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Why is down, down?

BOSTON UNIVERSITY

SCHOOL OF PUBLIC COMMUNICATION

Division of Broadcasting and Film

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION

by

Frederick Jared Ampel

ENTITLED

WHY IS DOWN, DOWN?

BE ACCEPTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE

DEGREE OF MASTER OF SCIENCE

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TABLE OF CONTENTS

CHAPTER I

RESEARCH AND LITERATURE

Introduction

In the fall of 1970 when I was asked to decide whether I wanted to complete my degree requirements by creative project or thesis, the decision was almost automatic: project. Reflecting back now after the twenty-one months it has taken from idea to completed project, I wonder sometimes whether or not the decision was perhaps made too hastily. But after looking at the completed project, I can only say that after all it was worth the incredible amount of time and effort, agony and hassle it has taken to bring what appeared to be a simple basic idea to fruition.

Way back then, the school was involved in the inflamed controversy that had erupted over children's programming and the networks. Action for Children's Television meetings drew enormous turnouts, lectures were held, class discussions came around again and again to the subject. After some thought and a preliminary research expedition to the library, I decided that Kid-Vid, as Variety dubbed it, was the area to which I should direct this project.

Background Research

The Spring of 1971 was essentially devoted to the

research stages of this project with frequent trips to New York City to talk with the staffs of The Children's Television Workshop (CTW) and The Schools for the Future (SFTF).

After much reading the research stages finally narrowed down to three basic sources: the first being several reports from the Children's Television Workshop, generally entitled The First Year of Sesame Street: An Evaluation, prepared by the Educational Testing Service of Princeton, N.J.; and books by Dr. Caleb Gattagno, Director of the Schools for the Future and creator of the "Pop-Up" films for NBC. Conversations were held at both organizations in January and February of 1971. At CTW I spoke with Barbara Reeves, a member of the research staff, and was given access to much of the back-up data in their files. At SFTF I spoke at length with Mr. Herman Keld, assistant to Dr. Gattagno and research director, and for a short while with Dr. Gattagno for detailed information on the theories behind his sound and color methods. In addition, reading was done in Jean Piaget on learning processes in children, the development of idea concepts and attention spans, material absorptive capabilities and similar areas in children.

In the report from CTW several important concepts were stated and proved useful in the formulation of the ideas behind the educational commercial concept. First, children watching the programs indicated some transfer learning

capabilities. That is some children learned to do things such as recognize full words, or write their names -- concepts which were not taught directly on the program.

In addition, the report indicated that certain types of production methods were more effective than others. The use of animation and short bursts of material appeared to show the most learning growth potential over short periods of time for the children tested. Third, the testing indicated: 'The program did not require formal adult supervision in order for the children to learn in the areas the program covers. Children viewing ... at home showed gains as great, and in some cases greater than children who watched in school ...' This point has significance in that the programs are designed to be network drop-ins, as would be a regular commercial, and for use in the classroom as is done with the "Pop-Up" films, although at different times.

In the Gattagno literature, important facets of scientific learning procedures are covered with respect to a visual medium. Dr. Gattagno's approach to teaching emphasizes sight, color and sound. "Sight is swift, comprehensive, simultaneously analytic and synthetic. It requires so little energy to function, as it does at the speed of light, that it permits our minds to receive and hold an infinite number of items of information in a fraction of a second.' This concept is vital to this program series,

in that large amounts of information will be presented in each one-minute spot, depending on the ability of children to absorb and hold this material as they do with regular commercials after several repetitions, but to gain something also from the initial viewing, even if unable to successfully integrate the knowledge the first time.

"The Medium of television is so interwoven with man's mind that one can be distinguished from the other only when the set is off' ; the images filling the space between the set and the viewers force them to perceive things transmitted from the set as real, and absorb them as reality.

The concept of the visual reality of television is also vital to these programs. It is this factor which will, when used, hopefully eliminate the natural barriers that exist in the conveyance of abstruse and conceptualized knowledge found in the classroom situation.

Towards a Visual Culture

In 1969, a small book was published. It received very little if any notice at CTW or the networks, but these organizations missed what probably could have been a million dollar saving book. Called Toward a Visual Culture: Educating Through Television, the book proposed a whole new approach to educational programming. Through this book and a sequel, What We Owe Children, the author, Dr. Caleb

Gattagno, proposed something both startling and unsettling to the network oriented programmer. He suggested making the medium an integral part of the learning process without its becoming obvious to the learner that he was being educated. The visual culture approach emphasizes several basic points. The visual as a medium possesses several distinct advantages over any other method of information transfer, be it in adults or children. Basically, it is the ability already outlined earlier in this report to capture and hold massive amounts of information in a very short span of time. Our eyes can scan material much faster than our brains are able to integrate it. We store this overload of material for future use, even if we don't realize it. Gattagno points again and again in both books to our unwillingness to realize the basic failure of our educational system to really teach us anything. Sure, we memorize material and spit it back by rote; sure, we work with materials and objects, but the system fails continually to help us integrate the printed and the real, the concept and the reality. What he is proposing and demonstrating with the "Pop-Up" series of films for NBC is that the visual alone can be a highly effective method of information transfer. Combined with colors and sound, it has an enormous teaching capacity, beyond almost any other method now in use. The Sound and Sight, Words in Color approach presented in these books

assumes two basic things: the ability to see and the ability to hear. By using the high speed of visual information transfer reinforced by color and appropriate sound, it allows the individual to absorb and integrate at his own speed, massive amounts of information, basic or complex, with a high degree of retentiveness, higher in fact than rote or any similar method of study. Gattagno emphasizes the natural inclination to seek integration in knowledge, to make a complete idea out of pieces, the natural propensity for order and logic in our minds. It is this concept that makes visual learning so effective. Blasting a person with enormous amounts or bits of information in a short span of time forces the individual to use his mind to later try to integrate this material into a complete idea or concept. Perhaps he can, but then he has questions to ask and answers to be found, making learning almost a natural progression from one step to the next, teaching without being force-taught, making learning a natural basic mental process, creating a visual reality in order to help structure a learned reality. Adults will deal with this type of approach in differing manners, but with children, with their constant questioning and exploration of their environment, this approach of using information to mold questions seems to have a high degree of effectiveness. Even the Workshop and Gattagno, forces at widely spaced points in TV educational

approaches, agree in their reports and his books that interesting visuals and creative sound and use of color have high degrees of attention span retention.

Taking this process and concept one step further, Gattagno and the Schools for the Future staff, with the assistance of teams of Japanese and Canadian animators, and a synthesizer, produced a series of sixty, one-minute animated films using the Words in Color approach to teach basic vocabulary and reading skills to the educationally disadvantaged and deprived as well as pre-schoolers. In extensive testing programs carried out at the School in New York, it was proved that the films did work. I saw them in use and the results were remarkable. So remarkable in fact, that NBC in its great wisdom bought the entire package and started running the spots in the prime children's time on Saturday mornings. The films worked again, and the process was begun. More are in production, others are being scripted.

The concept of the one-minute education package, prodocued as a spot commercial and used that way in the commercial ridden children's programs, seems to have immense validity. Commercials with their extremely high repetition viewing rates and short, lively, bouncy format on the whole, ingrain themselves rather quickly in the mind without the viewer on a conscious level even realizing it's happening.

How many still recall the Salem or Marlboro jingles, for example, even now with at least a six-month lapse in spot viewing.

In summary then: the essential points made in this data and the five months spent in research and exploration into the Kid-Vid area, and the present forms of such programming are:

1) Most children prefer cartoons to anything else on the tube, counter-programming or not.

2) Most attempts to educate through the tube run into at least partial if not complete failure of goals and more importantly bad ratings from the kids. Even Sesame Street, by far and away the most popular of the new wave of children's programs admits privately in its research data and studies to at least a partial failure in many of the areas in which the producers had expected its highest success rate.

It was then and still is my contention that at least part of the reason for this continuing failure is the basic educational philosophy that underlies almost all of the educational or part educational programming for kids. All of these shows, some to a lesser degree than others, essentially try to force feed information down the throats of their audience. When a child sits down to watch Sesame Street or The Electric Co. by now he knows to expect a dose of learning along with his ration of puppets and fun pieces.

CHAPTER II

PRE-PRODUCTION STAGES

Pre-Production Stages

But taking a proven format (ie. the one-minute spot) and the bare bones of a concept as yet unexpanded beyond the teaching of simple reading skills and letters and turning them into something to watch has proven to be an immense challenge far larger than I ever envisioned, and let me hasten to add enormously more expensive than even my wildest dreams had led me to expect.

The original germinal concept for the program revolved around the teaching of complex and often abstruse scientific concepts to children through the use of a learning burst or educational commercial method. The concept of the learning burst or educational commercial is twofold.

First, it attempts to carry a basal learning package to the intended viewers, the children, in a short burst of visual and sound information, so they can absorb quickly and with almost no noticeable expenditure of mental effort on conceptualization, and thus loss of attention.

Second, it attempts to provide the teacher or parent with the establishment in the child of a basal level of knowledge, a foundation level of knowing, so they can assume this level when attempting to expand on and further discuss

the concepts embodied in the program. In condensing this basic information into a compact and unitized format it becomes relatively easy to prepare the child for each new subject, since no great amount of detailed preparation is necessary. Each set of commercials assumes no previous knowledge, or a minimal level of knowledge, so no viewing preparation is required.

The basic question being asked is whether or not complex and often confusing scientific concepts can be taught in the learning burst format. That is, whether it is possible to convey in sixty seconds of television or ninety seconds of radio, enough information to hold the attention and teach, yet not so much as to confuse and bore the viewer. This specific topic area has never been attempted in this format before, and thus provides both a challenge to me, and a chance to help teach something most primary school teachers find foreign, difficult and trying.

CTW works with what they call a learning unit, that is a two- to three-minute segment of programming. Each unit contains much besides the information being conveyed, i.e. animation, visuals, and production work not directly related to the material, but designed to amuse and hold attention.

The Schools for the Future, while working in a one-minute format, depend on a cumulative effect as each unit interrelates with the next. The series is not truly functional

without the watching of the complete set of programs.

Although these proposed animations are a series, in that they are all about a basic topic area, it is hoped that it will not be necessary to view any one unit in order to understand the following segment. Each animation should stand on its own, as a commercial, capable of teaching without the support of any other unit.

In summary, the series "Why Is Down, Down?" will attempt to provide answers to the following basic questions:

1) whether the learning burst hypothesis is a viable approach to the teaching of scientific subjects;

2) what is the effectiveness of this method of teaching complex material;

3) how much information can be conveyed in one minute, without confusion;

4) what are the top and bottom age limitations for such a series of programs;

5) what is the best procedure for producing such a series.

Production Procedures

Each TV spot was to be exactly 59.5 seconds in length, making them suitable for commercial television. They were to be produced at the facilities of the School of Public

Communication, Boston University, using film both 16mm and 8mm if possible, graphics, slides (35mm) and portable video tape equipment. Tape to tape transfers were to be done if necessary prior to actual production. One of the major areas of pre-production was to be the shooting of 16mm and 8mm pixilation and semi-animation for use on the programs. Rental of a good 16mm camera was envisioned. Very little live studio was actually to be used, although the occasional pre-taping of a demonstration segment was possible. The shows were to employ almost all the available special effects: quick cutting, short musical bursts, and animation when advisable. No credits as such were to be used.

After the Spring of 1971 the original idea had narrowed itself down into a more complete and workable package. The production was to be done with 8mm film and slides, cost factors precluded anything else, then. The cutting-off of the radio spots was for three reasons. First, the unavailability of the necessary production facilities at reasonable cost; second, the total lack of interest expressed by all the stations contacted including WGBH and WBUR in running anything like what I proposed, and finally the inability to conduct any detailed proper testing for results (also cost factors seemed to be running very high for anything in stereo as the spots were envisioned).

The TV spots were to be animated for at least seventy-five

percent of their total running time with original synthesizer music keyed to the video image to add the necessary lively, bouncy feel to the whole package. Narration was to be kept to a minimum to avoid boredom and loss of audience attention, and to increase the visual impact of the graphics. With the highly selective use of the voice-over, and keyed music, it was hoped that a high recognition factor for key points and concepts could be obtained -- with the high repetition factor adding to the building.

Over the Summer of 1971, with the help of Mr. Monty Stark, Miss Nancy Atkins, John Kalaishes and Natural Sound Studios, Maynard, thirty minutes of original synthesizer music were recorded and mixed for use on TV from original eight track master tapes at a production cost of nearly three times the original estimate of $250.00. Final costs for the tapes with all the necessary copies came to $798.50, and this cost included price breaks on tape and studio time, and no engineering charges since I was my own engineer and mixer.

In the fall of 1971, with a final production date of December 16, 1971, final production got underway. It was then that disaster began to strike with highly monotonous regularity.

Evolution of the Creative Project

As previously discussed, the project underwent

considerable alteration from the concept presented in the original prospectus. After what I thought was the final form had taken shape and firmed up into a workable and, I thought at the time, produceable script, I began setting up a detailed production schedule. At first, my production schedule called for three months of preparing the graphics and filming them with either a homemade animation stand or a tripod-mounted 35mm camera. The use of professional animation stands and cameras had much earlier been ruled out because of several interfacing problems. First, the stand under construction by the Boston University Film Department was just that: still in the early construction stages. The other two professional stands in use at WGBH and WBZ were simply not available because of the extremely high use charges, exceeding $50.00 a day, plus the enormous union problems at WBZ and the high use factor at WGBH. After completion of the filming, one month was to be spent editing the film, with the best available editing equipment depending on cost, culling and sorting the slides and preparing both for use on the available Boston University TV equipment. Then a week was to be spent adding the voices a and music mixes, all this bringing the project to completion by December 10, 1971, allowing one full week to do run throughs and solve any major actual production problems.

All this looked fine on paper, however immediate problems

cropped up. The first involved the selection of the people to do the graphics. Not being in the least able to draw more than a poor stick figure, I knew from the outset that someone else would have to do the graphics materials. Having completed over the summer a basic script outline and having the skeletons for the proposed ten shows, a month-long search was started for the artists. The first and probably the most major problem encountered here was money. It proved impossible to find anyone willing to participate for no monetary reward; perhaps it was expecting too much. Finally two groups of people were found who were willing to participate for the kind of money I had been forced to allocate. Kenneth Leherhoff, a student at the Massachusetts College of Art, and Eric, Larry and Peter, whose last names I never discovered, students at the Museum School. Ken was to do the graphics layouts and lettering, while the other three were to produce in airbrushed cell animation the characters and backgrounds. Their work in this style can be seen at the end of Show One in the eyeball and pogo-stick sequences. Perhaps here it would be appropriate to discuss briefly the three basic types of animation used in the many stages of this project from the original 8mm films until the final finished 16mm sync sound product I now have.

Animation Technique

Airbrushed cell animation is perhaps the most expensive,

difficult and time-consuming style of animation. It is more commonly known as Walt Disney or Hollywood animation. Every frame of your film is produced by the use of one or at least one acetate sheet, 11" by 14", called a cell, on which are drawn or airbrushed (sprayed), with very expensive special inks and dyes, one sequential piece of your scene. For 16mm work in sound sync, this means 24 frames per second or 1440 frames per minute of film. However, in practice, with professional animation stand and lighting, up to ten layers of acetate cells, one with the character, several with background pieces, are used. As can be calculated, this very quickly gets enormously expensive. The two ten-second sequences used in "Why Is Down Down?" cost over $450.00 in materials alone, the total cost being in excess of $825.00 or about $50.00 a second. The Disney organization estimates that costs can run as high as $250.00 per second of film, with this amount being doubled in 35mm work. The absolute necessity of employing special inks and materials increases the cost level in this style of animation to an amount most simply cannot afford. However, this is the professional style and its quality is excellent; what most people know as animated cartoons are done in this style. A fine example is to be found in the film "Fritz the Cat."

The second type is what is called doll animation. Involved here are two-dimensional dolls constructed with

moveable joints which when placed on a semi-stationary background, are moved minute amounts for each one or two frames of film taken. Great care must be taken in moving such dolls to avoid jerkiness or awkward movement and to avoid damaging the delicate joint structures employed. Many, many rolls of both 8mm and 16mm film were consumed in learning how to move our characters. This factor differs for each character, a very time-consuming process since details must be exactly matched in order to enable them to turn, speak, move heads, arms and such. For example, turning our character "Sir Percy" from a full side view to a full frontal view involves the use of fourteen dolls in varying positions of "turned around," i.e. perspective. Although less expensive than cell-type animation, the time factor is not reduced by much and in some cases we found it increased. The costs involved are basically the art materials, such as color perfect paper or Coloraid paper for doll construction. This type of paper comes in sheets 18" by 24" at prices ranging from 50¢ to $1.50 per sheet depending on color. To date, the project has consumed 550 sheets of this paper. In addition to Coloraid paper, such materials as Letraset color sheet, zippertone sheets (these being plastic sheets with a pattern or color imprinted and a sticky backing), rubber cement and such were employed. The costs for the three minutes and forty seconds of doll

animation in the shows came to almost $900.00 (See Budget, Appendix E).

The third type of animation used in the shows is not really animation at all, but a form of slow motion photography. Called pixilation, it involves the filming of a moving object with a high speed camera taking only a few frames at a time, so that when the film is run at normal speed, the objects appear to be moving in steps or pieces, somewhat jerkily and out-of-joint, a commonly used comedy film technique. This method was originally tried for the title, but rejected after many attempts as being too hard to successfully complete without expensive specialized cameras.

Production Techniques and History

In October, 1971 the production of the project got underway about one week behind the original schedule. Because of the nature of the Boston University TV setup at the time, and because the installation of the 8mm film chain camera was not expected to be completed by the production date, it was decided to augment the original 8mm film with some 16mm, although as little as possible because of the high cost of film stock and processing. The title and out-title were filmed in 16mm as the first step of the project. These pieces of film, totalling seven seconds per show,

used up before production was over, 300 feet of 16mm Ektachrome stock at a cost of over $75.00 for stock alone. The animation set-up for both 8mm and 16mm was basic and simple, the construction of any kind of real stand being financially out of the question. What we used and continued to use throughout, was a very heavy duty tripod (Husky type), anchored to the floor with theatrical stage weights, positioned over a small Formica table, used because its smooth surface provided a nice surface to work on and allowed for ease of removal of the yards of masking tape we used to hold backgrounds and such to the table. Two high intensity sun guns providing close to 1800 watts of light at the proper 3200° Kelvin temperature for TV color film were positioned at the corners aimed down at the working area. In addition to light, these sources give off tremendous heat, which again and again caused curling of paper, melting of glues, and warping of acetate sheets. All of this was set up in the living-room of my apartment, the floor positions for the tripod and table being marked with masking tape to aid in future repositioning.

The 16mm camera we eventually settled on after much experimentation with the Bell & Howell cameras available through the school was a Bolex REXV Type III with a 21mm macro or close-up lens. This camera, because it is reflex (allowing you to see exactly what is going on the film),

provides the easiest working method for 16mm. The versatility of the camera allows camera fade in and out, double exposure, and in camera film dissolves, thus eliminating these costly lab "process" shots from the budget. The problem we encountered with the Bell & Howell and all similar range-finder type cameras was paralax. Because the viewing lens and shooting lens are not in the same physical position, the image will be off-center if you do not correct exactly for the angle involved. This proved to be almost impossible for animation work since the critical dimensions of the area being filmed are so exact as to preclude accurate enough paralax correction. We wasted much film determining this. It is also essential that the camera be capable of accurate registration in single frame operation. This means that the film must be in exactly the same position every time you push the shutter release. The Bell & Howell camera proved incapable of the necessary accuracy.

The 8mm camera used throughout the project was a Cannon Auto Zoom Model 518 with variable focal length lens, both automatic and manual exposure, and semi-single frame capacity. This camera, which used the standard Super 8mm cartridge and is capable of handling high speed color film, has a highly accurate pin registration system which along with motor drive and motor driven zoom, provided much flexibility

in operation. In the first project attempt a large amount of 8mm film was used, all of it shot with this camera on the stand we used. However, the camera's inability to provide full single frame capability proved its downfall. With a cable release, which by the way was used on all cameras to provide stability, it was possible with much practice to get the camera to take two or three frames at a time. More accuracy than that was simply not possible.

However, as we learned, 8mm film is not adaptable to this type of project with the present stage of its technology. Because it runs at 18 and not 24 frames a second, some flicker is present when it is shown on a TV screen. In addition, the lower light levels present in 8mm projectors provide poor color accuracy over the one-inch tape system used at Boston University. After much experimentation, and the abject failure of the first project taping, the use of 8mm film was dropped entirely. Perhaps at a later date with better cameras and projectors, and a suitable sound sync system, which was not available at the time, the improvement of editing and processing systems and so forth, 8mm will become a viable animation medium, but we were unable with the present equipment to make it do what we felt was necessary. Although its cost is much lower, and handling and such are easier, its inability to provide a true professional quality print, showable on TV without flutter and

color change, made it unusable in this project. The determination of these facts cost us over $75.00, and a total reshoot of the project in 16mm. In addition to the wasted money and stock, four months were spent trying to make it work.

A short note here about the problems we encountered with the system at Boston University. I had always envisioned this project in terms of color TV. I had planned originally to have the tape made outside the school on professional equipment, i.e. 2" high band color. However, when the color system was installed at Boston University great things were promised. The color we saw was good -- not excellent or network quality by any means, but quite acceptable. However, major technical problems kept cropping up: camera failures, poor quality tape, low light levels from the film chain, after-image problems in the color videcons, etc. Most of these have been corrected but the color quality delivered by the system is still below what I consider acceptable standards. Even when I had completed a full-scale 16mm print, I could not get accurate color reproduction from the system. It is very finicky about light levels and even a film print just a shade too dark, perhaps the equivalent of a quarter F stop or less, seriously affects the quality of the tape. Our first tape done under poor conditions had, in addition to color problems,

much video hash or noise, something that seems to be inherent in the Sony color system we possess. This made the tape not only bad TV but almost unviewable: details was blurred or gone entirely and low or dark images simply didn't show at all.

All the blame for this should not go to the system. The methods we used to transfer the 8mm film to tape, i.e. project on the screen in Studio B, and shoot this with one of the IVC cameras, proved totally unworkable. The 8mm projector does not put out enough light for that camera -- it has a high light level image system requiring about 200 ft. candles for a decent image. In fact, the 16mm projector with twice the lamp size proved to have barely enough output for a "fair" image quality.

All of this detail, and the problems encountered in trying to do something that had never before been attempted at Boston University presented us with a unique set of problems. Since no-one had done this before there was no data to go back to for help. No-one could supply us with a solution to these hassles. We eventually worked out one on our own, but again and again we found ourselves frustrated by the production hassles and the projector deficiencies. Nowhere in the initial planning stages did I plan for most of the production problems that cropped up. Few of them could have been envisioned until we actually tried

to produce the final tape. We had tried 8mm in studio before in monochrome and color using the RCA cameras and gotten fairly good images; we had tried in the production courses using tape for semi-sync audio, as had been done in the first production of WIDD. All the methodology had worked fairly well in other situations. But this program created its own unique set of situations.

On top of all these problems, the film lab created several major hassles. In one instance they destroyed a good bit of film due to the failure of a light seal in one of the automated processors. By the way, all the labs in town will process only Ektachrome stock on short notice, i.e. film from negative to print in six hours or less. In another case the processor put scratches on the film. These types of problems cause delay and reshoots, major hassles in working with a tight animated production schedule where time is the only thing you never have enough of. We estimate that for each second of film you see, ten to fifteen hours of work went into shooting, making graphics and editing. The total is staggering for 245 seconds of film.

One of the major concerns throughout the production was what I call image area, properly called critical or scanned area for the home set. The size of the actual critical area for the home set varies but some sort of workable standard has been set up. In one of the information sheets,

Professor Berlow prepared a set of specifications for critical area. Working with these, plus much testing of film we shot, what it looked like on a movie screen versus what showed on the monitors at school, we were able to work out for our particular film cameras and the background area we were using, 18" by 24", a set of overlay cut-outs. A critical area cut-out in the shape of a TV screen was placed over our material to determine what would and wouldn't show on the home screen. This proved to be an immense aid in avoiding either too much or too little, preventing the loss of vital material through non-scan by the home set. In technical terms, the film chains scan a full raster of 825 lines of TV image -- this all goes on the tape. A camera, however, scans only about 625, depending on lens and such, and the home set only 525. This 300 line deduction is major when working with a frame of film. Having to allow for this is crucial to getting a good, clean, non-chopped image. Again and again in the early stages, we would shoot the film, only to find that our calculations were off a bit, cutting something out or allowing background edges to show. These cut-outs would have to be made for each camera used in filming; no two are exactly the same. Minor variations in shutter speed can cause major problems in getting all you want on the screen, thus the necessity of accurate measuring is vital. However, only experimentation

will allow the final critical adjustments for your camera, using the type of animation we used. Other set-ups would cause different problems.

After the disaster in December 1971, with what I have now to call an abject failure of the project as a whole, the Christmas and New Year's breaks were spent in a total rethinking of the project, its goals and objectives, with special regard to the production and esthetic values we were trying to accomplish. It seemed obvious then that the entire method of production would have to be changed. What I wanted to achieve simply could not be done the way I had originally thought. Eight millimeter film proved to be unusable. Thirty-five millimeter slides couldn't be changed rapidly enough or maintain enough color stability; both rear and front projection into a studio camera were a failure. Music on tape couldn't be held in tight enough sync; the tape machines weren't stable enough for this critical application. In fact, I don't think any recorder without a special sync lock control would have been stable enough, sync being the maintenance of stability between music, voice and picture.

It appeared that I was facing the dismal and expensive prospect of a total re-shoot of the entire project: re-mixing the music, and re-editing and re-working the script and graphics. After many heated arguments with myself and

with the artists, things began to take shape again. The airbrush animators had left, the young high school girl who had stepped in at the last minute to help Ken Lehrhoff out with creating enough dolls had left, and Natural Sound was closed. This left me with Lehrhoff and myself. Out of the 300 seconds of film I needed for the project, I had complete at that time 20 seconds: the section of airbrush from the previous taping. I had to re-shoot, re-do and re-think 280 seconds of film or 6780 frames of film in the final print. The task was dwarfing. I spent January rewriting the scripts, cutting things out and rewording almost all the dialogue. The cuts of the horse and the remaking of "Sir Percy" and the Dude, "Mr. Gravity" plus the addition of a third character whose form was as yet undetermined, changed the entire construct of the show.

What the month of re-thinking and rewriting brought forth was a totally different project concept. I had cut the shows from ten to five, decided to do the entire thing in 16mm with sync sound, and changed and altered all the characters to increase simplicity by conveying more information with fewer words and more action, as well as altered the graphics totally for a much higher readability factor. In close partnership with Ken Lehrhoff, I worked out new character designs, and we created our own graphics style uniquely fitting it to the concept of the show. The use

of signs and such, the much more realistic backgrounds, with less creating more of an image, the absence of the clutter that afflicted the first shows, made it seem that the entire thing was far more likely to work.

The months of February and March were spent mostly working on the art materials, designing the backgrounds, shaping and re-shaping the characters and working on the dialogue with a teachers' manual for the readers the children were using, which shaped the dialogue to their vocabularies.

When April finally rolled around, we began filming again. The basic set-up was still the same, with a few minor changes for greater camera stability, i.e. heavier tripod weights, greater amounts of foam shock mounting for the camera. We had settled on the Bolex as the main camera, and the 26mm macro lens, a new lens from Bolex, as the system we would use. These two proved to be highly compatible. From the very first rolls of title we shot as test, the whole look of the project was changed. It simply looked better, more readable with better color and image quality. All the faults of a technical nature seemed well on the way to solution. Or so we thought. The first test rolls looked fine on the movie screen, but when we attempted to run them through the system using the new color film chain, which had supposedly been completely worked on, tuned

up and adjusted by a manufacturer's representative, we ran into the same problems again: poor image quality and severe color hashing, distortion of hue and tint. However, this major disappointment was turned, after some careful retesting, into one of the major learning points of the project. I had known from my technical researches that color film for television must have a low light density rating. This means that you cannot underexpose your film, even a little. You must have exactly 3200° Kelvin lighting, not close but exact. Everything is very critical, even processing must be held to within strict tolerances. After talking with several technicians at the lab I was using, Film Service Inc., I changed our method of photography slightly. By adding several low wattage, i.e. 250 watt, daylight photo-floods, and setting the F stop on the camera for a shutter speed of one thirty-fifth of a second instead of one fiftieth of a second recommended by Bolex, our next roll of title was nearly perfect for color TV transmission. With these changes, along with the lab's understanding that this film was to be slightly underdeveloped as with all color TV film, we had finally corrected all of our film technical quality problems.

After this we proceeded with the final filming, which took the better part of eleven weeks, working mostly nights and weekends but some days as well. We estimate 1200 man

hours went into this final filming and editing. After several days of corrective re-shooting to solve some bad editing problems, I had a final editing work print of the films. This time around we had made use of the full capabilities of the Bolex to cut down on editing and lab special effects. The Bolex Rex V is capable, with careful attention to exact operating parameters and careful attention to light levels, of in-camera fades, dissolves, double exposure dissolves or melds -- all lab tricks that run from $3 to $10 for each effect each time. Also, by keeping careful and exact count on frames and always figuring out each scene or event in frames per scene or action, we cut the amount of actual editing down to only about eight hours.

It was now the middle of April. The film had to be edited to its final form and quickly, for this editing was necessary before anything else like sound or voices could be added. Again problems cropped up -- I had to edit the original, the usual procedure being to edit a work print. The original is too soft and scratches and tears too easily on conventional Movieola equipment. I needed Steinbeck or similar "original" editing equipment. Boston University's equipment was tied up. I tried editing on a Movieola but ran into problems of slim knowledge of the machine and scratches on the film. I had just started working for WGBH, and things finally resolved that with permission from the

head of film at the station I edited with some assistance the final original at WGBH on Steinbecks. This was completed in two weekends of about four hours each.

The next step was sound. By several repeated viewings of the film with automatic timers running, I got exact timings in frames, and minutes and seconds of each section or piece. I then proceeded to edit the sound on Ampex equipment with automatic timers. Cutting the music to fit, I then brought my character voices in and one Sunday we recorded all the dialogue. When this was finally edited, I proceeded to transfer both the music and the voice tracks or tapes to 16mm magnetic film stock. Running these pieces on mag playback equipment, I did a final mix of the voices and music interlocked with edited picture onto one piece of new 16 mag stock. Previous to this, I had spent many hours syncing the two sound tracks to the picture using Steinbeck editing equipment designed for this purpose. To get the semi-lipsync I now have took over twenty hours of piece by piece editing and spacing, a complicated process that is outlined in any good film text.

Having now a final film and sound tracks, the film went to Sports Film Lab for the final release print with 16mm mag striped soundtrack, the better and less expensive method of putting sound on film; the other being optical striping, a complicated and expensive process that cannot be done in

Boston but must be done in New York, and takes at best a week with average cost being $85.00, including shipping. The mag striping process cost about $35.00 for the 209 feet of film I had.

Something which has not previously been discussed in any detail in this report is the process by which I determined the esthetic and visual values and make-up of both the characters and the graphics and dialogue we finally ended up using. The process was a complex and almost never-ending search for the highest possible clarity without sacrificing any of the basic production goals we had set up. After the original filming and subsequent failure of the project, many, many hours were spent with Ken Lehrhoff going over and over character designs, graphic styles, background colors, etc. At all times we were looking for both visual and intellectual clarity without losing any of the comic relief we had built into our characterizations.

From their original inception, the characters had been merely devices to convey information, their form and style being dictated basically by the artists' conceptions of my verbal descriptions of what they were supposed to be. What I was trying to do was create characters which would be both easy to animate, have some built-in comedy factor, and be flexible enough to play the role of information carriers. Although I conducted very little formal research into visual

design, I relied heavily on the ability of the artists to convey the necessary information to me. In most cases they were able to. Suggestions about color mixing, what colors to use, the size of features and such were determined by both a great deal of experimentation and creative sculpting by the artists.

Basically, the esthetic and visual design factors involved in the project were determined by trial-and-error experimentation guided by a set of basic parameters established as a result of earlier research. The guidelines came about due to text sources such as Gattagno and Piaget. However, it appeared obvious that innovative and original design styles could reinforce the whimsical nature of the situations and characters. Such a uniqueness in rendering is highly desirable to heighten the visual values, increase viewer interest and thus contribute to a probable increment in information conveyance. It is my recommendation that research be conducted by those attempting to create kinetically attractive illustrations for children, to determine which shapes, colors, textures and compositional factors can assist in the communication of basic scientific concepts from message designer to viewer. No, the characters and background are not perfect, but they do achieve their major purpose, i.e. to convey information with a little laughter.

Although artistic considerations weighed heavily in

deciding exactly how these films were shaped, several "time" considerations precluded any major attempts at character development within each individual film. To fit into their proposed network format the spots had to be exactly 59.3 seconds long. This is to allow for film chain roll in time. From this basic 59 seconds we had to deduct 10 seconds for opening and closing titles, and allow at least five seconds for any character to appear to walk on screen. Subtracting these time blocks gave us a working time of only 44 seconds of actual information carrying time. Much of the basic information was contained in the dialogue; the timing of the spoken audio dictated to some degree the length of the animated sequences. By carefully dividing up this block and back-timing the music and dialogue, we were able to make all our major action appear in this limited time. In producing anything for commercial television one must be careful to allow sufficient time for titles to establish, and sufficient out title or close to allow for fade to black smoothly.

An added recommendation to anyone else attempting a project involving animation is to expect to spend a lot of time and money getting what you really want. Use a good camera, do all the editing and such professionally. You will only compromise the results otherwise.

CHAPTER III

TESTING PROCEDURES

Subjects

It had been decided very early in the project that the only valid proof of whether the spots had any success in achieving their teaching goals was to test run the spots on their intended audience. By carefully testing these subjects we could determine some answers to the questions we had posed about the project's effectiveness as a teaching device and aid. To determine the answers to the following general value questions:

1) Whether the learning burst hypothesis is a viable approach to the teaching of scientific topics.

2) What is the effectiveness of this method of teaching complex material,

3) How much information can be conveyed in one minute, without confusion,

4) What are the top and bottom age limitations for such a series of programs,

5) What is the best procedure for producing such a series of programs,

it was necessary to specifically test the children on the spots.

Our testing procedure went through several revisions, but from the beginning the subjects were clearly defined. Since our target audience was approximately four to eight years old, we should test the spots on age groupings around those years like Kindergarten, 1st and 2nd grade elementary school children. Finding subjects was not as easy as determining them. After several lengthy searches, and checks with supervisory personnel, I finally located through Miss Gail Schulman, a Senior education student at Leslie College in Cambridge, the necessary grouping of classes in The Devotion Elementary School on Harvard Avenue. Gail was student-teaching there with second and third graders. After clearing it with all the necessary officials, we finally made arrangements to gather together approximately fifty children from classes within the school for the testing.

The group that we were able to assemble from classes in the first three grades at the school was quite a broad cross-section of the Brookline population. There were five Blacks, several children of Puerto Rican families, several Chinese and Japanese children, and several children from the wealthy Jewish neighborhoods in Brookline. Generally, the teachers expressed the opinion that these children were a good, average group. There were a few very bright children and a few who were having some trouble

learning to read well. Generally, it could be said that under the circumstances we got an average grouping. This generality gives the testing some more validity, since we were testing therefore on something resembling the TV audience we could expect on an average Saturday morning.

Our original testing plan was to break our test group into three parts. Group One would be given the Pre-test, and then told to watch the spots on Channel 56. They would then be given a Post-test. Group Two would be given the Pre-test, also told to watch Channel 56 and shown the films in a classroom setting, then given the Post-test. Group Three would be given the Pre-test, shown the films twice and then given the Post-test. The Pre-test was designed to determine what information contained in the spots was already known by the test groups. The Post-test, based specifically on the spots, was designed to determine what information, if any, they had picked up from seeing the spots, the different groups allowing us to determine with some accuracy whether home viewing alone or in combination with classroom viewing was more effective than classroom viewing alone.

However, management difficulties at Channel 56 plus scheduling problems at the school eliminated this idea. Instead, each class was given the Pre-test the day before by their respective home room teachers with no instructions

other than those absolutely necessary to enable the children to complete the information. Miss Schulman supervised this testing. The next day, after some problems with obtaining the right type of projector, we ran the films for the entire group of kids, gathered into one classroom. The films were run twice, including the spacing leaders contained for TV taping purposes. Nothing was said to the children before or afterwards other than that they were to see some cartoons. Each group then returned to its respective classroom, and the Post-tests were administered by the teachers within three hours of the film viewing.

As can be seen from inspection of the questionnaires (See Appendices), they are extremely simple in design. The hand lettering and yes-no format were chosen at Miss Schulman's suggestion as being the usual form of testing used in the school. To avoid any confusion or indication that this was not normal procedure to the children, we followed this procedure. At no time did we want to convey the impression that this was something special. The kids were excited about the cartoon viewing -- that was unavoidable. But no further special nature was to be indicated. This would have an effect on the test results, and these results are vital to the project's whole nature.

Reactions of the Children to the Viewing

When we arrived at the school on the morning of the

film showing, the kids were moderately intrigued by the equipment. They had been going through the usual morning routine before we arrived. We created some interruption in the routine, but we tried to avoid this as much as possible. After a delay because the right type of sound projector had to be obtained, we proceeded to show the films. Some of the older children, the 2nd graders, clustered around the projector asking questions about it and the films. I tried to avoid specific answers to any of the questions, the teachers keeping the large group's attention on the films. The first time the films were run several distinct reactions could be observed. Some of the older children were ahead of the films and were somewhat bored. The Kindergarteners were having trouble with the graphics, since their reading ability was somewhat limited. At several points, especially when the egg character blasts off in the fourth film, and when Sir Percy is rolled off-screen, laughter was heard. Some head-nodding and hand-clapping at the music rhythms was observed. Also we observed during this first run that some of the 1st and 2nd graders were counting down the films to the "Academy" leader. The leader goes down 10, 9, 8, 7, etc.

After this first showing, a small conference was held between myself, Professor Prince, Ken Lehrhoff and Miss Schulman, all present at this showing, to determine whether

or not to run the films again. After some discussion, including the mention that Sesame Street, which a large number of the children watch, repeats segments quite often for emphasis, the children were told that there were more cartoons coming. We then proceeded to run the films a second time. Some children, mostly second graders, expressed some disappointment that it was the same thing again, but this reaction was limited to only three or four children.

This second showing produced the most dramatic results. There was a definite increase in the laughter, a much more intense response to the music and its visual cues. Generally, the small amount of familiarity we had established seemed to increase noticeably the children's attention to the films. Several of the older children near me began to follow the graphics, quietly saying the words to themselves. Quite a similar reaction was observed during my test viewing of the "Pop-Up" films in New York. The Mr. Gravity figure elicited a measurably larger reaction, I feel, because his whole approach being half-comic, half-serious, he was pleasing to the children. The second viewing of the blast-off sequence got a large amount of laughter and giggling.

On the whole, the reactions were very satisfying. We had succeeded on all the basic levels. We had attracted

and held the kids' attention, gotten laughter and some pattern association on the surface, and they were interested in the films in a general sense. Several of the kids wanted to know about how we did them and so did the teachers present. All of them thought the films were interesting and informative. I would give a very high success rate to the showing.

It is interesting to note here that at the request of two of the teachers we returned to the 1st and 2nd grade classes about two weeks later and worked with the children on teaching basic animation, using materials they themselves constructed with our help. We then filmed a short piece: about two minutes in 8mm color, had the film processed and let them see it. They were very excited about it, making critical suggestions and generally being fascinated by the movement of the characters they had made. It is easy to see why the Yellow Ball Children's Film Workshop has been so successful. These older kids were very, very interested not only in the films but also in how they were done, thus showing their innate curiosity about the things around them. They wanted to be shown how this was done and try it themselves. With the energetic assistance and cooperation of the two teachers, we did as much as we could in three days. Everyone enjoyed the experience which only reinforced my observations about the subject and the medium being highly compatible.

CHAPTER IV

CONCLUSIONS AND ANALYSIS

Testing Results

The data we obtained through this testing situation indicate several general patterns. First: in all cases, in all grades tested, there was an overall numeric increase in the number of children who got totally correct scores from the Pre- to the Post-test, indicating on a basic level that indeed some knowledge pick-up had occurred. Even taking into consideration the considerable guess factor present, especially in the Kindergarten children, these test subjects did gain something from viewing the films.

I also noted, when computing the results, that as the questions increased in specificity in both the Pre- and Post-tests, the number of correct responses decreased, although in the 2nd graders, especially on the Post-test, this was not the case, perhaps indicating that the children had been able to integrate the specifics in the film to answer the questions we were asking. Several children in the 1st grade appeared to be confused by Question Three on the Post-test, although it is clearly stated in the film that Gravity is indeed a force. The reasons behind this problem are obscure, perhaps the method of presentation is

not clear enough, although I do not believe this to be the case. Without detailed interviewing and questioning of each child both before and after the films, it would be impossible to pin down the problems more specifically. For purposes of anonymity, we asked that no names appear on the questionnaires. Therefore we had no way to compare children across the Pre-/Post-test time period.

In a more detailed vein, the questions we felt were most crucial in determining whether or not we made our basic points were Questions 1, 2 and 4 on the Pre-Test and Questions 1, 2, 4 and 7 on the Post-test. These questions (See Appendices for questions) cover all the basic points we were trying to get across. Success there would indicate that the spots work at least on a general level. As can be seen on the analysis tables (See Appendices), in all three grades we achieved an increase in the number correct on Question 1 from Pre- to Post-test. Although many got the question right the first time, there was an increase, hopefully an indication that this point about direction had been gotten across. With Question 2 we achieved the same type of success, although in the Kindergarten both in Pre- and Post-tests all answers were correct. I cannot determine whether this is luck, guessing, remembering from one day to the next, or the films. I have a feeling that it is a combination of all four. With Question 4, the most

crucial point in both cases, we achieved a definite pick-up of correct answers, except in the Kindergarten where there was no change noted. I feel that the method in which this point is made in the films may be above the acceptance level of these younger children, but our success in the 1st and 2nd grades bodes quite well for the films as a teaching device. With Question 7 on the Post-test our level of correct response, which exceeded 90% in both the first and second graders, was quite gratifying. This question, combining two of the major points in the films, showed that we had gotten these points across to most of the children with enough clarity to enable them to use it.

Generally, the trend of the testing indicates that I have achieved at least on a basic level, the goals of the project. Without questioning each child, this is only a subjective judgment, however. There were no names on the tests to compare specific children across the Pre/Post-test period.

We did produce films that taught something, the children enjoyed watching them, and had little trouble understanding the basic points we were trying to make. They were able to integrate most of the basic material we presented well enough to formulate answers to our questions. Generally, I feel that there was a definite indication that this type of approach is both workable and useful.

Much more detailed research would be necessary before anything like a full series of thirty spots in this topic area or any other topic area could be undertaken. More spots would have to be produced, and part tested -- that is, testing specific pieces of the material on the kids before using it in order to determine the material's success or failure as a tool. In addition, eye movement tests should be conducted to determine attention spans of the various age groups for the material, and detailed knowledge pick-up testing should be carried out both in school and with home viewing. Essentially, these spots seemed to work well for the Kindergarten and first grades, with some of the Kindergarten children not being able to follow all the material and almost all of the 2nd graders having a fairly good basal knowledge profile to start with. We did achieve the best pick-up of correct answers in the 2nd grade, so that this might indicate a better ability to integrate the material with only two viewings. Many more repeated viewings would be necessary to establish definite learning profiles for the varying age groups. There was no home viewing or testing to give data on that area.

Postscript

At the present time, Kaiser Globe Broadcasting in Boston, Channel 56, UHF whose financial participation is

gratefully acknowledged, has agreed to run the spots for approximately ten weeks in their Saturday morning kid strip (basically cartoons). Their reaction so far has been one of caution. They basically like the material, but wonder about the actual films, commenting that occasionally they could use more professional touches, but they understand that this was not possible under the production conditions used. Their comments on more professionality were basically directed toward the technical quality of the film itself, with some questioning about the varying light levels, and the occasional quick cutting to be found, but overall they feel that given the conditions, these films are quite acceptable. They present no major technical problems for broadcast use as they now stand. They would like to see more spots. They seem to feel that this type of programming could be a great boon to the independent station in fulfilling its public service requirements, and in cutting down on the repeats of programming they now must use to fill the time. The one-minute formula is very persuasive, since they lose very little in revenue when running such a series. The mail so far has been very light with most letters wondering about where these spots came from. Only one negative response has been received so far.

Pre - Test

☐ K ☐ 1 ☐

1. Are up and down directions?

☐ yes ☐ no

2. Is a force a push or a pull?

☐ yes ☐ no

3. Is gravity a force?

☐ yes ☐ no

4. Is gravity everywhere on the earth?

☐ yes ☐ no

Post-Test

☐ K ☐ 1. ☐

1. Are up and down directions?
   ☐ yes ☐ no
2. Is a force a push or a pull
   ☐ yes ☐ no
3. Is gravity a force?
   ☐ yes ☐ no
4. Is gravity everywhere on the earth?
   ☐ yes ☐ no
5. Is gravity a pull?
   ☐ yes ☐ no
6. Does gravity pull down?
   ☐ yes ☐ no
7. Is gravity a force that pulls down
   ☐ yes ☐ no

Appendix A

Results of Pre-Test

Kindergarten	Total Response	Right	Wrong	No Answer or Change
Question 1	13	12	1	
Question 2	13	13		
Question 3	13	9	4	
Question 4	13	9	4	

Number totally correct, i.e. all four questions answered "yes" -- 5 out of 13.

Results of Post-Test

Kindergarten			
Question 1	12	12	
Question 2	12	12	
Question 3	12	10	2
Question 4	12	9	3
Question 5	12	11	1
Question 6	12	11	1
Question 7	12	11	1

Number totally correct -- 8 out of 12.

N.B. One child was absent the second day.

Appendix B

Results of Pre-Test

1st Grade	Total Response	Right	Wrong	No Answer or Change
Question 1	20	14	6	
Question 2	20	16	3	
Question 3	20	17	3	
Question 4	20	17	3	

Number totally correct -- 9 out of 20.

Results of Post-Test

1st Grade				
Question 1	20	16	4	
Question 2	20	18	2	
Question 3	20	13	7	
Question 4	20	18	2	
Question 5	19	16	2	1 NA
Question 6	20	18	2	1 C
Question 7	19	16	3	1 NA

Number totally correct -- 11 out of 20.

Appendix C

Results of Pre-Test

2nd Grade	Total Response	Right	Wrong	No Answer or Change
Question 1	18	16	2	
Question 2	18	14	4	1 C
Question 3	18	15	3	
Question 4	18	17	1	

Number totally correct -- 10 out of 18.

Results of Post-Test

2nd Grade				
Question 1	18	18		
Question 2	18	16	2	1 C
Question 3	18	17	1	
Question 4	18	18		
Question 5	18	16	2	
Question 6	18	18		
Question 7	18	18		

Number totally correct -- 15 out of 18.

Why Is Down, Down?

Show 1

Time	Action	Dialogue
5"	Title	
	cut to	
15"	Up and down stripes	
	dissolve to	
15"	Egg sitting on wall	
	Background: brick wall on an open field	
	Balloon from behind wall rises, egg points up	EGG: This direction is up.
	Egg points down	EGG: And this direction is dow-ow-ow-ow-own.
	Egg falls of wall	
	cut to	
	Blank screen	Sound of egg crashing.
	cut to	
10"	Pogo stick sequence	
	cut to	
10"	Eyeball sequence	
	dissolve to	
5"	Out title	

N.B. Timings were converted to frame counts (i.e. 24 frames by number of seconds) for actual production. Since Bolex possesses a frame counter, this method gives you extreme accuracy of control over time factors.

Why Is Down, Down?

Show 2

Time	Action		Dialogue
5"	Title animated		
	cut to		
25"	Force discussion		
	Background: open field with lectern. Sir Percy enters from screen right and greets the audience		
	The word "pull" pops onto screen	S.P.:	A force is a pull, like this.
	Sir Percy reaches off screen and pulls egg in by the arm.		
	The word "push" pops onto screen	EGG:	Or a force is a push, like this.
	The egg then pushes Sir Percy off screen		
	dissolve to		
25"	Direction discussion		
	Background: road with signs, Gravityville Cab Co., Gravity Used Cars, etc.		
5"	Mr. Gravity enters from left and greets audience		

Show 2 (continued)

5"	Object passes from right to left as Mr. Gravity points	Mr.G.:	That went in that direction.
	Object passes from left to right as Mr. Gravity points	Mr.G.:	And that went in that direction.
	cut to		
	Out title		

Why is Down, Down?

Show 3

Time	Action		Dialogue
5"	Title		
	cut to		
25"	Gravity discussion Background: road running at a slight angle across screen with billboards containing word "gravity" and road signs with up and down.		
	Sir Percy enters from right and greets audience	S.P.:	Eh-hem. Good day. Sir Percy here to talk about a force: gravity. Gravity is what pulls things to earth.
5"	cut to earth diagram Gravity arrows and objects for illustration		
	cut to Sir Percy who completes discussion.	S.P.:	As you can see, this force pulls objects, even you, toward the center of the earth. No matter where you are on earth, gravity pulls you down to the ground.
	dissolve to		And now my friend Hubert
25"	blast off demonstration		will demonstrate the power of gravity.

Show 3 (continued)

Background: rocket launching pad. Egg enters from bottom left and walks toward rocket gantry. He stops 1/3 of the way there and turns toward the audience. He looks one way, then the other, smiles mischievously, turns and runs to gantry. He then turns again toward the audience, braces himself, smiles ... BLAST OFF. During ascendence he looks up and sees the word "up". He is off screen for 1 or 2 seconds.
"Gravity" flashes at bottom of screen. Egg reenters. He looks down, sees "down," knocks gantry tower over, and cracks

Show 3 (continued)

as his shell hits the ground

5" Out title

Why Is Down, Down?

Show 4

Time	Action	Dialogue
5"	Title	
	cut to	
20"	Gravity discussion	
	Background: basketball court, brick wall with graffiti of "up," "down," "force," "gravity," "push" and "pull."	
	Mr. Gravity enters from bottom right	Mr.G.: Some people have been trying to explain gravity to you. Well, now I'm going to tell you about gravity. This basketball will go down through the basket hoop, if I throw it right, because gravity pulls it.
	cut to close up: 60% of court	
	Mr. Gravity reaches off screen and comes back with ball	
	He throws ball towards hoop, "gravity" pops on screen below ball.	
	Ball misses basket.	
	Mr. Gravity throws	Mr.G.: Let me try it again.

Show 4 (continued)

	ball. "Gravity" on screen, ball goes through hoop. cut to close up of Mr. Gravity. He smiles dissolve to Background: open field	Mr.G.:	OK? Now let me explain it to you again.
5"	Mr. Gravity on screen with balloon in hand He starts rising cut to close up Mr. Gravity, cut back	Mr.G.:	This balloon is pulling me up and we know that when I
	Mr. Gravity lets go "gravity" pops on screen He falls to the ground cut to		let go of the balloon, gravity will pull me down again.
15"	close up Mr. Gravity lying on ground cut to Basketball sequence cut back to		Now you see? It was gravity that pulled the basketball to the ground. And it was gravity that pulled me to the ground when I let go of the

Show 4 (continued)

	Mr. Gravity falling	balloon. It's gravity that pulls everything down.
	cut back	
	dissolve to	
5"	Out title	

Budget

(Inclusive of both the 1st and 2nd attempts)

Artistic Materials	$1622.62	
Film Stock	648.95	
Tape Stock	270.50	
Studio Costs (Including ARP rental)	528.00	
Lab Cost (Special Film Work)	250.00	
Camera & Lighting Equipment Rental	643.78	
Salaries	710.00	
Film Costs for Additional Prints	177.45	
	$4851.25	Subtotal
Estimated Engineering Costs (Not paid since engineering was done by Producer)	950.00	
Estimated Editing and Sound Transfer Costs (See engineering note above)	350.00	
Estimated Additional Costs	1300.00	
	$2600.00	Subtotal
	$7451.30	Estimated Project Total

Budget Breakdowns

Artistic Materials

Coloraid paper	$565.50
Letraset & colors	231.70
Pencils, razor blades, inks, exacto blades, etc.	279.05
Masking tape	21.50
Airbrush inks	174.87
Acetate sheets	245.00
Other paper supplies	105.00

Film Stock

20 Rolls 8mm color, with processing	8.78@
23 Rolls 16mm color, including work and final print with processing	16.95@
4 Rolls 400' mag 16mm	10.50@
12 Rolls splicing tape	12.00
1 half-gallon film cement	8.50
3 Rolls 3000' white leader	21.00

Tape Stock

10 Rolls Scotch 206	158.00
3 Rolls Scotch 206 (1" music mastering stock)	112.50

Salaries

Lehrhoff	200.00
Airbrush animation (three artists)	360.00
Additional	150.00

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