March 1, 1973

To the Graduate Council:

I am submitting herewith a thesis written by John Preston Isenhour entitled "A Theoretical Analysis of Visual Film Editing." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Communications.

Irving G. Simpson
Major Professor

We have read this thesis
and recommend its acceptance:

Daniel W. Hoyt

John Lee Jellicorse

Accepted for the Council:

Hilton A. Smith
Vice Chancellor of
Graduate Studies and Research

A THEORETICAL ANALYSIS OF VISUAL FILM EDITING

A Thesis

Presented to

the Graduate Council of

The University of Tennessee

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

---

by

John Preston Isenhour

March 1973

ABSTRACT

Film is a plastic medium. A single piece of film can be divided into many parts of various lengths. Any two of these parts may be rejoined--literally glued together--with a film splicer. These two simple processes of dividing and rejoining have far-reaching effects in film communication. Through them alone, the film-maker is able to control the length and arrangement, and therefore the meaning, of a series of shots. The job of determining which shots are to be used, how long each should be, and where each is to be placed is called film editing.

In Chapter I a comparison of the film image and reality leads to a description of the unique characteristics of the medium. In Chapter II film editing is shown to be the primary means whereby the film-maker exploits these unique aspects of film. The basic editing process is defined and discussed.

Chapters III and IV provide an inventory of the known effects of editing, an explanation of how editing communicates, and a means of predicting and designing editing effects. Chapter V outlines an editing spectrum and suggests a new approach to film editing. In Chapter VI this new approach is further developed in a description of kinetic cuts. The operation of some traditional semantic editing conventions is explained and described in Chapter VII.

100565

TABLE OF CONTENTS

CHAPTER		PAGE
INTRODUCTION		1
I.	THE FILM ABSTRACTION	9
	The Still Photograph and Reality	10
	The Film Shot and Reality	11
	Film Editing and Reality	16
II.	FILM EDITING	29
	A Definition of Film Editing	30
	The Role of Selection	31
III.	EDITING EFFECTS: LENGTH	36
	Length and the Single Shot	36
	Cutting-Rate	38
	Rhythm	44
IV.	EDITING EFFECTS: CONTEXT AND ORDER	50
	The Basic Experiments	51
	The Film Assertion	54
	The Principle of Congruity	60
V.	THE EDITING SPECTRUM	70
	Previous Classifications of Editing	70
	The Kinetic-Semantic Spectrum	75
VI.	TYPES OF CUTS: KINETIC	79
	Space-Time Distortion	81
	Static Spatial-Tonal Relationships	86
	Variations in Intra-Shot Flux	88

CHAPTER PAGE

VII. TYPES OF CUTS: SEMANTIC 96

Continuity 96

Cinematic Storytelling Devices 98

VIII. SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS 108

LIST OF WORKS CONSULTED 114

VITA 119

INTRODUCTION

Film is a plastic medium. A single piece of film can be divided into many parts of various lengths. Any two of these parts may be rejoined--literally glued together--with a film splicer. These two simple processes of dividing and rejoining have far-reaching effects in film communication. Through them alone, the film-maker is able to control the length and arrangement, and therefore the meaning, of a series of shots. The job of determining which shots are to be used, how long each should be, and where each is to be placed is called film editing.

"The foundation of film art is editing," according to Russian film-maker and theorist V. I. Pudovkin.[1] Although American D. W. Griffith was the first film-maker to exploit fully the possibilities of film editing, the Russians were the first to explain it. They observed that by juxtaposing any two shots, the film editor creates new meaning not inherent in either shot alone. This insight has been echoed through the years by film-makers and theorists alike. Consideration of the dissenting opinion of Alfred Hitchcock will help further define the role of editing in motion picture creativity.

Hitchcock insists that "working on the script is the real making of the film, for me. When I've done it, the film is finished already in my mind."[2] For Hitchcock, the final assembling of shots is almost mechanical. However, Hitchcock must write his scripts in terms of shots and shot connections, or in other words, in terms of editing. His extraordinary powers of visualization enable him to precisely plan

editing before filming and so he is not forced to make any significant adjustments in the cutting room. Yet even for Hitchcock, editing in its broader sense, is a basic creative technique of film-making.

From the conception through the screening, film editing is the hub around which motion picture creativity rotates. For the average film-maker, a motion picture is planned, filmed, and finally "cut" in terms of editing. Of course, a poorly conceived, sloppily filmed motion picture cannot be salvaged by editing. All other things being equal, however, the measure of a film is the manner in which it is edited. Anyone involved with the study or production of films needs to know the potentialities of this most fundamental tool of film-making.

The Problem

This thesis is generally concerned with narrowing the definition of film as an art form. Before any artist can effectively create, he must know the inherent capabilities and limitations of his medium of expression. The painter must know that a mixture of yellow and blue pigments will produce green. This knowledge, however, does not reveal which shade of green is appropriate or where it should be placed on the surface of the canvas. Only the artist's intuition and experience can tell him that.

In film literature, the known and the intuitive have long been confused. The insight and opinion of countless aesthetic writers have served both to reveal and obscure the operation of film editing. These critics have understandably written more about what they believe is

desirable than what is possible in editing. In the fine arts, this same type of thinking led to paintings which were "pictures of something." Not until the abstract painters began to experiment was it evident that the possibilities of the medium far surpassed what had traditionally been thought desirable. These abstract painters were aware of the inherent capabilities of their medium, and were not harnessed by misguided aesthetic theories.

The thought process which led to experimentation in painting can be applied to the film art. The objective here is to separate the facts and opinions concerning film editing in order to define what is possible, before commenting on what is desirable. Once the facts are established, they will be used as a foundation for a creative approach to the art of editing.

For the reasons listed above, all available information related to visual film editing has been reviewed. This includes empirical research, descriptive studies, and aesthetic theories. This information has been collated and put into a theoretical framework which is of value to both the advanced film student and the practicing film-maker.

Distinctiveness

Prior to the work of Calvin Pryluck and Sol Worth, film scholars have generally suffered from "tunnel vision." That is, the various groups working with film within the confines of a particular discipline have not concerned themselves with groups similarly occupied in other disciplines. Until recently, the social scientists suffered the major loss from this lack of communication.

The early scientific research in film communication was conducted primarily by psychologists who ignored the traditional aesthetic descriptions of the medium. This research was generally concerned with instructional films. Unfortunately, the emphasis was mainly on "instruction," and not on "film." In the words of Calvin Pryluck, "writers in the tradition of behaviorist psychology limited their investigations to those aspects of film that could be incorporated into existing psychological theory,"[3] and in particular, learning theory.

A classic example of the type of research done by psychologists studying film is reported by Hovland et al. in Experiments in Mass Communication. In one study, researchers compared the opinion change resulting from two films. The first film presented "one side" of an argument over a controversial issue, and the other, "both sides" of the argument.[4] This is a typical learning theory experiment which just happens to be recorded on film. Although all the early experiments were not as misguided as this particular example, the psychologists of this period generally were more concerned with testing film as a transmission channel than as a unique medium of communication.

This emphasis on the properties of film as a transmission channel was demonstrated in a review of 32 years of research on instructional films by Charles F. Hoban and Edward B. Van Ormer. Hoban and Van Ormer arrived at 10 principles "governing the influence of films." Not one of these 10 principles makes any reference to film editing.[5] Only by reviewing the empirical research currently available can the full implication of this omission be fully appreciated.

It was not until 1951 that Herman D. Goldberg conducted the first empirical experiment to test the effects of film editing. He found editing to have an effect on shot meaning. That is, film was shown to be more than a mere transmission channel. The basic process of encoding a film message--editing--was shown to influence meaning. Seven years after the modest beginnings of Goldberg, John Gregory completed his dissertation on the psychological aspects of editing. Since that time Roger Penn, Rod Whitaker, and John Kuiper among others have made significant contributions to the empirical evidence demonstrating the critical influence of editing on film meaning. These experiments were based on, and have helped further to define, the basic parameters of film editing. Although film-makers and aesthetic writers were the first to identify the pertinent editing variables tested by the empiricists, they are unaware of these experiments. So, now the critics and film-makers suffer from the lack of interdisciplinary communications.

Of scholars on both sides of the scientific-aesthetic fence, only Calvin Pryluck and Sol Worth have made any significant attempt to integrate the full range of empirical, aesthetic, and analytic studies into a truly eclectic approach to film. Like the psychologists, theatre critics, sociologists, and literary analysts who have turned to film study, Worth and Pryluck have approached film through another discipline. In this case, the approach is adapted from linguistics. Yet, unlike the models adapted from other disciplines, linguistic paradigms provide great insight into film communication.

The greatest contribution of Worth and Pryluck has not been in providing answers, but rather in asking the right questions. For example,

Worth asks, "if I perceive 'thing' A, and then also perceive 'thing' B, what happens to make me know "thing" A and B or even 'thing' X?"[6] This is the critical question in studying film editing.

Answering these types of questions is essential to understanding film communication. In addition, both men generally have avoided entanglement in filmic non-issues inherent in applying linguistic analysis to a medium other than language. Generally, the contributions of Pryluck and Worth to this study have been crucial. Many of the ideas presented here, although probably unrecognizable to the two men, have resulted from a train of thought begun by their insight.

Unlike previous film studies, this thesis is not based on linguistics, psychology, dramatic or literary criticism, sociology, or any other discipline with its inherent capacity for distortion. The analysis begins with a comparison of film and its source--physical reality. The differences in film and reality are assumed to define the medium. The parameters used to discuss film arise from within the medium itself, and not from some preconceived theory borrowed from another discipline. This is the first known study which makes extensive use of both empirical and descriptive evidence to study film, and in particular film editing, in terms of the medium itself.

Specific Objectives

The thesis will be confined to a study of film editing within a silent motion picture scene. To go beyond the scene would necessitate a more extensive study of film plot, theme, and in general, content *per se*, which is of limited concern here. What is of primary concern is how

the editing of a particular film segment can influence its meaning apart from content.

At present, editing decisions generally are based on intuition and experience. A general objective of this thesis is to determine the point where the facts known about editing leave off, and intuition and experience must take over Specifically, the thesis is designed to furnish the following information in a theoretical context: 1) a general description of the role of editing in film communications; 2) an inventory of the known effects of editing; 3) a means for predicting and designing editing effects; 4) a means for devising new editing techniques; and 5) a basis for understanding why traditional editing conventions work. All theoretical prepositions are, of course, logical extensions of known facts.

Conclusions

The thesis combines empirical, descriptive, and selected aesthetic studies in an attempt to form a comprehensive theory of visual film editing. The heart of the study is the synthesis of science and art. Such interdisciplinary research is rare, but necessary, if scientists and film-makers alike are to benefit from the experience of each. A review of early film research provides too numerous examples of psychologists and other scientists, ignorant of film techniques, studying the wrong problems when only a cursory glance at the writings of Eisenstein and Pudovkin would have revealed the pertinent variables. Hopefully, the thesis is successful in showing the compatibility of the scientist's demonstrated fact and the aesthete's reasoned conjecture, and the value in the combination.

END NOTES

[1]Vsevolod I. Pudovkin, Film Technique and Film Acting, trans. and ed. Ivor Montagu, Memorial ed. (London: Vision Press, (1958), p. 23.

[2]Alfred Hitchcock, "Direction," Footnotes to the Film, ed. Charles Davy, rpt. in Film: A Montage of Theories, ed. Richard D. MacCann (1937: New York: E. P. Dutton, 1966), p. 55.

[3]Calvin Pryluck, "Structure and Function in Educational Cinema," Final Report, Project 7-E-081 (Washington: U.S. Dept. of Health, Education, and Welfare; 1969), p. 3.

[4]C. I. Hovland, A. A. Lumsdaine, and F. D. Sheffield, ed. Experiments in Mass Communication (Princeton, N. J.: Princeton Univ. Press, 1949), p. 201.

[5]Charles F. Hoban and Edward B. Van Ormer, "Instructional Film Research 1918-1950," Technical Report SDC 269-7-19 (Port Washington, N. Y.: Navy Special Devices Center, 1950), pp. 9-2—9-8.

[6]Sol Worth, "Cognitive Aspects of Sequence in Visual Communication," Audio Visual Communications Review, 16 (1968), 137.

CHAPTER I

THE FILM ABSTRACTION

> Between the natural event and its appearance upon the screen there is a marked difference. It is exactly this difference that makes the film an art. (V. I. Pudovkin)[1]

The differences between film and reality make the motion picture a unique medium of expression. Film techniques derived from these inherent differences are more to be desired from an aesthetic viewpoint, than are those imposed upon the medium. For example, films need not maintain strict dramatic continuity as stressed by some writers. In fact, it is not necessary to tell any kind of story. The modern deviations from traditional forms of cinematic storytelling are obvious from watching current motion pictures, but not so obvious in the pages of current literature.

In Albert Lamorisse's 1956 award-winning film, The Red Balloon, the little boy who "adopts" the balloon is continually being jumped from street to street in Paris with no explanation. Lamorisse merely lets the boy walk out of the frame and then cuts to a new street where the boy walks into and out of the frame, beginning the cycle anew. Traditionally, such changes of location would be connected by a dissolve. Lamorisse's technique was relatively new in 1956, but recently has become more common. Such violations of tradition are becoming prevalent because film-makers are more conscious of the unique characteristics of the medium and are not limiting film art to the artificial restrictions of literature or theatre. The remainder of this chapter is concerned with finding and describing the unique characteristics of the film medium.

The Still Photograph and Reality

Photographic film can record only the light entering the camera lens. With development, densities are created on the film roughly equal to the varying intensities of light that entered the lens. These varying densities produce shades of light and dark and, in combination with dyes, hues of color. This is what the individual sees in the photograph. And because the densities are generally arranged in familiar patterns, they can be identified. But these patterns are not innately familiar. The viewer must learn to interpret them.

Robert Flaherty, the "Father of the Documentary," provides some evidence of the abstract nature of the still photograph based on his experiences while filming Nanook of the North:

> . . . some of my Eskimos could not even read a still photograph. I made stills of several of them as preliminary tests. When I showed them the photograph, as often as not they would look at it upside down. I'd have to take the photograph out of their hands and lead them to the mirror in my hut, then have them look at themselves and the photograph beside their heads before, with a smile that spread suddenly from ear to ear, they would understand.[2]

More anecdotal evidence comes from studies of primitive African cultures. One writer states flatly that the Africans he observed could not interpret still photographs, while another indicates that the natives could not distinguish familiar landscapes or even land from water.[3] From this evidence it seems safe to say that the interpretation of still photographs is an acquired skill.

The still photograph is difficult to interpret because it is an abstraction. It is neither reality nor even an exact representation of reality. Disregarding some obvious, but insignificant differences

between the photograph and reality--such as size, clarity, and intensity--reality and the single photographic image differ along several basic dimensions. Reality is continuous, three-dimensional, and dynamic. The still photograph is fragmented, two-dimensional, and static. The still photograph records the light coming through the lens at one time and in one place, that is, at one point in reality.* It has only an illusionary third dimension. Thus "the magic of the camera is actually confined to the presentation of the physical appearance of things, isolated from all the rest."[4] At any given time and place there are infinite opportunities for still photographs, but each is a static, isolated, fragmented, abstraction from reality.

The Film Shot and Reality

Although the moving picture or film might first appear to be a more easily interpreted abstraction due to the presence of more psychological cues, this is not the case. After an examination of anecdotal evidence, Joan and Louis Forsdale have noted and described a state which they call "total illiteracy" in film. Total illiteracy is defined as "the inability to recognize familiar objects, people, places, and action when they are shown directly and without contrivance on the screen."[5] Their definition is based primarily on studies by Wilson and French in Africa, and Humphrey in Iran.[6]

Knowing that some people cannot interpret common still photographs, it is not surprising that they also fail to understand moving

---

*This statement disregards the use of double-exposures, superimpositions, and other composite techniques to produce multiple-image photographs.

pictures. However, a familiarity with still photographs is no guarantee, of film literacy.

This perhaps first became evident when D. W. Griffith began using the close-up as a means of filmic expression. According to Balázs, "when Griffith first showed a big close-up in a Hollywood cinema and a huge 'severed' head smiled at the public for the first time, there was a panic in the cinema."[7] Although perhaps a bit exaggerated, this evidence is corroborated by Russian film-maker and theorist V. I. Pudovkin who reported that audiences upon observing Griffith's use of the close-up cried, "Where are their legs!"[8]

Other evidence indicates that various other film conventions such as the moving camera and some optical effects are totally misunderstood by film illiterates.[9] The point is that although "film comes closer than any other medium to giving us the illusion of primary experience,"[10] it is <u>not</u> primary experience. In other words, whether still or moving, the picture like the word is not the thing.[11]

The motion picture abstraction begins with the still photograph. A series of still photographs of one continuous action, photographed and projected sequentially, can give the illusion of normally paced, continuous motion. Light is now recorded at two or more times and places. In motion picture terms, the still photographs making up the moving picture are called frames. The combination of two or more frames in sequence representing a continuous or seemingly continuous segment of reality is called a shot.

The shot is the basic physical unit of the motion picture. It is commonly defined as that strip of film exposed in one continuous running

of the camera.[12] Hence a recording of the reality before the camera. However, there are two shortcomings to this definition.

First, it is possible through various special techniques, such as pixillation (human animation),[13] to create the illusion of continuity where none actually existed in filming. In addition some underground film-makers, such as Jonas Mekas, use single-frame photography to intentionally disturb continuity. The definition presented here includes any sequence of two or more frames which are so united in an apparent physical reality that the audience member will experience a feeling of continuity within one particular, homogeneous segment of space and time. Any technique is included which results in a strip of film that appears to have been "exposed in one continuous running of the camera" (even with frames deleted). The standard is a measure of homogeneous space and time. The shot must only represent, not necessarily record exactly, a homogeneous segment of real space and time.

The second shortcoming of the traditional definition is that the continuous strip of film recorded in the camera can be divided into many smaller continuous segments or shots for inclusion in the finished film. Communications theorist Sol Worth has devised separate names for the continuous strip filmed in the camera (cademe) and the shots finally used in the film (edeme).[14] However, this muddying of the semantic waters seems of little value. It is better merely to keep in mind the distinction between the filming and editing phase of motion picture production.

The traditional definition of the shot is in terms of shooting technique. The one presented here includes the shot as recorded (filmed)

and as seen in the completed film despite any transformations which may occur along the way. Despite the dynamism provided by the shot, the motion picture remains fragmented and two-dimensional when compared to continuous, three-dimensional reality. Two-dimensionality is what Calvin Pryluck might call a channel limitation--it is present "across the board" in film communication. As such, it is not under the control of the film-maker. Every shot is two-dimensional and this characteristic is not subject to manipulation. There are, of course, ways of increasing the illusion of depth throughout a film by exploiting the simple principles of visual perception. Extreme examples are the "3-D movies" which enjoyed a short-lived popularity in the early fifties, and the use of wide screens as in Cinerama and Cinema-Scope.[15]

On a shot by shot basis, the film-maker can increase the feeling of depth in even a 16mm film by the imaginative use of lighting, framing, and wide-angle lenses. Although the shot remains two-dimensional, the film-maker can control the illusion of depth.

The second major difference between the shot and reality has been termed "fragmentation." Fragmentation refers to the limits of the field of view of the camera, the physical restrictions on the length of a given roll of film, and the practical limits of a given shot.

The field of view of the camera is limited by the lens. That is, a given lens can only channel light rays to the film within certain spatial limits--a wide-angle lens showing more of a scene than a "normal" or telephoto lens. The result is that a strip of film does not show everything present at a particular location. This aspect of fragmentation is often called the "frame limit,"[16] or limitation of the frame

(referring to the result of lens limitations in the projection of the film).

The limitation of the frame performs a central role in film creation. Because "the frame limit determines the spatial bounds within which the object to be shot is to be confined. . . . it is a means of making a primary selection."[17] The camera does not record everything, and a judgement must be made as to what to photograph. This selection is based upon aesthetic judgement. Every time the camera is turned on, a two-dimensional fragment of reality is "framed" in a pictorial sense, and the design of this composition is of artistic concern.

Fragmentation is also present in the physical limitation of the length of a roll of film. Film is normally available in standard lengths based on the capacity of standard cameras. The film-maker can make one shot only as long as the length of a given roll. This is insignificant, however, as in practice most films are intentionally photographed in short lengths. This is done so the film-maker can take maximum advantage of editing. So the film-maker himself contributes further to the fragmentation of the medium. Two-dimensionality and fragmentation are the major differences between that reality in front of the camera and that impression recorded on film in the shot. Of course, the film-maker may use bogus sets, special lighting effects, actors and all the other familiar and not so familiar devices of fiction film-making, but these too are real in the sense that they physically exist in terms of light transmittance or reflectance. The distinction here is between reality as defined by light, and reality

versus fiction. The set pictured may not be a true reflection of contemporary reality, but because the scene consists of real people and things which reflect or transmit light, it is here considered real.

Despite the limitations of fragmentation and two-dimensionality, the shot comes closer to "primary" experience than the completed film. This is due to the possibilities provided by fragmentation.

Film Editing and Reality

It is possible to make a film consisting of only one shot.* In the creative use of the medium, however, whether in industry or the more familiar environs of Hollywood, a single motion picture is generally composed of hundreds of individual shots. The film-maker shortens, arranges, rearranges, and finally joins together hundreds of shots into a completed film. This process is called editing.

Shots can be rearranged in an order other than that in which they were originally photographed, and shortened or divided into several shots. This adds an additional abstract dimension to the film medium. It gives the film-maker the ability to restructure filmic space and time into a framework of his own invention. This framework may be the pedestrian chronological arrangement of a Walt Disney film or an obscure psychological maze such as that in Alain Renais' Last Year at Marienbad. The filmic representation of generally realistic space-time in the shot

---

*This is generally described as using the camera as a recording device. The film-maker turns on the camera at the beginning of an event and turns it off upon its completion. He never moves the camera and makes adjustments only to conform to light fluctuations. The result is a continuous record of an event.

may become artificial space-time by virtue of the combination of shots in editing.

Space-time may be manipulated in two ways: first, the actual space-time sequencing of the filming of a particular shot may differ from its final space-time sequencing in the completed film. For example, an actor may have been filmed yesterday walking through a door, but his entrance into a room (seen from the other side of the door) may have been filmed a year ago. In the finished film, the actor may be made to appear to open the door from the outside in one shot and enter the room in the next in one continuous motion even though the shots were taken a year apart. In addition, the room entered in the second shot can be filmed a continent away from the doorway in the first shot. So although the filming of the two shots was separated in space and time, in the completed film a continuous space-time continuity was depicted.

Secondly, through the use of a third shot, called a cut-away, the actual time and space required for the man to open the door and enter the room can be compressed. For example, suppose the entire first shot consists of the man approaching the door, placing his hand on the door knob, opening the door, and entering the room. Suppose our man is being followed by a "mysterious stranger." It is possible to insert a close-up (cut-away) of the stranger just when the man has begun to open the door, and then to cut to the man closing the door behind him after his entrance without the audience experiencing a break in continuity. So even though a considerable portion of the actual sequence has been eliminated, the cut-away disguises the deletion, and space and time are compressed.

Time and space can be expanded in a similar manner. In this instance a portion of the action may be overlapped. For example, the man could be shown entering the door in both the first and last shots. The cut-away in between would once again disguise the space-time distortion.

Many writers also cite the "flash-back" and the "flash-forward" as techniques of time distortion characteristic of the cinema. Such time manipulation has been used for centuries on the stage however. The film has added only abruptness and speed to the process. The flash-back and flash-forward are time changes dependent only on the narrative content of the sequence. They are not uniquely filmic time distortions. The film has no past or future tense. The film can show only the present.[18] The best the film-maker can do is explain or imply that "this happened in the past" or "this will happen in the future" and then continue his narrative in the present.

Consider the problem of filmicly communicating that an old woman was lovely as a young girl. Starting from an extreme close-up of the woman, the film-maker may dissolve to a long shot of a lovely young woman. Through the dissolve he has attempted to inform the audience that "this is the way it was in the past." Yet once the dissolve is complete, the audience is looking at a woman who is young--now--on the screen. Unlike language, film has only one tense and that tense is the present. The present can be lengthened, shortened, and repeated, but it cannot be converted into the past or future.

In the comparison of the film shot and reality two major dimensions of the film abstraction were uncovered: two-dimensionality and

fragmentation. To these must now be added a third: the space-time distortion made possible by editing the fragments. This is a supra-realistic dimension of film communication. With the introduction of editing, film is no longer merely an imprint of reality, but a new entity created by the film-maker.

What is depicted in an average shot to shot connection most likely never happened exactly as shown and, if it did, would not be experienced in the same way as depicted on the screen. The film-maker creates the illusion of an event through a connection of shots. It was shown earlier that the frame to frame connection within the shot also produces an illusion. The differences in these two connections will be outlined below and the final aspects of the film abstraction examined.

Although shots may be connected by various transitional devices such as the dissolve, fade, and wipe, this thesis will concentrate on the most common connection--the cut. British film theorist Raymond Spottiswoode provides the generally accepted definition: "the cut. The instantaneous transference from any shot to its successor."[19] Unlike the dissolve, fade, or wipe the cut does not exist as a physical entity--it occupies no space and no time. As Spottiswoode remarks, "the cut is in the strictest sense imperceptible, and is only a logical abstraction. . . ."[20]

Despite attempts by Whitaker and others to assign meanings such as "therefore" and "then" to the cut in selected situations,[21] the cut does not mean anything. It is a term used to describe a process of connection. The images "mean," not the cut. In the completed film,

the cut joining two shots does not physically differ from the connection of one frame to the next within a shot. According to Stephenson and Debrix, "the difference between the succession of each frame within the shot, and the succession from shot to shot [via the cut] is a difference of degree rather than one of kind."[22] This difference is not discernible outside a consideration of the film image.

What visually distinguishes one shot and one frame from the next is visual variation of the light patterns projected. On the screen, light patterns move about, change size or shape, change color, vary in intensity or texture, or whatever. These visual variations result from changes of camera position, manipulations of the lens, or the actual recording of some movement or change in the scene during photography. There are two kinds of visual variation: spatial and tonal.

Spatial variations are the movement or change of some person or object in space. For example, a boy walking across the room, or a balloon being blown up. Tonal variations include changes which are not spatial *per se*--a light turned off or on, the changes in color or intensity mentioned above. In other words, a change which is not spatial, but nevertheless is recorded on film. The significant occurrences of this type of variation are generally confined to a frame to frame connection although in special cases it may occur from shot to shot without the overriding influence of some spatial variation.

The major difference in shot connections by the cut and the frame to frame connection within the shot, however, is most often in the degree of spatial variation. For example, in a given shot one may watch a man walking across the street. Within this shot it is impossible to visually

distinguish one frame from the next. The change from frame to frame is so slight that the spectator cannot perceptually separate them. This is due to what psychologists call apparent movement[23] or, more popularly, the phi phenomenon.

Flashing lights are often used on billboards to take advantage of the phi phenomenon. In a row of lights which flash on and off sequentially, the motorist will perceive motion if the time interval between flashes is correctly set. This is an involuntary, not a judgemental, response.[24] If the lights are flashed in sequence at certain intervals, the motorist will perceive movement. In the film medium the same illusion is produced by the frame to frame connection if the frames are projected at a certain speed (normally 24 frames per second).

In the example above, it was shown that in a continuous shot of a man walking, it is impossible to distinguish one frame from the next due to the phi phenomenon. However, if a cut is made to a close-up of the man's face, it is immediately apparent. The spatial variation is so great that the phi phenomenon is not in operation. The audience can see the change and knows a new shot is being shown. If, as in the example above, the two shots show two views of an apparently identical space-time, the difference in spatial orientation must be large enough for the spectator not to perceive it as a frame to frame connection. If the viewer perceives a frame to frame connection when a shot to shot connection is intended, a jump-cut occurs.

In other words, if two shots are very similar in spatial orientation, the phi phenomenon will cause the audience to perceive motion where none is intended. In this instance, the degree of change between

frames is so large that the subject seems to "jump" rather than move smoothly as in the shot. On the other hand, the spatial change is too small to make a clean transition like the normal cut from shot to shot. Thus the jump-cut is a transition which perceptually lies somewhere between the frame to frame and shot to shot connection. It is a visible break in time and space continuity perceivable by the audience.

Unlike two adjoining shots depicting an identical space-time segment, two shots in sequence may have little or no space-time continuity. Such connections do not show continuous events such as a man opening a door in one shot and walking through in the next. Rather the man in one shot may explain he is going to town and in the next, connected by a cut, be shown walking down a city street. Other shots may have no space-time continuity and be related only by the overall theme of the film. In any case, the spatial or tonal variation in light patterns must be sufficiently great for the audience to perceive the difference in shots. Just how great this change need be is an empirical problem. However, some guide-lines established by film-makers will be discussed later during further consideration of the jump-cut.

So the shot to shot connection and the frame to frame connection within shots differ in terms of the degree of spatial or tonal variation. When the variation between frames is perceivable, a shot to shot connection or a jump-cut has occurred; when it is not, a frame to frame connection has occurred. Spatial and tonal variations account for <u>all</u> movement and change seen in the film. This distinction can be better understood by returning briefly to a contrast of the shot and still photograph.

The motion or change of light patterns recorded by the shot distinguishes it from the frame or still photograph. To simplify terminology, the visual movement and change present in reality will henceforth be called flux. The flux recorded in the film shot will be called intra-shot flux, and will be defined as the filmicly recordable change of physical reality along time in space. Obviously, the recording of this flux is necessary before there can be any illusion of movement in the shot.

The preceding comparison of film and reality has relied heavily on the recognition of the underlying essence of this recording process. That is, in the motion picture medium, the visible dimension of reality is converted into two-dimensional spatial-tonal representations on film. Secondly, the time dimension of reality is converted into length.[25] Finally, the spatial-tonal representations are recorded on film in the sequence in which they occur in reality. So a certain number of frames (comprising length) upon which are recorded spatial-tonal representations (visible changes) are organized (by sequence) to produce an illusion of physical reality in the shot.

Any shot may be analyzed on the basis of these three factors. For example, a shot of a man walking represents a change in spatial-tonal orientation from frame to frame. How long he appears to walk is a question of the number of frames in the shot, or shot length. The illusion that he is walking and moving smoothly is dependent on the sequencing of frames, and, of course, the phi phenomenon. Theoretically, a shot is simply a certain number of frames in sequence which record spatial-tonal representations.

So to the parameters of the film abstraction mentioned above must be added the peculiarities of the recording process itself. These peculiarities are all aspects of the reproduction of the "filmicly recordable change of physical reality" earlier termed intra-shot flux. Thus the length, sequence, and spatial-tonal representations recorded on film are the three dimensions of intra-shot flux. Yet intra-shot flux is not the final characteristic of the film abstraction.

In the shot, the space-time representations are generally an imprint of what actually occurred in reality. However, in the shot to shot connection, the spatial and temporal sequencing may be entirely artificial. So the spatial-tonal variations of light patterns resulting from the shot to shot juxtaposition is an element of flux added by the film medium and not derived from reality. The nature of shot connections is subject to only the physical limitations of the medium and the imagination of the film-maker. So to the recording of an imprint of reality through intra-shot flux must be added this artificial flux made possible by the connection of shots. This new element will be called inter-shot flux. It is only through the discernment and interpretation of the visual changes in intra-and-inter-shot flux that audiences are able to receive meaningful communications through the film medium.

This chapter first established that film is an abstract medium of communication, and secondly, prescribed a theoretical explanation of that abstraction. Based on anecdotal evidence, the understanding of motion pictures was said to be an acquired skill. In search of critical differences, film was then compared and contrasted with physical reality. Reality was described as continuous, three-dimensional, and dynamic.

Although the film shot was found to be dynamic also, it differed from reality because of two-dimensionality and fragmentation. The essence of shot dynamism in filmic representation was found in the recording of visual reality as spatial-tonal representations which were ordered in time by length and sequencing. The changes recorded in the shot were termed intra-shot flux. Finally, an examination of reality and the shot juxtaposition showed that film had the capacity to distort space and time, and could create supra-realistic changes through inter-shot flux.

So the inherent characteristics of the film medium were found to be: 1) two-dimensionality; 2) fragmentation; 3) space-time distortion; 4) intra-shot flux; and 5) inter-shot flux. It is apparent that these five characteristics overlap. Space-time distortion and inter-shot flux are impossible without fragmentation. None of the three is significant without the recording of intra-shot flux. However, each of these five factors identifies a particular facet of the film abstraction not specifically included in any of the others. For this reason, all five factors may stand alone despite their ultimate interdependence.

Throughout the remainder of this thesis, modes of film communication dependent on these unique characteristics of the medium will be differentiated from those which are not. Borrowing terms, but not definitions, from Russian film-maker and theorist Sergei Eisenstein,[26] film techniques which exploit these inherent characteristics will be called kinetic. Those techniques which generally have been adapted from literature or the stage will be called semantic. Eisenstein first used these terms to distinguish between two categories of montage or

editing. They are used here in a much broader connotation to describe a dichotomous relationship existing throughout the length and breadth of film communication. This distinction is in keeping with the basic assumption that modes of film communication derived from the unique characteristics of the medium are more aesthetically pleasing than those which are not.

END NOTES

[1]Pudovkin, Film Technique, p. 86.

[2]Robert Flaherty, "Language of the Eye," Theatre Arts, 35, No. 5 (1951), 33.

[3]Joan R. Forsdale and Louis Forsdale, "Film Literacy," Audio Visual Communications Review, 18 (1970), 267.

[4]Nicola Chiaromonte, "A Note on the Movies," Encounter, 14, No. 3 (1960), 60.

[5]Forsdale and Forsdale, pp. 263-264.

[6]John Wilson, "Comments on Work with Film Pre-Literates in Africa," ed. transcript, mimeographed, Columbia University Teachers College; May 2, 1961; Arthur A. French, "A Background of Non-Reference," Makerere Journal (Uganda) 5 (1961), 3-10; John Humphrey, "Experiences in Motion Picture Production for Film Illiterates," ed. transcript, mimeographed, Columbia University Teachers College; June 29, 1961.

[7]Béla Balázs, Theory of Film: Character and Growth of a New Art, trans. Edith Bone (1952: rpt. New York: Dover, 1970), p. 35.

[8]Pudovkin, Film Technique, p. 198.

[9]Forsdale and Forsdale, p. 269.

[10]Michael Roemer, "The Surfaces of Reality," Film Quarterly, 18, No. 1 (1964), 20.

[11]Forsdale and Forsdale, pp. 264-265.

[12]For example: Lee R. Bobker, Elements of Film (New York: Harcourt, 1969), p. 31; John R. Gregory, "Some Psychological Aspects of Motion Picture Montage," Diss. Univ. of Illinois 1961, p. 3; Roy Huss and Norman Silverstein, The Film Experience (New York: Dell, 1968), p. 24; John B. Kuiper, "Cinematic Expression: A Look at Eisenstein's Silent Montage," Art Journal, 22, No. 1 (1962), 39; Ernest Lingren, The Art of the Film, 2nd ed. (New York: Collier, 1970), p. 80; Haig P. Manoogian, The Film-Maker's Art (New York: Basic Books, 1966), p. 34.

[13]Dan Burns, "Pixillation: Stop Camera Effects," Film Quarterly, 22, No. 1 (1968), 36.

[14]Sol Worth, "Film as Non-Art," American Scholar, 35 (1966), 332.

[15]Arthur Knight, The Liveliest Art: A Panoramic History of the Movies (New York: New American Library, 1957), pp. 288-289.

[16]Vladimir Nilsen, The Cinema as a Graphic Art (London: Newnes, 1936), p. 27.

[17]Nilsen, p. 27.

[18]Ralph Stephenson and Jean R. Debrix, The Cinema as Art (Baltimore: Penguin, 1965), p. 135.

[19]Raymond Spottiswoode, A Grammar of the Film: An Analysis of Film Technique, rev. ed. (Los Angeles: Univ. of California Press, 1950), p. 44.

[20]Spottiswoode, Grammar, p. 121.

[21]Rod Whitaker, The Language of the Film (Englewood Cliffs, New Jersey: Prentice Hall, 1970), p. 50.

[22]Stephenson and Debrix, p. 135.

[23]Clifford T. Morgan, Introduction to Psychology, 2nd ed. (New York: MacMillan, 1961), p. 313.

[24]William N. Dember, The Psychology of Perception (New York: MacMillan, 1961), p. 192.

[25]Gregory, p. 7.

[26]Sergei M. Eisenstein, "Programme for Teaching the Theory and Practice of Film Direction," in Lessons with Eisenstein, V. B. Nizhny, trans. and ed. Ivor Montagu and Jay Leyda (New York: Hill and Wang, 1963), p. 160.

CHAPTER II

FILM EDITING

> In this hell's kitchen of cellulose nitrate, gelatine and acetone, I am the master. These three, five, ten-foot snippets of photographed reality, those visual sentences, are condemned to hang lifeless on the hooks until I give them a new lease on life. (Robert Vas)[1]

The film medium is visually abstract because of the presence of five factors: 1) two-dimensionaloty; 2) fragmentation; 3) space-time distortion; 4) intra-shot flux; and 5) inter-shot flux. A theoretical basic unit of film communication must possess all of these factors to be adequate. So the normal designation of the shot as the basic unit of the motion picture is unsatisfactory. True, the shot is the basic physical unit of film assembly, but the shot alone provides only the potential for the full range of film communication. The shot alone does not exploit the possibilities of space-time distortion and inter-shot flux. Only in juxtaposition do these two factors come into play. Thus the basic unit of motion picture communication is the shot to shot juxtaposition.

However, the "basic unit" approach is perhaps not as illuminating as that of Calvin Pryluck based on linguistic analysis. Pryluck suggests that the filming of the shot be designated as "primary coding," and the juxtaposition of shots as "secondary coding."[2] He indicates that "secondary coding is important in any symbol system since combining of primary units [shots] in some kind of arrangement extends the coding potential to almost infinite range."[3] This approach emphasizes the

interdependency of the shooting and editing phases of film-making. The making of a film is an evolutionary process beginning with the recording of shots and ending with their sequencing. In film-making, this sequencing is termed editing.

A Definition of Film Editing

There are as many definitions of film editing or montage as there are books and articles on the subject. The definitions generally fall into two categories: definitions in terms of the effects editing has on the film audience, and definitions describing the techniques of editing. A definition based on technique will provide a point of departure.

British film-maker Karel Reisz has coined the most often quoted, discussed, and plagiarized definition. Reisz defines the "process of editing--[as] the selection, timing, and arrangement of given shots into film continuity. . . ."[4] "Timing" recognizes the ability of the editor to control the length of shots. "Arrangement" refers to the film-maker's capability to control the sequencing and thus the space-time structure and context of particular shots within the film. Selection is or should be an aesthetic consideration governing the other two.

As indicated above, timing may be changed by manipulating the length of shots. When the length of a shot is shortened however, space is eliminated. There is no way in which shot timing can be changed without also changing shot space and shot content. Instead of timing, the more inclusive parameter of length should be isolated for study.

The study of length includes manipulations of time, space, and some content in the shot, and the results of these manipulations in

shot-to-shot juxtaposition. The latter obviously intrudes on the consideration of Reisz' second parameter, arrangement. There are arrangement effects primarily dependent on length however. Arrangement effects may also be dependent on shot content, or in other words what the images themselves mean. Yet content has effects independent of arrangement and thus stands alone as a determinate of meaning. In any given shot however, the film editor cannot change image content. He may only eliminate (shorten) content. Thus the film editor is concerned primarily with content in the relationships it establishes in juxtaposition. Intra-shot content is firmly established before the shot reaches the editor. To borrow a literary term, it may be said that the film editor is more able to influence shot context than shot content. So content will be considered here in a most general way and then only when it has some bearing on the processes unique to editing.

To summarize, the film-maker has at his disposal three tools for structuring film meaning: shot length, shot arrangement, and shot content. Through the manipulation of shot length and shot arrangement, the film editor can distort those space-time impressions--that content--recorded by the camera and create new meaning.

The Role of Selection

Before beginning an inventory of editing effects, the motivation for the selection of various editing devices will be discussed. This motivation should be the theme. The theme is the core of meaning around which a film should be organized and unified. Every frame, shot, and sequence in a film must be conceived, filmed, and edited in accordance

with the theme. Eisenstein stresses the importance of the theme in his definition of montage: "Piece A (derived from the elements of the theme being developed) and piece B (derived from the same source) in juxtaposition give birth to the image in which the thematic matter is most clearly embodied."[5] Briefly, shots based on the theme are combined in terms of the theme. The result is a unified work of art. There is not, however, universal agreement on the unifying role of the theme.

Several authors suggest continuity as a basis for film unity. Continuity in this sense may be described as "the smooth progression of one shot into the next, or one scene into the next, creating for the viewer the feeling that he is witnessing a whole action, rather than a series of interrupted actions cleverly dovetailed."[6] The supporters of this concept of film unity seek a relatively uninterrupted flow of action throughout a film. Pragmatists such as Monier and Mascelli believe the basis of editing is continuity.[7]

Two general classifications of continuity have been established by various authors. These may be described as physical and intellectual. In physical continuity, the shot to shot transition depicts a homogeneous space-time. For example, a man may be shown opening a door from the outside, and entering the door from the inside in consecutive shots joined by a cut. In intellectual continuity, shots may be connected by ideas or concepts.

Pudovkin sums up the general view:

> A myriad of methods of connection may exist between the highly ideo-physical [intellectual] and the externally-formal [physical] connection, but all of them must be present in the shots being

> joined in order that montage (or cutting) create an action on the screen which develops without interruption, is understandable, and is completely meaningful. Two shots cannot be joined together if one of them in some manner or aspect does not continue the other. This, of course, must be understood to include the widest possible forms of connection including sharp contrast or contradiction which are sometimes the best ways of joining two or more shots in continuous development of a single idea.[8]

Pudovkin believes that each juxtaposition should have both physical and intellectual continuity. He thinks there is no "either-or" distinction between continuity and theme. Rather the development of continuity is the practical basis for the "continuous development of a single idea" or theme.

Rotha and Griffith best describe the relationship of continuity and theme in their definition of the former as "the fluidity of the development of the thematic narrative."[9] This fluidity of theme development does not require strict physical continuity for each shot or any two shots. The theme is a concept, an idea, whereas the film normally depicts physical action. A film may be completely discontinuous in terms of homogeneous space-time, but still have good continuity in terms of intellectual content and theme.

Other authors suggest that the film should be unified by a plot. According to German theorist Siegfried Kracauer, one of the major objectives of the film-maker should be "to advance the action by assigning to each shot a meaning relevant to the plot."[10] Lindgren suggests organization of the film around what he calls the "plot-theme or "action theme," and defines as the "central action of a fiction film expressed in the briefest possible form."[11] The plot-theme is "made a complete whole by consisting of a beginning, a middle, and an end."[12]

Both Kracauer and Lindgren severely limit the film-maker who desires to present a sequence of events which is not linked causally. One would be hard put to determine the causative relationships or the beginning, middle, or end of Last Year at Marienbad. Yet this film is often cited as the epitome of modern cinema art. The plot restriction also rules out the expressive cinema of film-makers such as Jonas Mekas who capture impressions rather than develop narratives. Kracauer and Lindgren have by definition excluded these two forms of cinema art. As such, their requirement for a plot is too restrictive. It is better to regard the plot as just one method of communicating a given theme to an audience.

The film medium does not have to be logical and discursive to communicate. As an artist, the film-maker can arrange shots in any manner he chooses as long as he can justify the arrangement in terms of the theme. The theme should be the film's basis of both development and judgement. As Pudovkin remarked, "the theme is a supra-artistic concept."[13]

Selection governs the overall editing process. Once selections are made based on the theme, the film-maker may begin to manipulate the meaning of a film by controlling the length and arrangement of shots. Only in such manipulation in editing does the film-maker begin to exploit the inherent capacities of filmic communication.

END NOTES

[1]Robert Vas, "Meditation at 24 Frames per Second," Sight and Sound, 35, No. 3 (1966), 119.

[2]Calvin Pryluck, "Structural Analysis of Motion Pictures as a Symbol System," Audio Visual Communications Review, 16, No. 4 (1968), 384-387.

[3]Pryluck, "Structural Analysis," p. 387.

[4]Karel Reisz and Gavin Millar, The Technique of Film Editing, 2nd ed. (New York: Hastings House, 1968), p. 15.

[5]Sergei M. Eisenstein, The Film Sense, trans. and ed. Jay Leyda (New York: Harcourt, Brace, 1947), p. 11.

[6]Manoogian, p. 79.

[7]Pierre A. Monier, The Complete Technique of Making Films (New York: MacMillan, 1959), p. 229; Joseph V. Mascelli, The Five C's of Cinematography (Hollywood: Cine-Graphic, 1966), p. 67.

[8]Vsevolod I. Pudovkin, "On Montage" [O Montazhe], Selected Articles [Izbrannye Statei], trans. Peter A. Dart (Moscow: Iskusstve, 1955), rpt. in Peter A. Dart, "Pudovkin's Film Theory," Diss. State Univ. of Iowa, 1965, p. 113.

[9]Paul Rotha and Richard Griffith, The Film Till Now, 3rd ed. (New York: Twayne, 1960), p. 341.

[10]Siegfried Kracauer, Theory of Film: The Redemption of Physical Reality (New York: Oxford, 1960), p. 69.

[11]Lindgren, p, 298.

[12]Lindgren, p. 79.

[13]Pudovkin, Film Technique, p. 35.

CHAPTER III

EDITING EFFECTS: LENGTH

> A photograph of a movement or an action in a film is a dead thing until it has been rendered alive by rhythm. (Joseph and Harry Feldman)[1]

The selection of shots based on the theme is the aesthetic basis of the film editor's work. In practice the editor is more involved with the manipulation of shot length and arrangement. It is obvious that length and arrangement can only be theoretically separated. Pragmatically, the two are inextricably fused in film communication. It is of heuristic value, however, to examine each independently while always keeping in mind their final unity in the finished film. This chapter is concerned with the effects of shot length.

Length and the Single Shot

The length of film shots must be considered in two ways: first, in terms of the length of a single shot; and second, in terms of the arrangement of shot lengths in the completed film. The length of a single shot can be measured both quantitatively and qualitatively. That is, the shot is a certain number of frames long, and it has a certain psychological duration. Shot duration is a function of content and placement, and is not dependent on the shot's actual objective length.

Rod Whitaker has established empirically the length-duration dichotomy in experiments at the University of Texas:

> If a group of shots of similar data are cut together at a perfectly regular rate, the audience will sense the later shots are longer than the earlier ones. . . .

> We were able to produce an audience reaction of regular, even tempo by reducing the length of each successive shot. The amount of the reduction followed no formula we could see.[2]

The measured length of a shot and the perceived length of the same shot differ in the context of a film. This, as Whitaker admits, is not too surprising. Film theorists have been saying it for decades.

Ivor Montagu paraphrases Eisenstein from the 30's: "the length of a shot depends not solely on its footage. The length as it seems to the spectator is what is significant. . . ."[3] The Eisenstein[4] insight fails, however, in suggesting that each shot should remain on the screen only long enough for perception by the audience.*[5]

The Feldman brothers' insight has proven more tenable. They write, "the director can, by controlling--i.e., composing--the temporal content [length] of his shots, strongly influence the emotions and understanding of the spectators."[6] Experiments by Robert K. Tiemans and Rod Whitaker have demonstrated the validity of this insight. According to Tiemans, "the meaning which is communicated by a motion picture shot is, to a certain degree, dependent on the length of that shot. . . ."[7] Whitaker provides additional information on the effect of shot length.

In an experiment, Whitaker showed subjects a series of long shots, medium shots, and close-ups for varying periods of time to discover "the relation of [shot] duration to the transfer of fact and attitude."[8] Whitaker expressed his findings in a ratio of facts to attitudes reported

---

*Eisenstein is in good company with Reisz and Rotha who agree totally; Stephenson and Debrix who think a shot should be changed "exactly when the viewer has had enough of it;" and Nilsen who believes "there is an inviolable dependence between the cutting time and the time the spectator takes to apprehend the composition of the given-shot."

by subjects viewing the shots. He discovered that once the shot has passed beyond the point where the viewer had fully perceived its objective content (facts), there was a marked tendency for the viewer to manufacture "extra content[that] did not come from the film; it came from the viewer's experience, memory, or imagination."[9] The viewers reported content in the shots which absolutely was not there--content with little or no relationship to the shot viewed.

During "normal" exposure times, the subjects reported a greater ratio of facts to attitudes when viewing the long shot than when viewing the close-up. Reporting for the medium shot fell somewhere in between. As exposure times were increased, the ratio of facts to attitudes for both the long shot and the close-up tended to balance out toward that of the medium shot.

Generally, the more time a long shot is held on the screen the more subjective the audience response, and the more time a close-up is held on the screen the more objective the audience response until a point when both level out at the medium shot fact to attitude ratio of approximately 3:1. Whitaker calls this phenomenon "centripetal decay," as the fact to attitude ratio of both long shot and close-up "decay" toward the central position of the medium shot.[10]

It is obvious that there is more involved in a consideration of shot length than the audience's cognitive capacities. The film-maker can significantly alter the meaning of a single shot by varying its length.

Cutting-Rate

Midway between a consideration of shot length and shot context

lies the hybrid concept of cutting-rate and its aesthetic corollary--rhythm. Cutting rate and rhythm result from the arrangement of shot lengths. The emphasis above was on the length of the single shot. The present analysis will be extended to include the effect of varying the lengths of several shots in sequence. The consideration of lengths (as opposed to durations) in sequence is normally called "cutting-rate." Whitaker defines cutting-rate as "a simple, rather mathematical matter of the number of shots per unit of time. . . ."[11]

The bold use of cutting-rates was characteristic of early Russian film-makers Eisenstein and Pudovkin. Eisenstein observed the effects of accelerated cutting on an audience viewing the mowing contest in Old and New: ". . . I saw the more impressionable members of the audience quietly rocking from side to side at an increasing rate of speed as the pieces were accelerated by shortening."[12]

Pudovkin aroused audiences with fast cutting as Rotha noted during the 1929 showing of The End of St. Petersburg: "the action was worked to a crescendo by gradual short-cutting, with the title 'All power to the Soviets!' at the peak of emotion. The audience was observed to start gradually stirring, then muttering, until eventually many persons rose to their feet, cheering and clapping."[13]

In addition to such anecdotal evidence, film scholars through the years have remarked on the effects created by cutting-rates.*[14, 15]

---

*For example: Pudovkin observed that "rapidly alternating" shots were "stirring." Stephensen and Debrix write that accelerated cutting "[where] each shot is shorter than the last . . . is more exciting than a whole string of short shots." Conversely, slow cutting has been described as "soothing," "phlegmatic," and creating a "more relaxed atmosphere."

Generally, the concensus has been that fast cutting-rates will be lively and exciting, while slow cutting will be serene and tranquil. Accelerated cutting (where each shot is shorter than the previous one) is thought to increase the effects of fast cutting. Decelerated cutting (in which each shot becomes progressively longer), is thought to enhance the effects of slow cutting. Although these observations are intuitively acceptable, they have been given further credence by empirical studies.

John Gregory found limited evidence that increased cutting-rates will produce a more exciting sequence.[16] However, Roger Penn has conducted the only major experiment specifically examining the effects of cutting-rate. Using the insight of Eisenstein and Spottiswoode as a source of parameters,[17] Penn studied the effects of accelerated, decelerated, and constant rates of cutting. The latter included both fast and slow constant rates. Penn also tested the effects of content variance. Using word association tests and Osgood's semantic differential, Penn tested subjects using 45 separate films.[18] The result is a labyrinth of findings and counter-findings that are difficult for the layman to understand.

Penn's results are hard to understand because he has expressed them in the jargon of Osgood's semantic differential. It is quite hazardous to generalize from these findings, and the reluctance of Penn himself to do so is not encouraging. However, without such generalization the findings are, of course, of limited value. The following is a compromise--part generalization and part quotation. Yet before the discussion begins, it is necessary, if unpleasant, to quickly examine

the nature of Penn's chief tool of measurement--the semantic differential.

The semantic differential is a "scientific" test used to determine the semantic meanings of words, pictures, symbols, or whatever. Osgood and others have found through experimentation that semantic meaning has three major dimensions: activity, potency, and evaluation.[19] For example, if a person is asked what he thinks the word "God" means, he might reply" "good, strong, omnipotent, loving, excitable." "Good" and "loving" are descriptive words on the evaluative dimension of meaning. In using these words, the person has made a subjective, evaluative judgement of the word "God." "Strong" and "omnipotent" would be classified as part of the potency criterion of semantic meaning. Finally, "excitable" would be on the active dimension of meaning. To repeat, the semantic meaning of everything meaningful consists of three major dimensions: an activity dimension (Is the 'thing' excitable, slow, fast?); a potency meaning (Is the 'thing' strong, weak, powerful?); and an evaluative meaning (Is the 'thing' good, bad, immoral?).

In his experiment, Penn attempted to determine how the activity, potency, and evaluative dimensions of meaning changed when he varied the cutting-rates in film sequences. For example, if the cutting-rate in one film is fast, and the cutting-rate in another film is slow; what is the difference in the activity dimension of meaning for the two films? Penn has the answer.

Penn arrived at three relatively straightforward conclusions. First, the "rate of cutting is a variable which can be used to affect the meanings evoked in a motion picture audience."[20] Secondly, "fast constant rates of cutting, such as one-half second per shot, can evoke

the perception of more potency and activity in a film than slower [constant] rates of cutting."[21] Lastly, cutting-rate has "little if any effect on evaluative meanings. . . ."[22]

Beyond this, Penn's conclusions are limited. (This is especially true in terms of the goals Penn set for himself. None of the five hypotheses tested were verified without major reservations).[23] Additional results show that accelerated cutting may "evoke the perception of potency when people are shown in a film," and "activity when cars or [animated] rectangles are shown. . . ." Despite Penn's prediction to the contrary, fast constant rates may be as effective as accelerated cutting in the latter case.[24] In addition, decelerating cutting, which Penn hypothesized would have the opposite effects of accelerated cutting, had the similar characteristic of increasing activity in films with a subject matter of people.[25]

The rather limited findings of Penn's experiment result first from a failure to isolate the variables he was attempting to test, and secondly, from a failure to consider adequately the influence of content in determining the effects of cutting-rate.

Penn attempted to isolate accelerated, decelerated, and fast cutting-rates for study. Yet his test sequences for all three were quite similar. The accelerating sequence began with a standard four second shot, cut to a five second shot, followed by four, three, two, one, three fourths, and one fourth second shots in that order. In the decelerated sequence, the order of the shots in the accelerated test was merely reversed. The fast cutting sequence alternated 32 shots, each one-half second in length. The test began and ended with a four second shot.[26]

The point in listing the shot lengths in each test is to emphasize that the accelerated, decelerated, and fast constant rates of cutting are all "fast," especially in comparison with the slow sequence made up of four shots of four, eight, eight, and four seconds respectively.[27] Penn has erroneously assumed that accelerated and decelerated cutting also mean fast cutting. From this it would appear to be generally difficult for the test subjects to make significant distinctions between the effects of fast and non-constant cutting-rates, and indeed, this was the case.

The second major flaw in Penn's study lay in his failure to consider adequately the commonly held belief that cutting-rate must be based on content and not imposed upon it. In fact, if motion is considered a type of content (and it should be), Penn himself discovered five significant cutting-rate--content interactions. For example, he found that with people, "when [subject] fast motion was combined with the accelerating and decelerating rates of cutting, the highest levels of activity were evoked. . . ."[28] That is, fast moving people within a sequence, made accelerating and decelerating cutting more active. Generally, content was shown to influence the effects of cutting-rate. Penn failed to comment on how this should have altered his experimental design.

Although this might seem more a question of aesthetics than science, no matter how fast the cutting, Penn's sequence showing two animated rectangles doing a sort of abstract minuet, is not going to arouse the same kind of passion as the mowing contest in Old and New.

In Eisenstein's mowing contest, the cutting is motivated by what is occurring on the screen. In Penn's sequence, the cutting is motivated by the hypothesis.

Generally, the insights of countless film theorists have not been countermanded by Penn. Fast cutting is more exciting than slow cutting. Because accelerated and decelerated cutting were not suitably tested, the inclination is to remain committed to the traditional observation. That is, accelerated and decelerated cutting enhance the effects of fast and slow cutting, respectively. Finally, Penn has provided limited evidence that the cutting-rate operates in conjunction with content to produce its effects.

Rhythm

Cutting rate and shot length in general are studied only as a preamble to the subject of real interest--rhythm. No matter how long the discussion of shots per unit of time, the theorist is left always with the unexplainable rhythmic appeal of some films and the lack of such appeal in others.

Rhythm is a subjective element--the "felt cutting-rate."[29] So the objective here is to present an approach to, and not a formula for, creating film rhythm. This analysis will continue to concentrate on the visual aspects of the film medium, and in this case visual rhythm. Before beginning an analysis of visual rhythm, however, it will be helpful to first review the general nature and sources of all filmic rhythm.

In practice, the techniques for creating rhythm are found in the manipulation of shot length and arrangement. Such manipulation is

ineffectual, however, if content is ignored. This was implied by the Penn experiment and has been the opinion of most film scholars for many years.*[30] From the traditional viewpoint, "expressive form must rise from inside the subject matter."[31]

This does not mean that fast action necessarily dictates fast cutting, although this normally would be the case. Speed of action and speed of cutting are "quite independent of each other."[32] Rather than rising from physical activity, rhythm must be based on the emotional content of a scene.[33] Despite the absence of physical activity, a scene can be emotionally "fast." For example, a platoon of soldiers resting before a battle is inactive, but the scene is high in emotional tension. In this case, the editor might use fast cutting to heighten the tension. Generally, the pace of rhythm must parallel the emotional "feel" of the scene and not the tempo of action.

Emotion is the source of all film rhythm. So it follows that visual rhythm is built around the emotional appeal of the scene. On a practical level, the editor examines the visual variations within the shots (intra-shot flux) and the potential variations between shots (inter-shot flux). "From the viewpoint of rhythm," writes Balázs, "these features [content within the shot] are merely carriers of light and shadow, of form and movement. They are no longer objects at all."[34] So the editor conducts an abstract analysis of visual patterns in search of harmony and contrast. The film editor "should, obviously, be led

---

*Such authorities as Pudovkin, Reisz, Stephenson and Debrix, Manoogian, and Balázs point to the general necessity of basing rhythm on content.

into thinking of degrees of change, impact, and intensity. . . ."[35] Once the editor has analyzed these abstract visual changes, he then may manipulate them to conform to and enhance the emotional timbre of the scene.

Thus far the stress has been on the overall concept of creating visual rhythm. The means to this end is found in the simple shot to shot connection. The film editor must design each shot juxtaposition to produce an intended effect.

A jump-cut will have more impact than the average match-cut. The cut from an extreme long shot to an extreme close-up represents more of a change than a cut from a medium shot to a close-up and it too will have more impact. The principle: "the dynamic impact of the cut varies as the degree of difference or contrast between fundamental compositional structures of adjoining shots."[36] Other sources of contrast or similarity might be brightness, color, mass, line, or in general, any spatial or tonal variation between shots.

In short, given a single shot, the editor is concerned with four factors: 1) the spatial-tonal variations within the shot; 2) the relationship of these variations to those in other shots; 3) the impact of the connection of shots; and 4) the context of the sequence in which the shot is placed. The emphasis of a particular shot and its juxtaposition are at issue. The editor controls these four variables by changing shot length and arrangement.

An analysis such as that recommended above, is based on the unique characteristics of the film medium. Of particular interest is the operation of inter-shot flux which determines the nature of the shot to

shot juxtaposition. Visual rhythm will thus be termed a kinetic characteristic of the film medium.

To have the most effective visual rhythm, the visual variations must be approached abstractly. This is almost impossible with a script bound by traditional literary structure. As a result, in most films visual rhythm (along with most other kinetic characteristics) plays a secondary role to the task of storytelling.

Rhythm founded on the effects of shot length and cutting-rate is a central creative element of all film-making. According to René Clair, with the creative use of rhythm, "the cinema can become a new force which, abandoning the logic of facts and the reality of objects, will engender a series of visions hitherto unknown and inconceivable outside the union of the lens and the moving film."[37] The effects of rhythm do not come from literature or the stage, but from within the film medium.

Although rhythm should be approached on an abstract level, the final product from an aesthetic viewpoint should not be a McLaren-type "light show" of gyrating patterns and cascading colors. In such films, the film-maker disregards the essential elements of film--the ability to record the spatial-tonal variations of real subjects. Although experimentation of this type will no doubt contribute to film theory, the main thrust of film study and film-making is sure to continue the search for new ways to communicate film's special version of reality.

END NOTES

[1]Joseph Feldman and Harry Feldman, Dynamics of the Film (New York: Hermitage House, 1952), p. 204.

[2]Whitaker, p. 126.

[3]Ivor Montagu in notes to Lessons with Eisenstein, V. B. Nizhny, trans. and ed. Ivor Montagu and Jay Leyda (New York: Hill and Wang, 1963), p. 172.

[4]Montagu in notes to Lessons with Eisenstein, p. 172.

[5]Rotha and Griffith, p. 387; Stephensen and Debrix, p. 116; Nilsen, p. 65.

[6]Feldman and Feldman, p. 197.

[7]Robert K. Tiemans, "The Relationship Between the Length of a Motion Picture Shot and the Meaning that Is Communicated," Unpublished paper, Univ. of Iowa, Dept. of Speech and Dramatic Art, Division of TV-Radio-Film 1959, p. 47.

[8]Whitaker, p. 44.

[9]Whitaker, p. 44.

[10]Whitaker, pp. 43-47.

[11]Whitaker, p. 125.

[12]Sergei M. Eisenstein, Film Form: Essays in Film Theory, trans. and ed. Jay Leyda (New York: Harcourt, Brace, 1949), p. 80.

[13]Rotha and Griffith, p. 388.

[14]Pudovkin, Film Technique, p. 70; Stephensen and Debrix, p. 112.

[15]Manoogian, p. 229; Pudovkin, Film Technique, p. 114; John Burder, The Technique of Editing 16mm Films (New York: Hastings, 1968), p. 88.

[16]Gregory, p. 91.

[17]Roger Penn, "An Experimental Study of the Meaning of Cutting-Rate Variables in Motion Pictures," Diss. Univ. of Iowa 1967, pp. 1-3, 10.

[18]Penn, "An Experimental Study," p. 23.

[19]Charles E. Osgood, George J. Suci, and Percy H. Tannenbaum, The Measurement of Meaning (Urbana, Illinois: Univ. of Illinois Press, 1957), p. 325.

[20]Roger Penn, "Effects of Motion and Cutting-Rate in Motion Pictures," Audio Visual Communications Review, 19 (1971), 48.

[21]Penn, "Effects of Motion and Cutting-Rate," p. 45.

[22]Penn, "Effects of Motion and Cutting-Rate," p. 33.

[23]Penn, "Effects of Motion and Cutting-Rate," pp. 33-43.

[24]Penn, "Effects of Motion and Cutting-Rate," p. 37.

[25]Penn, "Effects of Motion and Cutting-Rate," p. 38.

[26]Penn, "An Experimental Study," p. 13.

[27]Penn, "An Experimental Study," p. 13.

[28]Penn, "Effects of Motion and Cutting-Rate," p. 39.

[29]Whitaker, p. 125.

[30]Pudovkin, Film Technique, p. 159; Reisz and Millar, p. 246; Stephensen and Debrix, p. 114; Manoogian, p. 236; Balázs, p. 133.

[31]Slavko Vorkapich, "A Fresh Look at the Dynamics of Film-making," American Cinematographer, 53 (1972), 222.

[32]Balázs, p. 129.

[33]Lindgren, p. 69.

[34]Balázs, p. 133.

[35]Slavko Vorkapich, "Toward True Cinema," Film Culture, 19, March 1959, rpt. in Film: A Montage of Theories, ed. Richard D. MacCann (New York: E. P. Dutton, 1966), p. 175.

[36]Vorkapich, "A Fresh Look," p. 183.

[37]René Clair, Reflections on the Cinema, trans. Vera Traill (London: William Kimber, 1953), p. 61.

CHAPTER IV

EDITING EFFECTS: CONTEXT AND ORDER

> By what, then, is montage characterized and, consequently, its cell--the shot?
>
> By collision. By the conflict of two pieces in opposition to each other. By conflict. By collision. (Sergei M. Eisenstein)[1]

In a comparison of film and language, Pryluck observed that the film image is specific and the word, general.[2] For example, the word "tree" can mean anything from a spruce to a giant redwood. A shot of a tree, however, is a particular tree. Therein lies the difficulty of communicating abstractions in film. Whereas "God is love," in language requires three simple words; in film, the communication of such an idea creates a problem of major proportion. Yet it would also require a great many words to describe the tree in the shot referred to above. A small tree. An evergreen tree. A dying tree. An ugly tree. A twisted tree. The cliché that "a picture is worth a thousand words" holds true. And, it might be added, a word is also worth a thousand pictures.

There is no intention of becoming bogged down in a comparison of film and language, but the simple distinction made above is of profound importance in the general conception of film editing. Because of its specificity, the film medium has an affinity for advancing from the specific to the general. That is, one shot alone is always specific. It can only become general in sequencing. Based on this reasoning, Pryluck describes the film medium as "structurally inductive"

and postulates that "the specificity of a shot tends to be generalized by juxtaposition in editing."[3] In the vernacular of this chapter, it can be said that a shot is given its generalized meaning by context.

The Basic Experiments

The effects of context and order are perhaps the most fundamental and least understood results of film editing. Unlike the arrangement of lengths, contextual or order effects result primarily from the interaction of content from shot to shot.

The first known experiment on film context is the often mentioned Kuleshov-Pudovkin effort reported in Film Technique and Film Acting. In the experiment, similar close-ups of the Russian actor Mosjukhin which "did not express any feeling at all" were juxtaposed with shots of a bowl of soup, a dead woman in a coffin, and a little girl playing. The audience judged Mosjukhin's expression to reflect "pensiveness," "sorrow," and a "light, happy smile," respectively. Although, to repeat, the actor's expression remained the same in all three shots, the audience "raved about the acting of the artist."[4] Generally, the experiment by Pudovkin and Kuleshov demonstrated that the meaning of a shot will vary with its context.

In addition to this experiment, Pudovkin illustrated how the variance in the order of shots could change their meaning. Pudovkin suggested two sequences of three close-ups. In the first, a man is seen smiling, followed by a shot of a pistol being pointed, and finally the same man is shown looking frightened. In this sequence the man seems to be a coward because he is frightened by the gun. If the

shots are reversed, however, and the audience sees the man frightened, the gun, and the man smiling; a quite different effect is created. In this instance, the man appears very brave indeed. Although threatened by a lethal weapon, he merely smiles.[5] By changing the order of shots, the meaning is changed. This illustration and the experiment mentioned above have been the impetus for most empirical studies on context and order.

Four basic empirical studies have verified and built upon the observations of Kuleshov and Pudovkin. In the early fifties Herman D. Goldberg tested 147 Hofstra students using two four-shot sequences. Film A consisted of the following shots: 1) a boy riding a tricycle; 2) a foot depressing a car brake; 3) a motionless car wheel; and 4) a woman screaming. In Film B, shot 1 was identical to the first shot in Film A. Shot 2 showed the same boy as in Film A stopping the tricycle and placing a toy on his head. Shot 3 was a man laughing and shot 4 was identical to shot 4 in Film A.

Goldberg tested to determine the variance in meaning of shot 4 (the woman screaming) in each film. He found that the meaning of this shot varied significantly between Film A (fear) and Film B (less fear). Goldberg attributed the variance to context.[6]

In 1958 John Kuiper compared the responses of subjects to three four-shot sequences in which he varied only the third shot. In all the sequences, a man walks into the frame in medium shot, and then is shown in close-up looking out of the frame. This shot is followed by the three variable test shots of either a friendly girl in a bathing suit, a small child running toward the camera, or a man being hit by an

automobile. The final shot in each sequence is a close-up of the same man in the first two shots looking at the camera with a neutral expression.[7] The test subjects were required to judge the meaning of the final shot in each sequence.[8]

The meaning of the man's neutral expression was found to vary significantly from film to film. In Kuiper's words, "these differences are most certainly attributable to a difference in the shot preceding the final shot in each film,"[9] or, in other words, context.

Eight years later, J. M. Foley combined the experiments of Pudovkin, Goldberg, and Kuiper to "investigate some shifts in the meaning of a shot caused by changing the shot which precedes it [Pudovkin] or the shot which follows it [Goldberg and Kuiper]."[10] Foley used the same footage as Kuiper with one minor exception (one shot had to be re-filmed) to prepare six test films.

In the first three films, a man walks into the frame in medium shot, and then is shown in close-up looking directly at the camera with a neutral expression (Kuiper's shot 4). The third and final shot is varied using Kuiper's attractive girl, child running, and man hit by a car. These three films were specifically designed to repeat the Pudovkin experiment. For the other three sequences, Foley used films identical to those of Kuiper to repeat his (Kuiper's) earlier experiment.[11]

In addition to confirming the results of the Pudovkin, Goldberg, and Kuiper experiments, Foley determined specifically that "the perception of a facial expression was significantly changed by reversing the order of the close-up and the contextual shot [girl, child, or accident]."[12]

In other words, given a close-up of an actor with a neutral expression and a shot of a pretty girl, the meaning of a sequence depends on whether one sees the shot of the girl or the shot of the man first. Foley summarized his findings and those of Pudovkin, Goldberg, and Kuiper when he explained that both "order and context of shots . . . were . . . found to influence the audience's perception of the actor's facial expression."[13]

To integrate all these basic experiments it will be helpful to resort to a form of shorthand adapted from Worth.[14] Given a notation system in which A,B is the representation of the juxtaposition of shots A and B, and $\neq$ is used to indicate a difference in meaning; Pudovkin discovered that in sequences such as A_1,B and A_2,C in which A_1 and A_2 are <u>exactly the same shot</u>, $A_1 \neq A_2$. Goldberg and Kuiper found that in sequences such as B,A_1 and C,A_2 in which A_1 and A_2 are <u>exactly the same shot</u>, $A_1 \neq A_2$. Foley verified the findings of Pudovkin, Kuiper, and Goldberg and in addition found that A,B$\neq$B,A.

<u>The Film Assertion</u>

As implied above, Worth first suggested the description of film sequencing in terms of mathematical analogies. He proposed testing the communative law of mathematics (AB=BA)[15] which Foley disproved in his experiment. Continuing the mathematical analogy, Worth asked the question, "Is there a way that we can construct a sequence of three edemes [shots] A,B,C, so that a viewer will put cognitive parentheses around two or them?"[16] For example, given shots of a boy (A), a dog (B), and a man (C); Worth wants to know if the film-maker can cause

the audience to interpret the sequence as (boy and dog) versus (man) [(A,B),C] or as (boy) versus (dog and man) [A,(B,C)]. John Gregory provides the answer.

In an experiment reported in his doctoral dissertation, Gregory found evidence that film could indeed establish (A,B),C type relationships. He prepared six sequences: three live action and three abstract animated films. These sequences varied in complexity from 19 to 41 shots. The live-action films showed people performing mundane activities, while the abstract films were an attempt to construct meaningful sequences using essentially meaningless figures.[17]

Gregory was interested in establishing two types of relationships: 1) relationships between selected shots; and 2) relationships between selected characters or figures within the sequences as a whole. Of course, what Worth and this thesis are concerned with is Gregory's first type of relationship--that between selected shots.

In this instance Gregory was successful in establishing (A,B),C type relationships between shots in all six of his films. These relationships were established by what Gregory calls the "assertion structure."[18] Generally, Gregory proved the hypothesis that "given associative cues within the scenes [shots], a simple succession of scenes [shots] will make an assertion."[19]

Gregory's work with assertions is founded on the research of Charles Osgood et al. on the nature of meaning. Osgood states that "there is no interaction among them [the varied meanings of signs], and no consequent meaning change, except when they are brought into the peculiar evaluative relation to one another that we shall call an

assertion."[20] Gregory points out that "the structure of this relationship may be simple contiguity (white house), or a structure word (puppies are furry), an activity (two men shaking hands), or presumably, some motion picture structure."[21] The Pudovkin experiment demonstrated an assertion in action.

The isolated close-up of the actor Mosjukhin with a neutral expression meant simply that--an actor with a neutral expression. However, when this shot was juxtaposed with one showing a dead woman in a coffin, the meaning of the two shots "interacted" and the meaning of the first changed to perhaps "a sad man."

So an assertion may be described as a "coupling action"[22] or signal of some sort in which two previously unrelated signs are presented, each in terms of the other. In the example above, simple juxtaposition caused the audience to interpret the shot of the man in terms of the shot of the woman in a coffin and, it may be added, vice versa.

As Gregory indicated in his original hypothesis, the establishment of an assertion depends on the inclusion of associative cues in juxtaposed shots. According to Gregory, "connections of an 'associative sort' . . . are found in separate stimuli in which are imbedded generalized cues which have some meanings or connotations in common among the stimuli." In the case of film, "these cues may be environmental or personal. . . ."[23]

An example of an environmental cue would be a room common to two shots. A particular workshop appearing in two shots would assert that both shots were taken in the same <u>place</u>. A personal cue might be

a human action common to two shots. In one shot the audience might see a medium shot of a man raising a hammer, and in the next a close-up of the hammer striking a nail. These two shots would be connected by an assertion based on a personal cue.

Gregory's two theoretical types of cues are based on the semantic meaning of the shot. For example, in the second example above, Gregory would emphasize that the audience must identify the action "man hammering," and then recognize that the close-up is a continuation of the action. However, it is possible for the film editor to substitute for the second shot (close-up of hammer hitting nail), a close-up of a man banging his fist on the table and the assertion between the two shots will be just as effective. The point being that the continuous movement between the two shots forms just as strong an assertion as any similarity of semantic meaning between shots.

In general, "shots may be bound together by including in each scene some motion, actual or implied, which refers the viewer's eye or ear to preceding and following shots."[24] In the hammering example, both motion and semantic cues are present. Logically, the assumption must be that the connection of these two shots would form a stronger assertion than one in which semantic or movement cues alone were present. However, if need be, either the movement or semantic cues alone can connect two shots.

It is possible to generalize the type of effect attributed to movement in the above example. In a purely visual sense, any shot can be similar or different only in terms of spatial-tonal variations. In the hammering example, the spatial change begun in one shot and continued

in the next, is enough to connect the two shots. Generally, spatial and tonal variations form one class of cues which will be termed kinetic cues. A discussion of kinetic meaning will be presented in the next chapter. For now it is enough to say that there is a separate dimension of meaning resulting from spatial and tonal variations. A second class of cues will be called semantic cues. Cues of this sort are, of course, based on semantic meaning. The personal and environmental cues of Gregory are included in the second category.

Gregory's idea that "connections of an associative sort are found in separate stimuli in which are imbedded generalized cues which have some meaning or connotations in common among stimuli" may be restated as follows: Associative connections in film communication are found in separate stimuli within each shot in which are imbedded generalized cues which have some kinetic or semantic meaning or connotations in common among stimuli. In other words, shots are associated which have similar characteristics. These similar characteristics may be classified as either kinetic or semantic cues. In the example of the man hammering, the two shots are similar in terms of both semantic (man hammering) and kinetic (continuing action) cues.

Associative cues are the basis of the "coupling action" or assertion between two shots. Assertions may be based on either kinetic or semantic cues. In addition, assertions of either type may also be associative or disassociative.[25]

In the interest of contrast the film editor might juxtapose two shots in which there are contrasting cues, in hope of disassociating the two. Simply, shots can be associated by similar cues and disassociated by dissimilar cues within shots.

An example of the latter would be the juxtaposition of a shot of a man running through the woods and a shot of a burning candle. Such extreme contrast is often a necessary part of film art. In terms of the two shots mentioned above, the editor is doing everything possible to disassociate them. However, he cannot be wholly successful because as Eisenstein pointed out, "two film pieces [shots] of any kind, placed together, inevitably combine into a new concept, a new quality, arising out of that juxtaposition."[26] Or in the jargon used here--the simple act of juxtaposition is associative.

Although both associative and disassociative assertions play an important role in film communication, the former must dominate if one expects the audience to understand a film. If there is a predominance of disassociative assertions the audience will have little basis for relating the signs present in film communication.

Assertions are not, of course, confined to the connection of one shot to the next. Assertions can also be established between scenes and sequences. For example, the pressures of being a housewife and an executive might be compared in consecutive scenes showing first the woman at home coping with several small children and second a man at work in a heated debate. However, the concern here remains with the basic shot to shot juxtaposition.

Secondly, if several similar shots are placed in sequence, the assertion between the later shots may be reinforced. For example, if a first shot is of two men playing tennis, and a second is a medium shot of a single player serving, what will the third shot be? The audience will expect to see what happens after the ball is served.

The first two shots lead up to the third. The connection of the first and second shots creates a sense of expectancy in the audience which reinforces the assertion between shots 2 (man serving) and 3 (the results of the serve).

A similar effect is produced by traditional editing conventions. Normal shot selection when depicting continuous events has historically been long shot, medium shot, close-up. Pragmatically, the initial long shot or establishing shot conveniently provides the film editor with numerous opportunities for assertions. Anything within the establishing shot may be used for the following medium shot or close-up. In any event, the long shot, medium shot, close-up convention is recognized by film-literate audiences and they expect such sequencing. So when a long shot is seen on the screen, a portion of the audience expects a medium shot to follow. In this instance, an assertion is strengthened by established film conventions.

The Principle of Congruity

It is now possible to explain the principle that forms the essence of most aesthetic theories of editing. As Spottiswoode puts it, "the juxtaposition of two shots and their accompanying ideas can give rise to a third idea which has no physical embodiment."[27] This phenomenon is due to the operation of the film medium's form of Osgood's principle of congruity. This principle forms a basis for predicting the effects of the juxtaposition of any two shots. The principle is that "whenever two signs [shots] are related by an assertion, the mediating reaction characteristic of each shifts toward

congruence with that characteristic of the other, the magnitude of the shift being inversely proportional to intensities of the interacting reactions."[28]

Although quite simple, the jargon peculiar to Osgood's discipline makes the statement of the principle difficult to understand. Some explanation of terms is in order. By "mediating reaction characteristic" Osgood means how the individual reacts, in terms of meaning, to a meaningful stimulus. If confronted with a picture of Hitler, for example, most Americans would have an intensely negative reaction.

Based on the congruity principle, the "mediating reacting characteristic" of Hitler would remain stable until the picture is forced into some interaction with another meaningful sign. Assume the picture of Hitler is placed side by side with a picture of an anonymous German soldier in a Nazi uniform. Assumedly, the "mediating reaction characteristic" of the common soldier would be less intense (less negative in this instance) than that of Hitler. Therefore the "reaction characteristics" of Hitler and the soldier would not be "congruent"--they would not be of equal intensity (a picture of Mussolini might be an example of a sign congruent with a picture of Hitler).

When the picture of Hitler and the picture of the soldier are put together (related by an assertion), the "mediating reaction characteristic" peculiar to both pictures will change. Because of the high intensity of the Hitler picture, as compared to that of the soldier, the "reaction characteristic" of Hitler will change only slightly. On the other hand, because the picture of the soldier has been associated with that of Hitler, the meaning of the soldier will make a major shift

toward congruity (equality) with Hitler's bad connotation. So the soldier will seem even more evil when associated with Hitler. It is not necessary, however, to rely on hypothetical examples of the principle of congruity in action. Several examples have already been cited in a different context.

When Kuleshov and Pudovkin juxtaposed the close-up of the man with a neutral expression with a shot of a woman in a coffin, the audience interpreted the man's expression as sorrow. In this case the "mediating reaction characteristic" of the shot of the man was less intense than the coffin shot, and thus the meaning of the shot of the man made a major shift toward that meaning suggested by the dead woman in the coffin.

In the Kuiper experiment, the shot of the actor with a neutral expression (low intensity) shifted toward congruence with the shots of the girl in the bathing suit, the running child, and the automobile accident (all high intensity). Worth has found some additional evidence relevant to the operation of the congruity principle in film communication.

In experiments with two-shot abstract sequences, Worth found that "the larger differences due to sequence occur with similar elements rather than dissimilar elements."[29] These "similar" and "dissimilar" elements are composed of associative and disassociative cues which lead to assertions. So to restate Worth's findings: the larger differences due to sequence occur with shots connected by associative rather than disassociative assertions.

For example, given the juxtaposition of two similar close-ups of equal intensity (such as a close-up of a man screaming and a close-up

of a woman screaming), sequence will be a more important determinate of meaning than in the connection of the close-up of the woman screaming and a long shot of a man screaming. In the latter case, the meaning of the woman screaming will dominate whether the shot is placed first or last.

From Worth's findings it seems obvious that the nature of the assertion, whether strongly associative or disassociative, also has a bearing on the intensity of the interaction between signs and thus the degree of shift in meanings. As Worth explains, "it is more likely when the pair is dissimilar [disassociative] that the viewer will suspend judgment or be attracted more by the importance of one element [shot] than the other or simply average the elements with the order of the elements consequently immaterial."[30]

So it may be assumed that in the hypothetical limiting case of a totally disassociative assertion, the congruity principle will not be in effect. This is not surprising because Osgood himself emphasizes that two shots must be "related" by an assertion before the principle applies.[31] What is surprising is that the operational validity of the congruity principle will vary along the entire spectrum from complete disassociation to complete association. In other words, Worth has found some evidence that in film communications the change in the meaning of two shots related by an assertion is dependent not only on the original intensity of the meaning, but also on the nature of the assertions relating the two shots. Osgood predicted this same effect in language, but provided no empirical evidence.[32]

A return to the notation system suggested earlier will help

clarify this distinction. If the symbol ≃ is used to indicate that the symbols on either side are approximately equal in meaning, then Osgood's congruity principle states that A,B≃B,A if either A or B is a great deal more intense than the other. If the arrow $\underset{\rightarrow}{A},B$ means A is associated with B; and the arrow $A,\underset{\rightarrow}{B}$ means that B is disassociated from A; then Worth found that $\underset{\rightarrow}{A},\underset{\leftarrow}{B} \neq \underset{\rightarrow}{B},\underset{\leftarrow}{A}$ and that $\underset{\leftarrow}{A},\underset{\rightarrow}{B} \simeq \underset{\leftarrow}{B},\underset{\rightarrow}{A}$.

By way of review, the findings of Foley must be qualified by those of Gregory, Osgood, and Worth. Briefly, Foley found that A,B≠B,A. But as has been indicated, this is true only when the differences between the intensities of the meaning of A and B are not extreme, and secondly, when A and B are associated. This, obviously, is all very relative.

Worth did not find that sequence is without influence when dissimilar shots are juxtaposed. He merely found that sequence was less important in such juxtapositions. In addition, the idea that A,B≃B,A (if either A or B is a great deal more intense) must be qualified by Goldberg's experiment in which the meaning of the very intense shot of the woman screaming was found to vary with context.

So the theorist is left with two variables of equal importance: 1) shot intensity and 2) the direction and strength of inter-shot assertions. Only after determining the nature of these two variables can he begin to predict the shift in meaning caused by juxtaposition.

The length of juxtaposed shots no doubt has some bearing on the operation of the congruity principle. There is presently little evidence relating to this question. Despite the scarcity of information, there is some value in speculation based on what evidence is available.

In the sequence in which he found fast cutting-rates to be more active, Gregory had no difficulty in forming filmic assertions. In some cases, it may even be possible to create "length" cues. For example, after a series of 10 short shots, the audience might expect the eleventh to be short also. If it is short, the series could be said to create an associative assertion. If the eleventh shot is long, the series may be said to have created a disassociative assertion. This type of kinetic or length cue is only possible in extended sequences.

Rod Whitaker's findings suggest other effects which shot length might have on the congruity principle. In his experiments on centripetal decay, Whitaker found that the meaning of a shot varies with its length. It may be generally assumed that the intensity of the meaning of a shot will increase in direct proportion to its time on the screen. After an increase in intensity, the shot would be less vulnerable to change when related to another shot by an assertion. There is no known evidence for this speculation despite its common-sense elegance.

A final question is, "what happens when two shots are connected by a fade or dissolve?" In the dissolve, one shot slowly vanishes from the screen as another appears. There is a momentary superimposition of images. In the fade, one shot slowly darkens until the screen is black. The screen then begins to lighten until the second shot appears. Although fades and dissolves were specifically excluded from extensive investigation in this study, some theoretical projections are of value.

Theoretically, the dissolve may be said to dampen the effects

of shot juxtaposition. If a connection of shots is associative, the dissolve will lessen the associative tendency. For example, if a medium shot of a man hammering is connected by a dissolve to a close-up of a hammer hitting a nail, the strength of the assertion will be less than if the two shots were joined by a cut.

Conversely, if a connection if disassociative, the dissolve will lessen the degree of disassociation. For example, if a medium shot of a man running through the woods is connected by a dissolve to a close-up of the hammer hitting a nail, the degree of disassociation will be less than if the shots are connected by a cut. Obviously, the degree of dampening by the dissolve will be determined by its length (standard dissolves are either 8, 12, 24, or 48 frames long).

The fade is always disassociative. It completely separates one shot from the next. The fade often marks the end of one sequence and the beginning of another. Generally, both the fade and dissolve operate directly on the assertion structure in film communication. The strength of an assertion may be dampened by the use of the dissolve and a strong disassociative assertion may be established by use of the fade.

Despite this long discussion of assertions and the congruity principle, a number of questions remain unanswered concerning the practicality of using the principle to predict effects. The problem, of course, is determining the intensity of shot meanings and the strength of assertions in less than extreme instances. For example, is a long shot of a screaming woman more or less intense than a long shot of a man being hit by a car? Is the assertion based on the same camera to subject distance, as in two close-ups, as strong as one based

on simple movement? Secondly, once the intensity difference and assertion profile are determined, how can the film editor determine the degree of shift in the meaning of the two shots?

Because of these problems, the congruity principle and its corollaries can be used only for gross prediction of effects. If shots were discrete variables, perhaps it would be possible to catalog them in a sort of shot dictionary. However, because there are an infinite number of shots, such a dictionary is impossible. Yet using such broad categories as speed of spatial change, degree of light variation, etc., it may be possible to isolate some intra-shot variables which do influence shot intensity. Studies such as that of Shoemaker on camera angles and lighting ratios, and that of Tannenbaum and Fosdick on lighting angles[33] are of interest in this area.

END NOTES

[1]Eisenstein, Film Form, p. 37.

[2]Pryluck, "Structure and Function," p. 21.

[3]Pryluck, "Structure and Function," p. 24.

[4]Pudovkin, Film Technique, p. 168.

[5]Pudovkin, Film Technique, p. 167.

[6]Herman D. Goldberg, "The Role of 'Cutting' in the Perception of the Motion Picture," Journal of Applied Psychology, 35 (1951), 70-71.

[7]John B. Kuiper, "The Relationship Between Context and the Meaning of a Single Shot in a Motion Picture Sequence," Unpublished paper, Univ. of Iowa, Dept. of Speech and Dramatic Art, Division of TV-Radio-Film 1958, pp. 3-4.

[8]Kuiper, "The Relationship," p. 6.

[9]Kuiper, "The Relationship," p. 14.

[10]Joseph M. Foley, "The Bilateral Effect of Film Context," Unpublished Master's thesis, Univ. of Iowa 1966, p. 1.

[11]Foley, pp. 8-9.

[12]Foley, p. 45.

[13]Foley, p. 45.

[14]Worth, "Cognitive Aspects," pp. 138-139.

[15]Worth, "Cognitive Aspects," p. 138.

[16]Worth, "Cognitive Aspects," p. 139.

[17]Gregory, pp. 103-110.

[18]Gregory, pp. 90-91.

[19]Gregory, p. 90.

[20]Osgood, et al., p. 201.

[21]Gregory, p. 37.

[22]Osgood, et al., p. 201.

[23]Gregory, p. 41.

[24]Lewis Jacobs, ed., The Movies as Medium (New York: Farrar, Straus, and Giroux, 1970), p. 82.

[25]Osgood, et al., p. 201.

[26]Eisenstein, Film Sense, p. 4.

[27]Raymond Spottiswoode, Film and Its Techniques (Berkeley and Los Angeles: Univ. of California Press, 1965), p. 90.

[28]Osgood, et al., pp. 200-201.

[29]Worth, "Cognitive Aspects," p. 143.

[30]Worth, "Cognitive Aspects," p. 140.

[31]Osgood, et al., pp. 200-201.

[32]Osgood, et al., p. 213.

[33]D. H. Shoemaker, "An Analysis of the Effects of Three Vertical Camera Angles and Three Lighting Ratios on the Connotative Judgment of Photographs of Three Human Models," Diss. Indiana Univ. 1964; P. H. Tannenbaum and J. A. Fosdick, "The Effect of Lighting Angle on the Judgment of Photographed Subjects," Audio Visual Communications Review, 8 (1960), 253-262.

CHAPTER V

THE EDITING SPECTRUM

> I am not opposed to the use of the film medium as an extension of theatre, I object only to calling such extension creative use of the unique characteristics inherent in cinematography. (Slavko Vorkapich)[1]

Given the human capacity and weakness for classification, film theorists historically have attempted to identify various types of editing or montage. The classifications vary from the poetic--Balázs allegoric montage--to the pedestrian--Mascelli's continuity cutting.[2] Several classifications of editing will be examined in quest of some unifying concepts.

Previous Classifications of Editing

Many theorists have an affinity for a dichotomous grouping of editing types. Spottiswoode suggests a division into "dynamic" and "continuity" editing. Dynamic editing "largely disregards the regular continuity of story cutting, and substitutes the film's particular ability to relate together things which may have occurred far apart."[3] In continuity editing the "film has a story to tell, and . . . it will tell this story most clearly if there is a recognizable continuity of movement and dialogue."[4]

Dynamic cutting takes full advantage of the film's unique capacity for space-time distortion, and is not bound by the narrative structure forming the basis of continuity editing. Spottiswoode notes that in practice most editing is a combination of these two types.[5]

Stephenson and Debrix describe the basically identical divisions of "expressive" and "narrative" montage adapted from Marcel Martin's Le Language Cinématographique. They describe expressive montage as "putting shots together with the purpose of producing a particular, immediate effect by the clash of two images." Narrative montage, "in its simplest form, is putting individual shots together in chronological order to tell a story."[6]

Eisenstein divides montage into "forms of editing along the line of kinetics" and "forms of editing along the line of semantic type."[7] These classifications reflect a synthesis of the entire range of Eisenstein's thinking from his early desire to do away with the story and plot altogether, through his later concern over mise en scene and an acquired belief in the necessity for a narrative basis of cinema. Kinetic editing includes his early classifications based on the effects of the "collision" of one shot with the next. The highest form of these early classifications was "intellectual montage" which involved a direct communication of concepts without the intermediary of a story. The film shot became a symbol in the hieroglyphic sense and the viewer, presented with a series of shots was expected to translate them into the concept intended by the film-maker.[8]

Eisenstein later rejected the intellectual cinema as the epitome of film in favor of a cinema using "the demonstration of such conceptual postulates by agency of concrete actions and living persons. . . ."[9] Eisenstein's second classification, semantic editing, includes methods whereby "conceptual postulates" can be communicated by means of "concrete actions and living persons." As

such, Eisenstein's two divisions of editing are similar to those of Spottiswoode, and Stephenson and Debrix.

Eisenstein's comrade, Pudovkin, established his own classifications of montage. He defined "relational editing" as "editing methods having as their aim the impression of the spectator." This at first seems to be identical to the dynamic-expressive-kinetic groups of the other theorists considered. However, Pudovkin includes in this category such traditional storytelling methods as parallel editing and symbolism.[10] Relational editing is really a mixture of the two major classifications considered thus far.

Pudovkin's second category, "constructive editing," is not a category of montage at all. Constructive editing is defined as "the resolving of the material into its elements and the subsequent building from them of a filmic whole. . . ."[11] This is a description of the technique used in planning and executing montage. It is what the editor does. All shots are put together in this manner. Pudovkin's characteristic concern with the pragmatic has prompted his designation of this non-category of montage.

A pragmatist of the modern variety, cinematographer Joseph V. Mascelli, proposes two categories of editing on the continuity-narrative-semantic end of the spectrum. In Mascelli's continuity editing, "the storytelling is dependent upon matching consecutive scenes . . ." and in compilation cutting, "the storytelling is dependent on the narration and the scenes merely illustrate what is being described."[12] Despite Mascelli's skill as a cinematographer, and the generally valuable contribution of his book, these classifications are insignificant because

they cover only the more obvious forms of editing. "Storytelling" films of one kind or another form the basis of the Mascelli analysis.

The final theorist to suggest a dichotomous grouping of editing types is academician Rod Whitaker. Whitaker divides montage into "substantive" and "conditional" categories. In a substantive editing sequence, "a series of shots combining to produce either a nounal concept or a total effect that can be encoded in one or more nouns" is created. For example, several shots of people whispering could produce the nounal concept "spreading rumor."[13]

Conditional montage is defined as "all other content productions based on juxtaposition and simultaneity. . . ." This latter classification is called conditional "because the extra content [created by montage] seems to be an effect of the conditioning of the audience member through exposure to the first shot, under the terms of which he views the second." Whitaker is quick to point out that conditional montage effects often play a role in determining the meaning of the "terminal noun"--rumor in the above example--in substantive montage.[14]

Indeed, it would be difficult to find a montage sequence in which "conditional effects" do not play a major role. All montage effects are dependent to one degree or another upon the interaction of shot meanings as was demonstrated in Chapter IV. Whitaker has merely observed that the operation of the congruity principle is additive. That is, in a sequence of A,B,C, the meaning of C is dependent not just on B, but on the interaction of A and B. This distinction is more at home in a discussion of editing effects than editing types.

Haig Manoogian lists four categories of editing: traditional, relational, empirical, and theoretical. Traditional editing is the familiar continuity editing described earlier. Relational editing is another form of continuity editing in which the film-maker is not bound to the traditional sequence of long shot, medium shot, and close-up. The connection of shots is "based on using the camera to relate shots and, in turn, weave a pattern that is expressive within itself."[15]

Empirical editing involves "shaping the film mainly during the cutting stage" and is a familiar method for documentary films. Theoretical editing is a rather murky category in which editing "is planned according to the known ways and means for securing a film syntax."[16]

Manoogian throughout is concerned primarily with methodology. Each of his four definitions describe different techniques of continuity editing. For this reason, all of Manoogian's categories may be grouped with those concerned with storytelling.

Finally, Balázs also departs from the dichotomous divisions to offer four categories of editing: metaphorical, poetic, allegoric, and intellectual. In metaphorical montage "the film induces in the spectators thoughts and emotions it need not itself explicitly express."[17] The viewer is expected to infer meanings from sequences above and beyond the content depicted. For example, given a shot of a young man and a shot of a beautiful girl, the viewer might be expected to infer that the two are in love although neither is shown with the other. This is an example of a simple assertion in action.

Poetic montage creates "very deep subconscious idea associations,"

once again not explicitly expressed.[18] Balázs apparently is referring to what is normally called symbolism. For example, Balázs refers to the capacity of a single image to "characterize" a situation. Poetic montage seems to be merely a more sophisticated application of metaphorical montage.

Allegoric montage involves the use of mundane symbolism such as the interjection of shots of a stormy sea between shots to indicate the tone of the story although the film has nothing to do with the sea.[19] Finally, intellectual montage is Eisenstein's "hieroglyphic picture-writing."[20]

Balázs aesthetically disapproves of the latter two types of montage. In terms of the two major categories of dynamic-expressive-kinetic and continuity-narrative-semantic discussed above, all of Balázs categories lie in the former because they require no physical continuity. That is, Balázs is primarily concerned with the communication of ideas or concepts. His editing types are not continuous in the space-time sense although it is necessary to maintain what was earlier termed intellectual continuity.

The Kinetic-Semantic Spectrum

The montage classifications reviewed above can be generally grouped into those in which a story-line is conveyed via continuity and those in which there is no story-line and the continuity is based on ideas. It is necessary to broaden the spectrum represented by these two poles to include editing in which there is a flow of expressive images not linked by a story-line or any measure of logical intellectual continuity per se. The images are linked primarily by a feeling

or emotion. The best example of this type of editing is found most consistently in television commercials.

In current Pepsi-Cola commercials the feeling of joy is often a theme. Happy people are shown drinking Pepsi-Cola with a background of lively music. These commercials produce an overall feeling of "joy" not in any way contingent on a story-line or the communication of logical thought. As a whole, these commercials communicate a theme directly.

At first glance, this type of editing seems identical to Eisenstein's intellectual montage. However, in its purest sense, kinetic editing is quite different. Eisenstein suggests that a shot of water plus a shot of an eye would equal the abstract concept of weeping.[21] The type of montage demonstrated in the commercial cited does not communicate words. That is, a person viewing the Pepsi-Cola commercial does not think J*O*Y--"joy"--he feels joy. This type of editing by-passes the viewer's logical-intellectual processes and operates directly on the emotions. This extreme of the montage spectrum will be called kinetic editing because it is based on the inherent capabilities of the medium. Included at this end of the spectrum are Spottiswoode's dynamic editing, Stephenson and Debrix's expressive editing, Eisenstein's kinetic editing, and all four of Balázs categories.

At the other end of the spectrum is the use of the camera as a recording device. As indicated earlier, there is no editing involved in such usage. Considering attempts at film art, the lowest form must be the direct translation of a drama from stage to screen. Further along the spectrum toward kinetic editing is typical story editing,

built around a narrative. In this basically literary category must be grouped Spottiswoode's continuity editing, Stephenson and Debrix's narrative editing, Eisenstein's semantic editing, Pudovkin's relational editing, Mascelli's continuity editing, and all four of Manoogian's categories. Editing on this end of the spectrum is used to tell a story. This end of the spectrum will be called semantic editing, because its basis is literature and drama. Somewhere in between the extremes of kinetic and semantic editing lies Mascelli's compilation editing and the average documentary.

Generally following the spectrum is the diversity between realistic and non-realistic space-time continuity. In the use of film as a recording or storytelling device in semantic editing, space-time continuity is either realistic or is accepted to be so by the audience. On the far end of the scale in kinetic editing, there is not even a pretense of space-time, or logical, discursive continuity.

Kinetic editing exploits more fully the cinematic capacity for space-time distortion. This results in fuller use of the film's special capacity for fragmentation and maximizes the effects of inter-shot flux. Thus kinetic editing makes fuller use of the unique capacities of the film medium to alter reality. In a purely theoretical sense, this points to the aesthetic superiority of editing on the kinetic end of the spectrum. This is not to belittle the story film. The film medium is ably equipped to tell stories. (Deliverance as a novel is powerful. As a film, it is overwhelming.) It is only to say that it is theoretically and practically possible for the film based on kinetic editing to reach the excellence of the best story films. Bruce Brown's surfing epic, The Endless Summer, is an example of an attempt.

END NOTES

[1]Vorkapich, "Toward True Cinema," p. 174.

[2]Balázs, p. 127; Mascelli, p. 149.

[3]Spottiswoode, "Film and Its Technique," p. 104.

[4]Spottiswoode, "Film and Its Technique," p. 105.

[5]Raymond Spottiswoode, Basic Film Techniques (Berkeley and Los Angeles: Univ. of California Press, 1948), p. 33.

[6]Stephenson and Debrix, pp. 130-131.

[7]Eisenstein, "Programme for Teaching," p. 160.

[8]Eisenstein, Film Form, pp. 125, 30.

[9]Eisenstein, Film Form, p. 125.

[10]Pudovkin, Film Technique, pp. 75-77.

[11]Pudovkin, Film Technique, p. 31.

[12]Mascelli, p. 149.

[13]Whitaker, p. 130.

[14]Whitaker, p. 131.

[15]Manoogian, p. 219.

[16]Manoogian, p. 222.

[17]Balázs, p. 125.

[18]Balázs, p. 126.

[19]Balázs, p. 127.

[20]Balázs, p. 128.

[21]Eisenstein, Film Form, p. 30.

CHAPTER VI

TYPES OF CUTS: KINETIC

The medium of the film is visual images. (René Clair)[1]

Various types of cuts have been identified by film scholars. Actually, the classifications really do not refer to the cut at all, but rather to the relationship of two shots connected by a cut. So a "form cut" may be defined as the connection of two shots in which a form or shape is repeated.[2] For example, one shot may be of a round cannon barrel at extremely close range, and the next, a close-up of a round porthole. The round motif is repeated in each shot and normally the two shapes will be in exact registration. The two shots are related by the repetition of the round shape. This has nothing to do with their connection by a cut. The connection is made pertinent by the spatial similarity of the images in each shot.

As described above, the term "cut" may be recognized as the film assertion discussed in Chapter IV. The film assertion was described as a "coupling action" or signal of some sort, in which two previously unrelated signs are presented, each in terms of the other. These coupling actions may be either associative or disassociative. Assertions were shown to be dependent on the presence of either kinetic or semantic cues within the shots. Kinetic cues are based on spatial-tonal variations in the shot and between shots. Semantic cues are based on the semantic or literary meaning of the shots.

Kinetic and semantic cues form the basis of the editing spectrum

described in Chapter V. Those types of editing found on the kinetic end of the spectrum are based on kinetic cues. Similarly, semantic editing types are based on semantic cues. The classifications here differ from those in the previous chapter in that for "types of cuts" the emphasis is on the connection of one shot to the next. In "types of editing" the interest was primarily in the extended editing practices for long sequences and whole films. In this chapter, types of cuts on the kinetic end of the spectrum will be discussed. Shot juxtapositions founded on semantic cues will be examined in Chapter VII.

The kinetic end of the spectrum includes cuts based on traditionally unacceptable space-time distortions, essentially static inter-shot spatial-tonal relationships, and variations in intra-shot flux from shot to shot. The first category includes the jump-cut and its variations and the juxtapositions in which two shots have absolutely no space-time relationship. An example of the latter would be a connection of a close-up of an apple and a long shot of the Taj Mahal.

The static spatial-tonal category includes those connections of shots based on similarities or differences in static spatial arrangement or tonal quality between shots. The change in spatial-tonal characteristics on which these connections are based occurs from shot to shot rather than within the shot. For example, a close-up of a man wearing a bright red shirt could be juxtaposed easily with another in which a bright red balloon fills the screen. The visual relationship of the red color would associate the shots. This is a connection based on tonal similarity.

Shot linkages dependent on intra-shot flux are based on graphic changes within the shot created either by camera manipulation or actual variation in the scene photographed. This category includes all cuts based on changing intra-shot spatial or tonal characteristics. For example, an airplane flying right to left in one shot can be smoothly juxtaposed with a similar shot of a bird flying right to left. The continuation of the motion from shot to shot insures their smooth connection. In this example, the two shots are associated by intra-shot spatial changes.

Space-Time Distortion

Kinetic cuts based on space-time distortions include space-time leaps in which there is an unsettling jump on the screen; and those in which there is no space-time relationship between shots. The former is recognizable as the "jump-cut" which was earlier defined as a transition which, perceptually, lies somewhere between the frame to frame and shot to shot connection. It is a visible break in time and space continuity perceivable by the audience.

When viewing a jump-cut the phi phenomenon causes the spectator to actually see the subject jump on the screen. This is because the audience perceives a frame to frame connection where a shot to shot connection is intended. For example, suppose the editor has a single shot eight feet long of a man stepping down from the curb, walking across the street, and stepping up on the curb on the other side. To create a jump-cut, the editor merely cuts out the middle two feet of the shot and splices the two ends together. The result is a sequence

in which the man steps down from the curb, and after a few steps, "jumps" to within a few feet of the opposite curb and keeps walking. The editor has deleted the middle portion of the space-time of the original shot and created a simple jump-cut.

A variation of the jump-cut is called the "overlapping cut." In this case, the space-time of a sequence is expanded by repeating in the second shot, the same action as shown in the first. For example, suppose the editor has two strips of film showing a man crossing the street. To create an overlapping cut, in the first shot the editor shows the man stepping down from the curb, and in the second, again shows the man stepping down from the curb. The result is an overlapping of action--an overlapping cut--which is obvious to the audience.

A good example of this technique is found in the Vitalis commercial featuring professional basketball player Pete Maravich. A slow motion close-up of Maravich writhing his way through several opposing players to shoot is repeated several times with astounding effect.

Not all overlapping cuts will result in a jump. For example, if a close-up and a long shot showing slightly overlapping action are juxtaposed, there will generally be no jump. This is because it takes the viewer an instant to adjust to the change in camera to subject distance and focus on the primary action. This type of cut is sometimes intentionally used in semantic editing to allow the audience time to adjust before continuing. This usage is discussed further in Chapter VII under the heading of "compositional back-cut."

Jumps may also result from directional changes. If the camera

or subject of interest is moved between shots so that the subject changes sides of the screen, a jump-cut may occur. That is, the subject originally shown on the left side of the screen may suddenly jump, on the cut, to the right side of the screen. This can be prevented by not changing the angle formed by the intersection of the line from the camera to the subject in the original camera position and the line from the camera to the subject in its second position more than 180 degrees. Mascelli suggests mentally drawing a line through the subjects of interest and always staying on one side of that line.[3] Generally, directional changes from shot to shot result only in a momentary disorientation which is a concern of semantic cutting. However, selected directional changes will produce jump-cuts.

All the jump-cuts reviewed above involve discrepancies in what the audience knows to be realistic motion picture space-time continuity. This, of course, does not include devices such as the reverse cut in dialogue scenes which, within certain limits, have become accepted modes of cinematic expression. A second type of jump-cut is what Slavko Vorkapich calls "transformation."

In transformation, "a sudden magical metamorphoris of one object into another takes place whenever two objects, similar in some ways but different in others, appear successively on the same spot on the screen."[4] A familiar example is found in Méliès' Conjurer, in which an acrobat bounces into the air and, when he begins a somersault, a cut is made to a ballerina occupying the same space in the frame who then lands gracefully on the floor. The effect is that the acrobat is "transformed" into a ballerina.

Although both time and space are deleted in such a transformation, the primary interest here is the spatial similarity from shot to shot. In the example, everything remains the same except the ballerina replaces the acrobat. In addition, the somersaulting motion of the acrobat is repeated by the ballerina. In this transformation there are many points of similarity between the two connected shots (setting, movement, and generally everything except the acrobat and ballerina). However, transformation can take place with far fewer points of similarity--often to the dismay of the film editor.

The most commonly used transformation in editing is the "form cut." The form cut was defined earlier as "the connection of two shots in which a form or shape is repeated." An example was given in which one shot pictured a round cannon barrel, and a second, a round porthole. Since the two shapes are similar (usually the same size and in exact registration), a transformation occurs on the cut.

This leads to some general observations about the jump-cut. It is possible to juxtapose totally unrelated shots such as a close-up of Ho Chi Minh and a close-up of a hamburger without a jump-cut. A jump-cut occurs only when two separate juxtaposed shots are so similar that the phi phenomenon causes the audience to perceive them as the same continuous shot. <u>The two shots must be similar</u>. Exactly how great the similarity must be, and the nature and importance of given points of similarity is an empirical problem. However, some practitioners have attempted to define limits.

A jump-cut has been found to result when two shots are connected which were taken from the exact same camera angle when the variance in

camera to subject distance is not large enough. For example, if the cinematographer makes one shot of a man with the camera to subject distance of eight feet, and another at a distance of nine feet, a connection of the two shots will result in a jump-cut whether or not the actions depicted match. Exactly how much the subject to camera distance must change is an empirical problem not addressed by any theorist so far. Yet it is known that, on a relative scale, if the cut is from close-up to medium shot, no jump-cut will occur. To avoid jump-cuts of this kind, Monier recommends that all intercutting of shots taken from the same camera angle should be avoided.[5]

A jump-cut will also occur whenever two shots are connected in which the camera to subject distance remains the same but the camera angle changes only slightly. Monier recommends angle changes of not less than 30 degrees from shot to shot.[6] Obviously, those desiring a jump-cut would keep the change less than 30 degrees. As in the camera distance jump-cut, the angle jump will occur even when there is no actual deletion of time and space in the shot. The spatial leap alone is enough to make the cut unacceptable to the viewer.

Camera angle and camera to subject distance are just two of the many possible variables between shots. In general it may be said that <u>any visible variable characteristic of the shot can be the basis of a jump-cut</u>. Because of the nature of the medium, it is always possible to achieve that degree of visual similarity necessary to make any shot to shot connection jump.

For example, take a static shot of a still photograph in which the initial lighting is bright and slowly fades until the photograph

is barely visible at the end of the shot. If the editor deletes the middle portion of the shot and joins the beginning and end footage, a jump-cut will occur solely on the basis of screen brightness. Choose any changing visual characteristic of the shot at random and the editor can use it to create a jump-cut. Again, the jump-cut results from visual similarity.

In terms of assertions, the jump-cut is disassociative. Taken at face value, the many similarities necessary to create a jump-cut would seem to make it associative. However, the jump resulting from the operation of the phi phenomenon tends to jar the audience and disassociate the shots. This is a classic kinetic effect. It is impossible to describe a jump-cut to someone who has never seen one. This is often the problem in the discussion of kinetics effects which are more dependent on perception than cognition.

Space-time kinetic cuts also include those shot connections in which there are no unsettling jumps on the screen and no continuity in the narrative or semantic sense. The connection of shots of Ho Chi Minh and a hamburger is an example. Taken on a shot to shot basis this type of connection has no apparent motivation. Only by observing a sequence as a whole will the motivation become evident. The connection may be directly related to thematic or rhythmic development which becomes clear only in long sequences. As a unit, the two shots connected have little or no relationship. Such connections form a disassociative assertion.

Static Spatial-Tonal Relationships

The second major category of kinetic cutting is the transition

dependent on spatial-tonal variations between shots. This category includes connections based on the change between shots of the placement of subjects on the screen or in their intensity, color, and brightness.

The spatial dimension of this category is only a little different from Vorkapich's transformation. In fact, Whitaker's description of "eye-guiding," which is included in this category, sounds similar to Vorkapich's description of the requirements for transformation: "It [eye-guiding] normally requires a sense of where in the frame the audience member's focus is at the end of the shot, then cutting into the next shot with the center of action (or most important detail) at the same place in the frame."[7]

Whitaker theorizes that generally such a spatial-tonal transition makes a "soft" (associative) cut, while a "hard" (disassociative) cut results from ignorance of the techniques of eye-guiding.[8] Obviously, the editor must carefully study each shot joined to insure that there are not enough similarities to result in unintentional transformations.

Generally, a cut based on static spatial relationships between shots would require the repetition of some composition or spatial emphasis between shots. For example, two shots of different subjects could be taken from high camera angles. The similar angles would associate the two shots because of spatial similarity.

A cut based on static tonal relationships between shots requires some similarity in brightness, color, or intensity. For example, a shot of a bright, white beach could be followed by a shot of a bright, white hospital room. The brightness similarity would serve to connect the two shots. Generally, these spatial-tonal transitions are based

on static relationships between shots. This, of course, includes connections intended for contrast (disassociative) and similarity (associative). A spatially busy composition may be followed by a simply designed one. A darkly lit shot may precede a similarly lit one.

Variations in Intra-Shot Flux

A final category of kinetic cut is those shot to shot connections based on the similarity or contrast of intra-shot flux. The editor examines the visual changes within the shot and attempts to associate or disassociate shots based on these changes. There are two categories: cuts based on intra-shot spatial variation to include physical movement, changes in size, shape, etc.; and cuts based on variations in tonal qualities.

The editor is concerned with two types of spatial variation: artificial and actual. Artificial variations are created by the camera and the camera lens. The camera is a portable instrument. There are various familiar labels for camera movements such as the pan, tilt, dolly, truck, etc. Such classifications tend to become limitations. It is well to remember that the camera can be moved in an infinite number of ways dependent only on the requirements of the film-maker.

Spatial variation may also result from two lens characteristics: first, the exceedingly popular, if overused, zoom lens produces a dolly-like effect; and second, all lenses can be focused and unfocused. The zoom movement is similar, but not identical to, the camera dolly.

Finally, actual spatial variation on the screen is simply the movement of actors, vehicles, or whatever, while being photographed.

Given the infinite possibilities of camera movement, it follows there are infinite varieties of connections based on movement. It is of some value, however, to consider several observations of this and other authors.

First, there is a difference between the editing considerations associated with artificial and actual variations on the screen. In terms of movement there are four possibilities for the shot: 1) static shot of static subject; 2) static shot of moving subject; 3) moving shot of moving subject; and 4) moving shot of static subject.*[9] Of the four, only the last produces any real problem for smooth, associative cutting.

In a moving shot of a static subject, artificial movement is imposed on stationary subject matter by the cinematographer (in the case of number 3, a moving shot of a moving subject, the cameraman merely follows the action of the subject). Mascelli has observed that "inter-cutting static and moving shots of static subject matter is generally difficult, because the switch from a static shot to a moving shot (or vice versa) is abrupt and jarring [disassociating] due to lack of subject movement." On the other hand, "shots of moving subject matter will generally offer little or no editing difficulties, because player or vehicle movement can be carried across either static or moving shots."[10]

---

*Adapted from Mascelli.

The editor who is concerned with associative cutting must take great care with "moving shots of static subjects." Yet as Bobker explains, "in modern cutting techniques, the editor often deliberately interrupts [camera] movement when the audience is least prepared for it."[11] The editor wishing to maximize the effects of kinetic cutting may use the jarring, disassociative effects of intercutting moving shots of static subjects with all other varieties of shots. To avoid the jar, he will cut on the pauses at the beginning and end of such shots provided by the experienced cinematographer.

Aside from these general considerations, editors often connect shots based on the nature of actual movement within the shot. For example, shots may be connected on the basis of similar or contrasting movement. A current Coca-Cola television commercial, stressing the universal appeal of the soft drink, juxtaposes a medium shot of an American child throwing a baseball with a medium shot of an African child throwing a spear. The throwing motion for each shot is the same, both are in slow motion, and both children are throwing from right to left. These shots are associated on the basis of similar motions. Contrasting or disassociative movement is even more frequently used.

Various commercials are currently exploiting the popularity of motorcycles. A combination of quick cutting and shots of motorcycles traveling in opposite directions at high speed is used as a visual stimulant. Mascelli recommends such cutting on opposing movements to "build suspense, predict a clash, or contribute dramatic impact. . . ."[12]

Secondly, a phenomena often used, but mentioned nowhere in the

literature is what could be called the "intra-shot wipe." This can be illustrated best by an example. A cinematographer is filming a group of people gathered in a small, static group. As the camera continues to run, another small group of people walks past very close to the camera, blocking the view of the original group. The result is a shot in which the first group is seen, the second group in the foreground temporarily blocks the camera view as they pass, and finally the original group comes back into view. If, in editing, the film-maker cuts just as the original group is completely blocked from view, he can connect a shot of just about anything due to the "wipe" effect. Generally, the blocking of the screen by real subjects within the scene provides strong motivation for a cut. Similarly, the shot beginning with such a blocking of the screen can follow most any shot. This technique is often used in both semantic and kinetic editing.

The "swish pan" and fast zoom are two common uses of artificial spatial movement to relate two shots. The swish pan is created by quickly panning the camera. The result is a blurred, fast-changing image. Obviously, a similar effect can be created if the camera is quickly tilted, twisted, dollied, or, for that matter, thrown down a well. The fast zoom is obtained by quickly zooming in (enlarging the image) or quickly zooming out (shrinking the image). A similar effect can be obtained by a fast dolly. But given the logistics of the matter, the zoom lens is most often used.

Neither the swish pan nor the fast zoom have any significant semantic content. They do have exciting kinetic effects, however. In a visual sense, both shock the audience. To illustrate, a film-

maker could quickly zoom in on a man's face and then cut in the midst of the zoom to a long shot of the Empire State Building. The fast zoom is used as a transitional device disassociating two shots. The swish pan operates similarly.

The swish pan and zoom usually, but not necessarily, come at the beginning or end of an otherwise normal shot. For example, a shot could begin with a static close-up of a man's face, and then after a few seconds, swish pan to a cut to the long shot of the Empire State Building. Sometimes another swish pan or zoom may be used to begin the second shot and ease the transition. Because of the intentional shock value inherent in the use of the swish pan and fast zoom, both may be classified as disassociative transitional devices.

A final consideration is where to cut on movement. That is, should the editor generally cut before, on, or after subject movement.*[13] More traditional film editors generally believe that the cut should come before or after subject movement. This type of cutting is the norm for the average semantic film. It minimizes the impact of cuts by, in effect, hiding the process and "watering down" the strong associative cues created by continued movement across a splice.

In general, whether the editor cuts on or between movements

---

*Cinematographer Joseph V. Mascelli begs the question in recommending that the film should be shot so as to give the editor the choice. Bauchens says not to cut on movement, Manoogian recommends cutting on movement to create excitement, Deren suggests generally cutting on movement. Burder believes the editor generally should "cut where movement is minimized," and Reisz thinks the editor should cut at a moment of rest, between movements, "reinforcing the rhythm of the actor's performance."

must depend on the effect he seeks. Cutting on movement allows the spatial change begun in one shot to be continued in the next without interruption. This creates a strong associative assertion. Assertions are weakened by cutting between movements.

The second type of intra-shot variation of interest is the tonal variation within the shots juxtaposed. The most familiar tonal movement used to associate shots connected by a cut is the focusing and unfocusing of the lens. One shot will end by slowly going out of focus and the next will begin by slowly coming into focus.

Other possibilities in this category include changes in light value, color, and brightness. For example, one shot could slowly become more and more blue, and then be cut to another shot which starts at the same color of blue and slowly becomes more natural in color. The blue cast would provide an associative cue. Conversely, the blue shot could be juxtaposed with a red one to produce a harsh disassociative cut. The possibilities are limited only by the number of visible variables in the shot.

Both the fade and dissolve are clearly related to tonal variations used to relate two shots. Whereas the variations mentioned above are confined to the shot, the fade and dissolve blend shot boundaries and destroy their individuality. Both are tonal transitions. As indicated in Chapter IV, the dissolve tends to dampen the assertion of the two shots considered alone, and the fade is purely disassociative. These two optical devices are often used to hide unintentional jump-cuts and other transitional problems. Generally, while the fade and dissolve technically are not based on intra-shot flux, these two

devices are the best general examples of the uses of tonal variation to connect shots.

In general, shot connections based on intra-shot flux, like those based on space-time distortion and inter-shot spatial-tonal variation, may be made based on anything that changes within the shot. The variation of color, placement, lighting, camera position, or whatever, as reflected within the shot is the basis of the cut founded on intra-shot flux.

In summary, kinetic cuts may be made based on any visual variation within or between shots. These variations may be classified as either space-time leaps, spatial-tonal changes from shot to shot, or changes in intra-shot flux. The editor may use similar cues to associate shots and contrasting cues to disassociate shots. In all cases, the film-editor is involved in creating uniquely filmic assertions. The particular type of transition represented by kinetic cuts is found only in the film medium. There are no jump-cuts in literature.

END NOTES

[1]Clair, p. 28.

[2]Huss and Silverstein, p. 67.

[3]Mascelli, pp. 93, 109.

[4]Slavko Vorkapich, "Some Good Cuts and Some Not So Good," American Cinematographer, 22 (1972), 15, 18.

[5]Monier, pp. 47-48.

[6]Monier, p. 230.

[7]Whitaker, p. 37.

[8]Whitaker, p. 37.

[9]Mascelli, p. 161.

[10]Mascelli, p. 161.

[11]Bobker, p. 142.

[12]Mascelli, p. 89.

[13]Mascelli, p. 84; Anne Bauchens, "Cutting the Film," in We Make the Movies, ed. Nancy Naumberg (New York: Norton, 1937), p. 203; Manoogian, p. 228; Maya Deren, "Tempo and Tension," Movie Makers, May 1947 rpt. in The Movies as Medium, ed. Lewis Jacobs (1947: New York: Farrar, Straus, and Giroux, 1970), p. 148; Burder, p. 75; Reisz and Millar, pp. 246-247.

CHAPTER VII

TYPES OF CUTS: SEMANTIC

> A remarkable fact about the history of screen stories is that in sixty years the medium has found essentially nonverbal methods of presenting plot, character, and thought, elements that function organically in a unique art form. (Roy Huss and Norman Silverstein)[1]

Editing techniques found on the semantic end of the editing spectrum are most often used to tell a story. Most film-makers stress that film stories should be told visually. This means that words, dialogue, narration, and language in general, should be subordinated to pictures. Telling a story without words in film is dependent on the continuous development of a narrative through what is called "continuity."

Continuity

As defined earlier, continuity is "the smooth progression of one shot into the next, or one scene into the next, creating for the viewer the feeling that he is witnessing a whole action, rather than a series of interrupted actions cleverly dovetailed."[2] The most common type of cut used to insure continuity is the match-cut.

The match-cut is a connection of two shots in which narrative continuity is maintained. On the most basic level, two matched shots give the audience the impression that the shots depict the actual progression of an event. For example, one shot may show a man dropping something, and a following close-up the man picking up a coin. In match cutting the audience is given the impression that one shot

chronologically follows another, as in live television programming when the director switches from camera to camera.

The primary goal of the editor in match cutting is the depiction of homogeneous space-time continuity. Normally, theorists considering match cutting concentrate on how the editor can avoid harsh cuts following Spottiswoode's dictum that "in cutting it is very much easier to describe what is bad than to define what is good."[3] However, the necessities of match cutting go beyond merely avoiding harsh cuts. First, the editor is concerned with clearly communicating a story-line to the viewer. Considerations of this type may be grouped under the heading of "intellectual continuity" discussed earlier. In a second category, physical continuity, the editor <u>is</u> primarily concerned with avoiding harsh cuts, but also with the avoidance of impossible changes between shots pretending to represent homogeneous space-time. In an impossible change, a first shot may show an actor wearing green and white argyle socks, the second a close-up of the actor, and a third, a shot of the same actor (supposedly only a few seconds later than the first shot) wearing red socks. It is impossible for the actor to change socks during the close-up in this narrative sequence. The impossible change is a violation of the rules of physical continuity.

Editors must also preserve directional continuity in match cutting for physical continuity. For example, an actor seen walking right to left in one shot, should be seen walking right to left in the next. Also in static shots, the actor or subject seen on the right side of the screen in one shot should remain on the right side in subsequent shots. Directional continuity is maintained during filming by remaining

on one side of a base line drawn through the subjects of interest. Thus the cameraman has an 180 degree arc in which he can maintain directional continuity.[4] Obviously, directional changes can be made within the shot without loss of continuity. Continuity is lost only when directional changes are made between shots.

Generally to preserve physical continuity in any two shots purporting to show the same homogeneous space-time, the editor should adhere to Mascell's rule that "Anything may change during a shot. . . . Nothing should be changed between shots. . . ."[5] Although meant to be applied to shot to shot connections, this rule can also be broadened to include any two shots, whether or not they are juxtaposed, which are meant to show the same homogeneous space-time.

Although modern film-makers sometimes intentionally violate Mascelli's rule, crews for traditional semantic films usually include a "continuity girl" who insures that no one changes shoes, socks, or positions between shots. Because the interval between the filming of two shots to be juxtaposed may be days, months, or even years, continuity can become a problem of major proportion. In one scene in Lawrence of Arabia, Peter O'Toole is seen in close-up looking out across the desert. His view of the desert is then shown before cutting back to a close-up. This final close-up of O'Toole was shot two years after the first one. Luckily, O'Toole had not aged appreciably.

Cinematic Storytelling Devices

Despite the preceding, the practice of semantic cutting is not merely a case of avoiding certain practices. In fact, certain uniquely

cinematic techniques of storytelling have been developed in the semantic cinema. These include the cut-away, cross-cut, reverse-cut, subjective cut, compositional back-cut, and forced logic cut. All of these techniques exploit to one degree or another the unique capacity of the cinema to distort actual space-time continuity. Yet because they are based on strong semantic assertions, the editor may use them without breaks in narrative continuity.

Mascelli describes cut-aways as "shots of secondary action--directly or indirectly related to the main action. . . ."[6] For example, a first shot may show a man in long shot opening a car door in a suburban neighborhood, the second a medium shot of his wife on the porch waving goodbye, and the third, the man driving away in the car. The first and third shots picture generally the same homogeneous space-time--a certain man and a certain car at a certain place. The second shot may be taken on a suburban porch anywhere, on any morning, assuming the porch and wife are not shown in shots one and three. This type of space-time independent shot which does not result in a break in physical continuity is called a cut-away.

A variation of the cut-away is what Mascelli calls the "cut-in close-up."[7] In the example above, a close-up of the man could replace the second shot, and it could be followed by the third shot with no break in continuity. Unlike the cut-away, the cut-in close-up is always a part of the primary action.[8]

The significance of the cut-away and its variations is that they allow the space-time of a sequence to be expanded or contracted without loss of continuity. The first and third shots in the above examples

may be shortened, used in their entirety, or the action overlapped because the cut-away will hide any break in continuity.

The freedom of the cut-away is limited. Although the second shot in the first example could be taken almost anywhere, the woman cannot be standing on the wooden porch of a mud hut somewhere in the jungles of Bolivia. As Mascelli indicates, cut-aways generally must be established in an initial long shot of the action.[9] That is, the subject matter in the cut-away must be part of, appear to be a part of, or be reasonably acceptable as a part of the initial setting. More correctly, for both physical and intellectual continuity, Burder points out that "cut-aways must, of course, always be relevant. It's useless just putting in any old shot you happen to have spare. Choose one which refers to the action in question. . . ."[10] For example, one shot may show an irascible villain getting hit in the face with a pie. Any close-up, within reason, of a person laughing will serve as a cut-away, because such a shot would be relevant.

The most common use of the cut-away in pedestrian editing is to avoid breaks in continuity. A cut-away placed between two unmatched shots will hide their disparity and result in a smooth, associative transition. Mascelli indicates that such a cut-away is used to "distract" the audience. Another common use of the cut-away identified by Mascelli is to provide a reaction to or commentary on the action, as in the pie-throwing example.[11] The cut-away is the most simple of editing devices, but by its use alone, the film editor can completely alter realistic space-time continuity. In addition, because the cut-away is by definition

relevant, it forms a semantic assertion between shots, and insures the maintenance of continuity.

Another editing device used to exploit the cinema's capacity for the manipulation of space-time is the cross-cut which may be defined as a connection of two shots in which the audience is made aware of a change in time or space, or both, from shot to shot. The audience is not aware of such space-time manipulation in the cut-away.

The classic example of cross-cutting is the chase scene in which the action is shown from the point of view of the person being chased and the person chasing, although they may be separated by miles or even continents. The narrative time of the second shot in a cross-cut may be simultaneous, before, or after the first shot. Space may be identical, or different. Cross-cuts to time before that shown in the first shot are called "flash-backs," and those to time after that shown are called "flash-forwards." As mentioned earlier, these are purely narrative time distinctions. The film medium is always in the present tense.

In any event, the cross-cut allows the film-maker to go anywhere in narrative time or space. As Mascelli points out, "the uses of cross-cutting have one common characteristic: Any event happening anywhere may be connected with any other event."[12] The usual practice finds the film-maker telling several stories at once, all of which are in some way related. On a shot to shot basis, the cross-cut serves to separate rather than join. So the cross-cut may be classified as a disassociative assertion even though in the long run it tends to unify the narrative.

The reverse-cut has become an accepted editing convention in semantic films despite the drastic spatial leap involved. The reverse cut may be defined as a transition in which the second shot shows the same scene as the first with the camera angle being changed more than 90 but less than 180 degrees. By use of this technique, great spatial concentration is achieved.[13] The reverse cut has become a cliché in dialogue scenes and its acceptance despite the abruptness of change can only be explained in terms of the motivation created by a given dialogue to see both the speaker and listener. The reverse cut is not universally accepted outside the dialogue scene.

The subjective cut is a classic example of the filmic assertion in action. Vorkapich describes the phenomena: "when you show a look directed outward, intently directed outside of the shot, no matter what you show after that--it becomes a subjective view."[14] That is, the second shot is asserted to be what the actor sees. The "look directed outward" provides the associative cue for the audience to accept the next shot as what is being seen. For the careless editor, this may result in what Vorkapich calls "impossible views."[15]

For example, a recent political advertisement shows in one shot the candidate riding in a convertible looking left to right, and waving to the crowd. The second shot shows a crowd looking right to left and in their midst is the candidate. The effect: the candidate is waving to himself. To avoid such unintentional subjective cuts Vorkapich advises the editor to cut when "the look is averted and not intently directed toward anything in particular. . . ."[16]

The subjective cut must be anthropomorphically motivated. A waffle iron cannot intently direct a look outside the frame. The second

shot in a subjective cut has the same freedom and is bound by the same rules as the cut-away. The actor staring intently off the balcony of a Hawaiian hotel may see the Honolulu harbor in a subjective view, but not the Champs Elysees.

The compositional back-cut is more of a matching device than a "unique cinematic storytelling device." It is an overlapping cut of two shots when the transition is from close-up or medium shot to an extreme long shot, which allows the audience to locate the major character or center of action on the screen before continuing. If the two shots are not overlapped the audience may take an instant to locate the center of attention, and the result is a harsh, disassociative cut. By overlapping shots "perhaps a twelfth of a second" the viewer "will have a sense of continuity"[17] although this is not technically the case. The compositional back-cut is an allowance for the perceptual flaws of the audience.

Finally, the identification of the forced logic cut points to the current trend toward the blending of kinetic and semantic editing techniques. Writes Whitaker, "The forced logic cut carries the central figure from morning to evening, from indoors to outdoors, from dressed to undressed on a simple cut, without the dissolve or fade that would, in past times, have served to indicate the end of a sequence and the beginning of another. The audience member's logic prohibits him from imagining that these events have followed one another without a lapse of time."[18] Intellectual continuity is still maintained in such a cut and is what in fact ties the two shots together. Yet the avoidance of

fades and dissolves to show the passage of time is an abrupt departure from previous traditions of semantic cutting.

An editing technique similar to the forced logic cut has developed in recent years based on the old match-cutting trick of letting the characters walk out of the frame to disguise breaks in continuity. This can be best illustrated by an example. In Hitchcock's Vertigo, James Stewart and Kim Novak are shown walking through the giant redwood forest. In one shot, Hitchcock lets the two walk out of the frame and then picks up the action a short time later in a second shot connected by a cut. At first, it would seem that this would create an impossible change or a jump-cut between shots--time and space have been deleted between two shots without the intercession of a cut-away. This is not the case. Hitchcock has been able to delete time and space in a simple match-cut because, for editing purposes, time passes while the subjects are off-screen. Generally, when subjects move out of the frame and no longer appear on the screen, the editor can delete a portion of the actual space and time required for a given activity without a break in continuity.

If the concept behind the forced logic cut is applied to this principle, then the semantic editor can, for example, let the hero walk out of the frame in his apartment and next be seen working in his office using only a cut between shots. Often the second shot will begin with the subject out of the frame and either let him walk into or pan to reveal his location. Time is subject to great compression when the subjects of interest are moved out of the frame.

Cuts of this type are associative. Obviously, the Hitchcock example is the more associative of the two. The latter is a kind of cross-cut bridging time intervals which normally would have been covered as in Vertigo: man leaves apartment and enters the elevator; dissolve to man leaving building and getting into car; dissolve to man getting out of car and going into office building; dissolve to man leaving elevator and entering his office. The type of cut described here eliminates all of these unnecessary transitional devices. In the process, the association between the man in the apartment and the man in the office is lessened. Given the sophistication of contemporary audiences, however, this is not a serious problem.

Obviously, the distinction between semantic and kinetic cutting is somewhat strained in this case. However, as long as the primary interest remains in telling a story, a cut is classified as semantic. In general, the semantic film does not tediously depict sequential action throughout a film. However, it does seek to develop a story--a narrative--with a literature based continuity.

In the preceding two chapters various types of cuts have been identified and explained. In kinetic cutting the shots are organized according to their graphic image content. In semantic cutting the shots are organized according to their narrative or semantic content. A kinetic cut may be made based on any visible characteristic of the film shot which changes or is changing from shot to shot. This may be either a disassociative cut such as the simple jump-cut, or an associative cut as in the form-cut. A semantic cut may be made based on advancing the plot of the story being told. The narrative determines when and where

a cut is made. Both kinetic and semantic cutting are based finally on the theme although in the latter the narrative acts as an intermediary.

The most important contribution of the review of types of editing and types of cuts was in developing the kinetic-semantic spectrum of both editing and film types in general, and in realizing that each is a valid form of the filmic art. Generally, these two modes of film communication are used in combination. The emphasis, however, is normally on telling a film story. Using the type of analysis suggested here, it seems possible to put together feature length films whose merit does not depend on the intricacy of plot, or the development of character, but on the impact of images and image connections.

END NOTES

[1]Huss and Silverstein, p. 32.

[2]Manoogian, p. 79.

[3]Spottiswoode, Film and Its Techniques, p. 107.

[4]Mascelli, p. 109.

[5]Mascelli, p. 135.

[6]Mascelli, pp. 149, 151.

[7]Mascelli, p. 177.

[8]Mascelli, p. 177.

[9]Mascelli, p. 151.

[10]Burder, p. 79.

[11]Mascelli, p. 151.

[12]Mascelli, p. 156.

[13]Mascelli, p. 97.

[14]Vorkapich, "Some Good Cuts," p. 4.

[15]Vorkapich, "Some Good Cuts," p. 4.

[16]Vorkapich, "Some Good Cuts," p. 4.

[17]Whitaker, pp. 115-116.

[18]Whitaker, p. 116.

CHAPTER VIII

SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS

> The future of the cinema depends on the films that are made, and not on theories. (Gavin Lambert)[1]

Film editing is the fundamental creative tool of the film-maker. Every aspect of film-making is in some way dependent on the capabilities of film editing. This thesis has attempted to define precisely what these capabilities are. This has been done by consulting pertinent empirical research, descriptive studies, and aesthetic theories.

Generally, the subjects for discussion were taken from the aesthetic literature, and the supporting facts came from empirical and descriptive studies. This led to a deceptive lack of emphasis on the actual influence of aesthetic writers. The reason for this is simple.

Perhaps five or six aesthetic writers have written something like, "fast cutting is exciting." However, that ends the consideration of fast cutting. This kind of "me too-ism" is the weakest kind of evidence. This leads the researcher to look for more solid evidence which may be found in the empirical and descriptive literature. When such evidence is available, it must be featured in the subsequent analysis.

So although the original reason for considering the effects of cutting-rate in the first place may have come from the aesthetic literature, the empirical studies provide stronger evidence than several aesthetic writers' opinions. This is true even though the empirical studies were stimulated in the first place by the aesthetic literature.

Suffice it to say that, although the basic core of information presented herein comes from empirical and descriptive studies, the inspiration for the thesis came solely from the aesthetic literature.

Summary

The thesis was designed to provide the following specific information: 1) a general description of the role of editing in film communication; 2) an inventory of the known effects of editing; 3) a means of predicting and designing editing effects; 4) a means for devising new editing techniques; and 5) a basis for understanding why traditional editing conventions communicate.

In Chapter I a comparison of film and reality led to a description of the unique characteristics of the medium. In Chapter II film editing was shown to be the primary means whereby the film-maker exploits these unique aspects of film. The basic editing process was defined and discussed.

Chapters III and IV provided an inventory of the known editing effects, an explanation of how editing communicates and a means of predicting and designing effects. Chapter V outlined an editing spectrum and suggested a new approach to film editing. In Chapter VI this new approach was further developed in a description of kinetic cuts. The operation of some traditional (semantic) editing conventions was explained in Chapter VII.

Recommendations for Additional Research

The most obvious deletion is the role of sound in editing. Although film is essentially a visual medium, sound is of critical importance to

editing and film-making in general. An example which immediately comes to mind is the "Dueling Banjos" sequence in Deliverance. In this scene, the intermingling of the high-spirited music and the image of the mongoloid child is a moving example of how music and image in combination can produce an effect with far more impact than either alone. Without the music, the image of the pathetic child would have been unbearably mawkish. Generally, the relationship of image and sound is a crucial issue in film-making.

Secondly, the Penn study on cutting-rate has left many questions unanswered. More elegantly designed studies need to be conducted to precisely define the effects of cutting-rate.

Third, Vorkapich rightly suggests a close study of the relationship of visual perception and the film experience. This was touched on briefly in the description of the phi phenomenon, but a more thorough examination seems in order. This is especially true in the case of intra-shot variables. In fact, intra-shot variables in general have been neglected. Other than the studies of Tannenbaum and Fosdick on camera angles and lighting and that of Shoemaker on lighting, little has been done in this area. Research of this type may lead to the discrimination of those shot variables having a bearing on shot intensity. This would make predictions based on the congruity principle more accurate.

There is also a need to explore further the function of the congruity principle itself. Apparent examples of the principle in operation have been cited. However, specific studies should be conducted to verify the observations here and to define the principle of film congruity.

Finally, the theoretical propositions suggested here will remain merely theoretical until put to the test of practical film-making. Whether an extended motion picture founded on kinetic effects can actually communicate is in question until some film-maker actually makes an acceptable film.

Conclusions

Various insights and facts dealing with film editing have been reviewed and organized. The most important distinction made was in describing the kinetic-semantic dichotomy which exists throughout the study of film. Briefly, kinetic is a term used to describe film techniques and effects finding their basis in the inherent characteristics of the medium. Semantic is a term used to describe those techniques and effects finding their basis in the literary arts. In terms of a single shot, kinetic effects are to be found in abstract visual patterns and the change in those patterns. Semantic effects are based on the normal condition that the shot is a "picture of something." In the development of film art, both kinetic and semantic techniques have coexisted. Each is a valid basis of film creativity. However, the semantic aspects of the film image have generally overshadowed the kinetic potentialities of film-making.

The concept of "kinetic cinema" is relatively new to the printed page, if not the screen. The best example of this type of film-making is most often found in television commercials. Although this may seem heresy, Slavko Vorkapich essentially agrees when he writes that commercials are "often . . . more cinematic than the whole feature films into which they are inserted."[2]

Generally, Vorkapich comes closer than anyone else to identifying a cinema art similar to that described here. Whereas his theory is based on the primacy of movement within the shot, the one presented here expands this to include any change within or between shots. Despite this limitation, Vorkapich provides strong support for the type of film-making which would result from kinetic analysis:

> At present we have no specific name for the kind of cinematic experience that, in my opinion, should be offered to discriminating movie-goers. On the formal-physiological level it would be a vivid kinesthetic experience, while on the 'content' level it would be a kind of poetic experience. . . .
>
> . . . . . .
>
> Poetic values in film can be achieved only if the referential aspects and literal content of the shots are transcended so that they acquire multilevel meanings, which cannot be verbally described. And this can come about only by creative selection of right imagery, in right movement, and in the right context. This insistence on the kinesthetic-poetic aspect of the ideal film does not preclude a new kind of dramatic experience where moods, tensions, and conflicts would be expressed--in visual-dynamic imagery, but not in histrionics, as is done today. For that, however, we will have to wait for a visual-kinetic-imagist Shakespeare to appear.[3]

This thesis has been an attempt to further define the dimensions of this new kind of "cinematic experience."

END NOTES

[1]Gavin Lambert, "Sight and Sound," Sequence, Summer (1950), rpt. in Film: A Montage of Theories, ed. Richard D. MacCann (New York: E. P. Dutton, 1966), p. 52.

[2]Vorkapich, "A Fresh Look," p. 221.

[3]Vorkapich, "A Fresh Look," p. 223.

LIST OF WORKS CONSULTED

LIST OF WORKS CONSULTED

Balázs, Béla. Theory of the Film: Character and Growth of a New Art. Trans. Edith Bone. New York: Dover, 1970.

Bauchens, Anne. "Cutting the Film." We Make the Movies. Ed. Nancy Naumberg. New York: Norton, 1937.

Bluestone, George. Novels into Film. Berkeley and Los Angeles: Univ. of California Press, 1966.

Bobker, Lee R. Elements of Film. New York: Harcourt, 1969.

Burder, John. The Techniques of Editing 16mm Films. New York: Hastings, 1968.

Burns, Dan. "Pixillation: Stop Camera Effects." Film Quarterly, 22, No. 1 (1968), 36-41.

Chiaromonte, Nicola. "A Note on the Movies," Encounter, 14, No. 3 (1960), 58-61.

Clair René. Reflections on the Cinema. Trans. Vera Traill. London: William Kimber, 1953.

Eisenstein, Sergei M. Film Form: Essays in Film Theory. Trans. and ed. Jay Leyda. New York: Harcourt, Brace, 1949.

Eisenstein, Sergei M. The Film Sense. Trans. and ed. Jay Leyda. New York: Harcourt, Brace, 1947.

Feldman, Joseph, and Harry Feldman. Dynamics of the Film. New York: Hermitage House, 1952.

Flaherty, Robert. "Film: Language of the Eye." Theatre Arts, 35, No. 5 (1951), 30-36.

Foley, Joseph M. "The Bilateral Effect of Film Context." Unpublished masters thesis, Univ. of Iowa, 1966.

Forsdale, Joan R., and Louis Forsdale. "Film Literacy." Audio Visual Communications Review, 18 (1970), 263-276.

Goldberg, Herman D. "The Role of 'Cutting' in the Perception of the Motion Picture." Journal of Applied Psychology, 35 (1951), 70-71.

Gregory, John R. "Some Psychological Aspects of Motion Picture Montage." Diss. Univ. of Illinois, 1961.

Hoban, Charles F., and Edward B. Van Ormer. "Instructional Film Research 1918-1950: Technical Report SDC 269-7-19." Port Washington, New York: Navy Special Devices Center, 1950.

Hovland, C. I., Arthur A. Lumsdaine, and Fred D. Sheffield. ed. Experiments in Mass Communication. Princeton: Princeton Univ. Press, 1949.

Huss, Roy, and Norman Silverstein. The Film Experience. 1968; rpt. New York: Dell, 1969.

Jacobs, Lewis, ed. The Movies as Medium. New York: Farrar, Straus, and Giroux, 1970.

Knight, Arthur. The Liveliest Art: A Panoramic History of the Movies. 1957; rpt. New York: New American Library, n.d.

Kracauer, Siegfried. Theory of Film. New York: Oxford, 1960.

Kuiper, John B. "An Analysis of the Four Silent Films of Sergei Mikhailovich Eisenstein." Diss. State Univ. of Iowa, 1960.

Kuiper, John B. "Cinematic Expression: A Look at Eisenstein's Silent Montage." Art Journal, 22, No. 1 (1962), 34, 36-39.

Kuiper, John B. "The Relationship Between Context and the Meaning of a Single Shot in a Motion Picture Sequence." Unpublished paper, Univ. of Iowa, Dept. of Speech and Dramatic Art, Division of TV-Radio-Film, 1958.

Lindgren, Ernest. The Art of the Film: An Introduction to Film Appreciation. 2nd ed. New York: MacMillan, 1963.

Manoogian, Haig P. The Film-Maker's Art. New York: Basic Books, 1966.

MacCann, Richard D. ed. Film: A Montage of Theories. New York: E. P. Dutton, 1966.

Mascelli, Joseph V. The Five C's of Cinematography. Hollywood: Cine-Graphic, 1966.

Monier, Pierre A. The Complete Technique of Making Films. New York: MacMillan, 1959.

Morgan, Clifford T. Introduction to Psychology. 2nd ed. New York: MacMillan, 1961.

Münsterberg, Hugo. The Photoplay: A Psychological Study. New York: D. Appleton, 1916.

Nilsen, Vladimir. The Cinema as Graphic Art. London: Newnes, 1936.

Nizhny, Vladimir B. Lessons with Eisenstein. Trans. and ed. Ivor Montagu and Jay Leyda. New York: Hill and Wang, 1963.

Osgood, Charles, George J. Suci and Percy H. Tannenbaum. The Measurement of Meaning. Urbana: Univ. of Illinois Press, 1957.

Penn, Roger. "An Experimental Study of the Meaning of Cutting-Rate Variables in Motion Pictures." Diss. Univ. of Iowa, 1967.

Penn, Roger. "Effects of Motion and Cutting-Rate in Motion Pictures." Audio Visual Communications Review, 19 (1971), 29-50.

Peters, Jan Marie L. Teaching About the Film. New York: Visual Arts Books, 1953.

Pryluck, Calvin. "Structural Analysis of Motion Pictures as a Symbol System." Audio Visual Communications Review, 16 (1938), 372-402.

Pryluck, Calvin. "Structure and Function in Educational Cinema: Final Report." Project No. 7-4-081. Washington: U.S. Dept. of Health, Education, and Welfare, 1969.

Pryluck, Calvin, and Richard E. Snow. "Toward a Psycholinguistics of Cinema." Audio Visual Communications Review, 15 (1967), 62-75.

Pudovkin, Vsevolod I. Film Technique and Film Acting. Trans. and ed. Ivor Montagu. London: Vision Press, 1958.

Pudovkin, Vsevolod I. "On Montage [O Montazhe]." Selected Articles [Izbrannye Statei]. Trans. Peter A. Dart. Moscow: Iskusstve, 1955. Rpt. in "Pudovkin's Film Theory," Peter A. Dart, Diss. State Univ. of Iowa, 1965, pp. 111-129.

Reisz, Karel, and Gavin Millar. The Technique of Film Editing. 2nd ed., New York: Hastings House, 1968.

Roemer, Michael. "The Surfaces of Reality." Film Quarterly, 18, No. 1 (1964), 15-22.

Rotha, Paul, and Richard Griffith. The Film Till Now: A Survey of World Cinema. 3rd ed., New York: Twayne, 1960.

Samuels, Charles T. A Casebook of Film. New York: Van Nostrand Reinhold, 1970.

Shoemaker, D. H. "An Analysis of the Effects of Three Vertical Camera Angles and Three Lighting Ratios on the Connotative Judgement of Photographs of Three Human Models." Diss. Indiana Univ., 1964.

Spottiswoode, Raymond. A Grammar of the Film. Rev. ed., Berkeley and Los Angeles: Univ. of California Press, 1950.

Spottiswoode, Raymond. Basic Film Techniques. Berkeley and Los Angeles: Univ. of California Press, 1948.

Spottiswoode, Raymond. Film and Its Techniques. Berkeley and Los Angeles: Univ. of California Press, 1965.

Stephenson, Ralph, and Jean R. Debrix. The Cinema as Art. Baltimore: Penguin, 1965.

Tannenbaum, P. H., and J. A. Fosdick, "The Effect of Lighting Angle on the Judgement of Photographed Subjects." Audio Visual Communications Review, 8 (1960), 253-262.

Tiemans, Robert K. "The Relationship Between the Length of a Motion Picture Shot and the Meaning that Is Communicated." Unpublished paper, Univ. of Iowa, Dept. of Speech and Dramatic Art, Division of TV-Radio-Film, 1959.

Vas, Robert. "Meditation at 24 Frames per Second." Sight and Sound, 35, No. 3 (1966), 119-124.

Vorkapich, Slavko. "A Fresh Look at the Dynamics of Film-Making." American Cinematographer, 53 (1972), 182-183, 192-194, 220-223.

Vorkapich, Slavko. "Some Good Cuts and Some Not So Good." American Cinemeditor, 22, No. 1 1972), 4-5, 15, 18-19.

Vorkapich, Slavko. "Toward True Cinema." Film Culture, 19, March 1959. Rpt. in Film: A Montage of Theories. ed. Richard D. MacCann. New York: E. P. Dutton, 1966.

Whitaker, Rodney W. "The Content Analysis of Film: A Survey of the Field, An Exhaustive Study of Quai Des Brunes, and a Functional Description of the Elements of the Film Language." Diss. Northwestern Univ., 1966.

Whitaker, Rodney W. The Language of Film. New Jersey: Prentice-Hall, 1970.

Worth, Sol. "Cognitive Aspects of Sequence in Visual Communication." Audio Visual Communications Review, 16 (1968), 121-145.

Worth, Sol. "Film as Non-Art." American Scholar, 35 (1966), 322-334.

VITA

John Preston Isenhour was born in Oak Ridge, Tennessee on August 16, 1944. At age six his family moved to Kingston, Tennessee where he received his primary and secondary education, graduating from Roane County High School in 1962. The following July he entered the United States Military Academy at West Point, New York and in June, 1966, received a Bachelor of Science Degree in Military Engineering.

After four years in the U.S. Army, spent primarily in South Vietnam and West Germany, he resigned from the Military Service and entered the Graduate School of the University of Tennessee in September 1970. He received the Master's Degree with a major in Communications in March, 1973.