

# CALCULATED MOVEMENTS

a film by LARRY CUBA

a formal study

Leslie Bishko

Art Education 752

February 27, 1989

## INTRODUCTION

"Calculated Movements," by Larry Cuba, is an exploration of qualities that result from the relationships of formal structures.

The piece is structured into five specific sequences. The sequences occur in the rondo musical format of theme and variation, and follow an A B A B A pattern.

"One of the most fundamental designs in music, the rondo is a structure consisting of a series of sections, the first of which recurs...between subsidiary sections, before returning finally to conclude, or round off the composition" 3.

Each repetition of a sequence is slightly varied. The variations impart distinct qualities so that each one has a separate feeling. Upon formal analysis we begin to see the continuity from one sequence to the next.

"This repeatability seems to constitute the essence of musical "forms," forms that strictly speaking are not "forms" in the sense of formal ontology, but rather "qualities" of a specific kind (we normally call them "shaping qualities"). Their specific "formalism" is characterized by the fact that their concrete sound-base may within certain limits be different while their identity is retained." 2.

In the analysis and criticism of cinema the term "mise-en-scene" is used to describe the elements that form a scene.

"In controlling the mise-en-scene, the director *stages the event* for the camera."

1.

This term can be applied to computer animation. The individual elements of an animation are composed by the artist/director. In "Calculated Movements" the visual, temporal and musical elements create a sense or quality that can be described as the mise-en-scene of the piece.

The mise-en-scene varies within the A B A B A pattern of repetition. However, from beginning to end the use of white rectangular forms against a black background is consistent. It is my assumption that the forms are being represented through the use of a two-dimensional computergraphic system. Variations in size, (length, width and depth,) are simulated by the use of a grey value, having the effect of a three dimensional form that recedes in space. This convention does not accurately simulate three-dimensional perspective.

The simplicity of the forms, in shape and tonality, allows the movement to become the primary component of the mise-en-scene. The forms travel within the constraints of paths that begin and end inside the screen space. At times the forms read as if they are made of white liquid being poured through a transparent trough. The paths follow a course limited to vertical, horizontal and diagonal routes. This restriction characterizes the quality that is generated by the movement. Limited by vertical, horizontal and diagonal directionality, the forms move about the screen, criss-crossing and overlapping one another. The interaction of the forms result in textures and shapes that are in constant flux and have a dynamic quality of motion. The moving forms are like individual notes of music; their interactions create chords.

The final element of the mise-en-scene is the music. The visual and musical elements are interconnected and follow the same structural pattern of theme and variation. The rela-

tionship between the two is both mutual and reflexive. It is difficult to resolve whether the inspiration for the visual elements preceded the musical inspiration, or vice versa. The combined visual and musical elements are experienced as a singular quality.

Even so, it can be said that the visual elements reflect the structure of music. The theme and variation format is an established musical structure. The sequences consist of sets of movement phrases, which in turn are made of the movements of simple forms. The combined elements of the mise-en-scene are layered, forming hierarchical relationships.

To simplify the descriptive process, the A and B themes will be discussed separately.

## **THE "A" THEME**

### **A1**

A long thin rectangular form enters the frame on a diagonal just inside the lower left corner. It travels up towards the opposite corner, but changes abruptly to the left, and begins to follow an angular path. At this point, another form enters, following the same path as the previous form. Forms continue to enter in this fashion, until twenty of them have begun the sequence. By this time, the path of the original form has taken a course that moves it through the entire screen space and exits through the corner opposite from the starting point. The effect of the forms following the same path, each one at a set distance from the next, fills the screen space with motion. The moving forms suggest a larger pattern, yet it is never grasped due to the continuous changes. The forms intersect, pass through and sometimes become parallel to each other for brief moments. In one part of the path, the

forms move in a tight zig zag, which creates the illusion of an increase in velocity. Form gives a specific quality to the motion.

The music in this sequence sounds like it is being performed on a xylophone. The phrasing is made of regularly paced notes, and repeats with variation. The range of notes is limited, and specific notes within that range are used. The intervals between the notes follow an oriental tonal system. 2. The music has a continuous flow, like the constant motion of the forms.

## **A2**

The next version of the A theme uses longer forms. They move along the same path as the forms in A1. The forms are in staggered rows of six. Each form grows into the path motion as if appearing from a single point on the screen. They are close together, and move through the path as a dense group. A total of five rows enter the screen. They are each close behind the previous one, and soon all the forms appear woven together. The total effect is a moving texture that defines the boundaries of a moving shape.

In the second musical variation, the xylophone repeats a twelve note phrase. Two more "subphrases" are layered, like the layering of the staggered moving rectangles. Again, the visual and musical elements reflect each others structure.

## **A3**

In the final variation of the A theme, the format of five rows of six staggered forms is repeated. However, the forms are considerably shorter in length. This allows them to

complete the length of the path in a shorter amount of time. The overall effect resembles a school of fish, or a flock of birds. At the end of the sequence, the forms appear to hop or bounce before disappearing.

The notes in this last musical sequence are of a higher pitch than before. The complexity of A2 is used again, with even more layers. The feeling of this variation is quick and light.

## **THE "B" THEME**

### **B1**

The B theme uses the same fundamental elements as the A theme, yet the qualities are strikingly different.

The first sequence begins with thin horizontal lines that appear towards the bottom of the screen space, quickly filling the screen. They remain for the duration of the sequence, providing a simple background. The forms occur rapidly, making their way through paths whose beginnings and endings are within the screen space. There are many types of variations in the ways the forms are grouped, how they move along paths and in their relative size.

The occurrence of the forms corresponds directly to the music. There are several different types of sounds that have a limited duration, in contrast to the continuous quality of the A theme. A soft hum provides an underlying tonality like the backdrop of the horizontal lines. Loud mechanical sounds are accompanied by wide slow moving forms. A tinkling sound coincides with very thin, fast moving forms that cross each other and fill the screen before

ending. Sometimes the sounds are simultaneous; we see groups of moving forms, each group seeming to represent a specific aspect of the sound.

The sounds form a phrase which is repeated. With each repetition it becomes noticeable that the corresponding visual elements are constantly varied. The visual elements are also being repeated, but the paths of motion change, or the size and speed of the forms differ. This variation creates tension between the visual and musical elements. Since the occurrence of visual and musical elements are synchronized, the tension evolves from the constant changes in the visual elements. The viewer's expectations are that the two will always happen simultaneously, yet each variation defines a new quality within that expectation.

## **B2**

The second variation of the B theme is slower and more quiet. A different phrase of sounds is used, having a slightly lower range of pitch than B1. The vocabulary of motions are derived from the first variation. Movement of individual groupings of forms are more isolated, and fill more of the screen space.

## **INTERPRETATION**

The formal elements in "Calculated Movements" are used in a structural way. Through descriptive analysis the structure becomes more clearly defined. The structure provides boundaries that are explored throughout the piece. Although the structure is not imperative to the aesthetic experience, an awareness of it allows the viewer to become more engaged.

"...Bach's "classical" music is characterized not only by a high degree of rationality

in construction and a hierarchy of mutually entwined musical forms, but also by the clearly discernible emotional and even metaphysical qualities. Only through this rational ordering do we glimpse the full depth of the emotional, irrational element." 2.

The quality of the A theme is quiet and contemplative. The moving forms engage the viewer in visual activity: tracing the path of the forms, the eye will find brief resting places where the forms cross or become parallel. The continuity of the music has the effect of allowing the viewer to meditate on the moving forms. Watching these sequences is like being in a quiet place near a creek, becoming mesmerized as the water passes over stones.

The B theme is a harsh contrast to the A theme. The sounds are loud, mechanical and almost percussive in their duration. As the movement and sounds are directly related the viewer develops expectations as to what will be occurring next. The variation of the forms in relation to the sounds keeps the viewer engaged as the expectations are continuously redefined. This theme is also contemplative, but in a more active way. It is like being in a city, where many things happen at once.

## **EVALUATION**

The computerized execution of "Calculated Movements" facilitates its formal structure. Once an initial vocabulary of forms in motion was developed, they could be varied and reused quite simply through computer assisted techniques. The capabilities of the computer may have dictated the nature of the formal structures.

The simplified elements used in "Calculated Movements" suggest techniques and approaches



that can be used to make complex creative decisions. To expand upon the use of color and space would make a completely different statement. The exploration that takes place within limitations in this piece is made accessible by virtue of its simplicity.

The formal structures, technical approach and creative statement are unified; we experience the piece as seamless and aesthetically pleasing. Traditional filmmaking constructs a temporal and visual space, drawing the viewer in. "Calculated Movements" evokes a space through the combined qualities of motion and music. The hierarchical structures used in the piece seem to have parallels in nature and human experience. Fibers are spun into yarn and woven into fabric; cells form the tissues of living organisms. We have a natural inclination to appreciate the workings of such things. The piece appeals to us on this level, which becomes the vehicle for bringing out the qualities we experience. Although identification of these qualities enhances the richness of our experience, the piece puts forth these qualities in such a way that to simply experience them is enough.

## BIBLIOGRAPHY

1. Bordwell, David and Thompson, Kristin Film Art

Addison-Wesley Publishing Company

February, 1980

2. Ingarden, Roman The Work of Music and Problem of its Identity

University of California Press

Berkeley and Los Angeles, California

copywrite 1986 by Jean Gabbert Harrell

3. The New Grove Dictionary of Music and Musicians

Macmillan Publishers Limited, 1980

Vol. 16, pp. 172-177, and Vol 9, p. 512