

ABSTRONICS

An Experimental Filmmaker Photographs

The Esthetics of the Oscillograph

By MARY ELLEN BUTE

"Abstronics" is what Lewis Carrol would have called a portmanteau word. It is composed of the first one and a half syllables of "abstractions" and the last one and a half syllables of "electronics." The letter "r," fortuitously, is the hinge of the two parts.

This word, "abstronics," was suggested to me by Albert Tomkins and aptly connotes this important fact: today it is possible for invisible events in the sub-atomic world to be made to have esthetic manifestations which an artist can control, and, via motion pictures, organize into an interesting and meaningful visual experience.

Before I explain further what this portends, and before I describe the two moving pictures I have made electronically, it might be helpful if I set down a few biographical notes that will make more comprehensible how and why I have come to explore the artistic possibilities of electrons.

For years I have tried to find a method for controlling a source of light to produce images in rhythm. I wanted to manipulate light to produce visual compositions in time continuity much as a musician manipulates sound to produce music

It all started while I was a pupil of the remarkable painter and teacher in Houston, Emma Richardson Cherry. Mrs. Cherry then arranged for me to study at the Pennsylvania Academy of Fine Arts under Henry McCarter. At that time everyone was concerned with Cubism, Impressionism and other styles that derive from the desire to obtain the illusion of movement on canvas.

It was particularly while I listened to music that I felt an overwhelming urge to translate my reactions and ideas into a visual form that would have the ordered sequence of music. I worked towards simulating this continuity in my paintings. Painting was not flexible enough and too confined within its frame.

After leaving the Pennsylvania Academy I explored the possibilities of color organs. Most of these used optical devices for the projection of color and images but the end results were disappointing – amorphous shapes far from the creative expression I was seeking.

At about this time Leon Theremin was demonstrating the musical instrument that bears his name and I discussed with him the idea of developing a device for the free control of light and form in movement, synchronized with sound.



Mary Ellen Bute's eye dominates her ear and hand

I began to work with him and a year later, on January 31, 1932, we gave our first demonstration of "The Perimeters of Light and Sound and Their Possible Synchronization." This was an early use of electronics for drawing. Well begun, this work was short lived because of extreme lack of funds. Theremin's precipitous departure from this country on a Soviet ship killed all hope of resuming this work with him.

At the same time I had been working with Joseph Schillinger using his theory of mathematical composition as applied to the kinetic arts. I learned to compose paintings using form, line and color, as counterparts to compositions in sound, but I felt keenly the limitations inherent in the plastic and graphic mediums and determined to find a medium in which movement would be the primary design factor. Motion picture sound film seemed to be the answer and I began to make films, most of them abstract in content.

Of the ten films I made, two were not abstract; one, *Escape*, was based on a simple plot set against a musical background, and employed geometric figures for the action; the other was about the parabolic curve. The abstract films were made by the animation technique, that is, by use of countless drawings on paper. In this "cartoon" technique, the spontaneity of the artist's concept and design becomes extremely attenuated.

By good chance, Dr. Ralph Potter, of the Bell Telephone Laboratories, is interested in abstract films and recently asked to see my work. Here again was an opportunity to enlist a scientist in finding means by which to employ a controlled source of light as a drawing instrument.



I told him that I had long thought that the oscilloscope (used for testing radio, TV and radar equipment) offered a solution. Dr. Potter said he had thoughts of it too. He designed an electronic circuit for such an application of the oscilloscope. The equipment based on his design was then engineered and constructed.

By turning knobs and switches on a control board I can "draw" with a beam of light with as much freedom as with a brush. As the figures and forms are produced by light on the oscilloscope screen, they are photographed on motion picture film. By careful conscious repetition and experiment, I have accumulated a "repertoire" of forms. The creative possibilities are limitless. By changing and controlling the electrical inputs in the 'scope an infinite variety of forms can be made to move in pre-determined time rhythms, and be combined or altered *at will*.

Beautiful Lissajous* curves, e.g. can be put through a choreography that inspires – and startles – the imagination. The resulting beauty and *movement* contain intimations of occurrences in the sub-atomic world that hitherto have been accessible to the human mind merely as mathematical possibilities. I venture to predict that the forms and compositions artists can create on the oscilloscope, and organize and preserve on motion picture film, will not only give esthetic pleasure to all kinds of men and women in all climes and times but will help theoretical physicists and mathematicians to uncover more secrets of the inanimate world.

The figures and forms on the oscilloscope can be made to move on the horizontal and vertical planes, toward or away from the spectator; their shapes can be varied as much and as often as one pleases; the tempo of their movements can be changed at will (the physics of these tempos is a study in itself); luminescence and shadow can be deployed; and the illusion of 3 dimensional space can be aroused.

And all this can be synchronized with music.

The two abstronic films I have made are based on the music of "Hoe Down" by Aaron Copeland and "Ranch House Party" by Don Gillis. Because this music is simple rhythmically, clear and sharp, I thought it suitable for my first experiment in this new art medium. I could not, *as yet*, have dealt with the problems posed by, say, Bach's "Sheep May Safely Graze," even though I based one of my abstract films on a recording of it Leopold Stokowski made for me of his own arrangement. It music is too intricate for a first exploratory venture into an electronic visual interpretation.

I have put my first two abstronic films together into one and called it *Abstronic*. It is a Ted Nemeth Studios production.

The figures and forms in *Abstronic* have been colored by hand. But I have been promised three-color electronic tubes. If these prove successful, the last animation technique I will employ can be eliminated.

* Curves resulting from the combination of two harmonic motions, named for French scientist Jules A. Lissajous (1822-80).

Spelling errors retained as in the original

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