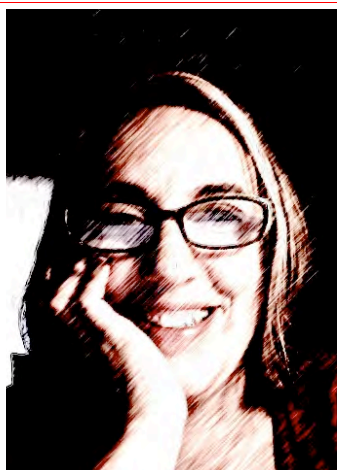


Michele Leigh

Paper : Animated Music: Early Experiments with Generative Art**Topic: Animation****Authors:**

Michele Leigh,
 Department of Cinema &
 Photography
 Southern Illinois
 University Carbondale
 www.siu.edu

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Abstract:

This paper will explore the historical underpinnings of early abstract animation, more particularly attempts at visual representations of music. In order to set the stage for a discussion of the animated musical form, I will briefly draw connections to futurist experiments in art, which strove to represent both movement and music (Wassily Kandinsky for instance), as a means of illustrating a more explicit desire in animation to extend the boundaries of the art in terms of materials and/or techniques

By highlighting the work of experimental animators like Hans Richter, Oskar Fischinger, and Mary Ellen Bute, this paper will map the historical connection between musical and animation as an early form of generative art. I will unpack the ways in which these filmmakers were creating open texts that challenged the viewer to participate in the creation of meaning and thus functioned as proto-generative art. Finally, I will discuss the networked visual-music performances of Vibeke Sorenson as an artist who bridges the experimental animation tradition, started by Richter and Bute, and contemporary generative art practices.

This paper will lay the foundation for our understanding of the history/histories of generative arts practice.

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Contact:
mtorre@siu.edu

Keywords:
 Animation, Music, New Media

Animated Music: Early Experiments with Generative Art

Dr. Michele Leigh, PhD

*Department of Cinema & Photography, Southern Illinois University Carbondale,
Carbondale, IL, USA
e-mail: mtorre@siu.edu*

Premise

This paper will explore the historical underpinnings of early abstract animation, more particularly attempts at visual representations of music. In order to set the stage for a discussion of the animated musical form, I will briefly draw connections to futurist experiments in art, which strove to represent both movement and music (Wassily Kandinsky for instance), as a means of illustrating a more explicit desire in animation to extend the boundaries of the art in terms of materials and/or techniques. By highlighting the work of experimental animators like Hans Richter, Oskar Fischinger, and Mary Ellen Bute, this paper will map the historical connection between musical and animation as an early form of generative art. I will unpack the ways in which these filmmakers were creating open texts that challenged the viewer to participate in the creation of meaning and thus functioned as proto-generative art. Finally, I will discuss the networked visual-music performances of Vibeke Sorenson as an artist who bridges the experimental animation tradition, started by Richter and Bute, and contemporary generative art practices. This paper will lay the foundation for our understanding of the history/histories of generative arts practice.

Animated Music: Early Experiments with Generative Art

Dr. Michele Leigh, PhD

*Southern Illinois University Carbondale
mtorre@siu.edu*

“When situated as a deep-time project, history becomes a discovery process with open-ended results and multiple points of entry. If we consider the convergence of technology and the expansion of cinematic arts, the opportunity for new forms and new voices increases exponentially.” Vicki Callahan [1]

In the above quote from *Reclaiming the Archive*, Vicki Callahan is arguing that we move away from history as a strictly linear series of events, instead she posits that we look at history as a database of occurrences/moments that overlap, intersect, and speak to each other in unique ways. Her statement could as easily have been written about the confluence of abstract animation, music and generative art, as it was about

history. This paper will explore multiple entry points in the history of abstract animation in order to highlight the historical underpinnings of selected attempts to visually represent music. By drawing attention to the work of experimental animators like Hans Richter, Oskar Fischinger, Mary Ellen Bute, and Vibeke Sorenson this paper will map the historical connections between music and animation as forms of generative arts practice.

Painting becomes one of the many entry points for talking about the history of abstract animation, music and generative art. Each of the animators I will discuss began their careers in painting and traditional arts practices. Lines of influence for animators Richter, Fischinger, Bute and Sorenson with avant-garde experiments in painting can be mapped directly through their involvement with these experiments themselves or indirectly through artistic training in art school. Early Twentieth Century experiments in painting by groups such as the Der Blaue Reiter (Blue Rider), Cubists, Futurists and Suprematists, often revolved around attempts to capture the dynamism of modern life: the light, color, form and movement of the urban experience on the canvas. Combining a fascination with spiritualism and symbolic uses of color, one of the founding members of Der Blaue Reiter group, Vassily Kandinsky, also strove later in his career to merge visual imagery, color and music. For Kandinsky “[the painter] naturally seeks to apply the methods of music to his own art. And from this results that modern desire for rhythm in painting, for mathematical, abstract construction, for repeated note, for setting colour in motion.” [2]

The fruit of Kandinsky’s application of musical methodology to painting can perhaps best be seen in works like *Composition VI* (1913) and *Yellow Accompaniment* (1924). The titles of the pieces alone, immediately call to mind musical arrangements and serve to reinforce the connection in Kandinsky’s mind between painting and music. “Hearing tones and chords as he painted, Kandinsky theorized that (for example), yellow is the colour of middle C on a brassy trumpet; black is the colour of closure, and the end of things; and that combinations of colours produce vibrational frequencies, akin to chords played on a piano.” [3] The synaesthesia with which Kandinsky purportedly painted also functions in the mind of the viewer. For example in *Composition VI*, one can hear chaotic musical accompaniment of this apocalyptic painting, the struggle between light (high notes) and darkness (low notes). The viewer sees the length of lines corresponding to length of notes; curving lines accounting for fluctuations in tempo; and the jumble of colors become the instruments competing with each other to be heard, the cacophony becomes overwhelming.

The desire to visually represent music and movement in painting coincided with the birth of cinema and this filmmaking naturally became a place where artists could explore visual music in a time-based medium. This new technology provided artists with a means of illustrating a more explicit desire to extend the boundaries of the art in terms of materials and/or techniques. Within filmmaking, animation, more specifically abstract animation became the place where artists could experiment with issues such as temporality, non-linearity, spirituality, dimensionality, visuality and of course musicality. These experiments range from the purely formal investigations of

animators like Mary Ellen Bute (1906-1983) and Hans Richter (1888-1976) to quests “for expanded consciousness and spiritual fulfilment” with animators like Oskar Fischinger (1900-1967) [4] and Vibeke Sorenson (1954-present).

Mary Ellen Bute’s experiments with animation arose, in part, out of an attempt to “find a method for controlling a source of light to produce images in rhythm.” [5] It was during her work with musicologist-mathematician-painter Joseph Schillinger, Bute says she “learned to compose paintings using form, line and color, as counterparts to compositions in sound, but [she] felt keenly the limitations inherent in the plastic and graphic mediums and [became] 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.” [6] Of the 16 films that Bute created during her 20-year career, 14 of them are abstract experiments with light and sound. While little may be known of Bute now (outside academic circles), her films at the time were widely disseminated, often showing before feature films in theatres and many of them even premiering at Radio City Music Hall.

Her earliest animated works, like her 1939 film *Spook Sport* (made with the help of Canadian animator Norman McLaren) were made using traditional animation techniques – innumerable drawings done on paper and individually photographed. Bute’s 1952 seven minute, hand-colored film *Abstronic* with Aaron Copland's "Hoe Down" and Don Gillis's "Ranch House Party," solidified her place in animation history as both a “America’s foremost innovator of abstract animation . . . [and as] a pioneer in electronics imagery.” [7] It was in this film that Bute was finally able to use light in dialogue with musical accompaniment.

Working with Dr. Potter from Bell Telephone Laboratories to adapt an oscilloscope for artistic rather scientific purposes, Bute, “By turning knobs and switches on a control board [she could] ‘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, [she had] accumulated a ‘repertoire’ of forms. The creative possibilities are endless.” [8] Bute’s database of oscilloscope images, were both generated by her contemporary music choices and at the same time they generate an experience of the music that is unique. The flowing oscilloscope images provide an ethereal, fluidity to the animation, at times suggesting three-dimensionality. Not only are the creative possibilities endless, the possible responses that the various combinations of image and sound generate in the viewer are also endless.

German filmmaker Hans Richter also hoped to generate a unique and endless supply of viewer responses to his ground breaking 1921 film *Rhythm 21*. Prior to making *Rhythm 21*, Richter was peripheral member of Der Blaue Reiter and later participated in the Cubist and Dadaist movements in art. In Zurich he met Swiss artist Viking Eggeling and in 1918, Richter & Eggeling worked together to “systematically study the underlying principles of rhythm in painting ... they completed a series of abstract drawings – variations on a theme – in which they created numerous permutations of basic compositional elements: time, shape, and so forth”. [9] They took the most successful drawings and laid them out on a scroll,

which could then be 'read' like a sentence or like hieroglyphs on an ancient Egyptian papyrus. The images could then be filmed using a single frame process and while Eggeling went on to utilize this format for his 1924 film *Symphonie Diagonale*, Richter quickly realized the limitations of this method, it's inability to move past the painterly into the filmic. [10]

Rhythm 21, is not only one of the first abstract animations to be screened, it is also Richter's first attempt at embracing the rhythmic potential/qualities of cinema. In the film, Richter utilized "the square (or rectangle) as the simplest way of dividing the square film-screen. The simple square gave me the opportunity to forget about the complicated matter of our drawings and to concentrate on the orchestration of movement and time." [11] Shooting one frame at a time, the film itself was made by "manipulating cut-out paper squares under the camera and recording changes one frame at a time. During the duration of this film, which ran for a little more than a minute, these squares moved, expanded, contracted and changed tone in a carefully orchestrated kinetic composition." [12]

It is through this planned arrangement of the squares and rectangles that Richter is able to create a sense of rhythm. This rhythm however is not based on any pre-established or recorded music, instead the flow of images across and around the screen is meant to generate a sense of rhythm/music in the minds of the viewers. Viewing the film takes on a meditative quality. Through the use of shape, size, shade and movement Richter creates a rhythmic database, or what animator Norman McLaren referred to as a canon. McLaren wrote, "In music the canon astonishes us. Just think! A single theme is used to accompany itself, two, three, or four times; it need only be staggered or overlapped in relation to itself, and, according to the method used, we get a network full of surprises!" [13] Richter builds this network from his rhythmic database, yet despite his careful orchestration, he requires the participation of the viewer who must make sense of and be mindful of the formal manipulations in order to generate their own rhythm.

Borrowing some of the formal aspects established by Richter, Oskar Fischinger's *An Optical Poem* (1937) combines simple geometric shapes with movement and color to evoke the music of Franz Liszt's *Second Hungarian Rhapsody*. Prior making *An Optical Poem*, Fischinger had an extensive career making abstract animation in Germany; inventing a special device which allowed him to create his experimental cut wax films, he played with stereoscopic imagery and there is "evidence that Fischinger produced several multi-projection film displays – an early for of installation art – at his studio around 1926 and also showed films as part of *Farblichtmusik* (Color, Light, Music), a multi-media presentation staged by composer Alexander Laszlo." [14] Fischinger is also the most prolific of the animators I am speaking about, with over 50 animated films made during his 30-year career as a filmmaker. Perhaps more important than the bulk of his work, is the way in which through him, the history of abstract animation intersects with mainstream Hollywood filmmaking (the segment he worked on for Disney's *Fantasia* and his time at Paramount and Metro-Goldwyn-Mayer).

One of Fischinger's most well known films is *An Optical Poem*, the only film he made for MGM. Like Richter, Fischinger uses cut-outs, his however are mounted on clear

wire and he moves them on multiple planes in front of the camera, allowing him to create a sense of dimension, at varying speeds/tempos to accompany the music by Liszt. Film historian, William Moritz describes how the shapes move in *An Optical Poem* – the squares, rectangles, triangles, and circles “move in irregular clusters like traffic in a market place, they march, they dance, they fly, they orbit each other in twos and threes and fours, they melt into each other, they recoil suddenly away from each other, they expand and contract rhythmically and flicker, alone, together, and across stunning multi-plane perspectives. The ‘meaning’ is for each viewer to contemplate: *An Optical Poem* is an instrument for meditation – microscopic, universal, personal.” [15]

The meditative quality generated by *An Optical Poem* is established not only through the careful utilization of Fischinger’s of shapes, movements and editing rhythms, but also through his use of color. Shot in glorious Technicolor, the film is a study in synaesthetic sound. Fischinger takes full advantage of the richness of the Technicolor stock to accentuate the connection between shape, color (red, blue, yellow, green and their myriad variations), movement and sound. The strength of the connection to synaesthesia is that the film functions as a beautiful piece of meditative filmmaking just as well without the sound as with.

The contemporary work of Vibeke Sorenson builds on the formalism of Richter, the fluidity of Bute and the meditative qualities of Fischinger. In a sense, each of these early filmmakers becomes one of the multiple entry points that speak to and are spoken to by the digitally generated work of Vibeke Sorenson. As an architecture student in 1971 Sorenson started contemplating the possibilities of computer generated imagery and electronic sound as a form of artistic expression. According to Sorenson, she “envisaged [much like Mary Ellen Bute] an advanced light-based art form, a kind of three-dimensional painting that would come off the canvas, surround [her], and move in response to [her] commands, similar to the way a musician uses an instrument to control and shape the parameter of sound.” [16] In an effort to achieve that goal, Sorenson has worked with scientists to develop new technologies, among them an interactive stereoscopic animation system conceived at the San Diego Supercomputer Center.

Sorenson’s 1991 stereoscopic film *Maya*, with stereo music by Rand Steiger and Tim Labor, utilizes the new technology developed at SDSC and allows her light-based imagery to literally jump off the canvas/screen with the illusion of three-dimensionality. According to Sorenson, with *Maya* (Hindu for illusion, it also implies the liminal space between illusion and reality) “in terms of visual and spatio-temporal form, [her] intention was to use sustained permutations of light, color and shape to create an experience that is reflective of life and the natural cycles that repeat continuously.” [18] She goes on to note that the film “on one level pays homage to the continuing tradition of abstract art and to the liberating effect of new and developing technology. On another level it’s a personal meditation, an introspective work that focuses on [her] own inner rhythms and spirit.” [17] The homage that Sorenson speaks about can be seen, not only in her use of geometric shapes that call to mind films by Richter, Eggeling and Fischinger, the fluid movement of the light

shapes across the screen calls to mind the electronic/digitally generated images of Bute, John Whitney and Len Lye.

Like Kandinsky and Fischinger, Sorenson's use of color has synaesthetic qualities; the fluctuations between rich hues, especially the reds and blues of *An Optical Poem*, shades of pastels and hints of the metallic all call to mind sounds and tones generated by the electronic instruments. The synaesthesia also speaks to the second level Sorenson discusses in relation to *Maya*, that of personal meditation, both her own and the viewer's as well. The ethereal music composed for the film generates and accentuates the meditative process, drawing the viewer in as the images float, soar and mutate across the screen.

This film, like the other films discussed encourages and even requires an active spectator to participate in making sense of the combinations of color, image, movement and sound. According to animation scholar Maureen Furniss, abstract animation serves "as an 'open text', which leads beyond the film itself . . . challenge[s] the viewer to participate in the process of creating meaning." [19] In this sense, Sorenson's film *Maya*, becomes one of the multiple entry points into history posited by Callahan at the beginning of this paper. The film is both a database of sound/image and through its intertextuality it is also a database of the intersections, overlappings and duplications of film history. I would also argue that it is this open-endedness, which connects abstract animation with generative art practices.

I would like to close with Vibeke Sorenson's thoughts regarding the future of computer stereoscopy and interactive media systems, Sorenson notes, "This kind of electronic connectivity could lead to the dissolution of the traditional art triad with the artist, the object, and the audience forming a new type of relationship that emphasizes interactive participation. Object making, in this sense would be totally virtual. Forms and figures would be capable of moving within a mutable and multidimensional environment without physical limitations or the constraints of linear time. In this context, on-line forms of stereoscopic imaging would be constructed from multiple and diverse sources, generating a dynamic feedback process that would potentially allow us to see others and ourselves during the act of creation." [20] For Sorenson, the future of abstract animation mirrors speaks to Callahan's view of cinematic history, as becoming innovative, interactive and democratic.

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