

1911 Prometheus

Uma das experiências mais conhecidas de relação entre cor e som é a peça de Alexander Scriabin, Prometeus, O poema do fogo. Apesar de em 1911 provavelmente ela não ter sido executada da maneira como concebida, devido a problemas técnicos, trata-se da primeira composição (e até hoje uma das mais elaboradas) a propor uma estética baseada no diálogo entre as partes musicais e tratamentos com cor do ambiente onde a peça é executada. Para esta finalidade, Preston Millar, um especialista em iluminação que trabalhava na Modest Altschuler, criou a Cromola. O dispositivo continha 15 teclas que operavam doze luzes coloridas diferentes. Como no caso do órgão de cor de Rimington, não havia mapeamento entre as cores e sons, pois o objetivo do instrumento era permitir que Scriabin executasse sua partitura.

Numa apresentação feita em Fevereiro de 2010, Anna Gawboy, então aluna de doutorado da Yale School of Music e especialista no compositor Russo, procurou concretizar a concepção de Prometheus. Para obter o resultado desejado, ela trabalhou em parceria próxima com Toshiyuki Shimada, maestro da Yale Symphony Orchestr, e Justin Townsend, um designer de luz premiado. Anna e Justin passaram um ano desenvolvendo ideais e preparando a performance, mas a maioria do trabalho de iluminação foi feito apenas dias antes da apresentação, quando uma versão recriada da Cromola estava disponível para executar as partes planejadas por Scriabin.

O projeto de Scriabin foi de uma ambição e escopo incomparáveis, mas estava inserido num contexto em que, no início do século 20, beneficiando-se do recente surgimento do filme, muitos artistas começaram a experimentar com as possibilidades de diálogo entre som e imagem, dando origem ao que ficou conhecido como Visual Music. Por isso, é possível identificar duas tradições separadas, que a esta altura começam a dialogar. A primeira delas é a da expansão da música de concerto, pela criação de instrumentos que permitem a execução conjugada de cor e som. A segunda delas é o diálogo das artes visuais com o universo da sinestesia, com imagens (e depois imagens em movimento) que vão buscar composições capazes de expressar qualidades sonoras por meio das imagens.

1911 Prometheus, the Poem of Fire, Scriabin

Em 1911, Kandinsky publica *Do Espiritual na Arte*. Em suas discussões sobre as características das cores, ele recorre a comparações com o som, inserindo seu livro entre alguns dos primeiros textos a elaborar de forma sistemática o problema da relação entre cor e som.

Duas grandes divisões se apresentam de imediato:

1º – o calor ou a frieza do tom colorido;

2º – a claridade ou obscuridade desse tom.

Distinguem-se, para cada cor, quatro tons principais. A cor pode ser: I. *quente* e, além disso, 1) *clara* ou 2) *escura*; II. *fria* e, ao mesmo tempo, 1) *clara*, ou 2) *escura*.

Cumprir entender por calor ou frieza de uma cor sua tendência geral para o amarelo ou para o azul. Essa distinção opera-se numa mesma superfície e a cor conserva seu próprio tom fundamental. Esse tom torna-se mais material ou mais imaterial. Produz-se um movimento horizontal: o quente sobre essa superfície horizontal tende a aproximar-se do espectador, tende para ele, ao passo que o frio se distancia.

Mesmo as cores que provocam esse movimento horizontal de outra cor são igualmente influenciadas pelo mesmo movimento. Todavia, outro movimento as diferencia nitidamente em seu valor interior: elas constituem o *Primeiro Grande Contraste* em relação a esse valor interior. A tendência da cor para o quente ou o frio é, portanto, de importância interior e de uma significação consideráveis.

O *Segundo Grande Contraste* é constituído pela diferença entre o branco e o negro, cores que formam o segundo par dos quatro tons fundamentais pela tendência da cor para o claro e o escuro. Também aqui o mesmo movimento – em direção ao espectador e, em seguida, distanciando-se dele – anima o claro e o escuro. Movimento não mais dinâmico, porém estático e rígido (ver o Quadro I).

O segundo movimento, o do amarelo e do azul, que constitui o primeiro grande contraste, é o movimento excêntrico ou concêntrico<sup>32</sup>. Consideremos dois círculos do mesmo tamanho, um pintado de amarelo, o outro de azul. Se fixarmos a vista nesses círculos, perceberemos rapidamente que o amarelo se irradia, que adota um movimento excêntrico, e aproxima-se quase visivelmente do observador. O azul, ao contrário, é animado de um movimento concêntrico que se pode comparar ao de um caracol que se retrai em sua casca. Distancia-se do observador. O olho é como que traspassado pelo primeiro círculo, ao passo que parece afundar-se no segundo. Esse efeito acentua-se com o afastamento das duas cores, uma clareando, a outra escurecendo. O efeito do amarelo aumenta à medida que fica claro (ou, muito simplesmente, se lhe for misturado o branco). O do azul aumenta se escurece (misturando-se o preto). Esse fenômeno adquire ainda mais importância se se observar que o amarelo tem tal tendência para o claro, que não pode existir amarelo muito escuro. Pode-se

mais importante de se considerar que o amarelo é mais próximo para o claro, que não pode existir amarelo muito escuro. Pode-se dizer, portanto, que há uma afinidade profunda – física – entre o amarelo e o branco, assim como entre o azul e o preto, visto que o azul pode atingir uma profundidade que confina com o preto. Além dessa semelhança inteiramente física, uma semelhança de

certo modo moral diferencia, de forma muito acentuada, em seu valor interior, os dois pares (amarelo e branco, de um lado, azul e preto, do outro), e aparenta estreitamente os dois membros de cada um deles (cf. *infra* o que é dito do preto e do branco).

Quando se procura tornar o amarelo – cor tipicamente quente – mais frio, vemo-lo adquirir um tom esverdeado e perder logo os dois movimentos que o animam, o horizontal e o excêntrico. O amarelo ganha então um caráter doentio, quase sobrenatural, tal qual um homem transbordando de energia e de ambição, mas que

circunstâncias exteriores paralisam. O azul tem um movimento totalmente oposto e tempera o amarelo. Finalmente, se se continuar adicionando o azul, os dois movimentos antagônicos anulam-se e produzem a imobilidade, o repouso absoluto. Aparece o verde.

Resultado idêntico com o branco misturado ao preto. Ele perde sua consistência e resulta geralmente em cinzento, muito próximo do verde como valor moral.



— Mas o amarelo e o azul contidos no verde, como forças mantidas em xeque, podem voltar a ser atuantes. Há no verde uma possibilidade de vida que falta totalmente no cinzento. A razão disso é que o cinzento compõe-se de cores que não possuem força verdadeiramente ativa (capaz de se movimentar), mas que são, ao mesmo tempo, dotadas de capacidade de resistência imóvel e de uma imobilidade incapaz de resistência. (Imagine-se uma parede indo até o infinito, de uma espessura infinita e um imenso buraco sem fundo.)

— As duas cores que constituem o verde são ativas, possuem movimento em si mesmas. Já se pode, portanto, em teoria, determinar de acordo com o caráter desses movimentos qual será a ação espiritual das duas cores. E chega-se assim ao mesmo resultado que ao procedermos experimentalmente e ao deixarmos as cores agirem sobre nós. Efetivamente, o primeiro movimento do amarelo, sua tendência para ir *na direção* daquele que olha, tendência que, aumentando a intensidade do amarelo, pode chegar até a incomodar; e o segundo movimento, o salto para além de todo limite, a dispersão da força em torno de si mesma, são semelhantes à propriedade de se precipitar inconscientemente sobre o objeto e se propagar em desordem para todos os lados, que toda força material possui. Considerado diretamente (numa forma geométrica qualquer), o amarelo atormenta o homem, espicaça-o e excita-o, impõe-se a ele como uma coerção, importuna-o com uma espécie de insolência insuportável<sup>31</sup>. Essa propriedade do amarelo, que tende sempre para os tons mais claros, pode alcançar uma intensidade insustentável para os olhos e para a alma. Nesse grau de potência,

soa como um trompete agudo, que fosse tocado cada vez mais forte, ou como uma fanfarra estridente<sup>34</sup>.

• *O amarelo é a cor tipicamente terrestre.* Não se deve pretender que o amarelo transmita uma impressão de profundidade. Esfriado pelo azul, ele adquire, como já dissemos, um tom doentio. Comparado com os estados de alma, poderia ser a representação colorida da loucura, não da melancolia nem da hipocondria, mas de um acesso de cólera, de delírio, de loucura furiosa. O doente acusa os homens, derruba tudo, joga tudo no chão e dispersa suas forças por todos os lados, dissipa-as sem razão nem propósito, até o esgotamento total. Isso faz pensar no extravagante desperdício das últimas forças do verão, no fascínio berrante da folhagem do outono, privada de azul, desse azul apaziguador que então só se encontra no céu. Tudo o que resta é um desencadear furioso de cores sem profundidade.

É no azul que se encontra essa profundidade e, de maneira teórica, já em seu movimento: 1º – movimento de distanciamento do homem; 2º – movimento dirigido para o seu próprio centro. O mesmo ocorre quando se deixa o azul (a forma geométrica é, neste caso, indiferente) agir sobre a alma. A tendência do azul para o aprofundamento torna-o precisamente mais intenso nos tons mais profundos e acentua sua ação interior. O azul profundo atrai o homem para o infinito, desperta nele o desejo de pureza e uma sede de sobrenatural. É a cor do céu tal como se nos apresenta desde o instante em que ouvimos a palavra “céu”.

• *O azul é a cor tipicamente celeste<sup>35</sup>.* Ela apazigua e acalma ao se aprofundar<sup>36</sup>.

Ao avançar rumo ao preto, tinge-se de uma tristeza que ultrapassa o humano<sup>37</sup>, semelhante àquela em que mergulhamos em certos estados graves que não têm nem podem ter fim. Quando clareia, o que não lhe convém muito, o azul parece longínquo e indiferente, como o céu alto e azul-claro. À medida que vai ficando mais claro, o azul perde sua sonoridade, até não ser mais do que um repouso silencioso e torna-se branco. Se quiséssemos representar musicalmente os diferentes azuis, diríamos que o azul-claro assemelha-se à flauta, o azul-escuro ao violoncelo e, escurecendo cada vez mais, lembra a sonoridade macia de um contrabaixo. Em sua aparência mais grave, mais solene, é comparável aos sons mais graves do órgão.

O amarelo, que atinge com facilidade os agudos, nunca desce muito profundamente. Ao passo que o azul só raras vezes atinge o agudo e jamais se eleva muito na escala das cores.

O verde é o ponto ideal de equilíbrio da mistura dessas duas cores diametralmente opostas e em tudo diferentes. Os movimentos horizontais anulam-se. Assim como se anulam os movimentos excêntricos e concêntricos. Tudo fica em repouso. É a conclusão lógica, fácil de obter, pelo menos teoricamente. A ação direta da cor sobre os olhos e, finalmente, através dos olhos, sobre a alma, leva ao mesmo resultado. É um fato há muito reconhecido não só pelos médicos (em particular pelos oftalmologistas), mas por todos. O verde absoluto é a mais calma de todas as cores. Não é o foco de nenhum movimento. Não se faz acompanhar nem de alegria, nem de tristeza, nem de paixão. Nada pede, não lança qualquer apelo. Essa imobilidade é uma qualidade preciosa e sua ação é benéfica sobre os homens e sobre as almas que aspiram ao repouso. Mas esse repouso, por fim, corre o risco de tornar-se enfadonho. Os quadros pintados numa tonalidade verde são prova disso. Enquanto um quadro pintado em amarelo emite um calor espiritual e um quadro pintado em azul tem algo de frio (efeito ativo, pois o homem, elemento do universo, foi criado para o movimento constante e talvez eterno), do

Na conclusão deste capítulo:

Essa dupla ação, na assonância ou na dissonância, confere à composição, seja pictórica, seja desenhada, imensas possibilidades.

1909 Der Gelbe Klang, Kandinsky

The Yellow Sound (in German, Der Gelbe Klang) is an experimental theater piece originated by the Russian artist Wassily Kandinsky. Created in 1909, the work was first published in The Blue Rider Almanac in 1912.[1]

The Yellow Sound was the “earliest and most influential”[2] of four “color-tone dramas” that Kandinsky conceived for the theater between 1909 and 1914; the others were titled The Green Sound, Black and White, and Violet.[3] Kandinsky’s pieces were part of a larger trend of their era that addressed color theory and synesthesia in works that blended multiple art forms and media. Such works — Scriabin’s Prometheus (1910) is arguably among the best known — utilized lighting techniques and other innovations to extend the normal range of artistic expression.[4] Kandinsky had published his own theory on color and synesthesia in his Concerning the Spiritual in Art (1911).

Kandinsky never saw *The Yellow Sound* performed during his lifetime. He and his Blue Rider colleagues, including Franz Marc, August Macke, and Alfred Kubin, worked intensively on a planned 1914 Munich production, but it was cancelled by the outbreak of World War I.[5] (That original production was perhaps intended for Georg Fuchs's Künstlertheater, which had the lighting facilities required by the project.)[6] Two subsequent German productions, one at the Bauhaus, also failed to materialize.

The work had its belated world premiere on 12 May 1972 at the Guggenheim Museum and has since been staged (in various levels of authenticity and completeness) at the Theatre des Champs-Élysées, Paris (4 March 1976) and on 9 February 1982, at the Marymount Manhattan Theatre in New York City.[7] There has also been productions at the Alte Oper, Frankfurt am Main (7–8 September 1982) the Theatre im National, Bern Switzerland (12–15 February 1987) and the NIA Centre, Manchester U.K.

on 21 March 1992. Productions of *The Yellow Sound* have been mounted with three musical scores in three countries. The American production employed a rearrangement based on ideas from the lost original score (composed by Thomas de Hartmann) by Gunther Schuller, while a French production used a score by Anton Webern, and a Russian production one by Alfred Schnittke.[8] The show was remounted with puppets in New York City in November, 2010, by Target Margin Theatre Co. at The Brick Theater.[9] On 10 April 2011 *The Yellow Sound* has been performed in Lugano (Palazzo dei Congressi) with the original score composed by Carlo Ciceri.[10] November 2011 also saw a full production of the stage composition with fragments of original score performed at Tate Modern, London, UK. This was commissioned as part of the Blaue Reiter Centenary Celebrations.



The Yellow Sound is a one-act opera without dialogue or conventional plot, divided into six “pictures.” A child in white and an adult performer in black represent life and death; other figures are costumed in single colors, including five “intensely yellow giants (as large as possible)” and “vague red creatures, somewhat suggesting birds....”

Drawing on elements of Symbolism and Expressionism (while and anticipating Surrealism), Kandinsky’s work had a strong influence on German theater innovator Lothar Schreyer, who “built a whole theory of performance on the expressive process first suggested in The Yellow Sound.”

\* Kandinsky's stage work *Der gelbe Klang*<sup>17</sup> (1909), with music (since lost) by Thomas von Hartmann, is intended as the realization of this theory. It has no "plot" and consists of a free combination of color, music, and telegraphic surrealist verse. The text of the work includes many directions concerning the character of the music at specific points. Of exceptional interest here is the point in scene 5 where men in costumes of different colors begin to move one by one as the orchestral colors appear which, according to Kandinsky's ideas, correspond to the colors of their costumes. The theoretical background of this correlation of color and timbre is to be found in Kandinsky's *Über das Geistige in der Kunst* (1912), in which the painter not only states the particular emotional effects which he ascribes to many colors, but also gives their equivalents in instrumental timbres.<sup>18</sup> Kandinsky was certainly influenced by his countryman Scriabin in this respect, though the painter considered the composer's efforts toward a synthesis of the arts "elementary."<sup>19</sup>

in: Crawford, John C. "Die glückliche Hand": Schoenberg's "Gesamtkunstwerk"

1909 Der Gelbe Klang, Kandinsky

1910 Die glückliche Hand

Die glückliche Hand (The Hand of Fate), Op. 18, is a Drama mit Musik (“drama with music”) by Arnold Schoenberg in four scenes. It was composed between 1910 and 1913. Like Erwartung, composed a year earlier, it was heavily influenced by Otto Weininger’s book Sex and Character.[1] Unlike Erwartung, Schoenberg wrote the libretto for Die glückliche Hand himself. The first performance took place in Vienna on 24 October 1924. The underlying message of the piece is the idea that man continues to repeatedly make the same mistakes, and the plot is developed from events in Schoenberg’s personal life.

The influence of the painter and theorist Wassily Kandinsky (1866–1944) must be considered more crucial to the work than any mentioned heretofore, since it decisively affected the work's basic concept. In an unpublished lecture delivered in connection with the 1928 Breslau production of the work, Schoenberg discussed this concept:

For a long time, a form had been in my mind which I believed to be the only one in which a musician might express himself in the theatre. I called it, in my own private expression: *making music with the media of the stage*.

. . . . .

In reality, tones, if viewed clearly and prosaically, are nothing else than a particular kind of vibrations of the air. As such they indeed make some sort of impression on the affected sense organ, the ear. By being joined with each other in a special way, they bring about certain artistic, and, if one may say so, certain spiritual (emotional) impressions. Now since this capability is on no account present in the individual tone, it should also be possible, under certain conditions, to bring about such effects with other media; that is to say, if they were treated like *tones*. If, without denying their material meaning, but *independent* of this meaning, one understood how to combine them in forms and figures, after one had measured them, like tones, as to time, height, breadth, intensity, and many other dimensions. If one knew how to bring them into relationship with each other according to deeper laws than the laws of the medium. According to the laws of a world rationally constructed by its creator.<sup>13</sup>

The particular *Gesamtkunstwerk* idea expressed here owes a great deal to the influence of Kandinsky, whose friendship with Schoenberg dates from the beginning of 1911.<sup>14</sup> Since Kandinsky's theory of the union of the arts, as it appears in his 1912 article "Über Bühnen-Komposition,"<sup>15</sup> is little known, it should here be restated in essence. Kandinsky believed that in the nineteenth century the arts had been combined only in repetitive ways (such as what he thought to be Wagner's duplication of the stage action in the music). The painter conceived a "monumental art"<sup>16</sup> in which all the artistic elements (including color and decoration, which he felt Wagner had slighted) would be equally important and would be treated independently. Through this outward independence, Kandinsky hoped to achieve a new kind of inner unity, since all the media involved would be used according to the artist's "inner necessity" of expression.

While color is used symbolically throughout *Die glückliche Hand*, and both stage action and lighting are precisely coordinated with the music by means of an ingenious system of signs, it is in the lighting crescendo of scene 3 that we find Kandinsky's influence most strongly present. After the episode of the artisans the stage becomes dark, and a synchronized crescendo of wind, lighting, and music takes place, motivated by the Man's increasing emotion. (A stage direction states that "the Man must represent this crescendo of light and storm in such a way as if both emanated from him.")<sup>20</sup> Table II shows the similarity of Kandinsky's ordering of colors and that which Schoenberg uses in his crescendo.<sup>21</sup> Both begin with the colors Kandinsky associates with motionlessness and morbidity (brown, green, and violet), move through various shades of red (strength and excitement), and climax with orange and yellow, which was to Kandinsky the most psychologically disturbing color of all. Table II also shows the instances in which Schoenberg's choices of instrumental equivalents closely correspond with Kandinsky's, although the general musical complexity of the crescendo makes this hard to follow without close study of the score. (Table II is found on pages 586-588, above.)



Despite its complexity of texture, the crescendo is made musically clear by the frequent use of three motives, which recur in many rhythmic and melodic variants (Ex. 1a, b, c). As the crescendo begins, the audience has no idea what motivates it. The only clue to its dramatic meaning is given by a stage direction concerning a grotto on the stage from which the Woman emerges after the crescendo is over: the grotto opens at the beginning of the crescendo, and as the crescendo reaches its height, "yellow, glaring light" is thrown on it from all sides.<sup>22</sup> Thus, the crescendo's motivation would seem to lie in the Man's supernatural awareness of the sexual activities of the Woman and the Gentleman in the grotto. Schoenberg's 1928 Breslau lecture supports this explanation, though he warns against an exclusively realistic interpretation of the crescendo:

Certainly, one could interpret this whole incident realistically, as the expression of jealous feelings and premonitions. Nevertheless, the totality is much more than that, and I consider it important to explain that one gets a distorted picture by the simple symbolic interpretation of such details. To be sure, this crescendo is clothed externally in the form of an *increasing pain*. But this clothing is only an outer husk, only a line of demarcation. This can be discerned most clearly in the fact that the light and also the colors, and particularly the music, follow paths that by no means lead so directly upward as those of the wind machine or other dynamic elements. These last are less suited to more complicated developments, and therefore remain in a straight line, limited to direct ascent. . . . The play of lights and colors, however, is not based *only* on intensities, but on values that can only be compared to pitches.<sup>23</sup>

At the beginning, you see twelve light *spots* on a black background: the faces of the six women and the six men. Or rather: *their gazes*. This is part of the mime performance, thus, of a medium of the stage. The impression under which this was written was approximately the following: it was as if I perceived a chorus of stares, as one perceives stares, even without seeing them, as they say something to one. What these say here is also paraphrased in words, which are sung by the chorus, and by the colors which show on the faces. The musical way in which this idea is composed testifies to the unity of conception: in spite of the diverse shaping of some *Hauptstimmen* this whole introduction is, as it were, held fast in place by an *ostinato-like* chord. Just as the gazes are rigidly and unchangeably directed at the Man, so the musical ostinato makes clear that these gazes form an ostinato on their part.<sup>25</sup>

From the perspective of the seventies one cannot fail to be struck by the prophetic nature of Schoenberg's theatrical conception. His idea of "making music with the media of the stage" is both original and profoundly significant, even though he does not go as far in the direction of abstraction and the nonrepetitive use of media as his own theories (as found in the Breslau lecture) would call for. In spite of the influences of Kandinsky, Strindberg, Kokoschka, and Wagner, every aspect of the work — dramatic and scenic as well as musical — shows "the fateful hand" of a true innovator.

1908-13 Die Gluckliche Hand, Schoenberg

1912 Vladimir Baranoff Rossiné

Voltando ao tema dos instrumentos de cor e som, para completar isto que pode ser entendido como uma história dos antecedentes que levam à performance audiovisual, no início do século 20 vai surgir um instrumento que insere novos elementos no paradigma dos órgãos de cor. Criado por Vladimir Baranoff Rossiné, o Piano Optofônico foi o primeiro a permitir o uso de formas e padrões. Lucassen explica que “um conjunto de lentes com cores, formas e padrões sobre elas criava uma experiência completamente nova. Não apenas as cores mudavam com o tempo, as formas e padrões também estavam constantemente se transformando conforme eles rodavam e se moviam”<sup>1</sup>. Rossiné apresentou várias performances com seu instrumento, a partir de 1912, em Paris.

“Imagine that each key of a piano or an organ keyboard stops at a chosen position, or makes a specific element of a set of transparent filters move, more or less quickly, transperced by a beam of white light, and you will have some idea of the instrument invented by Baranoff-Rossiné.

There are various kinds of luminous filters; plain coloured ones, optical elements such as prisms, lenses or mirrors; filters including graphic elements and, finally, filters with coloured shapes and defined outlines. Add to this the possibility of modifying the position of the projector, the screen frame, the symmetry or asymmetry of the compositions and their movements, as well as their intensity. You will then be able to reconstitute this optical piano that will interpret an infinite number of musical compositions. The key word here is interpret, because, for the time being, the aim is not to determine a unique rendering of an existing musical composition for which the author did not foresee any light being superimposed. In music, as in any other art, one

has to take into account elements such as the talent and sensitivity of the musician in order to fully understand the composer's thoughts. The day when a composer composes music using notes that remain to be determined in terms of music and light, the interpreter will have less freedom, and on that day, the artistic unity we are discussing will probably be closer to perfection.

(This autobiographic text was originally written using the 3rd person.)

In: <https://baranoff-rossine.com/optophonic-piano/>



1912 Piano Optophonique, Baranoff-Rosiné

1918 Mary Hallock-Greenwalt

Em 1918 Mary Hallock-Greenwalt surge como a primeira mulher a desenvolver um órgão de cor. Inventora profícua e detentora de uma série de patentes para vários dispositivos que usam a luz como material, incluindo um aparato de cor e luz e uma partitura de luz, Hallock-Greenewalt. Em seu livro Nourathar — The Fine Art of Light Color Playing, ela descreve a Sarabet, o instrumento que criou para relacionar luz e cor:

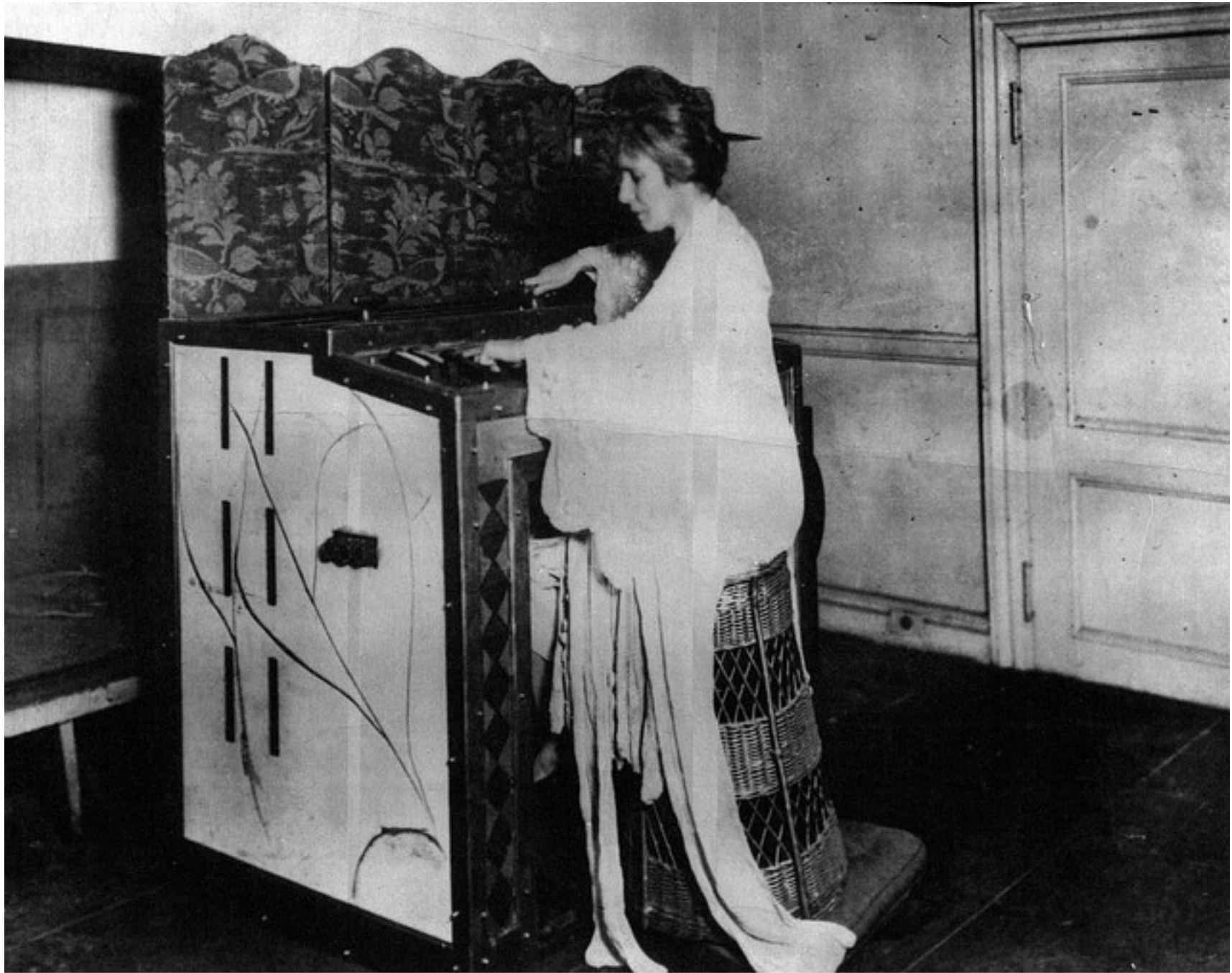
O instrumento em que a arte do NOURATHAR é tocado: ele consiste de um centro de controle em um console de forma parecida com uma mesa, de onde as unidades de lâmpadas e seus potenciais dinâmicos são tocados. Estes devem ser por necessidade distribuídos através de todo o espaço, destacado a uma distância do seu ponto de controle e cada um dos outros.

Hallock-Greenewalt também descreve uma partitura para luz, a “notação impressa ou escrita, através da qual qualquer seqüência ou toque de fluxo luz-cor pode ser registrado e sua temporalidade marcada para duplicação ou reinterpretação no instrumento construído com este propósito”



## Patent No. 1,945,635: Sarabet (“Light Color Instrument”) (1927)

Greenewalt would file four patents for the Sarabet, of which this was the final. “One object of my invention is to provide a console for a light color instrument,” she wrote in this patent description. “Another object of my invention is to provide fluid connectors for such an instrument ... and to raise or lower a current transmitting fluid about a resistor element for the purpose of increasing or decreasing its resistive action.” The Sarabet received its debut at John Wanamaker’s New York department store in 1922, so that Greenewalt could publicize her console for owners of theaters and film houses. A second console was constructed and installed at Longwood Gardens, Pierre DuPont’s botanical garden and conservatory in Kennett Square, Pennsylvania.

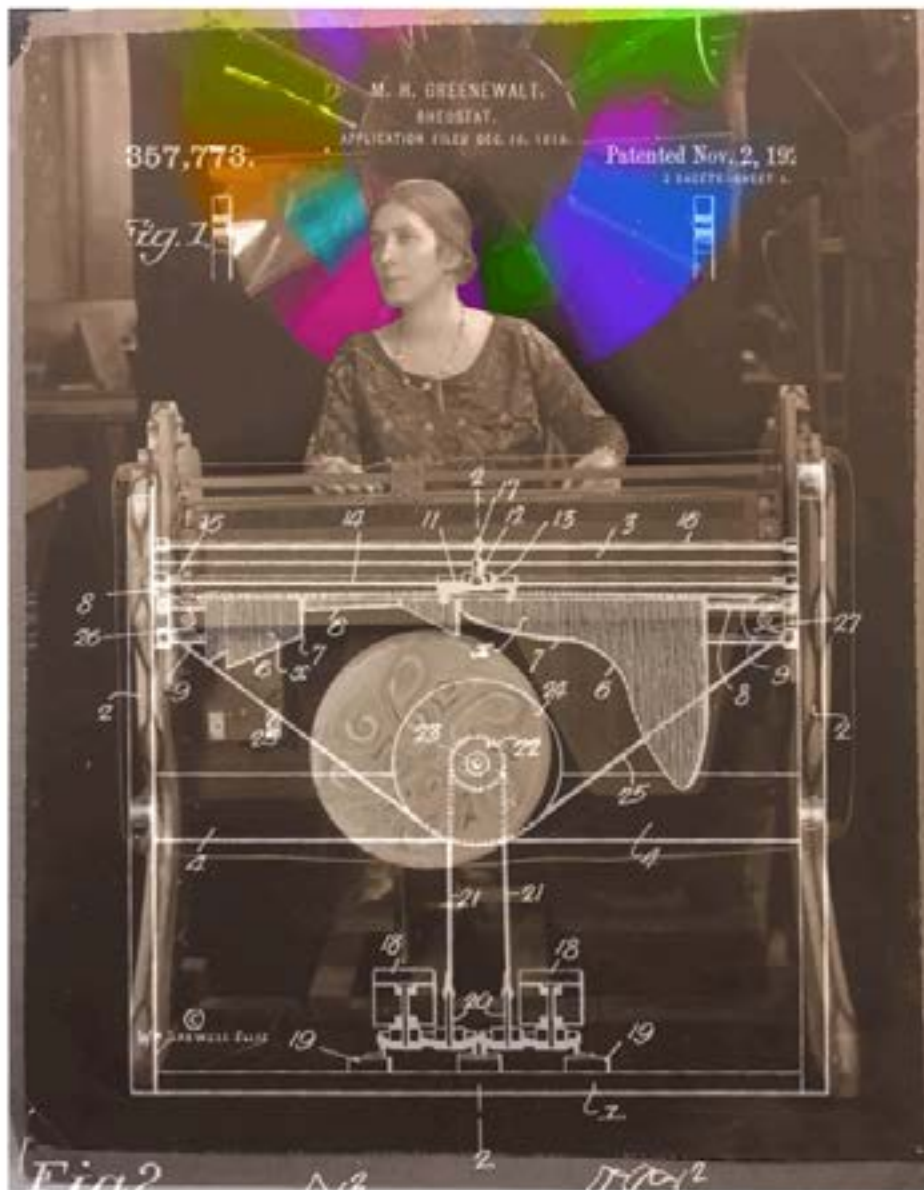


## Patent No. 1,345,168: "Illuminating Means" (1920)

This classical pedestal—shown here with a sculpture of Atlas holding the Earth on his shoulders—contained a gramophone or phonograph, which was adapted to play records and synchronize with lights of graduated tints or colors, which would then illuminate the dome.

"In order that the color scheme can be developed, the rotating table which carries the record disk may be provided with leaves of translucent, colored, or parti-colored materials, overlying the source of illumination and through which the latter may shine," Greenewalt wrote in her patent, "so that the color may be lessened or intensified, or altered in tint."





## Patent No. 1,357,773: "Rheostat" (1920)

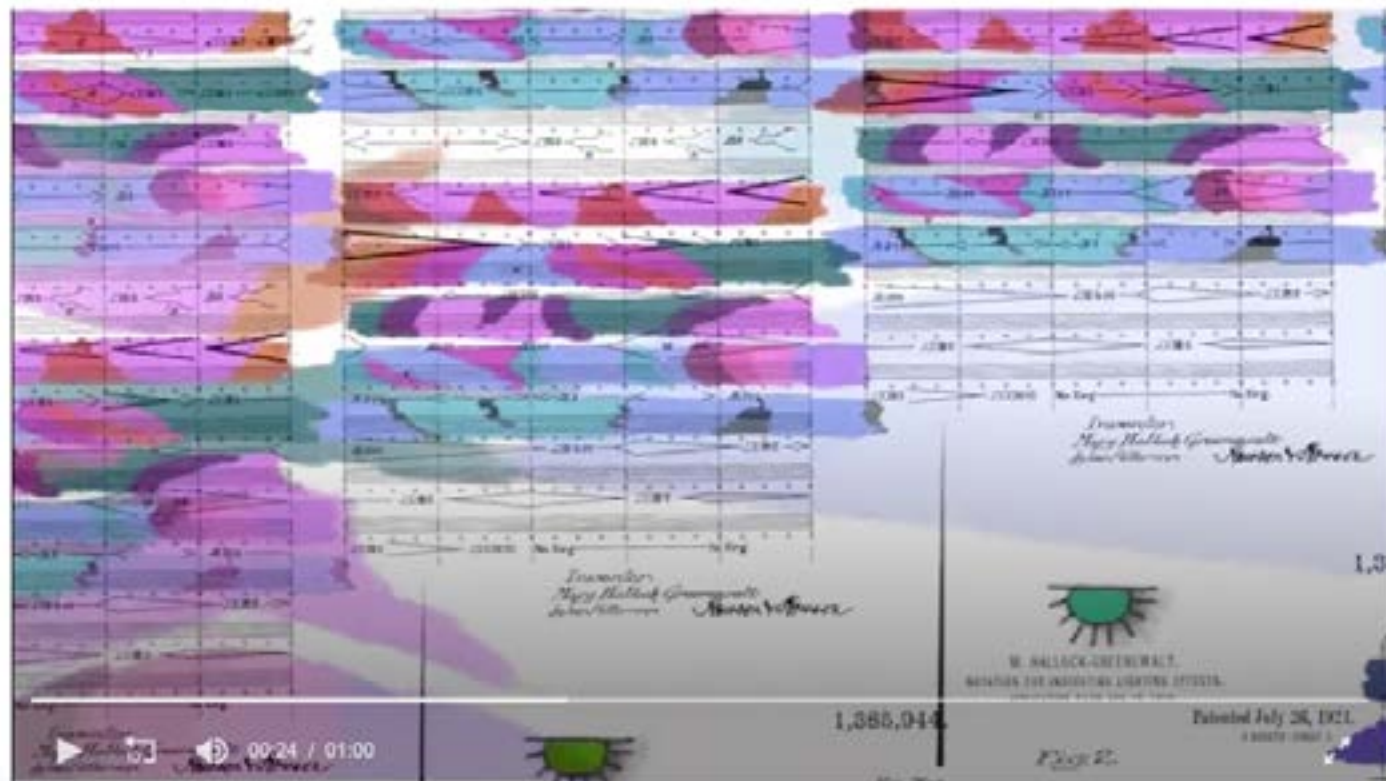
The rheostat was an essential mechanism of the Sarabet. It was an electrical device that varied the resistance of the electrical current so that Greenewalt could produce smooth fade-ups and fade-outs of light as she played. In this patent application, she describes the rheostat as "compact and substantial of a commercially practicable design; relatively simple as regards the aggregate number and arrangement of its parts, and at the same time includes a series of contact blocks and moveable contact member adapted for operation by human, mechanical or automatic power."

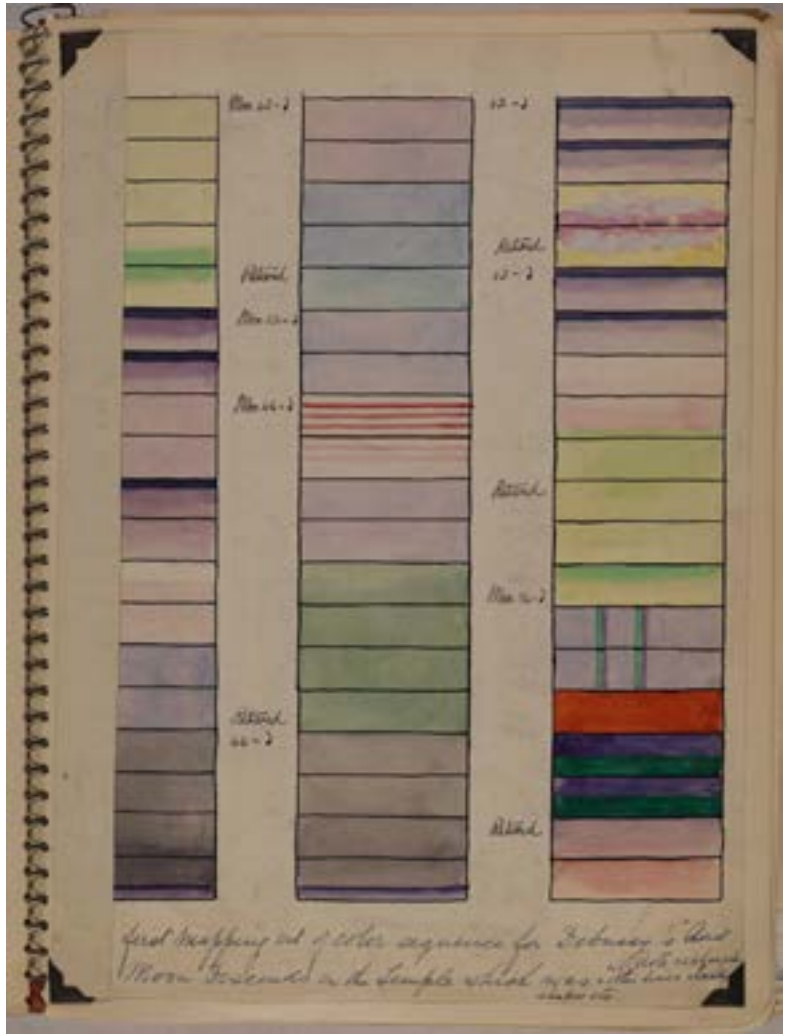
The rheostat would become a standard tool for electronic instruments, and when General Electric infringed on Greenewalt's patent in 1932, she sued. At first, a judge denied hearing the case, determining that the rheostat was too complex to have been invented by a woman. This decision was overturned on appeal by Judge Hugh Morris, who described Greenewalt as "a true artist" in his decision, and she eventually won the case.



## Patent No. 1,385,944: "Notation for Indicating Light Effects" (1921)

"The object of my present invention is to provide a score comprising names, numerals, marks, symbols, hieroglyphs, or the like, constituting a chart or record sheet for denoting or interpreting a lighting sequence or succession to accompany music," wrote Greenewalt in this patent. It involved Greenewalt's translation of Beethoven's 1801 "Moonlight" Sonata into a notation readable by a Sarabet player, here adapted by musician Melissa Grey.





Anos 1920  
Walter Ruttmann

## Absolute Film

An abstract film is one that does not contain the depiction of a concrete object. Such films were initially referred to as 'absolute' films, as they did not deal with the interpretation of a reality outside the film. There is debate as to the degree of abstraction required to classify a work as abstract. The spectrum ranges from filmed nonrepresentational source materials through semi-abstract real shooting of motifs that are difficult to identify (e.g., shadow plays) to cameraless and imageless direct editing of the film material. The history of abstract film began in 1921 with *Lichtspiel Opus 1* (Light-Play Opus 1) by Walter Ruttmann and continues to the present day. A substantial share of abstract films expressly make reference to music or musical principles.

Several phases can be differentiated with respect to the relationship between image and sound. In the 1920s, the focus was on experimenting with the image; sound was considered secondary. Most films were projected – depending on the available possibilities – with or without sound. In the 1930s, the relationship between image and sound was reversed: most abstract films were animated to an existing piece of what was often popular music. In the 1960s and 1970s, the question of the relationship between image and sound was solved in a conceptual or structural way: image and sound comprised a unit of almost equal artistic value; the sound was for the most part designed by the filmmaker him- or herself. Since the 1960s, the medium of video has also been worked with in an abstract way, with the different technology evoking fundamentally different approaches in each case. (Sandra Naumann)

Walter Ruttmann

«Ruttmann was born in Frankfurt am Main on December 28, 1897. He studied architecture in Zurich and then painting in Munich. [...] In ›Berlin. Die Sinfonie einer Großstadt‹ he applied the principles of his abstract studies and film montage to realistic photographs from the city of Berlin. [...] After ›Berlin‹ he turned to sound experiments and was eventually able to make ›Melodie der Welt‹, a Tobis film commissioned by Hapag-Lloyd and the first fulllength German sound film. [...] Ruttmann did not emigrate. He collaborated on a film for a ›Reichsparteitag‹ but withdrew from the team for unknown reasons. Beginning in 1934 he was employed as a director by UFA and made cultural, industrial, commercial, and propaganda films. On July 15, 1941, he died in Berlin after an operation.»

(source: Goethe-Institut (ed.), The German Avant-Garde Film of the 1920's, exhib. cat., München, 1989, p. 78.)

Ruttmann noted on the back of his untitled last painting of 1918 the words “Malerei mit Zeit” (painting with time), envisaging the transfer of this concept to film as follows: “An art for the eye that differs from painting in that it takes place in time (like music) and in that the artistic emphasis does not consist (as in images) in reducing a (real or formal) process to a single moment, but precisely in the temporal development of formal aspects. Because this art has a temporal development, one of its most important components is the temporal rhythm of optical events.”<sup>16</sup> Ruttmann did not put these ideas into practice until the making of his film *Lichtspiel opus 1* (Light-Play Opus 1), which premiered in 1921 and consisted of thousands of single-frame images he had created on a home-made animation stand and subsequently colored by hand. Critic Bernhard Diebold described the film as “music for the eye.” It was accompanied on its premiere by music that Max Butting had composed to precisely correspond to the events taking place on screen. Interestingly, Butting considered his music to be superfluous because he believed the film itself was already visual music. (Sandra Naumann)



Lichtspiel I (1921)



Walter Ruttmann «Light-Play Opus I»

Premiered in 1921, Ruttmann's «Opus 1» is the first abstract or «absolute» work in film history. Instead of containing depictions of reality, it consists entirely of the colors and shapes already formulated in Ruttmann's «Painting With Light» manifesto. In 1919, he writes that, after nearly a decade, he finally «masters the technical difficulties» struggled with as early as 1913 while executing his formulated idea. He also writes that one has to «work with film as though using a paintbrush and paint». Up to protecting his work by a patent in 1920, this artistically-motivated necessity born of new technical means leads to Ruttmann producing abstract and painterly image sequences in his films.

Following the neglected «Opus 1» come three other purely abstract films. These too, are painstakingly colored by hand. That each film has an original score composed especially for its production highlights another difference to the absolute films of Hans Richter or Oskar Fischinger, which transposed in images music that already existed. (medienkunstnetz)

This is the first abstract film to be publicly screened. Ruttmann mastered the technical means to realise his abstract imagery in film. He patented his particular technical methods in 1921. William Moritz provides an interesting description of his method: '[Ruttmann's] first animations for Opus No. I were painted with oil on glass plates beneath an animation camera, shooting a frame after each brush stroke or each alteration because the wet paint could be wiped away or modified quite easily. He later combined this with geometric cut-outs on a separate layer of glass.'" (Jennifer Valcke, *Static Films and Moving Pictures: Montage in Avant-Garde Photography and Film*, p173)

Ruttmann also envisioned his *Lichtspiel Opus I* film to closely relate to music and commissioned the composer Max Butting to compose a string quartet for it. In the music score Ruttmann provided many indications to ensure that the music precisely synchronised with the visual elements unfolding on screen. (Valcke, p173)

Walter Ruttmann «Light-Play Opus I»

"Following the First World War, Ruttmann, a painter, had moved from expressionism to full-blown abstraction," writes Gregory Zinman in *A New History of German Cinema*. As early as 1917, "Ruttmann argued that filmmakers 'had become stuck in the wrong direction,' due to their misunderstanding of cinema's essence," which prompted him to use "the technologically derived medium of film to produce new art, calling for 'a new method of expression, one different from all the other arts, a medium of time. An art meant for our eyes, one differing from painting in that it has a temporal dimension (like music), and in the rendition of a (real or stylized) moment in an event or fact, but rather precisely in the temporal rhythm of visual events."

To realize this new art form, Ruttmann came up with, and even patented, a kind of animation technique. Once a painter, always a painter, he found a way to make films using oils and brushes. As

experimental animations scholar William Moritz described it, Ruttmann created *Lichtspiel Opus I* with images “painted with oil on glass plates beneath an animation camera, shooting a frame after each brush stroke or each alteration because the wet paint could be wiped away or modified quite easily. He later combined this with geometric cut-outs on a separate layer of glass.”

The result still looks and feels quite unlike the animation we know today, and certainly resembled nothing any of its first viewers had even seen when it premiered in Germany in April 1921. This puts it ahead, chronologically, of the work of Hans Richter and Viking Eggeling, creators of some of the earliest masterpieces of abstract film in the early 1920s, not screened for the public until 1923. Alas, when Hitler came to power and declared abstract art “degenerate,” according to Bennett O’Brian at *Pretty Clever Films*, Ruttmann didn’t flee but “remained in Germany and worked with Leni Riefenstahl on *The Triumph of the Will*.” In wartime, he “was put

to work directing propaganda reels like 1940's *Deutsche Panzer* which follows the manufacturing process of armored tanks.”

Alas, “his decision to stay in Germany during the war would eventually cost Ruttmann his life,” which ended in 1944 with a mortal wound endured while filming a battle in Russia. But however ideologically and morally questionable his later work, Ruttmann, with his pioneering journey into abstract animation, opened up a creative realm only accessible to filmmakers that, even as we approach an entire century after *Lichtspiel Opus I*, filmmakers have far from fully explored.

Lichtspiel II (1923)

"Ruttmann's visual style is considered to be more playful and impressionistic than Eggeling's and Richter's and produces an overall painterly feel both in technique and in the use of screen, colour and movement. Indeed, his technical methods were also painterly and would have had a definite bearing on the resulting imagery. His Opus films have been described as paintings that move in time. While Richter and Eggeling focussed on figures, forms and time relationships between visual elements, Ruttmann focussed on a more expressive visual aesthetic for his imagery. He exploited 'movement and colour to create choreographies, where entrances and exits, collisions and complementary trajectories establish a linear, cumulative scenario or development in which new configurations, colours and shapes appear right to the last moments of the film'." (Jennifer Valcke, *Static Films and Moving Pictures: Montage in Avant-Garde Photography and Film*, p173)



## Walther Ruttmann's Lichtspiel Films

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research: VISUAL MUSIC

An Excerpt from The History of Motion Graphics:

The term “absolute film” differentiates the fully abstract films produced in Germany from the related, also “abstract” films, produced in Paris such as Ballet Mécanique. Both groups of work are commonly grouped together as “Dada cinema.” This collection of films by Walther Ruttmann, Hans Richter and Viking Eggeling are the oldest fully abstract motion pictures still known to survive. While all lived in Germany and produced their films at around the same time, they did not constitute a “group” or movement. The first productions by Ruttmann date to the years following the end of World War I, during the lead up to the onset of the German hyperinflation following the collapse of the Reichsmark in July 1922.

Lichtspiel II (1921)  
Walter Ruttmann

Walther Ruttmann (1887 – 1941) was initially trained as an architect and painter; he served on the Eastern front during World War I, suffered “shell shock” (what is now known as post traumatic stress disorder), and on being released from the hospital abandoned painting to make films. As he was the son of a wealthy mercantilist, he had the financial means to become a film maker upon being released from the hospital, enabling him to work independently of UFA, the major German studio at the time. His first productions were abstract animated films, and were also the first fully animated cartoon work produced in Germany. Ruttmann’s titles for these works indicate their relationship to the synaesthetic heritage: *Lichtspiel: Opus I* was produced between 1919 and 1921. It premiered in April 1921, and was released for German theatrical distribution in 1922. It is the oldest fully abstract motion picture known to survive, using only animated geometric forms, arranged

and shown without reference to any representational imagery; the first abstract films by Viking Eggeling and Hans Richter were not exhibited publically until 1923.

He followed it with *Lichtspiel: Opus II*, a second animation developing his visual ideas from *Opus I*, and refining the animation technique, but did not immediately move on to a third abstract film. The impact of the Weimar hyperinflation appears in the production gap between *Opus II* that premiered in April, 1922, and the his two final abstract films. During the period of hyperinflation he worked as an animator on commercial feature film projects for Fritz Lang, where he designed and filmed the dream sequence in *Die Niebelingen* (1924), and for Lotte Reininger's film *The Adventures of Prince Achmed* (1924-1926), and the sequence called "Lebende Buddhas: Eine Phantasie aus dem Schneeland und Tibet" in a film directed by Paul Wegener (1924). He returned to making

abstract films with Lichtspiel: Opus III produced from 1923-24, and Lichtspiel: Opus IIII, produced in 1925 as the German economy began to stabilize. Both premiered on May 3, 1925. This pattern of production interrupted by the 1922 period of hyperinflation appears in the work of Richter and Eggeling as well, but since they worked at the UFA studio, in a much less pronounced way.

Both Opus I and Opus II share a laborious paint-on-glass technique, employing oil smudges on plate glass, and supplemented by cut-out animations of angular forms. This technique is used to a lesser degree in Opus III, and Opus IIII was made using paper cut-outs.

Lichtspiel: Opus I (1921) was composed with loop printing to lengthen and develop his motifs over its 12 minute duration. Composer Max Butting produced a score for Opus I that is closely synchronized to the action of the curves, triangles and bars that move

around the screen. There are two sets of animated forms—one set are softly drawn, and their shape and movements are organic, the others are triangular, hard-edged shapes that jut into the screen, forcing the organic shapes to flee.

All of Ruttmann's Lichtspiel films employ color to some degree. Opus I was the most complex in its use of color, with different sections being tinted or toned to give color to the animation, geometric shapes and the background, reflecting both the action and the mood, while breaking it into distinct movements that correspond to Butting's score. The toned background follows the standard meaning for tinted film in the silent era, enabling the second movement, tinted blue, to be a nocturne.

Lichtspiel: Opus II (1922) expanded upon the formal innovations in Opus I, again employing a mixture of angular forms and organic forms done with the oil-on-glass technique. Although shorter, it

is also faster paced, and clearly is a more developed version of the motifs and structure from his first film. However, it also included the use of kinestasis—still images animated through camera movement—and multiple planes of glass with animation, allowing two sets of curved animated forms, one white and the other black, to interact on screen, wrapping around and masking each other against a grey background. The animation is a mixture of curves, squares and rectangles, arrayed into compositions that reference the shape of the frame, which are all in motion at the same time. Different sections were toned different colors—blue, then later, red—the individual forms were not hand colored as in Opus I.

Lichtspiel: Opus III (1924) is composed from squares, rectangles and other straight-edged forms animated in overlapping, kinetic compositions. The shapes in this film are not solid colors, but graduated tones, and the development of each sequence is built around asymmetrical compositions that break the frame into harmonious

sections. The result is dynamic, active: the moving shapes suggest the rapid movement of machinery, pistons. Then in the middle of the film there is a shift towards a bifurcation of the frame and oscillating patterns that rotate around this central axis, before a return to the asymmetry of the machine-like motions. The compositions employed in this film are unique in the 1920s, resembling the later work of Joseph Albers, or, the more contemporary work of Peter Halley in the 1980s.

Color serves a dramatic purpose in this film. Short sections of red and blue alternate towards the end, creating a contrast, but as in *Opus II*, the whole frame is tinted, and there is no hand-painting. The alternation of monochromatic, colored compositions at the conclusion enables the end to achieve a dramatic resolution that was missing in his earlier films. This use of color for emphasis is repeated in his last abstract film, *Lichtspiel: Opus III* (1925): the first half the film is black and white, then it is tinted blue for a min-



ute-long sequence of curved forms filling the frame, oscillating on screen, after which the opening black and white forms reappear, superimposed with the curved forms, then finally, the last two shots are bright red. The organization and imagery in this final film has even fewer parallels in the abstract painting of the 1920s. Composed in several sections, the first is made from bands of white and black that stretch horizontally across the screen, and “roll” between being white bands on black and black bands on white. These are interrupted by an ascending white blocks that moves outwards from the center, but does not empty the screen. Instead, these vertical bars move horizontally across the bands, creating graphic compositions. The closest parallel in film is *Lines Horizontal or Lines Vertical* by Evelyn Lambart and Norman McLaren in the 1960s; however, the imagery of *Opus IIII* resembles nothing else so much as the abstract video works of the 1970s by Gary Hill and the Vasulkas produced at the Experimental TV Center.

Lichtspiel: Opus III was the last fully abstract film Walter Ruttmann made; he would employ short abstract sequences in some of his other films: symmetrical abstract shapes like those in Opus III and Opus III appear as short graphic elements and transitions in *Das Wiedergefundene Paradies* (1925), *Dort wo der Rhein* (1927) and in the opening of *Berlin, die Sinfonie der Großstadt* (1927).

In considering all four of these abstract films in sequence, what emerges is a development away from the organic, soft-form animations of Opus I towards increasingly rectangular grid compositions and geometric forms. The adoption of a geometric abstraction demonstrates the shift towards non-referentiality and Constructivism that happens as the 1920s develop, a feature of abstract painting as much as abstract art: Kandinsky's works of the 1920s also become progressively more geometric and planar as the decade progressed.

The influence of Ruttmann's work on later abstract filmmakers comes primarily through the impact his work had on Oskar Fischinger who attended the first screening of *Lichtspiel: Opus I* in 1921. Fischinger would also begin making films during the 1920s, but did not produce fully abstract films until after optical sound was adopted as the standard in 1927. Prior to that he made a number of experimental animations using machines of his own design, including a wax-cutting animation device that Ruttmann bought, but apparently never used.

Walter Ruttmann  
Lichtspiel III (1925)

1924 Eggeling

O pintor sueco Viking Eggeling lidou com a integração de processos dinâmicos em seu trabalho visual dos anos 1910. Depois de numerosos estudos e modelos, ele se voltou para o filme a partir de 1920. Em 1924, completou a Sinfonia Diagonale. Eggeling os entendia como uma composição visual, portanto conscientemente os percebia silenciosamente e se orientava para os princípios composicionais com relação ao fluxo de formas. A contrapartida dos personagens foi entendida como um contraponto, sua sequência e mudanças no tempo como um ritmo. Eggeling partiu da idéia de uma linguagem de design abstrato universalmente válida e usou um punhado de padrões básicos, que são expandidos e variados no decorrer do curta-metragem.

Viking Eggeling, before turning to film, first worked on a “basso continuo of painting,” exploring to this end the relationships existing between a huge variety of forms.<sup>19</sup> Inspired by the Italian composer Ferruccio Busoni, he investigated musical counterpoint and developed the concept of an “optical counterpoint” in the sense of a visual theory of composition. He associated this concept with the philosophical considerations of Henri Bergson, who viewed the world as an endless flow in which every state is subject to permanent change in an interplay of contrasts. In his best-known work, *L'Évolution créatrice* (Creative Evolution, 1907), Bergson described life as “reciprocal interpenetration” and “endlessly continued creation” and compared such “creative evolution” with a “musical theme, which had transposed itself as a whole into a certain number of tones, and on which, still the whole theme, different variations had been played, some very simple, others very skilful. As for the original theme, it is everywhere and nowhere.”

From 1918 onward, Eggeling continued to pursue these ideas together with the like-minded painter Hans Richter, who was interested in oppositional contrasts between positive and negative planes. In order to explore relation-

ships between forms in temporal succession, they created “scroll paintings,” the first of which, *Horizontal-Vertical Orchestra* (1919), Eggeling described in entirely Bergsonian terms as “formative evolutions and revolutions in the sphere of the purely artistic (abstract forms), roughly analogous to the events that take place in music and with which our ears are familiar.” In this work, Eggeling and Richter were experimenting with a “language (of forms)” based on what for them was the “elementary principle” of polarity. For the two artists, polarity was both a “general life principle” and “a compositional method for every formal expression” and thus decisive for “proportion, rhythm, number, intensity, position, sound, time.” From 1920 onward, Eggeling and Richter tried to translate into film this synthesis of Bergson’s philosophical ideas on the flow of movement and the dualism of things with the absoluteness and the compositional principles of music, and thus to transform it into actual motion. In view of the structure of his film *Symphonie Diagonale* (*Diagonal Symphony*), completed in 1924, it is a matter of debate whether Eggeling took his bearings from the sonata form or merely used the title to make reference to a musically conceived composition. However, he gave the film no musical accompaniment, as the sounds



in a sense had already been transposed into organically curved forms and thus replaced by them. In his films *Rhythmus 21* (originally entitled *Film ist Rhythmus* [Film Is Rhythm]), *Rhythmus 23*, and *Rhythmus 25*, which were made around the same time and were likewise silent, Hans Richter used geometric shapes such as squares, rectangles, and lines on a black or white ground, and focused in their “orchestration,” as the titles suggest, on the rhythm, which for him represented “the chief sensation of any expression of movement.” (Sandra Naumann)

1924 Viktor Eggeling  
Symphonie Diagonale

1921 Hans Richter  
Rhythmus 21

"Richter, on the other hand, decided to adopt an entirely new strategy: rather than attempting to visually orchestrate formal patterns, he focused instead on the temporality of the cinematic viewing experience by emphasizing movement and the shifting relationship of form elements in time. His major creative breakthrough, in other words, was the discovery of cinematic rhythm, which he then used as the title of his first film, *Film ist Rhythmus: Rhythmus '21* (*Film is Rhythm: Rhythm 21*, 1921). For Richter, rhythm, "as the essence of emotional expression", was connected to a Bergsonian life force: 'Rhythm expresses something different from thought. The meaning of both is incommensurable. Rhythm cannot be explained completely by thought nor can thought be put in terms of rhythm, or converted or reproduced. They both find their connection and identity in common and universal human life, the life principle, from which they spring and upon which they can build further'.

The determining impulse for all of Richter's early film work, visual rhythm, as articulated time, was used to organize the constituent spatial elements of a film into a unified whole.

In *Rhythmus '21*, generally considered to be the first completely abstract film, Richter used these principles to create a work of remarkable structural cohesion. Completed by using stop motion and forward and backward printing in addition to an animation table, the film consists of a continuous flow of rectangular and square shapes that "move" forward, backward, vertically, and horizontally across the screen. Syncopated by an uneven rhythm, forms grow, break apart and are fused together in a variety of configurations for just over three minutes (at silent speed). The constantly shifting forms render the spatial situation of the film ambivalent, an idea that is reinforced when Richter reverses the figure-background relationship by switching, on two occasions, from positive to negative film.

In so doing, Richter draws attention to the flat rectangular surface of the screen, destroying the perspectival spatial illusion assumed to be integral to film's photographic base, and emphasizing instead the kinetic play of contrasts of position, proportion and light distribution. By restricting himself to the use of square shapes and thus simplifying his compositions, Richter was able to concentrate on the arrangement of the essential elements of cinema: movement, time and light. Disavowing the beauty of "form" for its own sake, *Rhythmus '21* instead expresses emotional content through the mutual interaction of forms moving in contrast and relation to one another. Nowhere is this more evident than in the final "crescendo" of the film, in which all of the disparate shapes of the film briefly coalesce into a Mondrian-like spatial grid before decomposing into a field of pure light.

According to Richter, the original version of *Rhythmus '21* was never shown publicly in Berlin. At the behest of Theo van Doesberg, however, it was shown in Paris in 1921, with Richter introduced as a Dane due to anti-German sentiment. In May 1922, Richter travelled with van Doesberg and El Lissitzky to the First International Congress of Progressive Art-

ists, where they formed the International Faction of Constructivism. In a group manifesto, written by Richter, they define the progressive artist 'as one who denies and fights the predominance of subjectivity in art and does not create his work on the basis of random chance, but rather on the new principles of artistic creation by systematically organizing the media to a generally understandable expression'." (Richard Suchenski, Hans Richter, [sensesofcinema.com/2009/great-directors/hans-richter/](https://sensesofcinema.com/2009/great-directors/hans-richter/))

1921 Hans Richter  
Rhythmus 21



1919 Thomas Wilfred  
Clavilux & Lumia

Um dos nomes mais celebrado nesta trajetória é Thomas Wilfred, criador do Clavilux, que foi apresentado ao público pela primeira vez em Nova Iorque, em 1922. Wilfred ficou um bom tempo esquecido e seu trabalho tem sido resgatado recentemente, quando sua importância passa a ser reconhecida. Em *Thomas Wilfred and Intermedia: Seeking a Framework for Lumia*<sup>1</sup>, Stephen Eskilson explica que o “Clavilux típico consistia de um ou mais projetores de luz poderosos com distância focal variável direcionando seus feixes através de uma variedade de prismas cuidadosamente planejadas”. Eskilson afirma que “Wilfred também usava filamentos de luzes com formas customizadas com objetivo de criar formas com um feixe direto”. O Clavilux foi criado em duas versões, uma na forma de uma espécie de teclado modificado, para ser usado em concertos das composições que Wilfred chamava de Lumias e outro em forma portátil, numa configuração parecida com a de um aparelho de TV, para uso decorativo em ambiente doméstico.

As Lumias de Wilfred eram silenciosas, sugerindo elementos musicais através do ritmo de suas variações (numa versão cinética das relações entre cor e som sugeridas nas já mencionadas pinturas de Klee). Além deste caráter híbrido que sugere sonoridades a partir de visualidades, as Lumias também se situam num intervalo pouco nítido entre acontecimento de concerto e pintura expandida. O próprio Wilfred deu preferência à proximidade de suas Lumias com a pintura, conforme esclarece Eskilson. Todavia, com andamento lento, gerando progressões que desdobram-se aos poucos em formas e cores de uma intensidade ímpar, as Lumias constituem outro ponto alto entre as poéticas ao vivo. A ambiguidade de linguagem que as Lumias instalam sugere que as obras que incorporam os acontecimentos em tempo real como parte de sua materialidade não restringem-se necessariamente ao palco, o que amplia o escopo deste repertório.

Clavilux is the term coined by the artist Thomas Wilfred to refer to his mechanical invention that allowed the creation and performance of lumia, which was Wilfred's term for light art.

From Latin, Clavilux means "Light played by key."

Wilfred built his first Clavilux, Model A, from March to May 1919.

While Wilfred intended the term to refer to any device that could be used to perform Lumia, the name Clavilux was not widely adopted by other artists working with light. As such the term is closely associated with Wilfred and his mechanical vocabulary. The only other artist known to have built a Clavilux is W. Christian Sidenius, who was an ardent admirer and later good friend of Wilfred's. Sidenius built a theatre behind his home to house his Clavilux and host Lumia recitals during the summer months.

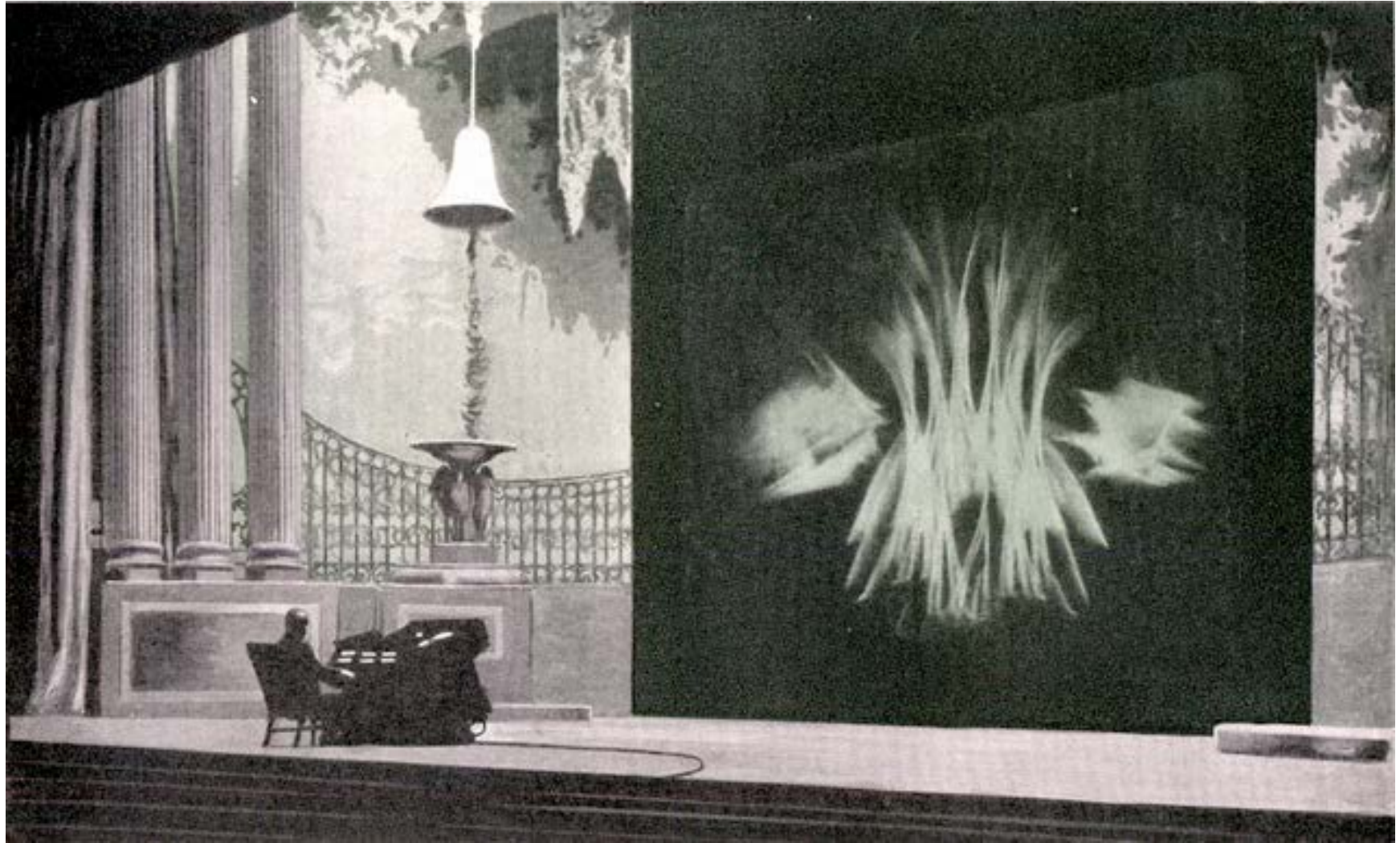
Wilfred also built sixteen smaller home Clavilux models which he also called "Clavilux Juniors." There are seven known to be extant, most of which are in private collections.

Two full-sized Claviluxii, Model E, (1924) and Model G (1936) were rescued in 2003. A 501(c)3 not-for-profit, Clavilux.org, has been formed to restore the Model E to working condition, and it plans on holding public recitals as soon as the machines are functional.



Finally, one comes across numerous blueprints and working plans that are all that remain of Wilfred's early "Clavilux" works—large-scale visual performances in which Wilfred played a keyboard or organ of his own design, manipulating various levers and switches to project gigantic murals in moving color. In this section, too, are several charts detailing Wilfred's theoretical and technical construction of Lumia, which for him was an "eighth art" in which light could be manipulated, by adjusting form, color, and motion (with the aid of technology) into an "art of light."

<https://brooklynrail.org/2017/06/film/Looking-for-Lumia>







Thomas Wilfred Study in Depth Opus 152



Thomas Wilfred Lumia Suite Opus 158



Thomas Wilfred Lumia Suite Opus 158



Thomas Wilfred Visual Counterpoint Opus 140



Thomas Wilfred Nocturne Opus 148

Thomas Wilfred  
Lumia Suite Opus 158

Anos 1920  
Oskar Fischinger

Oskar Fischinger originally chose music as a career, studying violin and organ building (for mathematical harmonic theory) before 1914. Too young and unhealthy for war duty, he was forced to learn architectural drafting and tool design. At the beginning of April 1921, he was thrilled by the first performance of Walther Ruttmann's Light-Play Opus No.1 (a color abstract film with a live musical score) and vowed to devote himself to absolute cinema, which could best combine his skills at music and graphic art.

His first films of the early 1920s are among his most radical, perhaps because he felt challenged to create something quite different from the romantic choreography of small figures in the films of Ruttmann or the static development of graphic intricacies in the work of Viking Eggeling. Fischinger was also influenced by Tibetan Buddhism toward meditative mandala structures. In Wax Experiments and Spirals Fischinger designed visual patterns



of extreme complexity which often move in hypnotic cycles, yet he interrupts with radical editing of single frames of contrasting imagery. Similar virtuosity in editing characterizes *R-1: A Form-Play*, a spectacular abstract multiple-projection show (using five film projectors and slides) which he performed between 1925 and 1927. Even when viewing the panels as separate films, one is struck by their dynamic vigor and fresh inventiveness.

He helped support himself during this period by making conventional cartoons, which demonstrate his mastery of realistic anatomy, perspective, and conventional story-telling. But his *Spiritual Constructions* shows the same radical consciousness and experimental techniques as his abstract films: the slender tale of two drunks who argue and stagger home becomes an epic voyage of warping shapes and thwarted perceptions, rendered again with single-frame editing and scratching directly on film frames --

devices that would only re-emerge thirty years later in the films of Stan Brakhage.

During the summer of 1927 he walked from Munich to Berlin, recording his journey in single-frame exposures -- again a premonition of the diary films two generations later. He was hired to make special effects of rockets, starscapes and planet surfaces for Fritz Lang's 1929 science-fiction feature *Woman in the Moon*, and broke his ankle on the set. In the hospital he began drawing animations on white paper in charcoal, which led to a series of 17 *Studies*.

By this time Ruttmann was no longer making abstract films, so Fischinger felt free to explore the romantic choreography of simple shapes. In each of the *Studies* he set himself a different visual problem to solve: in *Study No. 6* a flexible aerodynamic movement that resolves into icons suggesting the eye as mandala

or the splitting of matter in an Einsteinian relativity; in Study No. 7 a deep-space perspective of hard-edged figures contrasted with a flat surface where sensuous art-nouveau shapes metamorphose; in Study No. 8 an orchestral multiplicity and density of figures, etc.

The close synchronization of these Studies with music (originally begun as ads for recordings, thus a precursor of video-clips) made them immensely popular with audiences worldwide, but after the Nazi takeover, such abstract works were looked upon with disfavor, and Fischinger was denied permits to make any further such films. His involvement with inventing the Gaspar Color process allowed him new venues, since the 1933 film *Circles* was cleared as an advertising film, although it is essentially abstract imagery and the ad text only appears in the last few frames.

He secretly produced a second color film, *Composition in Blue*, using small geometrical models. Fischinger exhibited *Composition*

in Blue at foreign festivals without a proper permit, and it won the King's prize at the Brussels World Fair in October 1935, which placed Fischinger in a dangerous position. Fortunately Paramount rushed him to Hollywood in February 1936, but they did not allow him to continue to work in color once he was there. With a grant from the Guggenheim Foundation he was later able to buy back from Paramount his short film *Allegretto*, which, printed in color, stands as one of the most perfect pieces of visual music: the layers of cels allowed Fischinger to develop rhythms, harmonies and counterpoints of forms, while the colors change from frame to frame to create lush hues on divisionist principles.

All Fischinger's filmmaking attempts in America suffered comparable difficulties. He composed *An Optical Poem to Liszt's "Second Hungarian Rhapsody"* for MGM, but received no profits due to studio bookkeeping systems. He designed the Bach "*Tocatta and Fugue*" sequence for Disney's *Fantasia*, but quit without credit

because all his designs were simplified and altered to be more representational. The Guggenheim Foundation required him to synchronize a film with a Sousa march in order to demonstrate loyalty to America [4], and then insisted that he make a film to Bach's "Brandenburg Concert No. 3" even though he wanted to make a film without sound in order to affirm the integrity of his non-objective imagery -- and secretly did compose the silent masterpiece *Radio Dynamics* which breathes slow pulsating rhythms and astonishing single-frame flickers of painterly images.

Frustrated in his filmmaking, Fischinger turned increasingly to oil painting as a creative outlet. Although the Guggenheim Foundation specifically required a cel animation film, Fischinger made his Bach film as a documentation of the act of painting, taking a single frame each time he made a brush stroke -- and the multi-layered style merely parallels the structure of the Bach music without any tight synchronization. Although he never again

received funding for a film, the breathtaking Motion Painting No. 1 won the Grand Prix at the Brussels International Experimental Film Competition 1949. Three of Fischinger's films also made the 1984 Olympiad of Animation's list of the world's greatest films.

Dr. William Moritz

1931 Study n° 8  
Oskar Fischinger

1935 Komposition in Blau  
Oskar Fischinger



1938 An Optical Poem  
Oskar Fischinger

Um dos nomes mais importantes da visual music e da animação no século 20, Oskar Fischinger desenvolveu um instrumento conhecido como Lumigraph, que teve sua primeira versão concluída em 1951. No site do Center for Visual Music, há um artigo de Elfriede Fischinger que explica a gênese do instrumento. Ela explica que o Lumigraph era constituído de uma moldura em forma de caixa de mais ou menos 30 centímetros de largura e profundidade:

Esta 'moldura' continha uma abertura que encapsulava a folha de látex montada em um suporte de tela de madeira de 1 metro de altura por 1,30 metro de largura. Os gels coloridos tinham sido presos a tiras de vidro que giravam em uma roda dentro da caixa de madeira, e uma fenda fina dentro da quina frontal da caixa só permitia as luzes dos (frios) tubos de neon dentro da caixa emergirem neste ponto para formar uma camada fina de luz na frente da tela de borracha. Esta fenda de luz estava distante o suficiente

da tela para que apenas as porções da tela que fossem empurradas adiante caíssem na trajetória da luz e se tornassem visíveis ao espectador sentado em frente ao instrumento — e ao menos que algo sobressaísse na fina camada de luz, nada seria de forma alguma visível! (A caixa estava até pintada de preto). Cada cor de gel havia sido montada em uma tira de vidro diferente, e estes vidros coloridos podiam ser girados puxando uma tira da tela na parte de trás da caixa — Oskar tinha feito uma pequena escala para mostrar exatamente onde parar para obter vermelho, azul, amarelo, etc.

A silent excerpt from one of the Lumigraph films made by Elfriede, of her performances on Oskar Fischinger's Lumigraph. From the collection of and (c) Center for Visual Music, Los Angeles. Preserved by CVM for the 2005 Visual Music exhibition at MOCA and Hirshhorn.

Oskar called his invention a "new Color-Play instrument...The instrument is played by HAND and produces the most fantastic color display - but controlled direct through the Player."

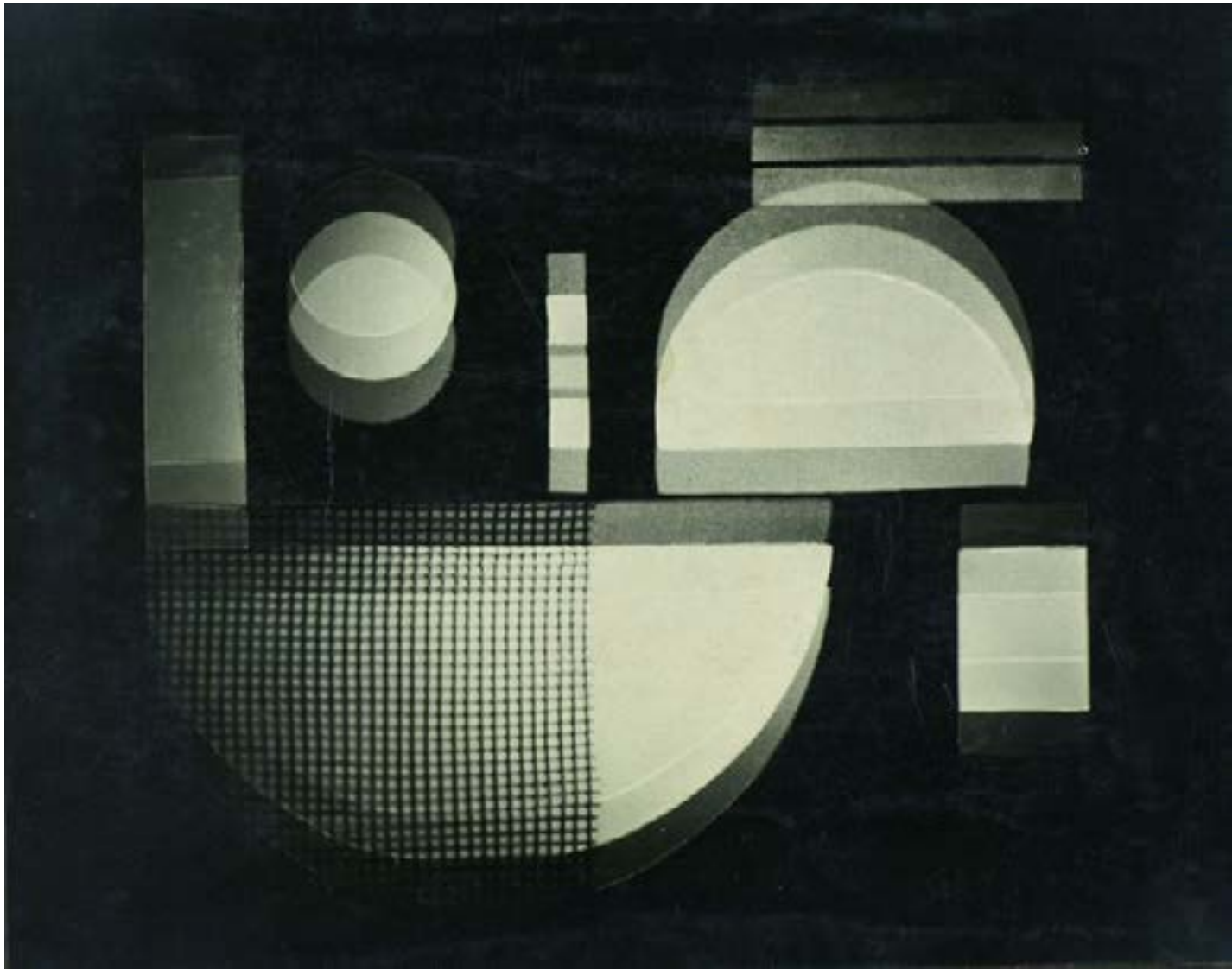
There are no films of Oskar's 1950s performances, only Elfriede's, made later. One of the recordings she played to was Valse Triste.

1951 Lumigraph  
Oskar Fischinger

Reflektorisches Lichtspiel  
1922-1923 – Kurt Schwerdtfeger

Together with Josef Hartwig, Kurt Schwerdtfeger constructed an illuminated apparatus with various cardboard shapes that could be moved in front of it by hand as a contribution to the Lantern Festival in July of 1922. The result was abstract patterns formed by the shadows on a transparent projection surface. Based on their discovery of dual warm and cold shadows as an optical phenomenon, Schwerdtfeger and Ludwig Hirschfeld-Mack continued to develop the system into the Reflecting Plays of Colours. Although this was still operated manually, it showed a strong relationship to the abstract films of the 1920s.

Kurt Schwerdtfeger's 'Reflecting Light Games' had its premiere at Kandinsky's flat in 1922 and was shown once again that same year at the Bauhaus. In 1923, it became part of the programme of the Bauhaus stage that had a performance during the Bauhaus Week at the Jena Theatre.





Reflektorisches Lichtspiel  
1922-1923 – Kurt Schwerdtfeger

1926 Alexander László

Um pouco mais adiante, Alexander László vai desenvolver sua música de luz e cor. Em *See this Sound*, Jörg Jewanski afirma que ele “criou sua música de cor e luz para permitir ao público participar nas associações de cor que ele percebia enquanto tocando o piano com um toque ricamente timbrístico”. A primeira apresentação de seu órgão de cor aconteceu em Kiel, em 1925. Ele, então, passou dois anos viajando ao redor da Alemanha apresentando seus concertos de música de cor e luz. Com a colaboração de Oskar Fishinger, ele ampliou as possibilidades de suas performances, incluindo projetores de slide e luzes sobrepostas. Por isso, para além de sua inserção na história do desenvolvimento de instrumentos de luz e cor, é possível inserir László entre os pioneiros da performance audiovisual propriamente dita, tendo em vista seu elaborado trabalho para criar relações entre música e luz em situações de palco. Todavia, é importante apontar (com Jewanski) que “ao contrário de

Alexander Wallace Rimington ou Mary Hallock-Greenewalt, László não visualizava composições bem conhecidas, mas em colaboração com o pintor Matthias Holl criava tanto a música quanto a pintura de luz em um processo criativo independente. Como no cinema, uma tela era usada para a projeção”.

According to Cindy Keefer "The first known simultaneous performance of abstract film, color organ light projections, and music was that of Hungarian composer Alexander László and Oskar Fischinger, in Munich in March 1926." I wish there was film or pictures of this. The only thing I've ever seen of this is this painting, but I don't think was of one of Laszlo's performances that included Fischinger's projections

<http://resolume.com/blog/9489/feature-early-abstract-film>



Parallel in the 1920s, Walther Ruttmann and Oskar Fischinger were pioneering visual music films in Germany, using tinted animation to live musical accompaniment. The Hungarian composer Alexander Laszlo wrote a theoretical text *Color-Light-Music* in 1925, and toured Europe with a color organ of his own devising, which contained switches for colored spotlights and slide projections on the stage above his piano. When the first reviews complained that the visual spectacle was much tamer than the Chopin-like dazzle of Laszlo's virtuoso piano compositions, he contacted Fischinger to prepare some filmed abstract images of greater complexity and vibrancy. Fischinger prepared a dazzling spectacle with three side-by-side movie projections that were augmented by two more overlapping projectors to add extra colors to the finale, and some complementary changing slide-projections around the borders of the film projection. Much to Laszlo's chagrin, the reviews flip-flopped: the astonishing visual imagery was much livelier and more modern than the old-fashioned Chopin-style piano music. Fischinger subsequently performed his multiple-projections several times under the title *R-1, a Form Play*, with live music by a percussion ensemble—a kind of predecessor to the light-shows such as Jordan Belson's Vortex Concerts of the late 1950s and the Rock concerts of the late 1960s. (Laszlo fled to Hollywood during the Nazi era, and wrote lush symphonic scores for dozens of B-movies and television shows, from *Charlie Chan* and *Attack of the Giant Leeches* to *My Little Margie* and *Rocky Jones, Space Cadet*.)

In: Moritz, William. The Dream of Color Music, And Machines That Made it Possible  
<https://www.awn.com/mag/issue2.1/articles/moritz2.1.html>

1929 O vôo de Lindberg  
Bertolt Brecht



Os meios de comunicação são os dispositivos que vão operar as coincidências e distâncias desta temporalidade que torna o mundo cada vez mais conectado. O rádio, a TV e mais recentemente a Internet e os telefones celulares mudam as geografias do planeta de forma definitiva, como foi discutido a ponto de não ser necessário elaborar demais o tema, neste contexto de discussão sobre as poéticas do ao vivo nas linguagens audiovisuais e suas intersecções com a arte contemporânea.

Uma das primeiras obras a explorar as possibilidades da transmissão ao vivo é também uma odisséia sobre as formas como espaço e tempo rapidamente se reconfiguram, nas passagens do século 19 ao 20. Trata-se de Lindbergflug, de Bertolt Brecht. Conforme a descrição por Golo Föllmer no site Medien Kunst Netz, uma das fontes mais completas sobre a história e os desdobramentos das poéticas tecnológicas, a obra é descrita da seguinte forma:

«Der Lindberghflug» foi composta para o Baden-Baden Chamber Music Festival em 1929. O programa incluía «Amateur Music» e «Original Compositions for Radio.» O libreto épico de Bertolt Brecht introduz o primeiro vôo bem sucedido através do Atlântico, realizado por Charles Lindbergh em 1927, como um símbolo do poder individual na sociedade. A música era de Kurt Weill e Paul Hindemith. A estréia mundial em 27.7.1929 foi um evento puramente radiofônico: a obra foi transmitida para várias salas ao redor de um espaço que foi temporariamente convertido em estúdio de transmissão<sup>2</sup>. Para a performance em forma de concerto no dia seguinte Brecht dividiu o palco em duas metades: músicos, coro e narradores foram colocado no lado esquerdo («O Rádio»), e no direito, separado por uma tela, sentou Josef Witt em mangas de camisa para representar «O ouvinte» e declamar a parte cantada de Lindbergh. Na versão radiofônica isto era, de fato, supostamente feito por cada ouvinte, sentado diante de seu rádio doméstico.

Deixando de lado o evidente esforço de forjar um mecanismo de participação do público, para tirar o ouvinte de seu lugar de cômodo receptor de conteúdos (algo a respeito do que Brecht escreve em seu conhecido artigo O rádio como um aparato de comunicação), em Lindbergflug fica claro o problema do encurtamento do tempo em curso como resultado de tecnologias capazes de encurtar distâncias e mudar a percepção da presença, como o gramofone, o telefone, o telégrafo e o rádio. Todavia a obra em mídia de Brecht é mais contundente pelos aspectos ligados às poéticas de transmissão ao vivo que pela capacidade de estabelecer um rádio mais dialógico.

Tanto o tema do vôo que aproxima continentes quanto os dispositivos de embaralhamento dos lugares tradicionalmente atribuídos a artistas em cena e público espectador são relevantes.

Os processos de mecanização em curso na época, ao mudar o sentido do que se entende por presença, fazem o tempo correr em outro ritmo, e tornam ao vivo certos tipos de acontecimento paradoxalmente envoltos em mecanismos de deslocamento ou mediação.

De forma inédita, o corpo fica menos preso ao lugar, e as distâncias parecem se encurtar, gerando um certo curto-circuito perceptivo. Aqui e agora, para usar a expressão marxista que Benjamin recupera para falar do efeito aurático que as pessoas têm quando encontram-se na presença de certas coisas que investem de um valor de culto, já não se restringem mais aos limites do que o corpo humano pode perceber em seu entorno. O vôo de avião torna outro lugar, em breve, aqui. A ligação telefônica aproxima dois corpos distantes, num agora em que, estranhamente, uma voz de lá encosta em meu ouvido.

Em *Strategien der Interaktivität*, Dieter Daniels aponta os principais vetores na trama que liga Brecht à cultura digital (ao mesmo tempo em que propõe uma distinção entre o entendimento brechtiano de interatividade, marcado pela chave ideológica da emancipação, e o entendimento turingniano, marcado pela chave tecnológica do algoritmo). Conforme são apresentados exemplos que cobrem quase um século de experiências que acompanham o surgimento das mídias digitais e de discursos que questionam a centralidade e a autonomia dos processos autorais (como, por exemplo, as experiências de Cage e o conceito de Obra Aberta), fica claro que nem todos os formatos ditos interativos pretendem permitir a participação consciente em processos compartilhados, motivação maior do interesse brechtiano pelas novas mídias. A interatividade é uma ideologia ou uma tecnologia? Os antecedentes desta questão retornam aos anos 1930 e podem ser identificadas em duas instâncias opostas: Bertolt Brecht e Alan

Turing. Brecht demandou em 1932: "Mude este aparato (o rádio) de distribuição para comunicação /.../ Ao submeter sugestões constantes, incessantes, para melhorar o uso do aparato para o bem geral nós temos que abalar os fundamentos sociais deste aparato, para discutir como ele esta sendo usado para para ampliar os interesses de poucos".

Há certos aspectos do texto de Daniels que precisam algum balizamento. Em primeiro lugar, por se tratar de um esforço de sistematizar um espectro amplo de obras, e tentar construir um fio condutor a partir do tema da interatividade, ele não abrange aspectos da questão que não sejam diretamente relevantes para seu recorte. Todavia, o retorno a Brecht é importante também pelo engajamento nas formas do imediato que o rádio permite. As peças de rádio de Brecht — inseridas no contexto mais amplo das peças didáticas que em seguida ele abandonará em favor de uma

dramaturgia mais explicitamente do palco — não exploram os modos de participação do público da forma contundente que os textos de Brecht sobre o rádio fariam supor.

São várias questões encadeadas: o artigo O Rádio como um dispositivo de comunicação contém algo de manifesto, na medida em que sonha possibilidades futuras de modificação de uma linguagem; o engajamento de Brecht em um teatro participativo, por meio das peças didáticas, não tem continuidade como resultado de seu investimento nos tipos de peça que lhe permitiram desdobrar a carreira de dramaturgo; a própria tecnologia do rádio fixa-se no formato broadcast que vai definir a comunicação de massa no século XX, e apesar de ser um aparelho possível de ser modificado quando aberto, a sugestão de Brecht torna-se cada vez menos razoável para o tipo de público que vai tornar-se consumidor dos produtos da indústria cultural.

A ligação entre Brecht e o rádio aponta para um campo de

intersecção de grande importância para entender as poéticas ao vivo. O teatro sempre foi uma linguagem do acontecimento, o estar diante do público (mesmo se protegido por uma quarta parede), o treino do corpo para certo desempenho, a necessidade do improvisado como um recurso que pode ter fins de criação ao vivo ou remediar imprevistos. Quando um artista com este tipo de interesse desloca suas energias para o rádio, fica clara que há também em curso a constituição de um novo tipo de presença. Deste ponto-de-vista, uma história sintética das mídias pode ser contada como a história da forma como a presença torna-se cada vez mais sensória e imediata. O rádio desloca vozes no espaço e no tempo. A televisão transfere corpos para longe das câmeras que captam suas silhuetas. As mídias digitais permitem que estas formas mediadas de presença democratizem-se de forma inédita e tornem-se finalmente bidirecionais.



ENKUNGEN ZU VERMEIDEN, BETEILIGT SICH  
E AN DER MUSIK ( HIERIN AUCH DEM  
OLGEND: TUN IST BESSER ALS FÜHLEN )  
MUSIK MITLIEBT UND IN IHR FELENDE  
UMMT ODER IM BUCH MIT DEN AUGEN  
IM VEREIN MIT ANDEREN LAUT SINGT.



1938 War of the Worlds  
Orson Welles

Desde o surgimento das formas mecânicas de mediação, inicia-se um processo de gradual transformação do espectador em participante, em parte como resultado de certa volatilização dos corpos tornados imagens móveis. Em A obra de arte na era de sua reprodutibilidade técnica, Benjamin reproduz trecho extremamente sagaz que Pirandello escreve a respeito dessa desmaterialização dos corpos, ainda que o faça envolto de um sentimento nostálgico que localiza no cinema uma espécie de morte do corpo.

Para o cinema é menos importante o ator representar diante do público um outro personagem, que ele representar a si mesmo diante do aparelho. Pirandello foi um dos primeiros a pressentir essa metamorfose do ator através da experiência do teste. A circunstância de que seus comentários, no romance Si gira, limitam-se a salientar o lado negativo desse processo, em nada diminui o alcance de tais observações. Elas não são afetadas,

tampouco, pelo fato de que está se referindo ao cinema mudo, pois o cinema falado não trouxe a esse processo qualquer modificação decisiva. O importante é que o intérprete representa para um aparelho, ou dois, no caso do cinema falado. "O ator de cinema", diz Pirandello, "sente-se exilado. Exilado não somente do palco, mas de si mesmo. Com um obscuro mal-estar, ele sente o vazio inexplicável resultante do fato de que seu corpo perde a substância, volatiliza-se, é privado de sua realidade, de sua vida, de sua voz, e até dos ruídos que ele produz ao deslocar-se, para transformar-se numa imagem muda que estremece na tela e depois desaparece em silêncio. A câmara representa com sua sombra diante do público, e ele próprio deve resignar-se a representar diante da câmara."

Pirandello (citado por Benjamin) descreve de forma precisa este deslocamento, ao tratar dos atores de cinema. Algo semelhante acontece, de forma mais rotineira, com as pessoas que passam a se relacionar cada vez mais por meio de aparelhos:

O ator de cinema sente-se no exílio. Exilado não somente do palco, mas também de sua própria pessoa. Com um mal-estar indefinível, percebo o vazio inexplicável que surge da transformação do seu corpo em uma aparição fugidia, que se evapora; roubam sua realidade, sua vida, sua voz e os ruídos que produz enquanto se movimenta, transformando-os em uma imagem silenciosa que treme durante certo momento na tela e em seguida desaparece em silêncio.

É este tipo de eclipse das corporeidades diante de espaços e tempos que se fraturam que Brecht procura explorar, quando encena seu jogo de proximidades e distâncias. Ao realizar um concerto invisível, em que os músicos tocam confinados num estúdio que irradia seus sons para um público remoto, Lindbergflug inaugura uma presença transmitida. O ao vivo passa a ser a expressão paradoxal desta presença mediada. Não é mais o corpo diante de,

mas o acontecimento no tempo em que, o fator de fascínio de uma cultura que, por um lado multiplica-se nas reproduções que passa a tornar possível nos cliques de câmeras cada vez mais sofisticadas, por outro expande-se nas distâncias que passa a conectar nos elos da rede de telecomunicação cada vez mais dispersas pelas geografias do planeta.

Um exemplo contundente desta dimensão de acontecimento que torna-se presente é *A Guerra dos Mundos*, de Orson Welles. A história é bem conhecida. Ao adaptar a novela de ficção científica de H. G. Wells, o diretor de programas de rádio e filmes estadunidense opta por uma estratégia que é comum até hoje na dramaturgia: ele substitui os ambientes e cenários do filme original, para torná-lo mais realista para o público dos EUA, incluindo descrições e nomes de cidades familiares para sua audiência. Welles não se dá conta de que as características midiáticas do

rádio resultará numa recepção excepcionalmente distorcida de seus objetivos. O rádio mistura notícias e novelas, fazendo com que seu ouvinte precise de marcas muitas claras para distinguir entre “ficção” e “realidade” das informações transmitidas. Além disso, a estrutura de sua programação em grades de horários fixos não corresponde à disponibilidade dos ouvintes, que nem sempre ouvem os programas do início ao fim, e muitas vezes ficam trocando entre estações até encontrar algo que prenda sua atenção. Como resultado destas características, grande parte dos ouvintes que escutaram A Guerra dos Mundos não ouviram o aviso inicial que atestava se tratar da leitura dramática de um texto de H. G. Wells. Para eles, as descrições realistas de uma invasão alienígena em lugares que poderiam ser as casas de seus parentes, com menções a cidades e marcos geográficos facilmente reconhecíveis, os levaram à confundir o programa com um noticiário extraordinário sobre a tomada de seu país por criaturas

de outro planeta. A confusão causou pânico, um espalhamento histérico e hipnótico de rumores que não era desconhecido nos processos de massa cada vez mais comuns no início do século. O congestionamento nas linhas telefônicas dos estúdios da CBS impediram maiores esclarecimentos, tudo culminando num efeito multiplicador desmentido apenas nas manchetes de jornal do dia seguinte.



1938 War of the Worlds  
Orson Welles

As experiências de Brecht e Welles tem muitos aspectos em comum, mas guardam diferenças essenciais. As semelhanças apontam para um novo tipo de ator no cenário da cultura que vai ser formado nas metrópoles reconfiguradas pelo uso de produtos industrializados, e por dispositivos de mídia, num processo que torna-se vertiginoso durante o século 20 (como já foi apontada no início deste livro). Brecht e Welles são intelectuais engajados na mídia, em certo sentido. Ambos têm um envolvimento com o teatro, e a dramaturgia os acompanhará nas carreiras que todavia em certo ponto começarão a divergir.

Beneficiando-se de um circuito de exibição constituído, e de um papel público que o teatro tem em uma cidade como Berlin, Brecht aproxima-se de mídias como o rádio porque sua época coloca-se o desafio coletivo de inventar as dramaturgias do futuro que essas novas tecnologias de então sugerem. Não se

trata de um engajamento explícito com o dispositivo, o que fica claro nas relações possíveis entre suas experiências com os jogos dramáticos e o interesse pela convocação da audiência em *O vôo de Lindbergh*. Brecht, a esta altura, está interessado sobretudo em um teatro capaz de emancipar o público, uma dramaturgia que suscita a reflexão e o debate, transformando o teatro num espaço de subjetivação — para usar uma palavra que atualiza, correndo o risco de extrapolar, o problema Brechtiano. Este desvio de Brecht para o contemporâneo, por mais que às vezes enfatize aspectos de sua obra que talvez não fossem os que mais lhe interessavam, tem sido uma tônica de estudos sobre sua obras, como fica claro, por exemplo, no livro de Ingrid Doumien Koudela *Brecht na Pós-Modernidade*.

Brecht, portanto, aproxima-se do rádio pela via indireta de um artista que percebe a importância de enfrentar as mudanças do mundo a sua volta, de incorporar de forma crítica o que surge, ao invés de descartar como algo menor e diluidor o que a cultura urbana começa a produzir. Esta postura de descarte, aliás, será a posição de alguém como Adorno, e neste sentido o engajamento Brechtiano parece mais enriquecedor na medida em que aceita as transformações do mundo, mas procura agir de forma crítica diante delas.

É neste aspecto que ele se afasta de Welles, pois este vai do teatro ao rádio e especialmente ao cinema com o mesmo interesse em investigar como acontecem as transformações nas maneiras como as pessoas recebem as narrativas de sua época, mas voltado para aspectos mais internos aos seus modos de difusão. Todavia, o que há de perturbador no cinema de Welles fica restrito aos modos

como ele introduz, em suas cenas, nos modos de filmá-las e montá-las, temas e recursos divergentes do formato industrial. Diferente de Brecht, ele estimula que o público pense não pela chave da participação mas do recurso ao pouco óbvio.

A diferença entre ambas inscreve-se, provavelmente, em parte no campos das diferenças culturais entre Europa e Estados Unidos. Enquanto há na Europa um embate entre uma cultura constituída e as maneiras como os processos de modernização virão modificá-la, nos Estados Unidos o rádio e o cinema se tornarão parte do projeto de um país. Basta lembrar da forma como Hollywood assumirá um protagonismo que vai ditar todo um modo de fazer dramaturgia, numa época em que a sala de cinema acaba assumindo um papel tão grande quando o que os teatros tiveram em certas épocas e contextos. Não faz sentido falar em substituição, pois a presença do teatro continua significativa na vida das cidades, mas durante o

século 20 ele passa a dividir espaço com as salas de cinema. Neste contexto, vale pensar qual o sentido desta anestesia massiva que o rádio vira a produzir durante a transmissão de Guerra dos Mundos, justamente no momento em que seus usos no velho continente pareciam indicar justamente o contrário, nos sonhos de um rádio comunitário, emancipador e aberto à participação e influência coletiva.

No Brasil, este surgimento da cultura de massa a partir do rádio tem um sentido mais próximo ao dos Estados Unidos, como é discutido de forma bastante detalhada no livro de José Ramos Tinhorão Música Popular — do gramofone ao rádio e TV. O rádio ao vivo, todavia, é usado no Brasil de forma mais canônica e será preciso se aproximar do universo das artes visuais para encontrar uma obra que dialogue de forma mais explícita com o problema da transmissão como ele aparece em Brecht (e às avessas em Welles). Trata-se de Flavio de Carvalho, com sua conhecida Experiência #2.

Voltaremos a ela mais adiante. A esta altura dos acontecimentos, Carvalho ainda estava fazendo Teatro “mais convencional”

1933 O Bailado do Deus Morto  
Flavio de Carvalho

A maioria destas experiências pioneiras estão ligadas ao palco. Um exemplo desligado da tradição dos instrumentos de cor e som, mas relevante para entender os desdobramentos da performance audiovisual no Brasil é o teatro da experiência, proposto por Flávio de Carvalho no contexto do modernismo brasileiro. Em verbete dedicado ao tema no site do MAC, Vanessa S. Machado e Daysi Peccinini, afirmam que o “Teatro de Experiência nasce em decorrência do debate traçado entre Flávio de Carvalho, Oswald de Andrade, Tarsila do Amaral, Oswald Sampaio, entre outros, em torno das idéias de renovação das artes cênicas no Brasil”. Nas palavras do próprio Carvalho:

"O teatro seria um laboratório e funcionaria com o espírito imparcial das pesquisas de laboratório. Lá seria experimentado o que surgia de vital no mundo das idéias: cenários, modos de dicção, mímica, dramatização de novos elementos de expressão,



problemas de iluminação e de som conjugados ao movimento de formas abstratas, aplicação de predeterminados testes (irritantes ou calmantes) para observar a reação do público com o intuito de formar uma base prática da psicologia do divertimento, realizar espetáculos-provas só para autores, espetáculos de vozes, de luzes, promover o estudo esmerado da influência da cor e da forma na composição teatral, diminuir ou eliminar a influência humana ou figurada na representação, incentivar elementos alheios à rotina e escrever para o teatro... e muito mais coisas que no momento me escapam".

Entre os resultados desta pesquisa encontra-se a apresentação da peça O Bailado do Deus Morto, texto do próprio Flávio de Carvalho. Na descrição de Machado e Peccinini:

Com cenário e figurino visualmente simples, cujo material utilizado era basicamente alumínio e tecido rústico, o Teatro de Experiência conseguiu superar o entrave da precariedade econômica e produzir a atmosfera ideal para a encenação da peça. O Bailado acontecia ao redor de um deus animal moribundo: seres humanos mascarados assistiam perplexamente a situação e procuravam aleatoriamente lugares onde pudessem se aglomerar e se esconder, numa movimentação expressionista. E foi aí que Hugo Adami proferiu o primeiro palavrão do teatro brasileiro.

A última frase do espetáculo era: "a psicanálise matou deus". A primeira encenação foi suficiente para que a imprensa levantasse o estandarte da moral e dos bons costumes. Após a terceira apresentação, a polícia encerrou a experiência.

Christine Mello: Um dos aspectos que liga O Bailado do Deus Morto à Visual Musica é a ênfase no gesto que Flavio de Carvalho vai imprimir ao trabalho. Esta relação entre texto e corpo tem um elemento de diálogo entre linguagens equivalente ao diálogo entre imagem e som que a Visual Music opera.

# A manipulação do sinal eletrônico em tempo real

Todavia, experimentos pioneiros com manipulação do sinal eletrônico em tempo real no vídeo já haviam sido feitos nos anos 1920, nas tentativas de Léon Theremin de construir uma televisão e em seus experimentos com osciladores e osciloscópios. Em seu primeiro concerto nos EUA em 1928, ele apresentou o Etherophone — um dispositivo com que ele guiava ondas elétricas através de um container com líquidos transparentes que criavam efeitos coloridos.\* Em 1932, ele apresentou o Whirling Watcher, em que ele tinha conectado um tubo de vidro cheio de gás a um circuito oscilador para gerar um efeito estroboscópico.\*\* Ele continuou com estas experiências nos anos 1930 com Mary Ellen Bute, que as descreve da seguinte forma:

Nós mergulhamos espelhos minúsculos em um pequeno tubo de óleo, conectados por um arame fino, ligado através de um oscilador a um tipo de controle joystick. Manipulando este joystick

era como ter um lápis de desenho responsivo, ou um pincel que fluía luz e estava inteiramente sob controle da pessoa com o joystick... Ele (o pequeno ponto de luz viva) parecia tão responsivo e inteligente. Ele parecia seguir o que estava na mente ao invés da manipulação do oscilador. O resultado na tela era cristalino e puro como um desenho adorável de luz cinética que se desenvolvia na continuidade do tempo. (Bute, 1982, página E)

De acordo com Bute, o aparato construído por ela e Theremin era muito caro (Bute, s.d) e imprevisível e, portanto, difícil de ser usado fora de contextos experimentais. Seus experimentos pertenceram ao campo das artes da luz e cor, em que artistas enfrentaram dificuldades semelhantes, às vezes trabalhando por décadas no desenvolvimento e melhoria de instrumentos de cor e luz, como é o caso de Thomas Wilfred. Seus dispositivos de

projeção (como o Chromatophon de Anatal Vietinghoff-Scheel (1930), o Sonchromatoscope de Alexander Lászlo (1925), o Sarabet de Mary Hallock Greenewalt (1920- 1934) e o Clavilux de Thomas Wilfred, já mencionado acima), deveriam ser considerados verdadeiros precursores das performances com imagem, já que eram usados para criar padrões coloridos em performances com ou sem música. (Sandra Naumann)

1930  
Mary Ellen Bute



Mary Ellen Bute, uma pioneira do filme não-figurativo nos Estados Unidos, desenvolveu maneiras de certa forma mais concretas de aplicar princípios de composição musical à composição visual que os expressos pelos conceitos de Ruttmann, Richter, e Eggeling. Dos anos 1930 em diante, ela fez uma série de filmes curtos com título *Seeing Sound* em que ela buscava arranjar o material visual de acordo com princípios tão intrínsecos quanto os usados em *Licht-Spiel* (2005, p. 46-56). Uma exceção é o filme *Radio Dynamics* (1942), que é silencioso e começa com uma inscrição trazendo as palavras “Por Favor! Sem Música-Experimento no Ritmo-Cor” para proibir expressamente o uso de acompanhamento musical. De maneira semelhante a Fischinger, Bute criou a maioria de seus mundos visuais em combinação com e à base de músicas clássicas e românticas, mas ela também usou melodias modernas. Diferente de Fischinger, todavia, ela estabeleceu correspondências sincrôni-

cas apenas parcialmente claras entre a música e os eventos visuais, porque ela estava menos interessada na visualização direta da música que na criação de uma contra- partida equivalente.

Bute relata que ela aproveitou o sistema matemático de composição de Joseph Schillinger, que foi concebido de forma universal e portanto podia ser aplicado à criação de qualquer obra de arte. Depois de uma análise das partituras que escolheu, ela usou as relações numéricas que estabeleceu para gerar uma composição visual a partir da qual ela organizou os elementos das imagens, ao mesmo tempo os envolvendo em uma trama complexa com o nível audível. Este método é particularmente evidente no filme *Tarantella* (1940), em que ela não usa uma peça musical existente, mas colabora com o compositor Edwin Gerschefski para desenvolver uma série de ritmos derivados de operações matemáticas. As camadas visual e musical foram primeiro desenvolvidas separadamente e apenas posteriormente unidas.

Mary Ellen Bute (1906 – 1983) was originally trained as a painter at the Pennsylvania Academy of Fine Arts in Philadelphia. After graduating in the early 1920s, she moved to New York and became involved with the same concerns with movement, rhythm and synaesthetic form that were common to the European avant-garde before World War II. Her engagement with these issues is apparent through her associations: she was closely involved with the community of visual music inventors and musicians in New York in the 1920s and early 1930s. During this period, she worked in the studio of Leon Theremin, and it is likely that through this connection she encountered Schillinger who was collaborating with Theremin on the development of the electronic musical instrument that bears his name; Bute read the paper about this instrument while Theremin demonstrated it to the New York Musicological Society. She would later also work in Thomas Wilfred's studio, learning to perform on the Clavilux.

Her movement between live performance of electronic and visual music, the aesthetics of abstract painting influence and her work with adapting Joseph Schillinger's mathematical model for synchronization of sound-image draws all the various threads of the history of motion graphics together in her film work, which she termed—in a direct reference to both visual music and the American abstract painter Stanton MacDonald-Wright's art “movement” of the same name—Synchronomy; she would produce ten abstract films between 1936 and 1959.

Bute's activity as an abstract film maker began as an attempt to produce a visual demonstration of music theorist/mathematician Joseph Schillinger's system for synchronizing music and image. Understanding Schillinger's musical system is essential to comprehending the formal development of Mary Ellen Bute's films; it occupies a central position in the aesthetics governing her film works. The earliest of these are directly relatable to the theoretical work produced by Schillinger. Her first attempt at an abstract film,

Synchronization (1933), was never completed, but was meant to be a logical demonstration of Schillinger's ideas.

Schillinger's music theories have many points of contact with the tactics of avant-garde artists working in the visual arts: he would attack and ridicule established conventions, arguing for a new model for music that he was proposing. The musical system is part of Schillinger's larger system of art that is principally modeled on the permutation of Aristotle's five senses. Music historian Warren Brodsky explains Schillinger's invention in his survey of the theorist's work:

This permutational approach to the arts (forty years before the computer era) defined eighteen different art forms involving sound, mass, odor, flavor, light, pigment and surface relation to general components of time and space. He spoke of synthetic and multisensory associations, as well as about the fusion of sensations, which we referred to as "colored hearing," "sound

seeing” and “kinesthetic temperature / texture reactions” of tone quality. Schillinger also raised the question of transformation and coexistence of optical forms based on musical patterns.

[Warren Brodsky. “Joseph Schillinger (1895—1943): Music Science Promethean,” *American Music* (Spring 2003), pp. 54-55.]

Mary Ellen Bute’s films show their influence from Schillinger directly: many are titled specifically as “A Seeing-Sound Film,” or as “Synchromy”. The connections between synaesthetic abstraction, the production of a “universal language of form” and both visual music and film could not be more explicit than in Brodsky’s listing. The construction of art around the synthesis of discrete senses and the fusion of sensation as “colored hearing” is a common theme among artists involved with the synaesthetic tradition. In working out the potentials of his system, Schillinger proposed several approaches to the synchronization of music to visuals, patenting devices of two types: the “Graphomaton” that

produced linear designs, and the “Luminaton” that employed projected light. The development of machineries to demonstrate the theoretical connection between sound and image, as well as the free movement between various types of “color organ” and film experiments, is one common feature shared by a majority of artists working in the first period of abstract film. Mary Ellen Bute’s work and close connections to Schillinger, Theremin and Wilfred has a visible impact on how she develops and experiments with creating visuals for her abstract films; central to this work are Joseph Schillinger’s theories about synchronization.

Schillinger’s approach conceptualized both film and music as similar problems where their structural organization and development was to be based on rhythm. In his model the rhythm of events (plot), actions (actor’s movements), and color (or chiaroscuro) are all coordinated to the music to create a single rhythmic effect. Bute’s first finished film, *Rhythm in Light* (1934)

simplified the earlier visual design of Synchronization and replaced the hand-animated forms with live filming of physical objects, thus allowing the production of the finished film much more quickly than what would have been required for the animation. Unlike Oskar Fischinger's direct synchronization of form-to-tone, Bute's design follows an elaborate synchronization of composition, musical phrase, visible motion on screen and editing to create its linkage of sound and image. It is an almost literal adaptation of Schillinger's description of synchronization from his February, 1934 article "Excerpts from a Theory of Synchronization" published in the Marxist film journal *Experimental Cinema*:

Synchronization of the visual-audible does not necessarily mean one to one correspondence. Different components can be correlated through all the infinite variety of their different powers and different modifications of the same powers. Different parameters of the same component follow the same principle. This means that the continuum of one or more components can be



represented through a system of parabolas, where the location of points expressing different parameters can be determined.

[Joseph Schillinger, “Excerpts from a Theory of Synchronization,” in *Experimental Cinema*, no. 5 (February, 1934)]

Schillinger’s brief article presents a mathematically-based theory for cinematic construction of synchronous relationships between music and image. The foundation for this construction is the rhythmic cycle based in an assumption that the audience already knows the development and progression of the piece itself; this element of past experience and conscious anticipation of the work’s development is a crucial, but unacknowledged element in his theory:

There are different ratios of correlation serving different purposes. For instance the rhythmic center for an image on a given area will be more dynamic or dramatic at the ratio of 4:3 than at 1:1.

The same is true referring to time for a whole composition: the suspension of a climax will be more effective at the ratio 3:2 than at 4:3—as it develops later, it will seem tenser.

[Joseph Schillinger, “Excerpts from a Theory of Synchronization,” in *Experimental Cinema*, no. 5 (February, 1934)]

The distinction between an image where the whole totality is perceived instantly, and the elaboration of a work across a duration is absent from this construction; this lapse is significant to understanding the theory Schillinger proposes. It is a conception where the organization of the whole, and its comprehension after viewing. In this theory, the full elaboration and the desired emotional effects of that construction, require a complete apperception of the totality once it is complete.

Filmmaker and historian Lewis Jacobs, whose magazine *Experimental Film* was engaged with promoting a politically-engaged cinema derived from Soviet work with montage, described Bute's films as being "more concerned with complementing rather than corresponding to the visuals." His observation about her films is appropriate: Bute's films do not engage in the synchronization of note/tone to form that Oskar Fischinger's films do; however, this is not to say that there is not a variety of counterpoint synchronization clearly evident in these films. Their structural organization, editing, rhythm and tonal qualities are all carefully fitted to the music, so the imagery serves as a response and a visualization of the music, but without displaying individual notes tied to specific forms throughout the entire film. The degree to which each film is synchronously connected to the music varies. Some, such as *Tarantella* (1940), have close synchronous relationships with forms, while others, such as *Synchromy No. 4: Escape* (1938), do not.

Rhythm in Light (1934) was Mary Ellen Bute's first completed film, appearing the same year as Schillinger's discussion of synchronization in *Experimental Cinema*. It had been preceded by several studies and an earlier attempt to film Schillinger's ideas using standard animation techniques that was abandoned because the imagery was too complex for standard production with hand animation. *Rhythm in Light* reflects this shift from the painterly and cel animation techniques employed by the absolute filmmakers (Ruttman, Eggeling, Richter) in the 1920s in favor of the same procedures of abstracting from reality by using already-abstract subjects employed by Laszlo Moholy-Nagy. Running just under three minutes long, following the opening credits it proclaims itself a "A Pictorial Accompaniment in abstract forms" followed by the explanation that "It is a pioneer effort in a new art form – It is a modern artist's impression of what goes on in the mind while listening to music." The explanatory element in Bute's film is a common feature of American abstract films of the 1930s

produced for commercial distribution—an element also shared by Fischinger’s 1936 *An Optical Poem*.

Her use of commercial distribution links the independent production of Bute’s abstract films to the more contemporary independent production companies that create motion graphics. Bute retained ownership and control over her films, distributing them herself; they would screen in commercial distribution as the animated short before prestige features such as *Mary of Scotland*, *The Barretts of Wimpole Street* or *Hans Christian Anderson*.

Like Fischinger, Bute chose classical music that was already familiar to her anticipated audience for *Rhythm in Light*. The abstract forms are organized in counterpoint to Edvard Grieg’s “Anita’s Dance” from his *Peer Gynt Suite*. To achieve the effect of an “absolute” animation, Bute filmed various objects that already has a geometric character in such a way as to render them abstract:

sheets of crumpled cellophane, an egg-cutter, prisms, toy pyramids, ping-pong balls, velvet sparklers, and bracelets. Their framing, movement and editing are responsible for creating the abstract effects seen in this film. Fully recognizable shots are kept to a minimum, and the elements seen only betray their actual, physical identity in a few shots—the majority of the material appears completely abstract, but has a sensuous quality produced through the lighting effects possible with tangible objects.

Synchromy No. 4: Escape (1938) introduces a series of new elements to Buté's visual vocabulary developed in her previous films: color, kinetic light effects (the influence of Thomas Wilfred), and subsumes all these to plot set to Johan Sebastian Bach's "Toccatà" from Toccatà and Fugue in D minor. The narrative drama is simple: it is the story of a red triangle in a black prison, and shows it breaking through a series of grids and bars in its process of escape, as it leads other triangles to freedom. This story

synthesizes the developments of her previous films, yet does not leave the realm of visual abstraction because the various “actors” are themselves simple abstract forms. This dramatic narrative element would become more pronounced in her collaboration with Norman McLaren on *Spook Sport* (1940) where his hand-drawn animations tell the story of ghosts and other spirits cavorting in a graveyard after dark, synchronized with Camille Saint-Saëns’ *Danse Macabre*.

1934 Mary Ellen Bute  
Rhythm in Light



1938 Mary Ellen Bute  
Symchromy n. 4 - Escape