

“RAUMLICHTMUSIK” - EARLY 20TH CENTURY ABSTRACT CINEMA IMMERSIVE ENVIRONMENTS

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Abstract

Filmmakers Oskar Fischinger and Jordan Belson created cinematic multimedia experiments from 1926 to 1959; three of these events are predecessors to immersive environments: (A) Beginning in 1926, Fischinger's multiple projector shows combining abstract films, colored light projections, and painted slides; (B) Fischinger's 1944 (unrealized) concept for a dome theatre with center film projectors filling the sphere, creating "endless space without perspective" and (c) Belson and Henry Jacobs' 1950s Vortex Concerts at Morrison Planetarium, utilizing multiple projectors and 38 speakers, with "no separation of audience and stage or screen; the entire domed area becomes a living theater of sound and light."

Keywords:

Vortex Concerts, Oskar Fischinger, Jordan Belson, Raumlichtmusik, Expanded Cinema, Morrison Planetarium, Farblichtmusik, Visual Music.

The origins of immersive media environments, multiple-projector Expanded Cinema performances and 1960s psychedelic Light Shows can be traced to the early experiments of film artists Oskar Fischinger and Jordan Belson.

These filmmakers expanded their work outside the rectangular film frame and beyond traditional screens, using multiple cinematic projections far surpassing anything previously attempted. They covered rooms and domes and planetariums with abstract imagery, creating sophisticated illusions and combining cinema with other art forms to create a greater experience.

produce abstract imagery and screened this in their multiple projector shows (and later completed films). Fischinger and Belson continued to extend the boundaries of cinema, projection, audience interaction and their own consciousness throughout their careers.

Fischinger (1900-1967) was the most important and influential filmmaker in visual music, producing over 50 films and 800 paintings. He's recognized as the father of Visual Music, the grandfather of music videos, and the great-grandfather of motion graphics. His films influenced generations of filmmakers, animators and artists, even continuing today.

Fischinger began his animated film experiments in Germany c. 1920, inventing apparatus like a Wax Slicing machine to produce unique abstract imagery. Beginning in Munich in March 1926, Fischinger and Hungarian composer Alexander László created *Farblichtmusik* multiple projector, multiple screen performances, combining Fischinger's abstract 35mm films with projected colored lights from László's color organ piano, and painted glass slides. Music varied from László's own compositions to Chopin, Rachmaninoff and Scriabin. Three reels of Fischinger's abstract animation were used in these performances.

László had begun the *Farblichtmusik* shows in 1925, though without films or slides. Fischinger later discussed their joint performances and László's machinery with curator Hilla Rebay of The Museum of Non-Objective Painting in New York. "László's machine was a technical marvel...built for him by one of the best and most imaginative

engineers...it was fantastic. It was a giant apparatus, which was played by him and his many assistants. He built in a special film projector for my films, and that topped everything. Zeiss Ikon in Dresden helped him...it cost unheard of sums of money and was shown in all the opera houses of Europe...At that time, Zeiss Ikon developed the unique and wonderful planetarium projectors. For that reason, and also because of the publicity connected with it, they were very much interested in László's Spectrum-Piano [Farblichtklavier] and at that time they put everything at his disposal that he could possibly ask for [1]."

Rebay in turn discussed various concepts of "expanded cinema," color organs and what we today would call immersive cinema with Moholy-Nagy, Charles Dackum, Norman McLaren and other artists whom the Museum sponsored, and thus appears to have been a link between Fischinger's 1920s multiple projector work and its influence on later filmmakers.

In 1926, a "Colorlight Dome" was constructed for *Farblichtmusik* performances at the Gesolei festival. A press review in the *Westphalian Landeszeitung* described the changing light effects in the "Farblichtdome:" rising light effects for a Scriabin score, bright red then yellow then harsh green colors, then blue circles and spirals. Dr. Jörg Jewanski explained, "From May to October 1926, a huge exhibition took place in Düsseldorf, Germany, named 'Gesolei'. Nearly 7,500,000 people visited 174 exhibition houses. In No. 78 'Light technique,' László performed his *Farblichtmusik*: 8-10 performances

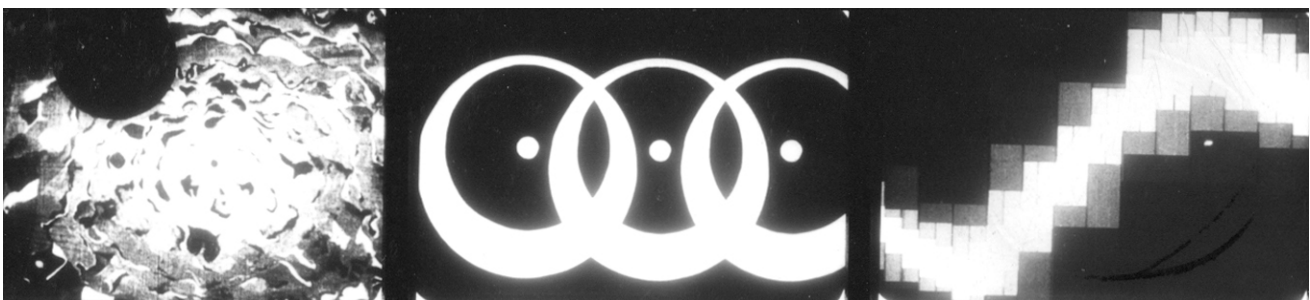


Fig. 1. Images from Fischinger's 1920s multiple projector performances. (©Fischinger Trust, courtesy Center for Visual Music.)

Both built machines and devices to

every day, altogether 1200 performances, shown to more than 40,000 people...László started his performances at the 'Gesolei' on May 22, but first without Fischinger's films, because there were problems with the fire brigade (nitrate films were flammable and needed special permission, which they didn't have) [2]."

A July 1926 review by critic Rudolf Schneider discussed Fischinger's 'wax experiments' footage used in a *Farblichtmusik* performance: "Fischinger's idea and invention is a great advance." The review described some of his other film images: "snakes, fog, balls, rings...fantasy," and noted that Fischinger was working on a film performance called *Fieber*. Schneider mentioned this new art "that Fischinger calls *Raumlichtkunst*..." [3].

László was not generous in giving Fischinger credit for his work, and it appears the press gave more praise to Fischinger's films than László's music. The two parted ways later in 1926. Fischinger began performing his own independent multiple projector shows called *Fieber*, *Vakuum*, *Macht*, and *R-1 Formspiel*. From press reviews and Fischinger's notes, we now understand these as attempts to create some of the very first cinematic immersive environments.

Fischinger described his "Raumlichtmusik" concept; he believed all the arts would merge in this new art. He wrote of "Eine neue Kunst: Raumlichtmusik" [The new art: Room or Space, of Light and Music]: "Of this Art everything is new and yet ancient in its laws and forms. Plastic – Dance – Painting – Music become one. The Master of the new Art forms poetical work in four dimensions...Cinema was its beginning...Raumlichtmusik will be its completion" [4]. A critic suggested the name "Raumlichtkunst," substituting 'art' for music.

In October 1926, Schneider wrote that Fischinger was working on a film for multiple projector apparatus, *Fieber*, which had the claim to being a new type of independent art.

A 1927 review of Fischinger's multiple projector performance in Munich notes that his current film work was called *Macht* (*Power*), another film is called *Fieber*, and that Fischinger's *Vakuum* has been finished and will soon be ready for showing [5]. In December 1927, an article titled "Raumlichtkunst" in *Die Zeitlupe München* magazine praised Fischinger extensively,

describing his three projector film show, his sliced film technique [wax experiments footage], and his "original art vision which can only be expressed through film."

Film historian Dr. William Moritz later interviewed László, who confirmed he'd seen Oskar's solo show in Munich called *R-1, Formspiel*, using five 35mm film projectors and slide projectors with painted glass slides. Moritz wrote: [Fischinger] "prepared his own multiple projector shows (including some of the imagery from the László shows) with three side-by-side images cast with three 35mm projectors, slides to frame the triptych, and at climactic moments, two additional projectors which overlapped the basic triptych with further color effects...Oskar used all three systems for coloring (tinting, toning and hand-coloring) to give a wider variety of colors" [6].

Working with Fischinger's films decades later, Moritz found material labeled "R-1, Formspiel" which he believed was from the multiple projector shows. In 1993 with support from the Deutsches Filmmuseum, he produced an anamorphic triple panel recreation film with some of this footage, optically printed onto a single strand of 35mm film [7].

No records have been found of performances of these shows by Fischinger after the late 1920s, though single reels of these films were shown in Europe in the early 1930s.

Endless Space Without Perspective

Fischinger became successful in Europe with his abstract animated films, his popular series of *Studies*, and his famous waltzing cigarette commercials. With Paramount Studio's help he emigrated to Hollywood in 1936, thus becoming the direct link from the European avant-garde film community to west coast experimental filmmaking. He worked briefly for Paramount, Disney (*Fantasia*), MGM, and for Orson Welles, but was not successful in the studio systems.

Rebay and The Museum of Non-Objective Painting provided support for him to make several films in the 1940s. Plans were underway then for the new Guggenheim Museum, and Frank Lloyd Wright spent years working on designs. Rebay proposed the creation of a Film Center in the Museum, discussing it

extensively with Fischinger, seeking his advice.

In 1944, Fischinger proposed building a dome theatre in the new Museum: "I would like to suggest to you a bigger theatre – half spherical – like a big planetarium. The Machines in the Center. The spheric projection-surface of a planetarium, produces a perfectly clear feeling of endless space, similar to the feeling which produces the star-lit-heaven at night. It is a cosmic-feeling of endless endless space without perspective. Images projected in such a sphere become far distant.

The people (a few hundred) are sitting in a big circle around the projection machines. The Sound comes (ideal) also from the center like the lightbeams of the projectors, and light and soundwaves strike the Sphere and are there reflected to the people" [8].

Fischinger also suggested the audience should recline on their backs, looking up at his abstract films projected onto the dome. Unfortunately, this dome theatre was not built. Fischinger's relationship with Rebay ended c. 1947, and her position at the museum concluded soon after. Fischinger found little support in America for his film work after this. Among his later experiments were a 3-D stereo film, a series of stereo paintings, and the Lumigraph.

In the late 1940s Fischinger invented the Lumigraph, his mechanical color-light performance instrument, which he performed in completely darkened rooms to a variety of music. Though he played it only a few times publicly in Los Angeles and San Francisco, many guests at Fischinger's home enjoyed performances of the Lumigraph given by Oskar and his daughter Barbara.

One filmmaker influenced by Fischinger's abstract films and his Lumigraph was Jordan Belson.

Belson and the Vortex Concerts

Belson (b. 1926) studied painting at the California School of Fine Art (now San Francisco Art Institute) and received his B.A. in Fine Arts from The University of California, Berkeley in 1946. At the historic Art in Cinema series at San Francisco Museum of Art beginning in 1946, he saw films by Fischinger, Norman McLaren, Hans Richter and others which influenced his work. Belson's first two films were shown at later Art in Cinema screenings and briefly distributed by Cinema 16, though

Belson considered himself primarily a painter. Upon Fischinger's recommendation, Belson received grants for a few years from The Museum of Non-Objective Painting.

In 1953 Belson attended Fischinger's performance of his Lumigraph at the San Francisco Museum of Art, after a screening of Fischinger's films. Belson remembered the performance in the completely blackened auditorium, "...in mysterious synchronization with the sounds appeared soft, glowing images... These irregular, always-changing shapes could flicker and pulsate, and when they swirled around, they could leave a vague trail like a comet's tail... Sometimes the lights would disappear and appear suddenly, but other times they would fade in and out extremely slowly – just as one color might glow exquisitely in saturated duration or suddenly jump to another hue, with brilliant, tasteful timing... When the music was over, we were plunged into total darkness again." He recalled how Fischinger "could turn even the simplest things into a luxurious, magical illusion of cosmic elegance. That was very inspirational to me" [9].

Four years later, Belson would create his own cosmically elegant illusions at the Vortex Concerts.

On May 28, 1957, the first of the legendary Vortex Concerts was performed at The California Academy of Science's Morrison Planetarium in San Francisco. Featuring new music from avant-garde composers worldwide curated by composer Henry Jacobs, Vortex was "a series of electronic music concerts illuminated by various visual effects" according to Belson, Vortex's Visual Director. Initially sponsored by Berkeley radio station KPFA and The California Academy of Sciences, five different Vortex series were held at Morrison through January 1959, with over 35 performances [10].

Jacobs played *Musique concrète* from composers including Karlheinz Stockhausen, Henk Badings, Gordon Longfellow, David Talcott and others from his extensive tape collection, and his own compositions. In the blackness of the planetarium's 65 foot dome, Belson created spectacular illusions layering abstract patterns, lighting effects and cosmic imagery. He recalls "working in an environment representing the heavens... a full-bodied experience with stunning visual effects" [11].

"Vortex is a new form of theater based on the combination of electronics, optics and architecture. Its purpose is to reach an audience as a pure theater appealing

directly to the senses. The elements of Vortex are sound, light, color, and movement in their most comprehensive theatrical expression. These audio-visual combinations are presented in a circular, domed theater equipped with special projectors and sound systems. In Vortex there is no separation of audience and stage or screen; the entire domed area becomes a living theater of sound and light." - *Vortex 4 program notes*

The planetarium's sophisticated sound system had 38 speakers in a circular configuration, and an electronics expert constructed a rotary mechanism with a handle so that Jacobs could 'whirl' the sound around the room to achieve what was called the Vortex Effect. "The name – Vortex – is derived from the ability to move the sound around the dome in either clockwise or counterclockwise rotation, at any speed. Since a single program source is used this is not a stereophonic sound but an entirely new aural experience" [12].

Vortex became immediately popular. The attendance exceeded all expectations, though from the beginning Morrison's management had difficulty with some of the "bohemian" attendees. The press loved Vortex and continually showered praise.

This type of immersive environment

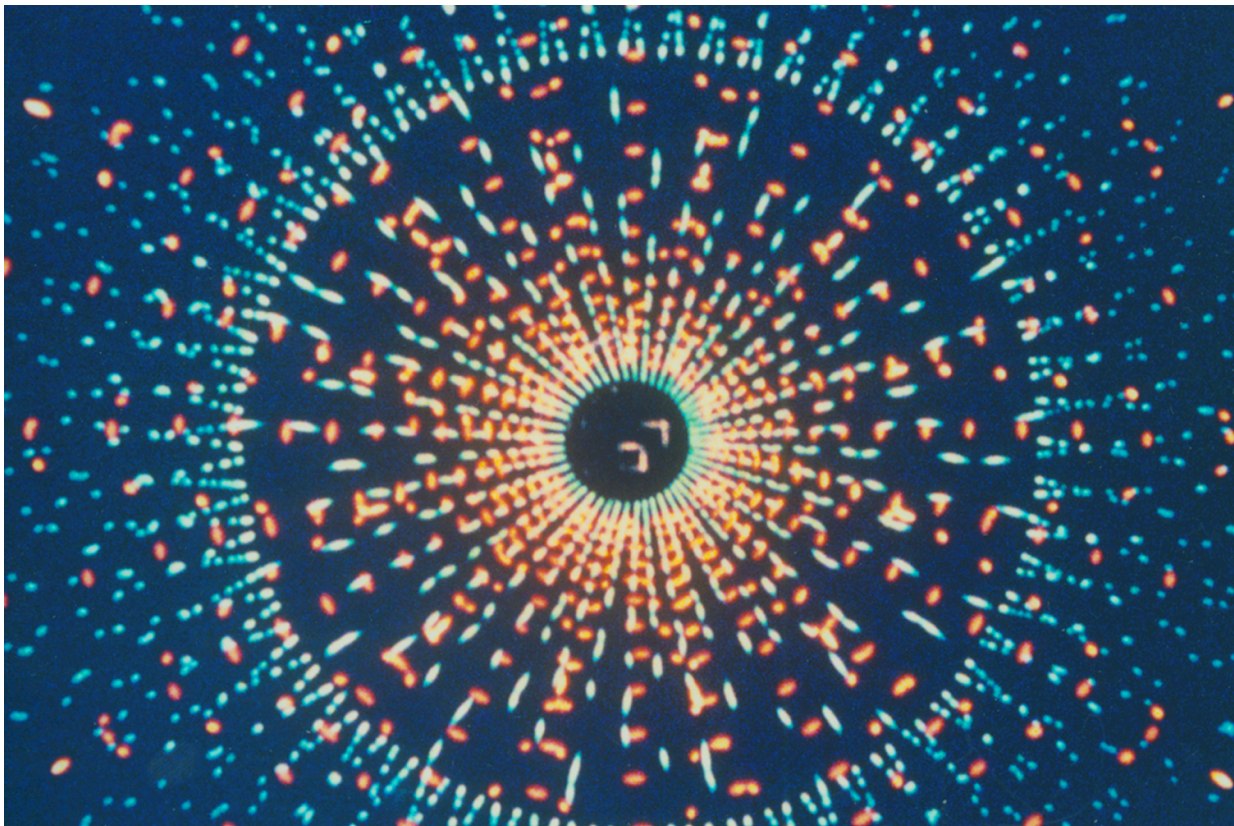


Fig. 2. Image from Belson's film *Allures* (1961), showing effect of interference pattern projectors. (©)Jordan Belson, courtesy Center for Visual Music.)

had never been created before. Vortex 4 program notes described its potential “for directly reaching an audience with unique sensory experiences.” Belson remembers, “You could create some beautiful and terrifying sensations and feelings there” [13.]

As Vortex continued, the sophistication of the visual effects increased. “Geometrically abstract forms, painted on slides and projected through slowly twirling prisms onto the apex of the dome, go through various spatial evolutions” [14]. Belson utilized up to 30 projection devices including the planetarium’s 13 foot starfield projector; kaleidoscope, rotating and ‘zoomer’ projectors, strobes, slide projectors, rotating prisms, 16mm film projectors, a flicker machine, a spiral generator, and four interference pattern projectors. The Vortex V program notes claimed “Vortex utilizes all known systems of projection.” Belson didn’t screen films in their entirety, only very brief manipulated fragments and tests. In his studio, he shot interference pattern projections on 16mm film; some of these can be seen in his film *Allures* (1961).

“The visual images ... consist of non-objective symmetrical patterns which move and change, expand and contract; of color effects and black-and-white effects; of fade-ins and fade-outs; occasionally of the planetarium effects themselves – stars and comets; and of combinations of all these. The images are projected by a dozen specialized devices, among them a standard film projector (though the audience does not get the feeling of a film on a screen, nor does it hear any sounds of machinery working) ... The combination of space, light, color, and sound creates an enveloping audio-visual experience in a completely controlled environment” [15].

Belson created illusions of floating in space. No images touched the edges, no frame lines were ever visible, and there were never frames of reference.

“Just being able to control the darkness was very important. We could get it down to jet black, and then take it down another twenty-five degrees lower than that, so you really got that sinking-in feeling...we were able to project images over the entire dome, so that things would come pouring down from the center, sliding along the walls. At times the whole place would seem to reel” [16].

In January 1959 Alfred Frankenstein reviewed a Vortex performance in the

San Francisco Chronicle: “Belson’s visual effects involve, as usual, geometric patterns of great purity and simplicity moving slowly in the center of the darkened dome, and vertiginously rapid forms of white light that streak and reel all over the planetarium’s immensity...one of his visual compositions has the extraordinary effect of lifting the spectator right off his seat to traverse that sky-space in a wonderfully disembodied way.”

Belson and Jacobs also performed several Vortex Concerts at Expo 58: The Brussels World Fair. A *Time* magazine article in February 1959 praised Vortex, discussing its popularity and the Brussels shows.

Though the Concerts were enormously popular, attracting capacity audiences and long lines, friction with planetarium management had increased. Finally Morrison Planetarium cancelled Vortex. The final series (Vortex V) was in January, 1959. Belson invited John Whitney, Sr. to contribute some of his pendulum patterns; though John did not participate his brother James contributed his own footage and attended a rehearsal.

Meanwhile Jacobs worked on a “Highlights of Vortex” LP, released on Folkways Records. Its liner notes called Vortex “Entertainment for the Space Age” and stated “plans are afoot for a Vortex performance in Japan, as well as performances in Europe.” But a further performance of Vortex by Belson and Jacobs never occurred. Despite its popularity, it was not to be reincarnated.

In October 1959 a very different, one night event called Vortex Presents was staged at The San Francisco Museum of Art, billed as “a concert of electronic music and non-objective film.” Using a single 16mm projector, short films were projected accompanying music. This marked the first synchronization and screening of James Whitney’s film *Yantra* with a soundtrack by Henk Badings; plus a screening of *Haut Voltage*, and an early version of a film by Belson (later completed as *Allures*). The audience was disappointed with Vortex Presents and the planned series was cancelled; according to Belson they came expecting a Vortex Concert like the planetarium shows, but instead saw a film screening.

Four decades later, Belson refers to the Vortex Concerts as “a sacred memory,” not possible or desirable to be re-created. He has continued to create a remarkable oeuvre of over 30 abstract films, richly woven with cosmological

imagery exploring consciousness, transcendence, and the nature of light itself. His films are featured in museum exhibitions internationally, and his recent videofilm *Epilogue* (2005) was funded by the NASA Art Program [17].

In 1979 Moritz wrote that Vortex “established the tradition of the psychedelic multiple-projector light show which blossomed in the late 60s” [18]. Today we know these roots lie further back in the 1920s. Fischinger’s multiple projector performances are the forerunners of light shows, and are possibly the first immersive environments using cinema.

In 1959, the Vortex Presents notes stated “The future seems to hold great promise for this new combined art form with the advent of further developments of the cathode-ray tube and video-tape. There have already been musical scores composed by analogue computers and ossilliscope [sic] visualizations of thought patterns. The separated worlds of Science and Art are ever reaching closer together” [19].

References And Notes

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3. Rudolf Schneider. “Formspiel durch Kino,” *Frankfurter Zeitung* (July 12, 1926).
4. Oskar Fischinger. “Raumlichtmusik.” Unpublished typescript, n.d. Fischinger Collection, Center for Visual Music, Los Angeles.
5. Walter Terven. “Bei Fischinger in München,” *Film Kurier* (Jan 15, 1927).
6. Dr. William Moritz. *Optical Poetry: The Life and Work of Oskar Fischinger*. (Eastleigh, UK: John Libbey Publishing, 2004).
7. Several reels of Fischinger’s abstract films from the 1920s shows are being restored from original nitrates by Center for Visual Music in 2009, with the support of a National Film Preservation Foundation Avant-Garde Masters Grant funded by The Film Foundation.
8. Oskar Fischinger to Hilla Rebay, April 25, 1944. Fischinger Collection, Center for Visual Music, Los Angeles.
9. Jordan Belson, 1971 testimonial statement about Oskar Fischinger, cited in Moritz [6] pp. 169.
10. The author thanks Belson for generously sharing his time to discuss Vortex and clarify events. Some information in this essay is derived from telephone conversations and correspondence

with Belson during 2002-2009. Thanks also to Catherine Heinrich for her invaluable assistance. In 2008, Belson remembered there were only a few dozen Concerts. No documentation exists to support claims of "over 100 concerts" in several texts. From existing documentation it is possible to verify c. 36 concerts, including Brussels, without counting a few of the unscheduled performances; an exact count is difficult as Belson confirms very occasionally a third performance was given on a night when only 2 were scheduled. Though several texts (Renan, Polt) in the 1960s refer to c. 60 concerts, and later texts (Moritz) refer to over 100 concerts, Belson does not support these accounts of 60 or over 100, nor do documents, press and program notes from the time.

11. Jordan Belson, telephone conversation with the author, December, 2002.

12. Vortex III Program Notes, January 1958. Belson Collection, Center for Visual Music, Los Angeles. Vortex Concerts and Vortex Presents program notes and LP liner notes cited are from the CVM Archives. The 'electronics expert' who built the rotary mechanism was probably a Stanford engineer, though Alvin Gundred of the planetarium is elsewhere credited.

13. Jordan Belson, cited in Scott MacDonald. *A Critical Cinema 3: Interviews with Independent Filmmakers*. (Berkeley: University of California Press, 1998).

14. Alfred Frankenstein, "Vortex: The Music of the Hemispheres," *High Fidelity & audiocraft* 9.5, (May 1959).

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17. *Epilogue* can be seen on *Jordan Belson: 5 Essential Films*, DVD (2007) released by Center for Visual Music (www.centerforvisualmusic.org).

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