

# CLOUD MUSIC (Hybrid Audio/Video Installation), 1974-1979

Robert Watts, David Behrman & Bob Diamond

Courtesy of The Robert Watts Archive, Sara Seagull and Larry Muller in collaboration with David Behrman, and Bob Diamond

**BOB WATTS** Born 1923. Studied engineering and art history. Professor of Art, Rutgers University. Associated with Fluxus. Produced Yam Festival and Monday Night Letter with George Brecht. Died 1989, Bangor, Pennsylvania.

**BOB DIAMOND** Born 1946, New York City. Engineer. Developed computer system for WNET-TV (Channel 13), New York City, in association with Nam June Paik. Founder and technical director of WPA theater, New York City. Beginning in 1972 designed and produced custom video circuitry and patented several designs. Currently President of Imagine That, Inc., San Jose, California.

**DAVID BEHRMAN** Born 1937, Salzburg. Well known electronic music composer, long time association with Sonic Arts Union. Performed with John Cage, David Tudor, Frederic Rzewski and the Merce Cunningham Dance Company. Producer, series of contemporary music recordings CBS. Lives New York City.

**CLOUD MUSIC** is an installation developed collaboratively during the years 1974 to 1979. It consists of a video camera (black & white 1974-78, color thereafter), which scans the sky; a video analyzer, which sense the changes in light produced by passing clouds; and a home-made electronic sound synthesizer, which responds musically to the passage of clouds overhead. For this historical exhibition a black and white camera is being used.

## EXHIBITION HISTORY

1974 Canadian/American Sky, Electric Gallery, Toronto.  
1976 Experimental Television Center, Binghamton, N.Y.  
1977 The Annual, San Francisco Art Institute at Fort Mason.  
1979 Re-visions, Whitney Museum of American Art, N.Y.  
1979 Fur Augen und Ohren, Akademie der Kunst, Berlin.  
1981 New Music America '81 Festival, San Francisco.

## CLOUD MUSIC

Video camera (A) points at the sky.

Specially designed video analyzer (B) superimposes six electronically generated crosshairs upon the video image. Each cross hair may be positioned anywhere.

Composite image (sky plus crosshairs) is sent to the video monitors (C).

The video analyzer generates six control voltages. Each voltage is proportional to the instantaneous light value at the point where one of the cross

hairs is positioned. As cloud surfaces pass these six crosshair points, the voltages vary in response to the clouds' light content.

Digital electronic music system (D) receives the six voltage outputs from the video analyzer. The music system senses voltage changes made by the analyzer and converts the changes into harmonic progressions and dynamic shifts.

Sound from the music system is sent to a six channel loudspeaker system (E). The loudspeakers surround the viewing space and the video monitors.

Cloud Music is intended for installation during times of the year when weather conditions favor a likelihood of high daytime cloud activity.

**BOB WATTS:** "I discovered when I first arrived in New York City in 1946, from the midwest, that I no longer had the same visual access to the sky. It was apparent that no longer could I judge the weather by checking out the sky morning and evening as was my custom. I considered this to be a handicap to my accustomed life style, and still do. This incident shocked me into the recognition that the sky was an important aspect of daily living and that it was important to me to be able to see it whenever I chose. Sometime later, some fifteen or twenty years, the sky (as clouds) made a more direct appearance in my work as an artist, in multiple exposures on movie film and photographic montage.

Since 1965 clouds, sounds, indeed the whole phenomenology of the natural environment has

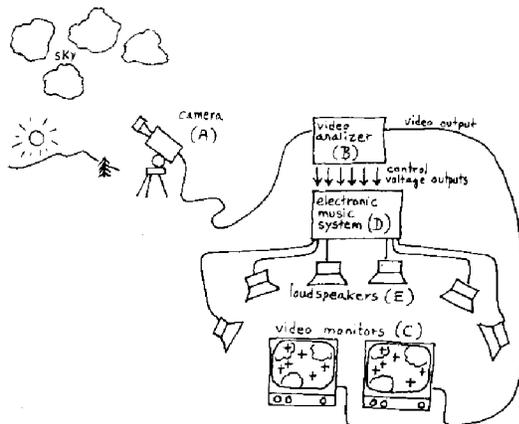


Diagram and summary, ca. 1975, David Behrman.



Bob Diamond with CLOUD MUSIC, work in progress, ca. 1976. Video analyzer (rear left) and music synthesizer (foreground).



FRAME 160 step through next 5 frames

pervaded most aspects of my work. This present work has been evolving since 1966 when at Rutgers University we made some experiments with a sound device that reacted to changing light intensity on a movie screen. At that time, I saw applications to my interest in clouds and the changing light of the sky. Early experiments showed possibilities but my hunch was that I should explore more sophisticated electronics, hopefully the missing miracle ingredient. My hunch proved correct.

The assistance of Bob Diamond and David Behrman was enlisted to expedite this project. Without their contribution, realization of the Cloud Machine would have been quite impossible."

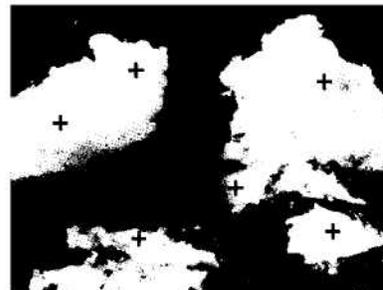
**BOB DIAMOND:** "I began to see that to really correlate an (sound) environment with the clouds a la Bob Watts would involve a very sophisticated electronic system. We agreed that we needed some sort of video system that would scan the clouds as they moved by and produce a control voltage proportional to the brightness of the cloud of the scan point. This voltage could be used to vary environmental qualities of a space. The method I developed to do this relies on the fact that a video signal has an associated time-base or sync signal. This signal synchronizes the sweeping movement of the electron beam in a TV picture tube with that in a TV camera. The beam sweeps across the screen in a 63.5 or so microseconds for 525 times to make the complete picture or frame in 1/30 second. I could take a "snapshot" of a particular point in the frame by timing how long the beam took to set to that point and taking a sample of the video signal at the time-out point. The amplitude of the video signal would

be proportional to the brightness. Thus the voltage is held until the next frame when a new voltage is held, etc. By changing the time-out period, the sensitive point can be moved to any part of the picture. To facilitate finding this "point" another video signal is generated and superimposed on the incoming video signal. The total signal when displayed show the original image with six crosshairs superimposed, indicating where the sensitive points lie."

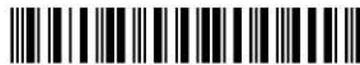
**DAVID BEHRMAN:** "For the sound, the outputs from Bob Diamond's video analyzer are used to create an interweaving of slowly shifting, multi-layered harmony that parallels the movement of the clouds. The technical means by which the passing of the clouds can be used to make music around a listener are of the 1970's - because only in the last several years have the sensory, logic, and video circuitry become easily accessible to individuals such as ourselves. But in spirit the project might be close to the old outdoor wind and water driven musical instruments of Southeast Asia and Polynesia.

Sound is produced by eight banks of audio-range function generators, four to a bank, each of which is tuned to a pre-selected four-part "chord" made up of pure modal or microtonal intervals. Six of the banks can each be detuned to four parallel transpositions by an output from the video analyzer. Any harmonic change corresponds to a minute change in light of crosshair in the video image.

Like sailing, the music is weather-dependent."



CLOUD MUSIC monitor with image of 6 crosshairs amidst lively cloudscape.



INFO frame 42318 to 45561



STEP BACK



STEP FORWARD

