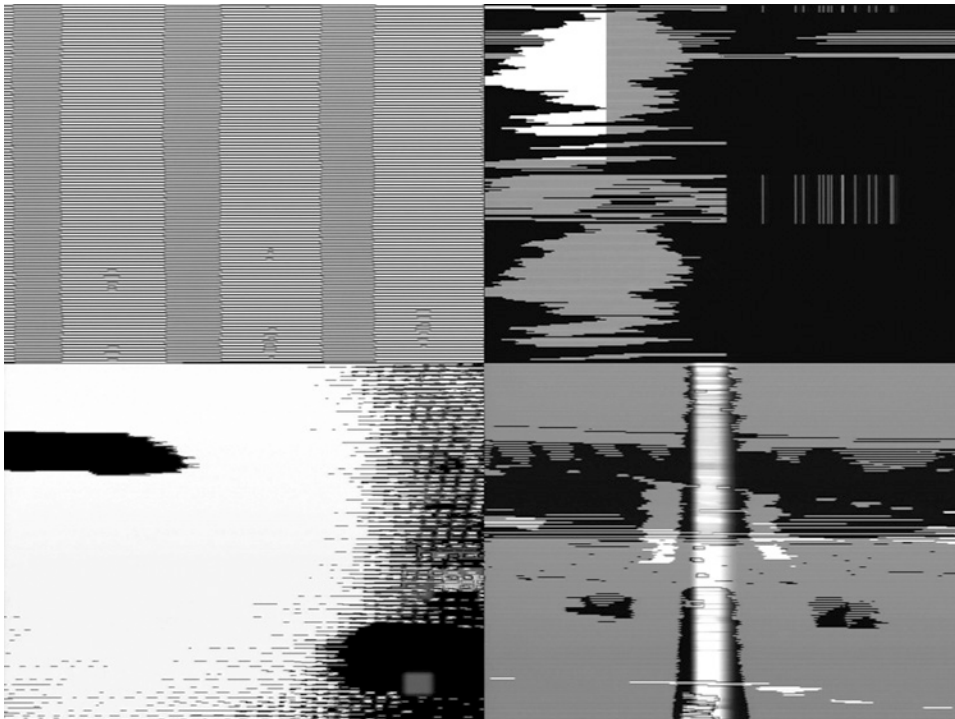


## *Visual Music*

Nicolas Collins (2006)

Electronics have pervaded and altered our visual world as profoundly as our sonic one and, furthermore, allowed us to link the two in peculiar, causal ways. In his 1965 work “Magnet TV,” Nam June Paik sat a large magnet on top of a television set to distort its image; although technically rather crude, this piece presaged the considerably more “sophisticated” electronic image processing that would come to typify much subsequent video art<sup>1</sup>. “Magnet TV” established a hacker precedent that would remain a consistent presence in Paik’s work, as well as in that of many multi-media artists who followed him.

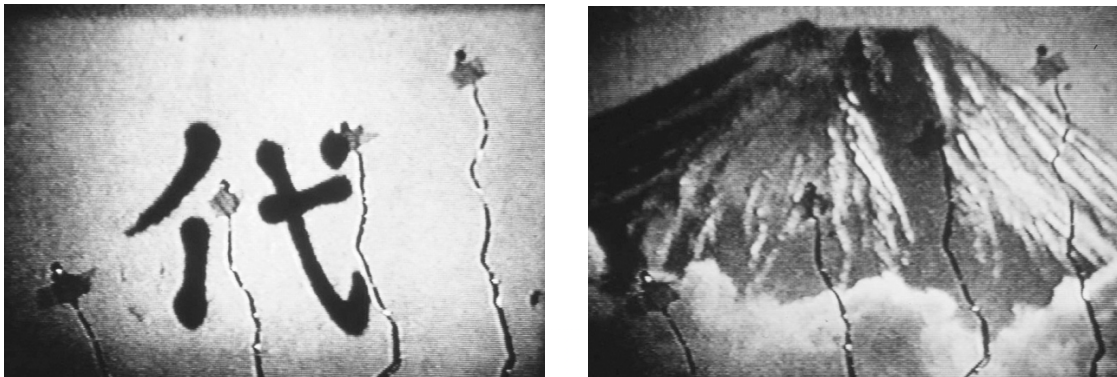
Before lightning-fast personal computers with massive amounts of memory made digital video processing as commonplace as word processing, Paik-like hacks were the only affordable way to manipulate visual images in real time, or to create linkages between video and audio. Video feedback was as common a tool for early video artists as audio feedback was for electronic music composers: Bill Viola (USA) made extensive use of it in the 1970s; more recently Billy Roisz (Austria) has VJ-ed with video feedback, modifying it through simple video mixers and keyers, and splitting the video signal to feed the PA as well, so that the bursts and jitter of the images are heard in parallel as glitches and hums (see figure 1).



**Figure 1** Four stills from a video feedback performance by Billy Roisz. Photo © Billy Roisz.

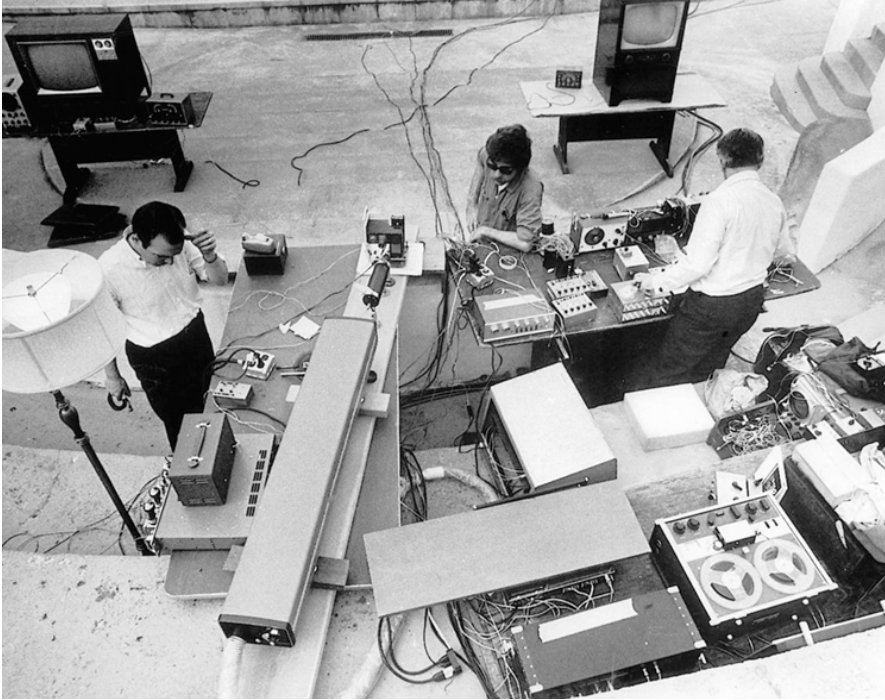
*Cloud Music* is a video/music installation developed by David Behrman, Bob Diamond, and Robert Watts between 1974 and 1979<sup>2</sup>. In the earliest version, a camera was pointed

at the sky and connected to a video monitor. A number of photoresistors were affixed to the screen. The light values of the passing clouds changed the resistance of the photoresistors, and, in turn, affected the sound score. Yasunao Tone (JP/USA) used a similar approach in his *Molecular Music* (1982–85): photoresistors are taped to the surface of a screen onto which a film is projected; each photoresistor controls the pitch of an oscillator (similar to those described in chapter 18), and the resulting sound mass responds directly to the change in projected images (see figure 2). Today Tone is best known as the “grandfather of glitch”: he began “wounding CDs” in 1985 by applying Scotch Tape punctured by pinholes to the underside of the disks; the resulting frenetic digital error-fest was the first documented music made with intentionally damaged CDs (see his audio track in the “Circuit Bending” section of the Gallery on this website)<sup>3</sup>. The intertwining of light and sound are central to Tone’s work: the deflection of lasers through pinholes is a miniaturized, but nonetheless logical, extension of film interrupting the projector’s light before it strikes the photoresistors. Similar experiments in controlling circuits through photoresistors reacting to projected light have been done more recently by Jeffrey Byron and Jay Trautman, Joe Grimm, Kyle Evans, and Infrason (see their videos in the “Visual Hacking” section of the Gallery on this website).

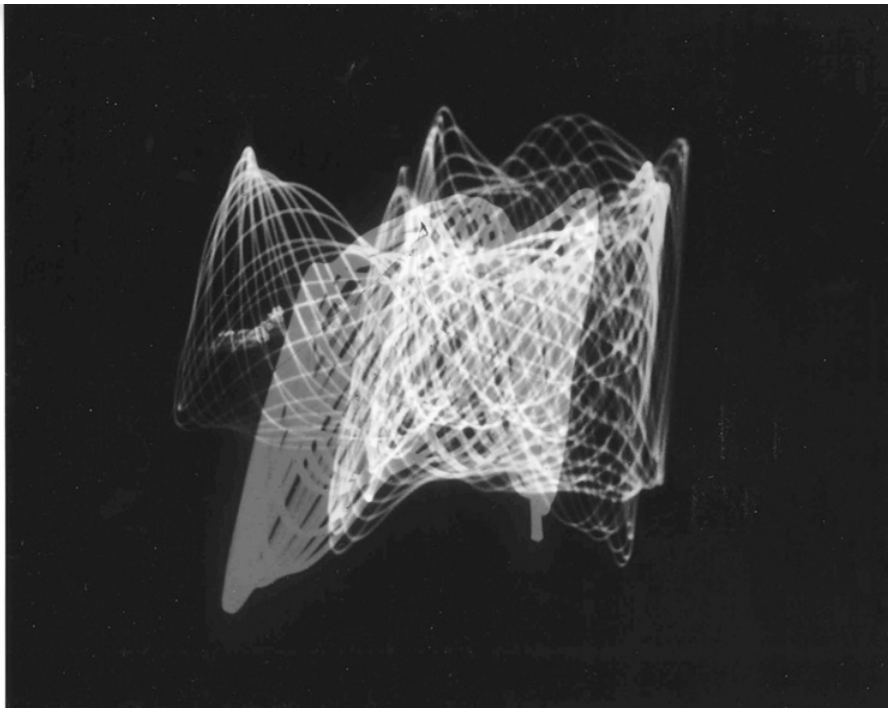


**Figure 2** Two stills from *Molecular Music*, Yasunao Tone. Photo © Yasunao Tone.

In 1969, long before planetarium laser shows, Lowell Cross (USA), a frequent collaborator of John Cage and David Tudor, created the first sound-modulated laser projections for his work *VIDEO/ LASER II*: the laser (enormous at the time—see figure 3) was reflected off mirrors mounted on transducers called galvanometers, which vibrated in response to sound input to create curving Lissajous patterns on the wall. (Lowell Cross also built a beautiful photoresistor-based matrix mixer embedded in a chessboard for the famous 1968 John Cage/Marcel Duchamp chess-playing performance, “Reunion”)<sup>4</sup>.



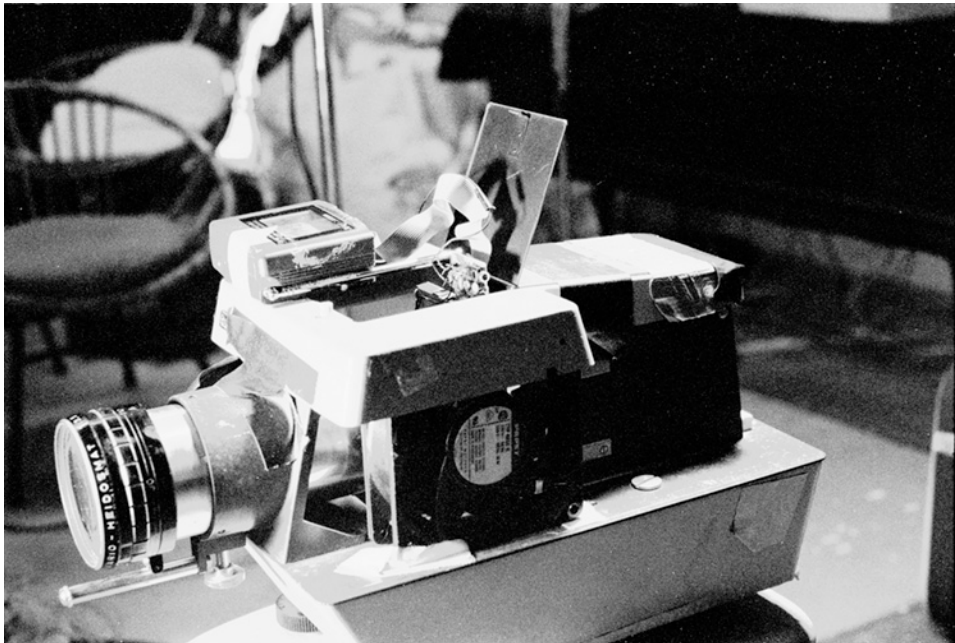
**Figure 3a** Lowell Cross (left), Eugene Turitz (center) and David Tudor (right) setting up for the first laser light show to use  $x$ - $y$  scanning, Mills College, Oakland, CA, May 9, 1969. Photo © Baron Wollman for the Tape Music Center, used by permission of Lowell Cross.



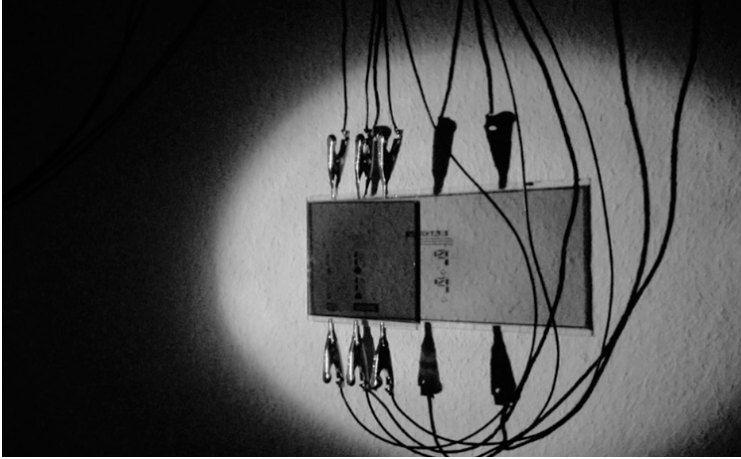
**Figure 3b** Laser-projected image from *VIDEO/LASER II*, December 1969, Lowell Cross. Photo © Lowell Cross, used by permission.

In 1999, when Stephen Vitiello had an artist's studio on the ninety-first floor of the World Trade Center in New York City, he and Bob Bielecki (see "The Luthiers") hooked up a photoresistor to a battery (as shown in the "Video Music" chapter in the Circuit Bending section of this website), placed it on the eyepiece of a telescope, aimed it down at New Jersey, and sat together listening to the flashing lights on a police car across the Hudson. Vitiello has made a beautiful series of recordings using this "audio-telescope" (see his audio track in "Visual Hacking"). Norbert Möslang and Andy Guhl of Voice Crack (see "Composing Inside Electronics," chapter 15), have used similar circuits to extract surprisingly rich rhythmic and harmonic textures from the light patterns of bicycle flashers and LEDs on toys (see their audio and video tracks in "Visual Hacking").

Computers finally caught up with video, but visual hacking hasn't stopped. The disparity between the \$100-portable LCD TV and the \$5,000-video projector offended the sensibility of the Dutch electronic performance trio BMBCon (Justin Bennett, Wikke 't Hooft, and Roelf Toxopeus), so in the mid-1990s they took the screens from cheap TVs (which have the same dimensions as 35mm slides) and dropped them into old slide projectors from the flea market—voilà: the home-made, low-budget video projector (see figure 4 and their video in "Visual Hacking"). In my installation *Daguerreotypes* (2006) high intensity LEDs shine through LCDs from toys and games, projecting a sort of miniature *wayang* shadow play onto the walls of a gallery (figure 6 and video in "Visual Hacking").

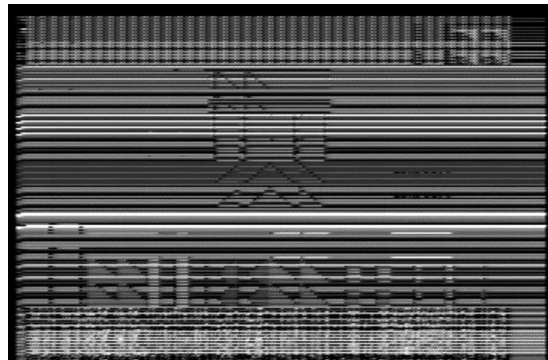


**Figure 4** Homemade LCD projector, BMB Con. Photo © BMBCon, used by permission.

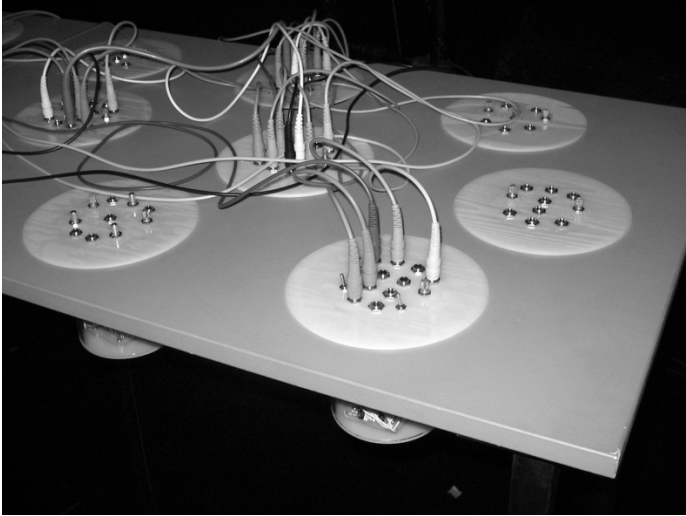


**Figure 5** Detail from *Daguerreotypes* installation with LCD screen and LEDs, Nicolas Collins.

Jon Satrom (USA) has built his VJ career on transforming a child’s “video paint box” into an instrument he calls the “Vitch” (see figure 6 and his video in “Visual Hacking”). By inserting Circuit Bending-style jumpers between various points on the circuit board, Satrom is able to disrupt the toy’s functions to produce a remarkable range of fragmented, frozen, superimposed, and digitally warped images (essentially a video equivalent of the keyboard malfunctions described by Phil Archer in “Circuit Bending”). Similar video circuits have been bent by Jordan Bartee (USA), J. D. Kramer (USA), Phil Stearns (USA), and the trio of Abbot, Archer and Tombs (UK) – see their videos in “Visual Hacking”. Tali Hinkis and Kyle Lapidus of the video hacking duo LoVid (USA) have created wonderful homemade video synthesizers, occasionally built into soft sculpture and wearables. Their “Kiss Blink Sync Vessel” is a collection of modules, embedded in tabletops, that can be patched together to synthesize both video and sound (see figure 7 and their video in “Visual Hacking”).



**Figure 6** “The Vitch”, John Satrom, left. Video image from performance, right. Photos © Jon Satrom, used by permission.



**Figure 7** “Kiss Blink Sync Vessel”, LoVid. Photo © LoVid, used by permission.

And in a pseudo-Victorian twist that would make John Bowers proud, Dutch artists Arthur Elsenaar and Remko Scha attach electrodes to Elsenaar’s face and electrically stimulate the muscles of expression to provide an “emotional display” for their computer (see figure 8 and their video in “Visual Hacking”)<sup>5</sup>.



**Figure 8** Portrait of Arthur Elsenaar’s face displaying an electrically-induced artificial facial expression. Photo by Josephine Jasperse, used by permission of Arthur Elsenaar and Remko Scha. © Josephine Jasperse.

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<sup>1</sup> <http://www.nydigitalsalon.org/10/artwork.php?artwork=27>

<sup>2</sup> [http://www.vasulka.org/Kitchen/PDF\\_Eigenwelt/pdf/152-154.pdf](http://www.vasulka.org/Kitchen/PDF_Eigenwelt/pdf/152-154.pdf)

<sup>3</sup> Yasunao Tone (Asphodel Ltd., Asphodel 2011), 2003. *Solo for Wounded CD* (Tzadik, TZ-7212), 1997.

<sup>4</sup> Lowell Cross, “‘Reunion’: John Cage, Marcel Duchamp, Electronic Music and Chess.” *Leonardo Music Journal*, Vol. 9 (1999). Pp. 35-42.

<sup>5</sup> Arthur Elsenaar and Remko Scha, “Electric Body Manipulation as Performance Art: A Historical Perspective.” *Leonardo Music Journal*, Vol. 12 (2002). Pp. 17-28.