Wobbulator – Early Media Instruments Today (W-EMIT)

Zsolt Gyenes

MATE University, Kaposvár Campus,
Rippl-Rónai Institute of Arts and Theatre, Hungary

April 20–22, 2023

University of Applied Arts Vienna, Austria

Under the Radar Festival
Symposium

Signal Culture, Owego, NY, USA – **Analog / Hybrid audiovisual studio**.
Photo: Zs. Gyenes, 2019.

EARLY MEDIA INSTRUMENTS

Jones Colorizer / Mixer

Jones Frame Buffer

Jones Keyer

Jones Sequencer

Paik / Abe Video Synthesizer

Raster Manipulation Unit – Wobbulator

Rutt / Etra Model RE-4 Video Synthesizer

Sandin Image Processor

…

EXPERIMENTAL TELEVISION CENTER

Begun in 1994 by the Experimental Television Center, the Video History Project is a research initiative which reflects the complex evolution and the multiple and interrelated histories of the media arts field. Goals are achieved through an interactive set of activities combining research and scholarship, realized on the web and as collaborative study projects supporting issues in electronic moving image preservation. The Video History: Making Connections conference (1998) brought together over 250 pioneering practitioners and contemporary artists working in new media and interactive technologies to Syracuse University for a two day celebration of media history. Looking Back/Looking Forward (2002) invited 60 media artists, conservators, and preservation specialists to a working symposium on moving image preservation, organized by the Center, in association with IMAP and BAVC. We have commissioned two texts on video preservation, co-authored by Sherry Hocking, Luke Hones and Mona Jimenez. In 2000 we launched the Video History Web which provides an inclusive web-based information resources designed to help sustain interactive web-based history of independent media arts and community television. With assistance from the Daniel Langlois Foundation for Art, Science and Technology we have focused on early analog instrumentation, and the contributions of artists and technologists such as Shuya Abe, Stephen Beck, Tom DeWitt, George Brown, Bill Etra, Carl Geiger, Bill Hearn, Dave Jones, Don McArthur, Nam June Paik, Steve Rutt, Dan Sandin, Eric Seigel, Woody Vasulka, and many others.

The Video History Project is under the direction of Ralph Hocking and Sherry Miller Hocking. Dave Jones is the web master.

The project is made possible with assistance from: The National Television and Video Preservation Foundation • Daniel Langlois Foundation for Art, Science and Technology • The Andy Warhol Foundation for the Visual Arts • Statewide Challenge Grant Program • New York State Council on the Arts • New York Foundation for the Arts Technology Planning Grants Program • mediaThe foundation inc. • Everson Museum of Art • Media Alliance • Institute for Electronic Arts at Alfred University • Blackhammer • Dave Jones Design • VidiPax • New York State Alliance for Arts Education • IMAP • BAVC • Felix • many individual contributors.

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EARLY MEDIA INSTRUMENTS

Jones Colorizer - demonstrated by Dave Jones
Documented by Carolyn Tennant with Meredith Baxter, Monica Duncan, Neil Freid, Pamela Susan Hawkins, Annie Langan, Michael Montagne, Hank Rudolph and Yesael Sumalave

Jones Frame Buffer - demonstrated by Dave Jones
Documented by Pamela Susan Hawkins with Carolyn Tennant

Jones Keyer - demonstrated by Dave Jones
Documented by Pamela Susan Hawkins and Hank Rudolph with Carolyn

Jones Sequencer - demonstrated by Dave Jones
Documented by Pamela Susan Hawkins and Hank Rudolph

Paik Abe Video Synthesizer - demonstrated by Dave Jones
Documented by Pamela Susan Hawkins and Hank Rudolph with Terese Longva

Raster Manipulation Unit - Wobbulator - demonstrated by Dave Jones
Documented by Pamela Susan Hawkins and Hank Rudolph

RUTT / ETRA Model RE-4 - demonstrated by Benton Bainbridge
Documented by Mona Jimenez and Kathy High

Sandin Image Processor - demonstrated by Hank Rudolph
Documented by Mona Jimenez and Kathy High

· **Case Photo:** Matthew Schlanger
· **Booklet Photo:** Peer Bode
· **Disc Photos:**
  Connie Coleman and Alan Powell - Jones Colorizer
  Dave Jones - Jones Frame Buffer
  Gary Hill - Jones Keyer
  Ralph Hocking - Jones Sequencer
  Dave Jones - Raster Manipulation Unit - Wobbulator
  Barbara Buckner - Paik/Abe Video Synthesizer
  Woody Vasulka - Rutt / Etra Model RE-4
  Andrew Deutsch - Sandin Image Processor

· **Design Team:** Monica Duncan, Pamela Susan H
  Matthew Underwood, Necole Zayatz an
· **Editing, Post production and**
  and Matthew Under
· **Producer:**

Paik / Abe Synthesizer

**Nam June Paik–Shuya Abe:
Video-Synthesizer, 1969/92.**

Changing Channels, MUMOK, Vienna, 2010.
Photo: Zs. Gyenes.

(Kunsthalle Bremen, Germany)

From 1969 to 1971, – together with television technician and specialist Shuya **Abe –, Paik constructed a video synthesizer (colorizer) that allowed him to edit seven different sources simultaneously; in real-time**.

https://www.kunsthalle-bremen.de/en/sb-page/collection/collection/art-after-1945
http://www.medienkunstnetz.de/works/paik-abe-synthesizer/
www.paiknamjune.org/.../paiknamjune_04_07.htm

Jones Colorizer / Mixer

More precise than the Paik/Abe synthesizer/colorizer.
It was built by **Dave Jones in the** mid **'70-s**.
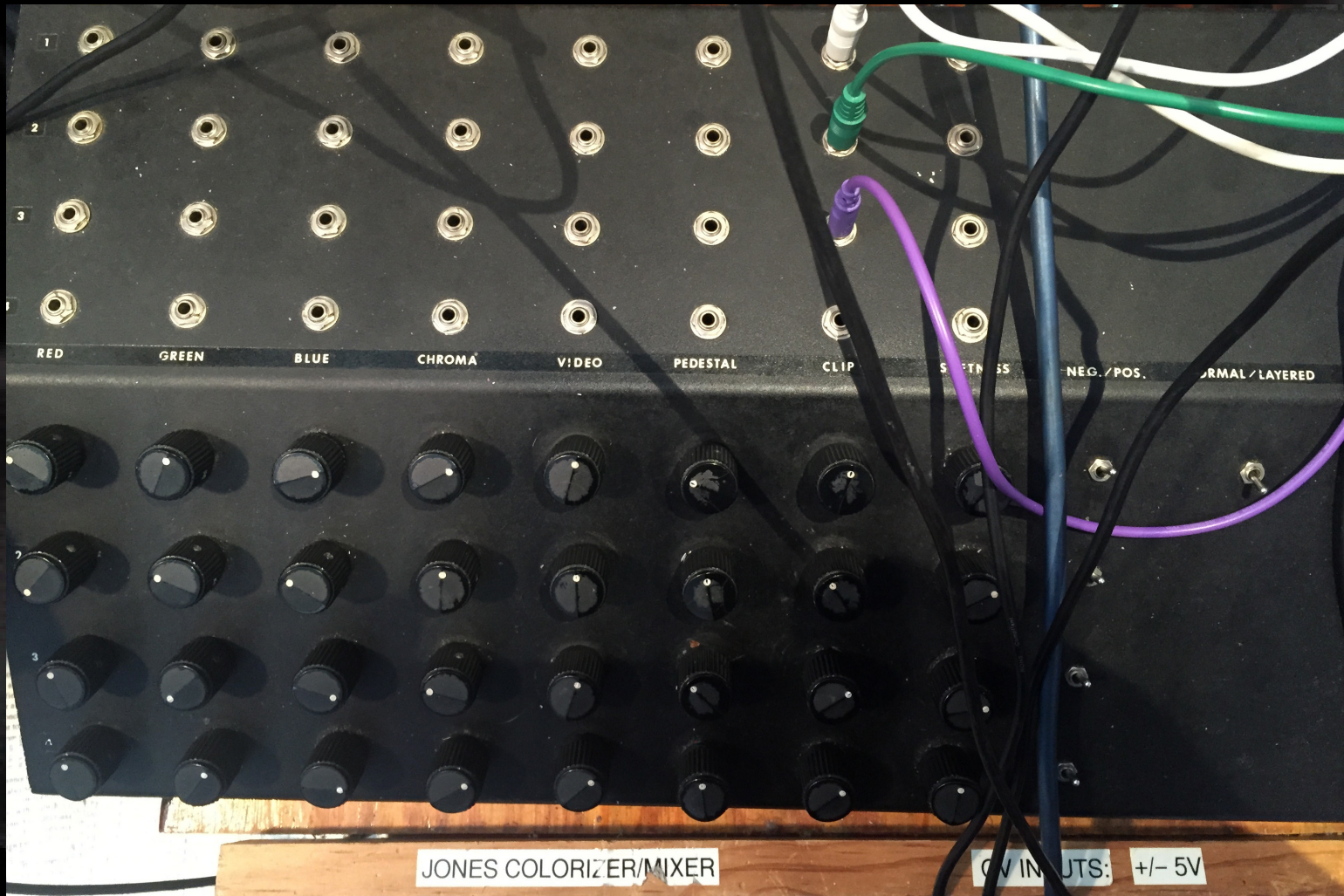
The Jones Colorizer is a **multi-functional image processing device** that inputs a **black-and-white video signal**, then adds **color**.
It also contains **other video processing**, such as negative video, keying, and mixing.

RED   GREEN   BLUE   CHROMA   VIDEO   PEDESTAL   CLIP   SOFTNESS   NEG./POS.   NORMAL/LAYERED

JONES COLORIZER/MIXER

CV INPUTS: +/- 5V

So the parameters are voltage controllable (can accept control voltages).
This voltage control also allowed oscillators and other **sources of voltages** to effectively **"turn the knob", allowing many additional effects and patterns** to be created with the colorizer **when combined with other machines**.

https://www.videohistoryproject.org/dave-jones-colorizer-experimental-television-center-studio-system-manual
https://www.videohistoryproject.org/jones-colorizer-history-design

Working in Signal Culture's one of the studios
– Owego, NY.
Photo: Kalpana Subramanian, 2019.

One Minute Signal
Doepfer Analog Modular (sound) synthesizer, Jones Colorizer/Mixer, Signal Culture, 2019.

(**Excerpt 1**)

Raster Manipulation Unit or 'Wobbulator'

Signal Culture.
Photo: Zs. Gyenes, 2019.

Some features of the Wobbulator:

A raster manipulation unit or 'wobbulator' **is a prepared television** which permits a wide variety of treatments to be performed on video images; **this is accomplished by the addition of extra three yokes** to a conventional black and white receiver and by the application of **signals derived from audio generators** on the yokes.

The **image** manipulations **cannot be recorded directly**, they can be recorded by **using a video camera**.

Audio signals cause distortions (in direct correspondence with changes in the audio signal).

The device generates an almost endless series of patterns which are highly controllable (real-time device). The effect of yokes is combined to **shift the raster in different directions**. One of the effects of one of the yokes produces an 'S carve' distortion of the raster. (see next page)

Because the yokes are electromagnets, they react to the audio amplifier in much the same manner that a sound speaker responds; the yokes are driven with the audio amplifier. It refers to the strength of the signal.

It can cause 'dancing patterns' too (3D effect).

Patterns are obtained, depending on the frequency ratio applied to the horizontal and vertical deflection systems (2 yokes).

A sine wave oscillator connected to the 'S curve' or continuous wind yoke of the raster manipulation unit with a frequency of 60 Hz **produces an image with as S curve. (Figure 15.)**
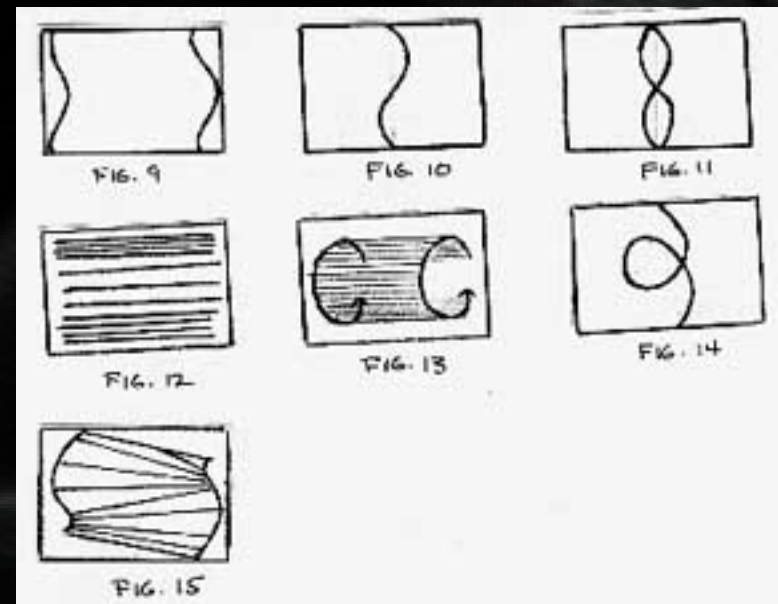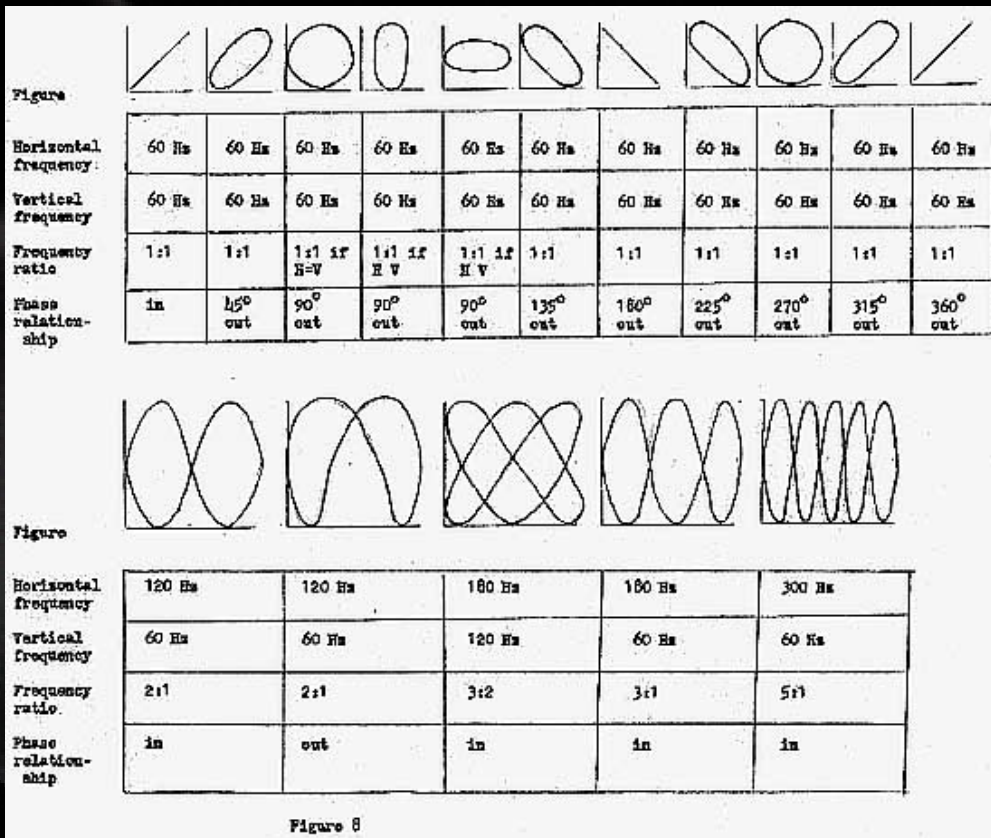
Raster Manipulation Unit: Operation and Construction
Source: Experimental Television Center, Binghamton, NY (1980)

https://www.videohistoryproject.org/raster-manipulation-unit-operation-and-construction
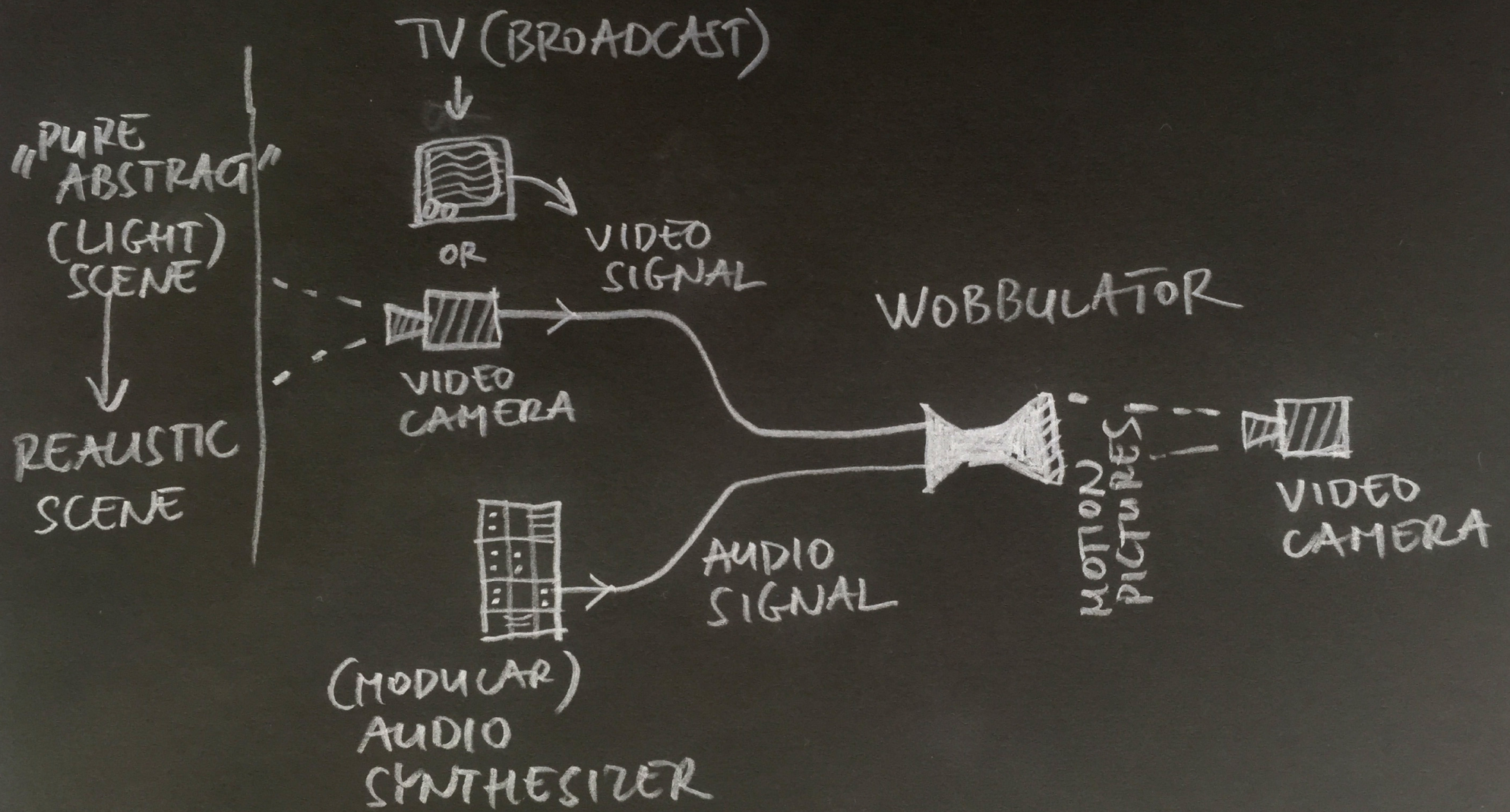
Lumage

"The term 'Lumage' is made up of the words **luminance and image**. The piece aims to depict the intangible and immaterial nature of light, and to make it an optically representable physical reality. In his experiments with visual music, Gyenes uses his awareness that **light is in fact electromagnetic radiation** in a scientific sense. His installation functions as a '**sound-reactive kinetic photogram'**, focusing on voltage fluctuations transformed into sound. The aim of Lumage is to **convert electroacoustic signals into visible**, perceptible **signals**. The light patterns generated from sound give rise to varied movements that contain improvisation and randomness, a constructive aesthetic of 'error'."

Light Art Museum, Budapest
https://lam.xyz/zsolt_gyenes

Lumage
2021
Audiovisual installation
Doepfer analogue modular audio
synthesizer and wobbulator (raster scan)

In Lumage, the artist attempts to optically transform electroacoustic signals, making them perceptible to the eye. As a "sound-reactive kinetic photogram," he attempts to represent the intangible and immaterial nature of light, to make it a physical reality that can be visualised.

Zsolt Gyenes (b. 1962, Hímesháza) uses the concept of "visible music," i.e. the synaesthesia of visual and auditory experiences, their correspondence to each other, to create his computer-interactive works.

Lumage
Audiovisual installation, Doepfer analogue modular audio synthesizer and wobbulator, 2019-2021.

(**Excerpt 2**)
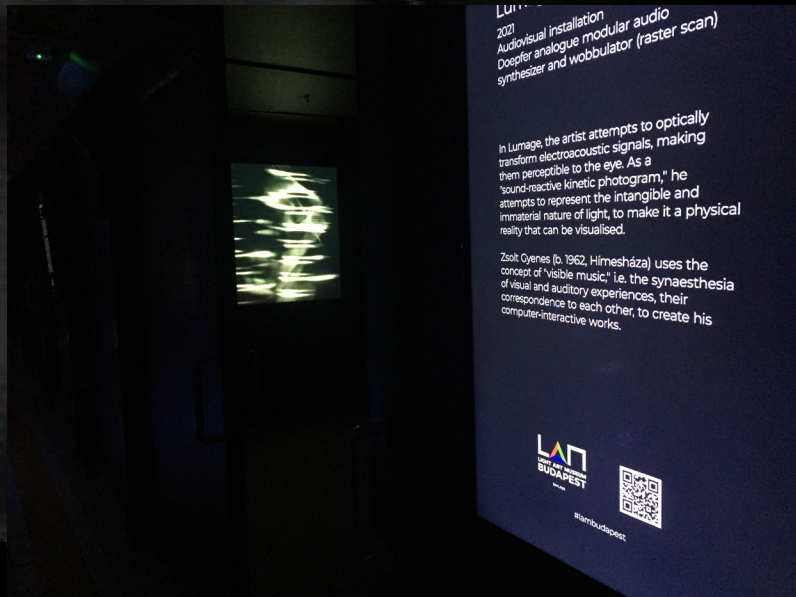
"**Improvisation is composition in real time**. Composition and performance come together 'in the moment.'"

Walter Wright
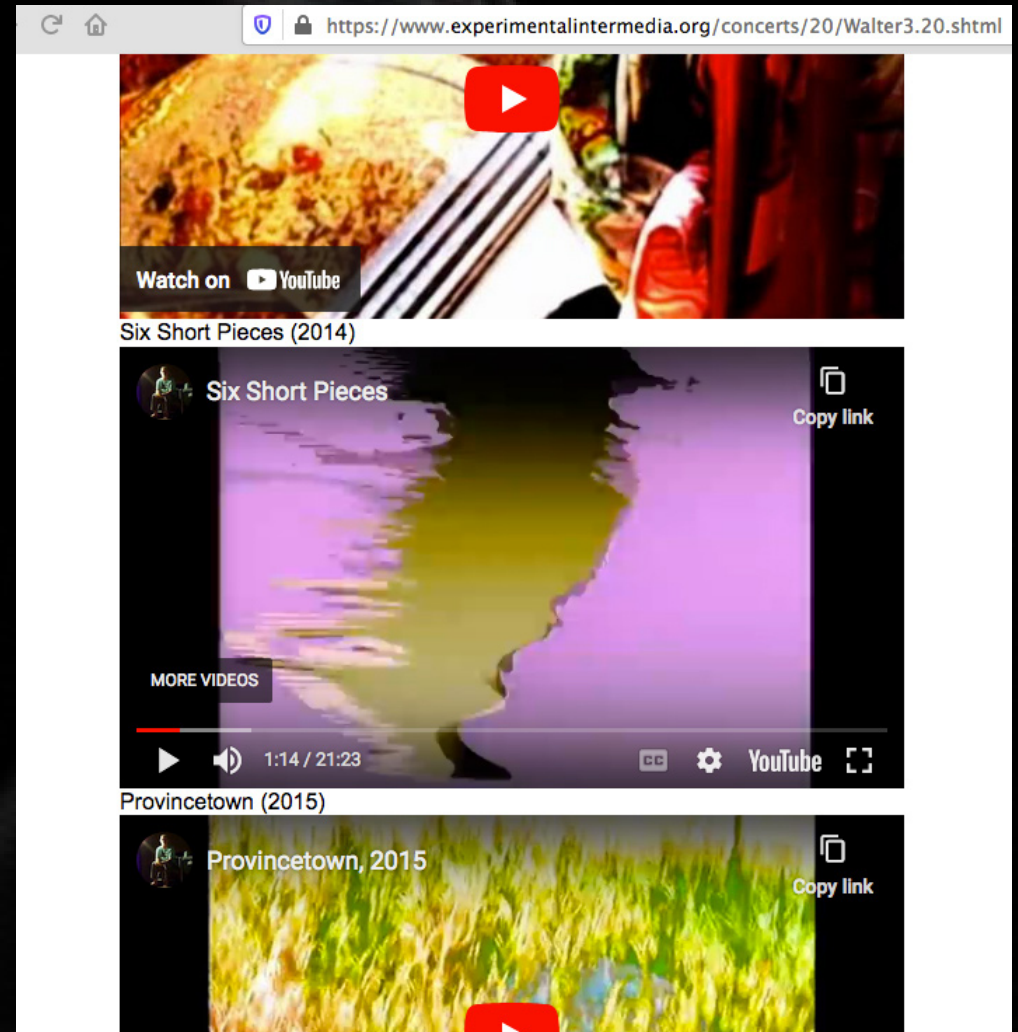
"Six Short Pieces" and other experimental videos by Walter Wright

Composition + Improvisation =
Comprovisation

From Concrete to the Abstract Art (digression)

Concrete Art **("pure abstraction")**	Abstract Art
"Everything that is **concrete is only itself**."	"...**abstract has a prerequisite** or a precondition..."
(Max Bense, 1965)	(M. Bense, 1965)
"...it concretizes and objectifies an idea."	"...it abstracts and idealizes an object"
(Gottfried Jäger, 2005)	(G. Jäger, 2005)

Jäger–Krauss–Reese: Concrete Photography, Kerber, Bielefeld, Germany, 2005, 19 p.

Works included in this channel **were created in whole or part at a Signal Culture residency**. They offer residencies for artists, researchers, and toolmakers. **The hybrid analog/digital artist studio includes rare real-time tools** such as a Jones **Colorizer**, Jones **Frame Buffer**, Hearn VideoLab, **Wobbulators**, and custom software.

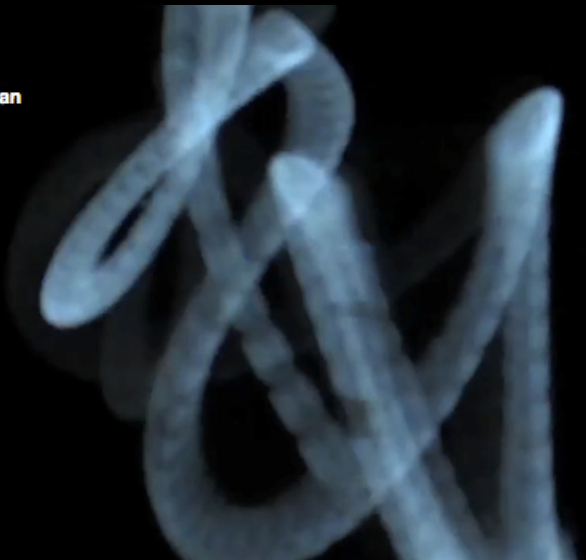Opuses were made by using wobbulator by contemporary artists

Examples from Concrete via Abstract to the Realistic Art:

– Different wobbulators built by Dave Jones, Jason Bernagozzi and Ivan Marusic Klif
– Using Doepfer (modular) analog audio synthesizer
– Combining wobbulator with other devices, like Framebuffer, Jones Colorizer or S-VHS taping

Wiggle
Charles Woodman

Patrick Cain: Vandals

Short loop produced at a Signal Culture artists residency in 2014. Made using the newly built, Nam Jun Paik designed, Wobulator. Produced by sending the output of the oscillator to the Paik Abe Wobulator, with the raster on that device collapsed. This image was then filmed off the screen. "Wiggle" was created in response to an invitation to show a short silent work at Peephole Cinema in San Francisco. In the end, the Peephole Cinema elected to show an excerpt from "Roman Spa".
Year: 2015
Duration: 1 min

Charles Woodman: Wiggle (2015)

Vandals/////Jake Meginsky\\\\\Open Mouth Records
Patrick Cain

OUT NOW
JAKE MEGINSKY VANDALS LP
ed of 300
OM43
order @ openmouthrecords.blogspot.com/2015/10/jake-meginksy-vandals.html

soundcloud.com/jmeginsky

Video imagery created using tools at Signal Culture in Owego, New York signalculture.org

Patrick is open to collaboration, comments, thoughts and reflections. He can be reached at patcain81@gmail.com

Wobbulator Patterns @ Signal Culture, April 2019

baron lanteigne
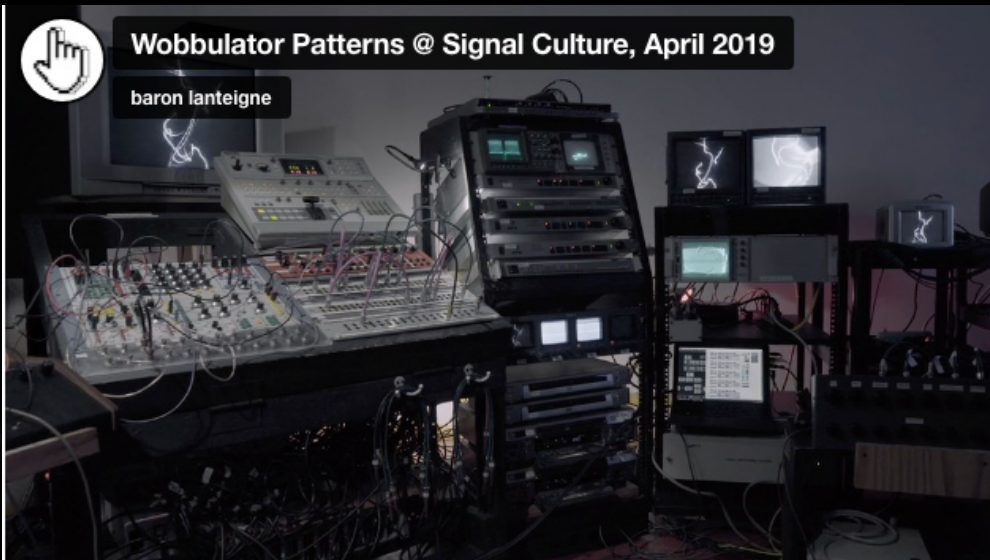
Signal Culture's artist in residence program provides experimental media artists with a studio connecting together equipment from the past five decades. Among this equipment lies two Nam June Paik's wobbulator. One of which was built and donated by Ivan Marusic Klif. The "Roadstar" was designed to be controlled by audio signal sent from a max patch.

During my stay at signal culture I tamed this device by modifying the patch and controlling it with midi data coming from a sampler / step sequencer. I left a collection of presets in the patch for future residents to explore in hope they discover the hidden potential of this rather unique device.

https://vimeo.com/channels/signalculturealumni/352039937

Baron Lanteigne: Wobbulator Patterns (2019)

This wobbulator (he used) **was built** and donated **by Ivan Marusic Klif**. The "Roadstar" was designed to be **controlled** by audio signal sent from a **max patch**.
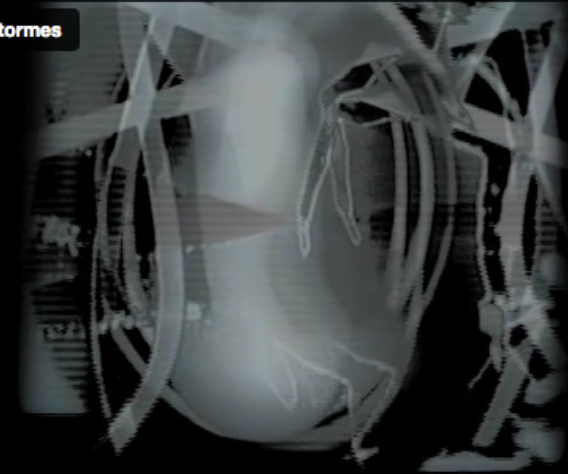
https://vimeo.com/channels/signalculturealumni/171958996

Stacey Stormes: Untitled (2016)

Using multichannel layered video feed put through **wobbulator** then further manipulated with **frame buffer**ing.
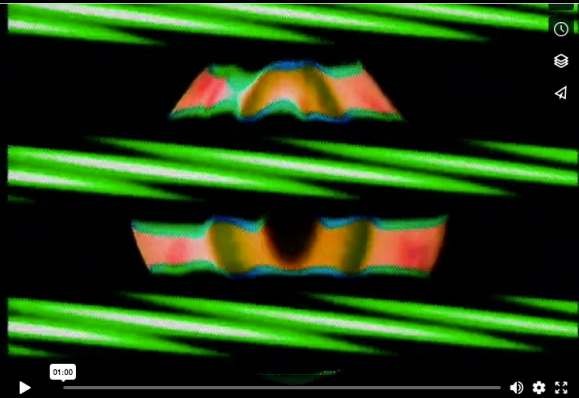

(excerpt) untitled performance with cameras, April 2016

Stacey Stormes

excerpt from an untitled project completed during April 2016 residency at Signal Culture using multichannel layered video feed put through wobulator then further manipulated with frame buffering
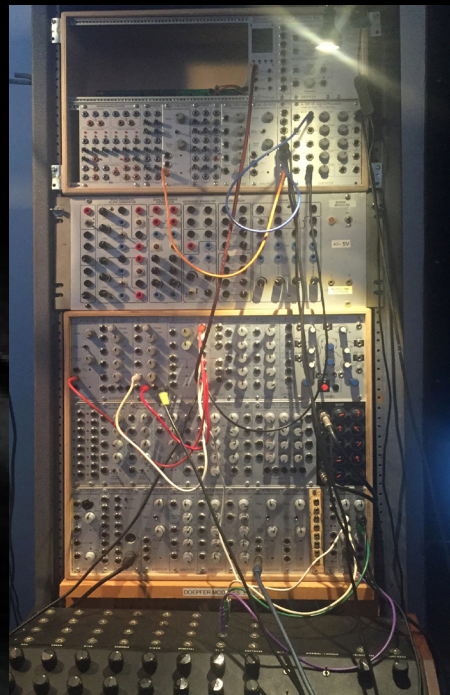
Eye Deconstruct (1 minute clip) 2018

Nicholas Economos: Hermaphroditos (2016)
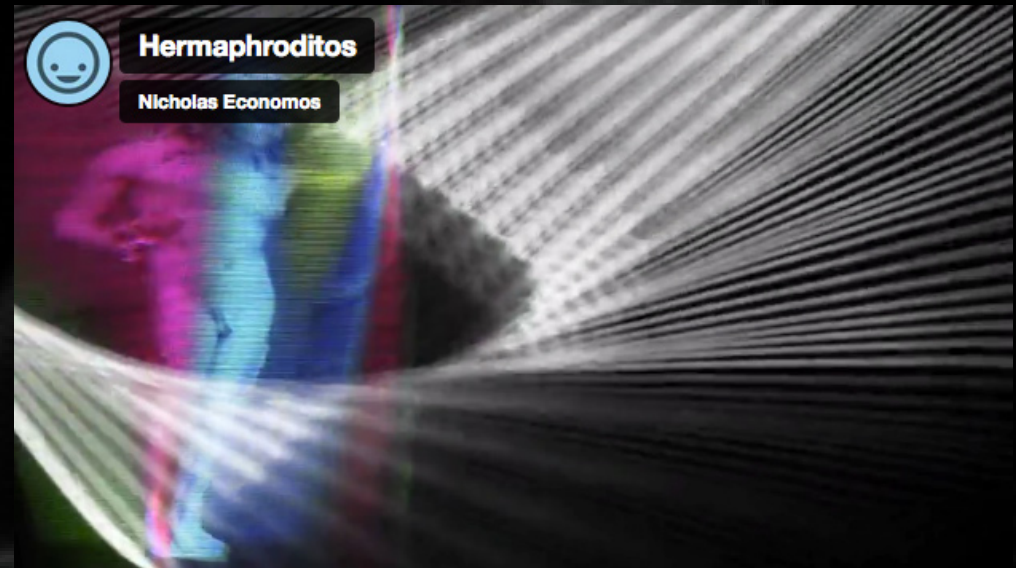
Nathan Hill: Eye Deconstruct (2018)

Video loops were processed with the Hearn VideoLab and Jones Colorizer modulation and **audio was created with a Doepfer** eurorack system.

Doepfer analog modular audio (synthesizer) system and Jones Colorizer/Mixer. SC, Owego, NY, 2019 (Photo: Zs. Gyenes)

Hermaphroditos

Nicholas Economos

This video is a composite of two clips made during an artist residence at Signal Culture, Owego, NY in May 2016. The source clips were generated using a Raster Manipulation Unit, aka Wobbulator and recorded to a video camera directly from the display monitor. The color version of the Wobbulator is a recent development at Signal Culture realized through the efforts of Dave Jones and Jason Bernagozzi.
Looking through the viewfinder of the camcorder, the images reminded me of documentation of weather or astronomy observations. I chose to leave the ambient sound of the studio for the audio track as a reflection of that experience.
see: signalculture.org/

//never forever// by Flatsitter

FLATSITTER

Sara Bonaventura: The Left Hand of Darkness (2019)

"This is a drawing exercise, recording in real time my left hand and a white paper, the right hand was not holding a pencil but rather adjusting knobs and patching oscillators, of a Jones **Raster Scan (Wobbulator), built by Dave Jones**."

neverforever.flatsitter.com

// Footage processed by Kyle Marler and Jax Deluca at Signal Culture // Audio + Web by Kyle Marler // Wobbulator built by Jason Bernagozzi //
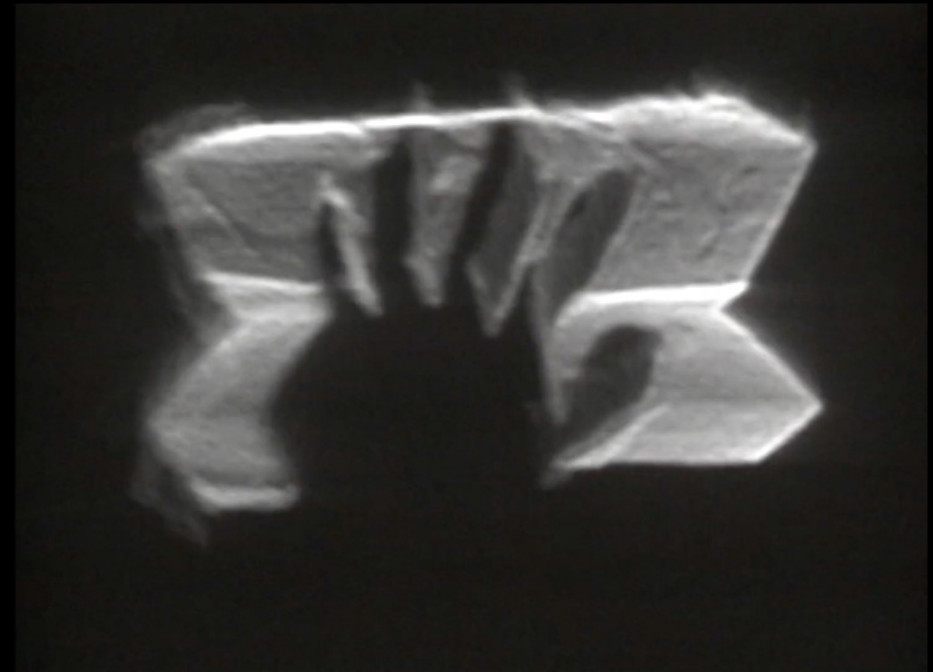
FLATSITTER (Kyle Marler and Jax Deluca): Never Forever

Wobbulator built by Jason Bernagozzi.

THE LEFT HAND OF DARKNESS
4' 10", color, 4/3, SD, 2019
Processed by Sara Bonaventura
Sountrack: Handplant, by EVN (Oh Cruel Science, Enklav label)

https://vimeo.com/channels/signalculturealumni/125818229

Darrin Martin: Disembody Electric

BALL SKILLS/WAVEFORMS/WHITE BRO RIOTS

James Connolly

This video was made for PHYSICAL EDUCATION, an experimental new media/video /performance show curated by Christine Janokowicz and Paula Nacif at Futbol Chicago.

More information:
facebook.com/events/1452083011780303/

Christine Janokowicz: armpitrubber.net/
Paula Nacif: paulalalalalalalalalalalalalalalalalalalalalalalalalalalalalalalala.land/

Portions of this video were made at Signal Culture in Owego, NY signalculture.org/
Thanks: Debora Bernagozzi, Jason Bernagozzi, and Hank Rudolph.

https://vimeo.com/channels/signalculturealumni/135718308

James Connolly: Ball Skills

Disembody Electric

Darrin Martin

This is an short excerpt of 28-minute loop that premiered as part of Pattern Recognition at Aggregate Space Gallery in Oakland. The work is derived from sending a 3D scan through a wobbulator and manipulating the stability of the image through manipulating electronic frequencies through oscillators. It was made in residence at Signal Culture.

Carl Diehl: Atempastoral Study: 1869 (Crooked) 2 (2015)

For TCC Chicago's Digital Buffet I've put together some animated gif previews of a work in progress titled American Fascist Fucks in RGB (With Omissions) that examines the degradation of political and social discourse on the internet while cathartically processing political spectacle through analog electromagnetic signal using a wobbulator built by Jason Bernagozzi.

INFO ON THE BUFFET:
TCC Chicago is proud to present the first ever Digital Buffet. Come and download your fill of unique packages of digital work and/or stuff your face with delicious food!!
July 9th, from 6:00 - 11:00 at Catalyze Chicago, an awesome maker space/interdisciplinary social hub located at 650 W Lake St, #220, Chicago, IL.
facebook.com/events/863332387053307/873096756076870/

Thanks to: Signal Culture (Jason Bernagozzi, Debora Bernagozzi, and Hank Rudolph)
signalculture.org/

J. Connolly: TCC Digital Art Buffet Advertisement
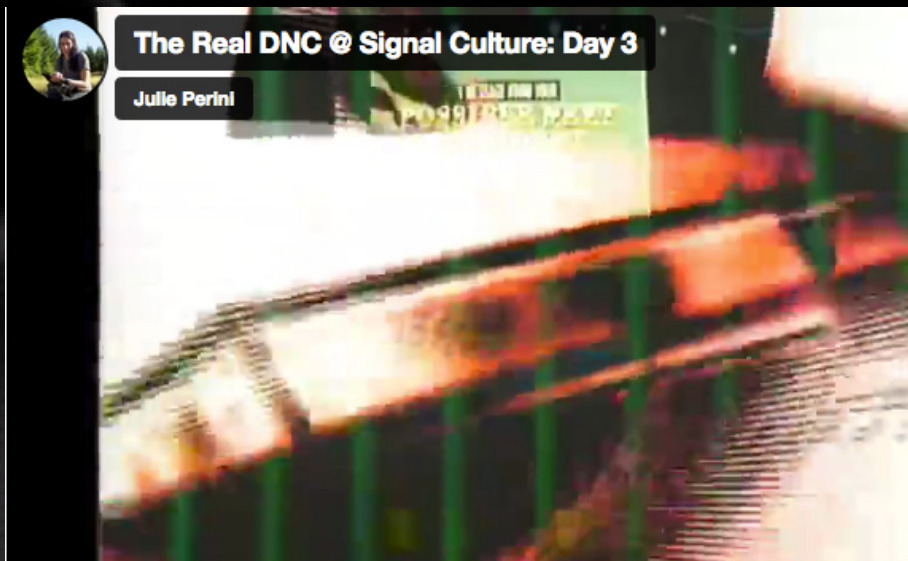
Atempastoral studies of Owego, past, present, futures. Conducted by Carl Diehl and Nat Hawks at Signal Culture residency, July 2015

https://vimeo.com/channels/signalculturealumni/176555401

Julie Perini: The Rael DNC @ Signal Culture: Day 3 (2016)

This is five hours of video captured from broadcast.

I imagine this bouncing might make him throw up.

https://vimeo.com/channels/signalculturealumni/175972285

Julie Perini: Trump with the wobbulator

July 27, 2016 / Signal Culture (signalculture.org/) / Owego, NY

Live video processing of Day 3 of the 2016 Democratic National Convention in Philadelphia, PA. This is five hours of video captured from that night.

Idea & Live Mixing: Julie Perini
Moral Support: Sarah Paul

Original broadcast was here: ustream.tv/dashboard/video-cms/22635520

Mammaries

Monica Panzarino

2016, SD video

This performance of Barbra Streisand's 1973 hit single, "The Way We Were", pairs a play on the word "memories" with a unique combination of real-time image and sound processing tools to evoke nostalgia for outmoded technologies. The image is processed by rescanning a replica of Nam June Paik's historic "Wobbulator", built by Jason Bernagozzi. Panzarino's voice is processed by "The Nipulator 2.0", a custom-built, wireless electronic bra created by the artist that uses hardware potentiometers (or knobs), a hacked DJ Hero microcontroller, and a Max/MSP software patch. The left "nipple" of the bra manipulates the frequency of Panzarino's voice in real-time, while the right "nipple" adds reverb.
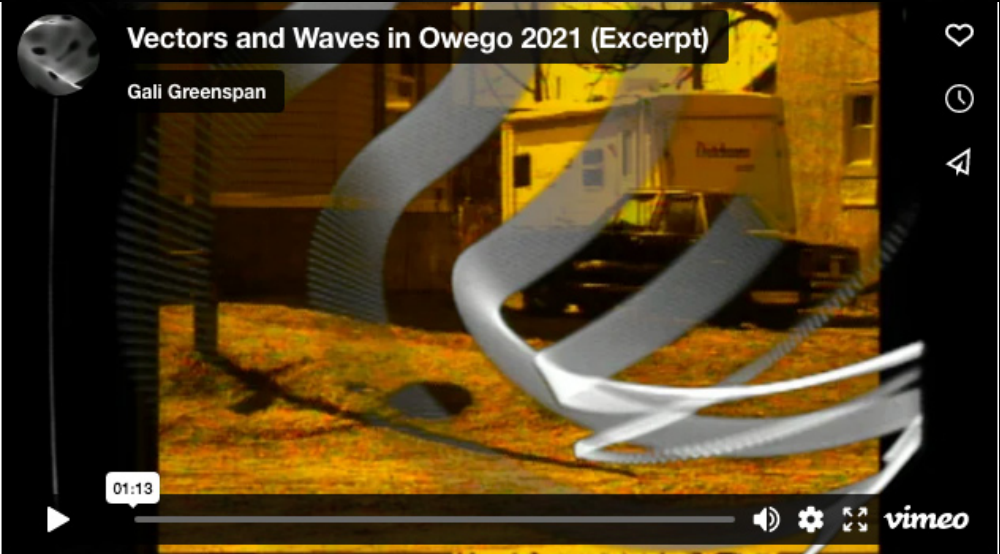
https://vimeo.com/channels/signalculturealumni/194294506

Monica Panzarino: Mammaries (2016)

The wireless electronic bra created by the artist that uses knobs, a hacked microcontroller, and a Max/MSP software patch. **The left "nipple" of the bra manipulates the frequency of Panzarino's voice** in real-time, while the right "nipple" adds reverb.

https://vimeo.com/channels/signalculturealumni/542703353

Gali Greenspan: Vectors and Waves in Owego (2021)

Vectors and Waves in Owego 2021 (Excerpt)

Gali Greenspan

01:13

Created at Signal Culture studio, Owego NY includes analog video materials processed with Jones analog coloriser, MVIP, and Wobbulator. Includes also digital footage processed using Avalton Live.

This video is part of large scale prints and a video installation at HiLo Art, catskill, NY. It documents experimentation with the materiality of analog systems and studies the demarcation between the self and a new, foreign surrounding.

Video + Audio Composition made at Signal Culture. Using the Wobbulator and pre-edited footage of timewarps.

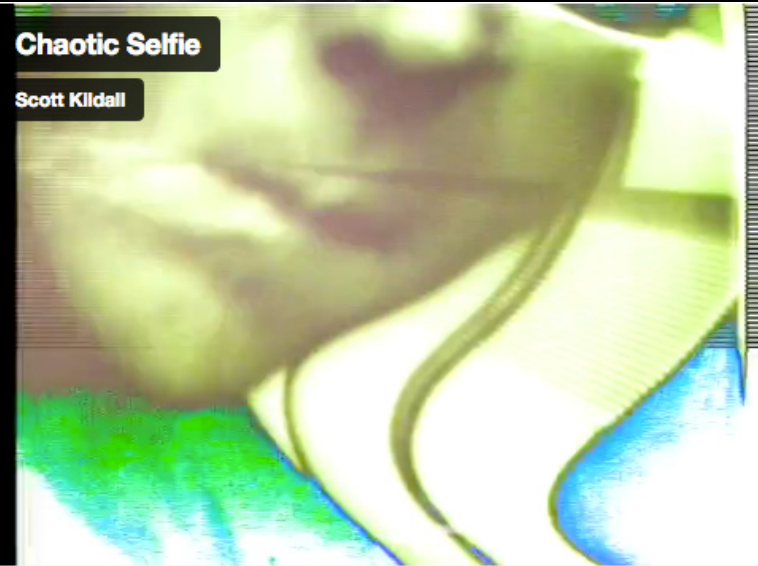https://vimeo.com/channels/signalculturealumni/135108906

Scott Kildall: Electric Energy

Produced at the Signal Culture residency using the Jones Colorizer and the Wobbulator. This video was originally shot with the Omnimovie HW SVHS (1988 camera)

https://vimeo.com/channels/signalculturealumni/136316566

Scott Kildall: Chaotic Selfie

Using the **Jones Colorizer** and the **Wobbulator**, and was originally shot with **SVHS** (1988) video camera.

https://vimeo.com/channels/signalculturealumni/135427598

Scott Kildall: Sperm and Seagulls

Two-track composition run through the Wobbulator.

https://vimeo.com/channels/signalculturealumni/135314612

Scott Kildall: Barbie Cemetery Mix w/wobbulator

Sperm and Seagulls
Scott Kildall

Two-track composition done at Signal Culture residency with Sperm animation and Seagull Footage, run through the Wobbulator.

Barbie Cemetery Mix w/wobulator
Scott Kildall
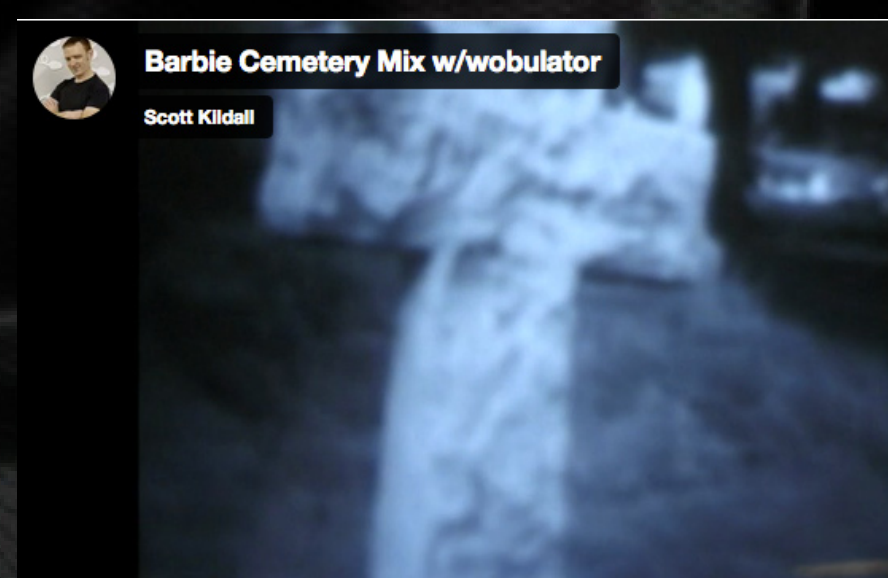
Mixed while at Signal Culture residency

Kalpana Subramanian

Woolgathering (2020)

"Cinematic breath, and breathlessness.
A pandemic reverie."

https://vimeo.com/616562364

Incantation (2021)

"A serendipitous **ritual of memory**
Colliding archives of body and place
A cine-incantation to freedom and (be)longing"

Excerpts: https://vimeo.com/721300727

Woolgathering (2020)
Incantation (2021)

(**Excerpts 3-4**)

Analog+Digital

Signal Culture Modular Apps (SC Apps)
Experimental Real-time (Modular) Video Processing Softwares

The Signal Culture Modular Apps gives you access to custom professional video and new media software applications for **producing real-time experimental media artworks**. Great for artists, VJ's, designers, and hobbyists!

https://signalculture.org/sc-apps.html#.Y-JlJCF7ky4

Frame Buffer Modular App

Stores and **repeats frames** on up to 3 keyed layers of video, allowing for feedback and keyclip compositing. You can set the repeated frames from 1 frame to as many as the memory of your computer will allow.

SSSScan

Uses generative or live video gradients to determine the shape and movement of a **buffered slitscan**. New features include variable speed and resolution controls and realtime gradient selection that allows users to alter the shape of the slitscan and to scrub backward or forward through the buffer.

Re:Trace

Redraws live or recorded video onto an **image plane** made up of **geometries** such as points, lines, polygons, etc. The image plane can then be rotated, zoomed in or out, **displaced on X, Y, and Z axes**, and can be folded into new shapes and volumes.
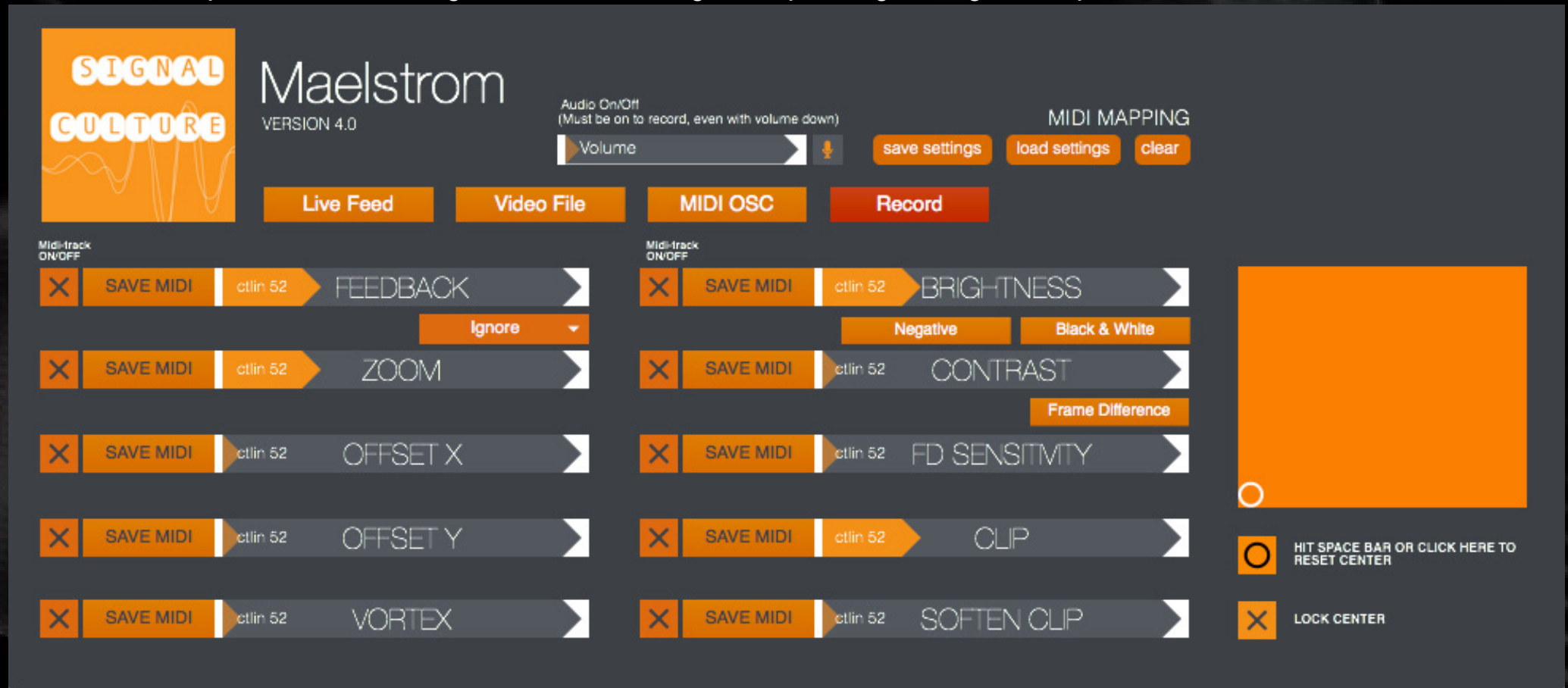
V-Mass

The V-Mass Modular App allows you **to map video** onto either a selection of geometric primitives or **onto** imported **3D models**. New features include support for short animations such as walk cycles and generative fractal bump mapping.

Interstream

The Interstream Modular App allows users to **datamosh movies** or live cameras fluidly in realtime – no more slow editing of I-Frames! Innovative new features include multi-directional, timed blooming and perpetual moshing without the need to reset your blooms.

Maelstrom

Features 2 levels of multi-directional feedback using stacked **keying and frame difference processing**. Send your video into multiple directions using downstream image compositing through our updated X, Y, Z and rotation controls.
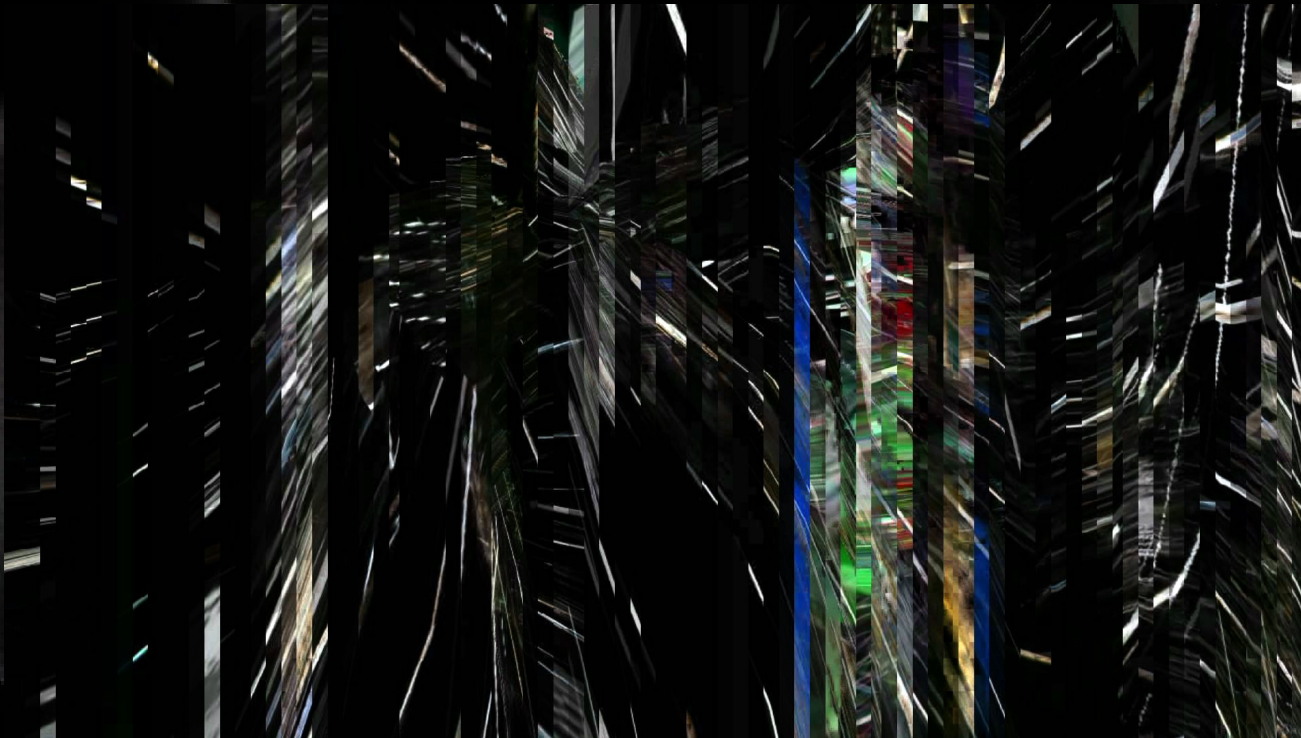
Example for the using of SC Apps (hybrid technics)

Vortex (2023)
Modular audio synthesizer, **Wobbulator**, Jones **Colorizer**, – SC Apps: **V-Mass**, **Maelstrom**, **SSSScan**

Excerpt: https://vimeo.com/790823557

(**Excerpt 5**)

1. Analog electronics **didn't have time** to run out, digital technology came at once and replaced it. So there are still many unutilized possibilities in the analog video, not to mention hybrid solutions.

2. The specialties of analog electronics: e.g. **organic character**, aesthetics of error, and chance.

3. Most of the early media instruments are **sound-reactive** and can work in **real-time**.

AV excerpts: https://www.youtube.com/watch?v=osseYiTXFig

Thanks to

Signal Culture
Hank Rudolph
Kalpana Subramanian

http://vizualzene.hu