

# Modularday 2019 - Analog VideoSynthesis

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## 1. History & Standards

History:

- Animac - <https://www.youtube.com/watch?v=TS1WY4H4Dvk>
- **Scanimate** (1968-1985) -
  - Reel - <https://www.youtube.com/watch?v=ispW6-7b2sA>
  - LetsGrove - [https://www.youtube.com/watch?v=Lrle0x\\_DHBM](https://www.youtube.com/watch?v=Lrle0x_DHBM)
- Sandin Image Processor (1971)
- Rutt/Etra Video Synthesizer (1972)
- **EMS Spectre** (1974)
- Dave Jones Video Digitizer (1975)
- **Fairlight CVI** (1984) Hybrid Digital/Analogue - [https://www.youtube.com/watch?v=t\\_B1Zk-CQP0](https://www.youtube.com/watch?v=t_B1Zk-CQP0)
- LZX Industries (2008)
- Gieskes - 3TrinsRGB+1c (2014)

Video Formats and Connectors:

- PAL/NTSC
- Composite, Component, S-video, VGA, DVI, HDMI

Sync Signals:

In video the medium is different from audio, since its constrained by the display device not by a physical phenomena.

Video Ranges:

- SubAudio: BETA movement (10-16hz), strobo
- Audio (20hz - 20khz)
- Video (15khz - 6MHz)

## 2. Composition & Shaping

- Shape Generation
  - VCO H, free running, rango H, rango V, A simple example of Composition+Animation with a VCO, synced to x50hz.
  - Ramps H y V
  - Mirrored Ramps
  - VCO: 3 oscillators - 1 HVCO modulated by another VCO, with pedestal modulated from a third one (O\_C).
- Comparators
  - Masks, Key Generators:
  - Gradients vs Solid Shapes,
  - Mixing signals in a single channel
- Faders - 2Q Multipliers
  - Mixing different shapes to generate more complex shapes
- Mixers
  - Mixing different shapes to generate a composition
  - Colorize
- Filters

- Edged Detection & Processing
- Image Processing (FX)
- Noise & Dither
  - TV Snow, Cosmic microwave background
  - Textures for shapes, organic animations
- Ring Modulators - 4Q Multipliers
  - Generación de formas complejas
- Wave Folder & Frequency Multiplier
  - Used to add even more complexity to a shape, can be frequency modulated
- Sample & Hold - Shift Registers
  - Downsampling (bitcrushing)
- Logic Gates
  - Used to mix signals and get cool solid shapes
- Colorizers
  - Using a Player - Mapper - Hue, Saturation and Brightness voltages into component YUV (Luma, R-Y, B-Y) and RGB
  - Color Chords - Colorize a composition
  - Black is also a “color” (or lack of) that can be used to create compositions.
- Creating 2D Objects
  - Navigator + ShapeChanger
  - Bouncing ball.
- Blending Modes
  - Additive mode
  - Multiplicative mode

### 3. Animation

- Audio signals as animation/scrolling source (when close to multiples V ranges 50hz)
- Audio Bandpass filters and Envelope Followers (Sensory Translator)

### 4. Video Processing and other topics

- Video Feedback -> Simplex VSynth: Camera + TV
- Processing Cameras and Video Input Signals
- Raster Scan vs Vector Graphics
  - Oscilloscope Music
  - Lasers
  - Holographics