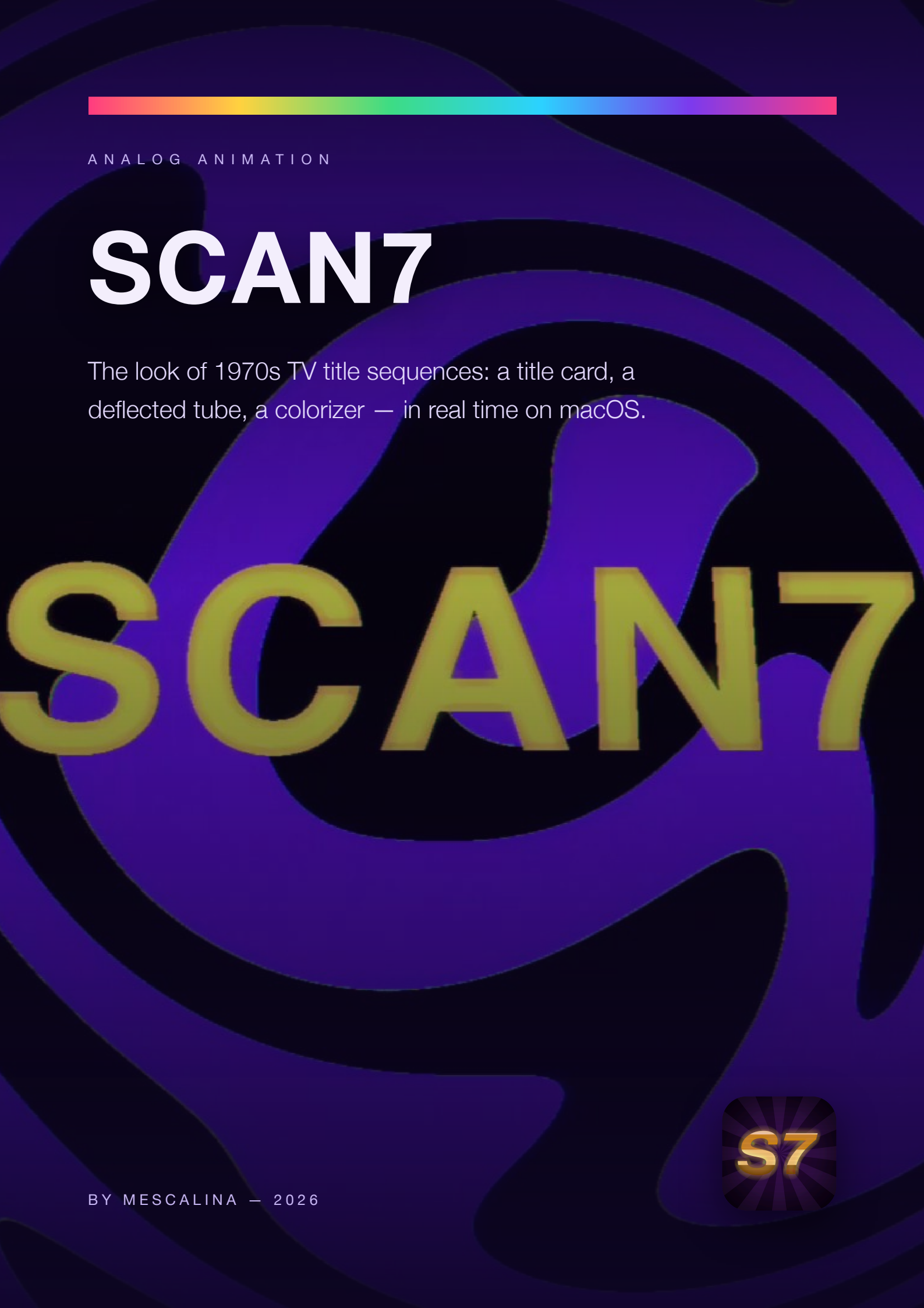
ANALOG ANIMATION

SCAN7

The look of 1970s TV title sequences: a title card, a deflected tube, a colorizer — in real time on macOS.



BY MESCALINA — 2026



SCAN7 output — “Chrome title”: level bands sliding through the letters, rays

CHAPTER 1

The legend — the Scanimate

Denver, late 1960s. Lee Harrison III and Computer Image Corporation build the Scanimate: the first real-time *analog* animation system, and the visual sound of a whole decade of television.

The principle: a high-resolution camera shoots a high-contrast **black-and-white card** — a logo, a title, a shape. The picture is displayed on a cathode-ray tube whose **scanning signals are deflected** by an analog computer: ramps, oscillators, multipliers, linked by patch cords. The card stretches, bends, spins and waves at 60 fields per second while the operator turns the knobs. A second camera re-shoots the tube; the grayscale output goes through a **colorizer** that gives each level its color. Several passes are layered on videotape for complex pictures.

The result has a grain you recognize instantly: organically fluid motion, saturated “electronic” colors, chrome bands flowing through the letters, glowing fringes along the edges. About ten machines animated the logos and title sequences of American television (ABC, NBC, HBO, Sesame Street…), commercials and films. Two units still run, maintained by Dave Sieg, who sums it up as “the visual equivalent of a Moog synthesizer”.

> The Scanimate was not software: it was a cabinet of circuits, a tube, two cameras and an operator playing the animation by hand. That *machine-instrument* is what SCAN7 brings back to life.



“Classic chrome”: the level ramp slides the colorizer bands through the title.



A video run through the hi-con camera and the colorizer: the title sequence gets its period color back.



SCAN7 output — “Nebula”: swirl, persistence and edge fringes

CHAPTER 2

The recreation — SCAN7

SCAN7 is a native macOS application (Swift + Metal) that reproduces the machine's complete chain, stage by stage, on three layers — and exports the result identically.

True to the machine

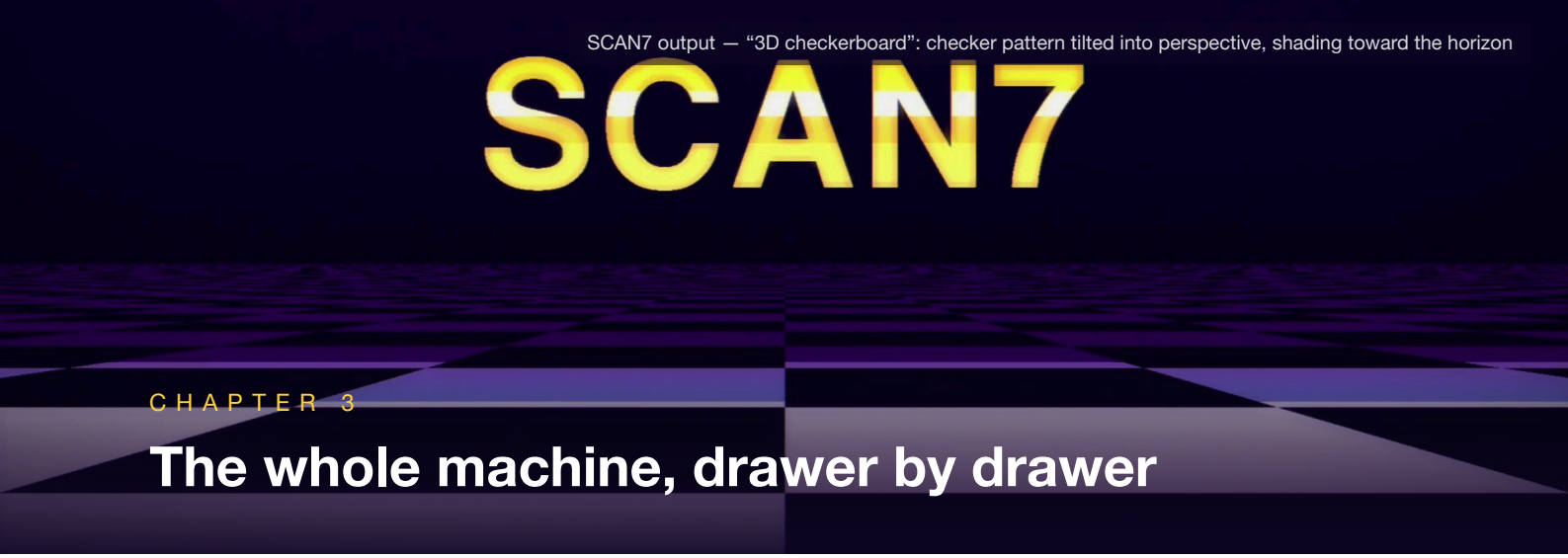
- the **hi-con camera**: threshold, softness, gamma, invert, outline;
- the **scan deflection** computed pixel by pixel: position, size, rotation, skew, 3D tilts, cylinder and sphere wraps, twist;
- **three oscillators** patchable to fifteen axes — waves, accordions, radial, swirl, rotation, size, hue…;
- the **level ramp** that makes the chrome bands flow through the letters;
- the **colorizer** with level bands and edge fringes, the **phosphor persistence**, the **re-scan camera** with its curvature, smear and scanlines.

An instrument for today

- **3 layers** A, B, C, each a complete Scanimate chain, blended by key, add, screen or multiply;
- sources: **title generator** (font, bold, outline, letter spacing), video, image, camera, **electronic patterns** and **animated shapes** (star, heart, rings, blinking eye), cut-out PNG;
- **A → B programmer**: two memories, manual T-bar or automatic ramp;
- live **REC**, deterministic H.264 / ProRes **export**, 8 output formats;
- 28 presets that keep your text and files, personal settings, undo.



“Rainbow bands”: the Rainbow palette in level bands, one oscillator on horizontal accordion, edge fringes.



SCAN7 output — “3D checkerboard”: checker pattern tilted into perspective, shading toward the horizon

CHAPTER 3

The whole machine, drawer by drawer

Layer source

Text (font, bold, italic, size, letter spacing, line spacing, outline, alignment), video with In/Out, image (original colors or alpha), camera, pattern.

Patterns and shapes

H/V lines, grid, circles, rays, checker, dots, ramp; pulsing star, beating heart, rings, blinking eye — size, center, angle, speed.

Hi-con camera

Threshold, softness (0 = hard contrast, 0.5 = gradient kept), gamma, negative, differentiator outline and its width.

Scan geometry

Position, width, height, rotation (+ continuous), skew, X/Y tilts in true perspective, focal length, 3D shading.

Wraps

Horizontal and vertical cylinder, sphere (negative = pincushion), twist.

Oscillators ×3

Sine, triangle, saw, square on 15 axes; amplitude, frequency, speed, phase.

Colorizer

12 palettes, level bands and their softness, edge fringes, fixed or rotating hue, brightness, saturation, key threshold.

Level ramp

The “chrome”: a ramp signal (angle, frequency, speed, shape) multiplies the level — the bands slide through the letters.

Phosphor and glow

Persistence (decay, zoom, drift, rotation, echo hue; Max / Add / Dissolve), adjustable glow.

Blend

Layers A → C by key, add, screen, multiply; opacity; black, color or gradient background.

Re-scan camera

Tube curvature, bandwidth, chroma aberration, softness, scanlines, phosphor mask, noise, flicker, vignette, gamma, contrast.

A → B programmer

Two state memories, mouse-driven T-bar, automatic ramp (duration, once / loop / ping-pong, curve).

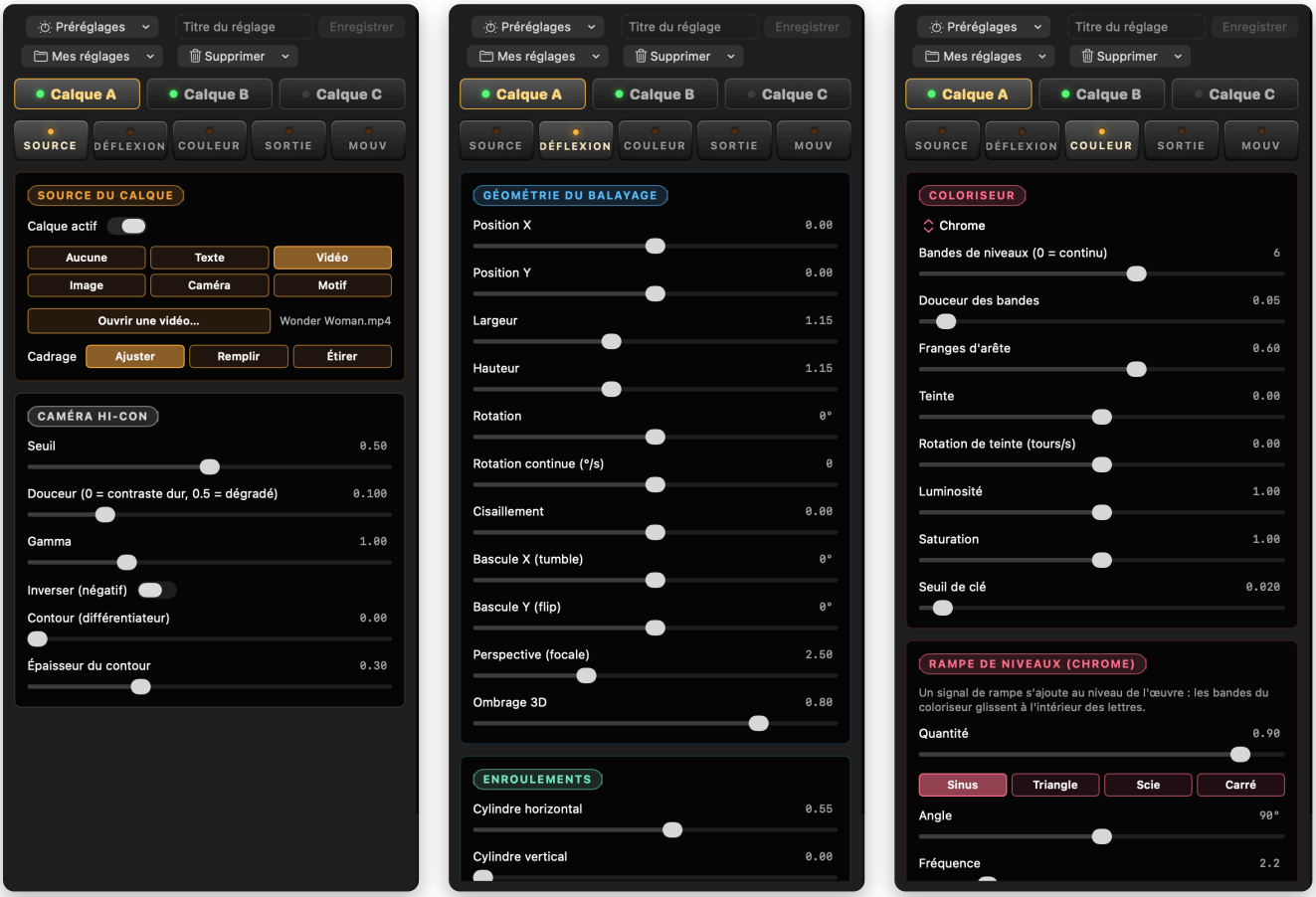
An instrument played live

- **Output format**: 1080p, 720p, 4:3, PAL, NTSC, square, vertical — sources are framed into it;
- • **REC** in real time, T-bar and gestures included; offline frame-by-frame **Export** (master video with sound and In/Out, or generative 24-60 fps), H.264 or ProRes 422 / 4444;
- **Output window** on a second display, **Bypass**, **My settings** as JSON.

CHAPTER 4

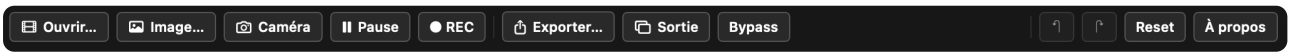
The interface — three layers, five tabs

On the left, the **sidebar**: presets and personal settings, the **layer A / B / C** selector, then five tabs — **Source · Deflection · Color · Output · Motion**. Source, Deflection and Color apply to the selected layer; Output and Motion are global. On the right, the Metal preview, the timeline and the transport bar. Real screenshots below.



Tab	Modules	Role
Source	Layer source · Hi-con camera	Choose what feeds the layer (text, video, image, camera, pattern, shape), frame it, then run it through hi-con: threshold, softness, gamma, negative, outline.
Deflection	Scan geometry · Wraps · Oscillator 1-3	The heart of the Scanimate: position, size, rotation, skew, 3D tilts and focal length; cylinder, sphere, twist; three oscillators on fifteen axes.
Color	Colorizer · Level ramp · Phosphor persistence · Glow · Blend	Give color to the gray levels, make the chrome flow, trail the phosphor, blend the layer with the others.

The transport bar



Open… video into the selected layer · **Image…** · **Camera** · **Play / Pause** (space) · ● **REC** · **Export…** · **Output** (output window) · **Bypass** (raw video) · ↶ ↷ undo / redo · **Reset** (layer A as white text, B and C off) · **About**. Above it, the timeline with **[In** and **Out]**.

Compose and animate





Output — the final picture

Output format: 1920×1080, 1280×720, 1440×1080 and 960×720 (4:3), PAL, NTSC, 1080 square, 1080×1920 vertical. Preview, REC and export all use it.

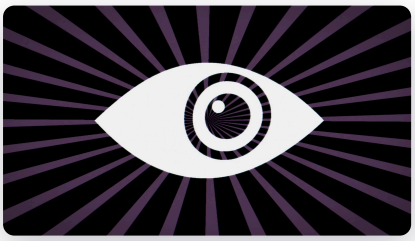
Background: black, color or gradient between two colors.

Re-scan camera: tube curvature, bandwidth (the horizontal smear of tubes), chroma aberration, softness, scanlines and their count, phosphor mask, noise, flicker, vignette, gamma, contrast.

Motion — the A → B programmer

Store A and **Store B** snapshot the complete state (three layers and global settings); **Recall** loads them back. **Move active** arms the **T-bar**: dragged with the mouse, it interpolates every knob from A to B — the Scanimate operator's “move”.

The **automatic ramp** plays the T-bar on its own: duration, once / loop / ping-pong, linear, smooth, accelerating or decelerating curve. **Take over** hands the knobs back without a frame jump. On export, the ramp starts at the beginning of the movie.



“Blinking eye” — animated shape.



“Studio star” — pulsing star, sphere.



“Beating heart” — shape, glow, pastel.

Conventions: drag a knob to set its value; **double-click the label** = default value; **click the number** = type it in. All screenshots are rendered by the application itself.

CHAPTER 5

Technical sheet

Item	Detail
Platform	macOS 14+ (Apple Silicon and Intel), native application. English interface, French available
Licence	Personal licence key (one per application), received by e-mail after purchase and entered once at first launch; single online activation (2 computers per key), then offline signature check, no account
Technologies	Swift + SwiftUI, Metal rendering (deflection by per-pixel inverse mapping, per-layer persistence ping-pong, compositor), AVFoundation, CoreText
Layers	3 complete Scanimate chains (A, B, C), key / add / screen / multiply blending
Sources	Title generator, video (In/Out, loop), image (alpha, original colors), camera, 8 electronic patterns, 4 animated shapes
Deflection	Geometry, 3D tilts in perspective, cylinder / sphere / twist, 3 oscillators × 15 axes
Color	12-palette colorizer, level bands, edge fringes, level ramp, persistence, glow
Output	8 formats (1080p, 720p, 4:3, PAL, NTSC, square, vertical), re-scan camera, output window on a second display
Recording	Real-time .mov H.264, constant frame rate
Export	Deterministic offline: master video (frame rate, duration and sound of the file, In/Out range) or generative 24 / 25 / 30 / 60 fps; H.264 in 3 qualities, ProRes 422 / 4444
Animation	A → B programmer (manual T-bar, automatic ramp), oscillators, continuous rotation, hue rotation, animated shapes
Files	Settings as JSON in `~/Library/Application Support/SCAN7/Presets/`
Documentation	Illustrated step-by-step tutorial (PDF)



“Perspective crawl”: tilted title, rays, shading toward the horizon.



“Twisted ribbon”: line pattern, wave and twist, neon palette.

> SCAN7 joins **Sandin FX**, **RE7**, **Q5K** and **PB7**: five By Mescalina instruments that bring back the founding machines of creative video, from the analog lab of the 70s to the digital control room of the 80s.

Visuals: actual outputs computed by the SCAN7 engine. SCAN7 — By Mescalina, 2026.