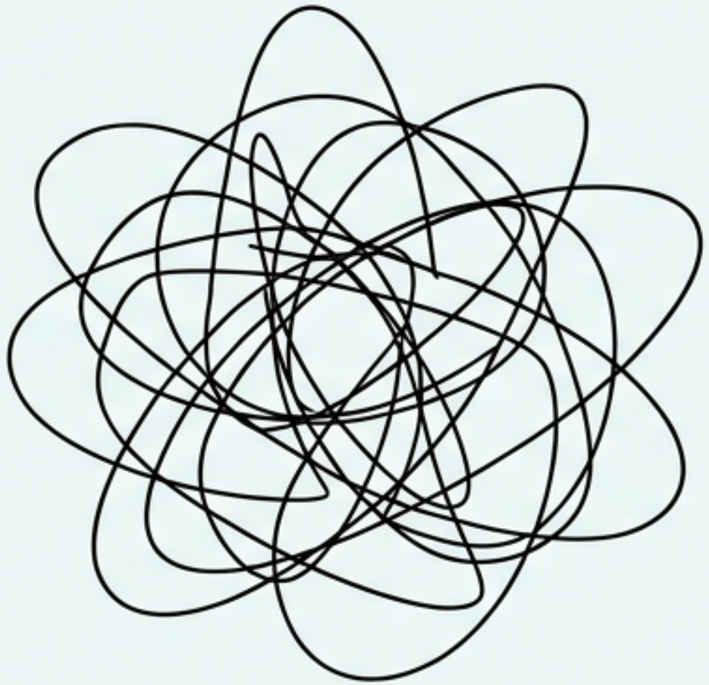
MASTERING THE MONOCHROME MATRIX: ADVANCED WORKFLOWS IN B&W LITE

Decoding the mathematical and architectural constraints of offline tone architecture.

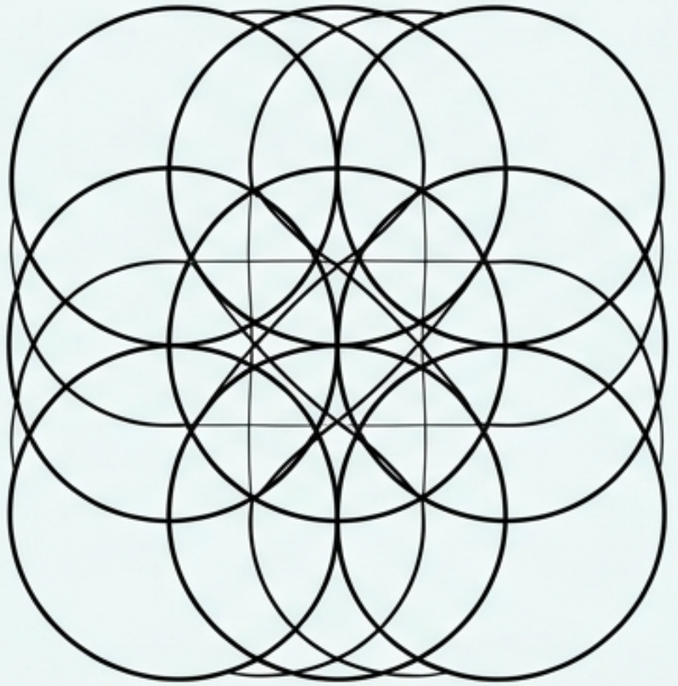


True monochrome is the deliberate mathematical translation of color into luminance.

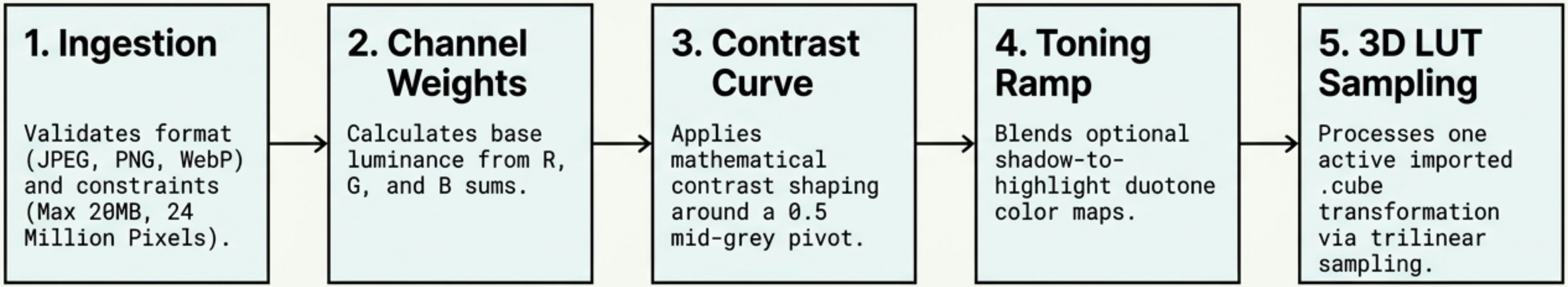
The Challenge
Muddy conversions occur when software relies on black-box algorithms or automated scene detection. Relying solely on visual perception instead of absolute data leads to inconsistent results and clipped tones.



The Solution
B&W LITE v2.5.4 operates as a strictly local, math-driven environment. It elevates the editor to an architect of tone by demanding precise, channel-weighted inputs and offering mathematically verifiable outputs—all entirely offline.



The Architecture of Absolute Control Follows a Strict Processing Pipeline



Starting Points Serve as Mechanical Baselines, Not AI Scene Detection

HIGH KEY

- **Action:** Opens greys and gently compresses contrast.
- **Use Case:** Bright, open monochrome starting treatments.

LOW KEY

- **Action:** Deepens tones and enforces stronger tonal separation.
- **Use Case:** Dramatic, constrained shadows.

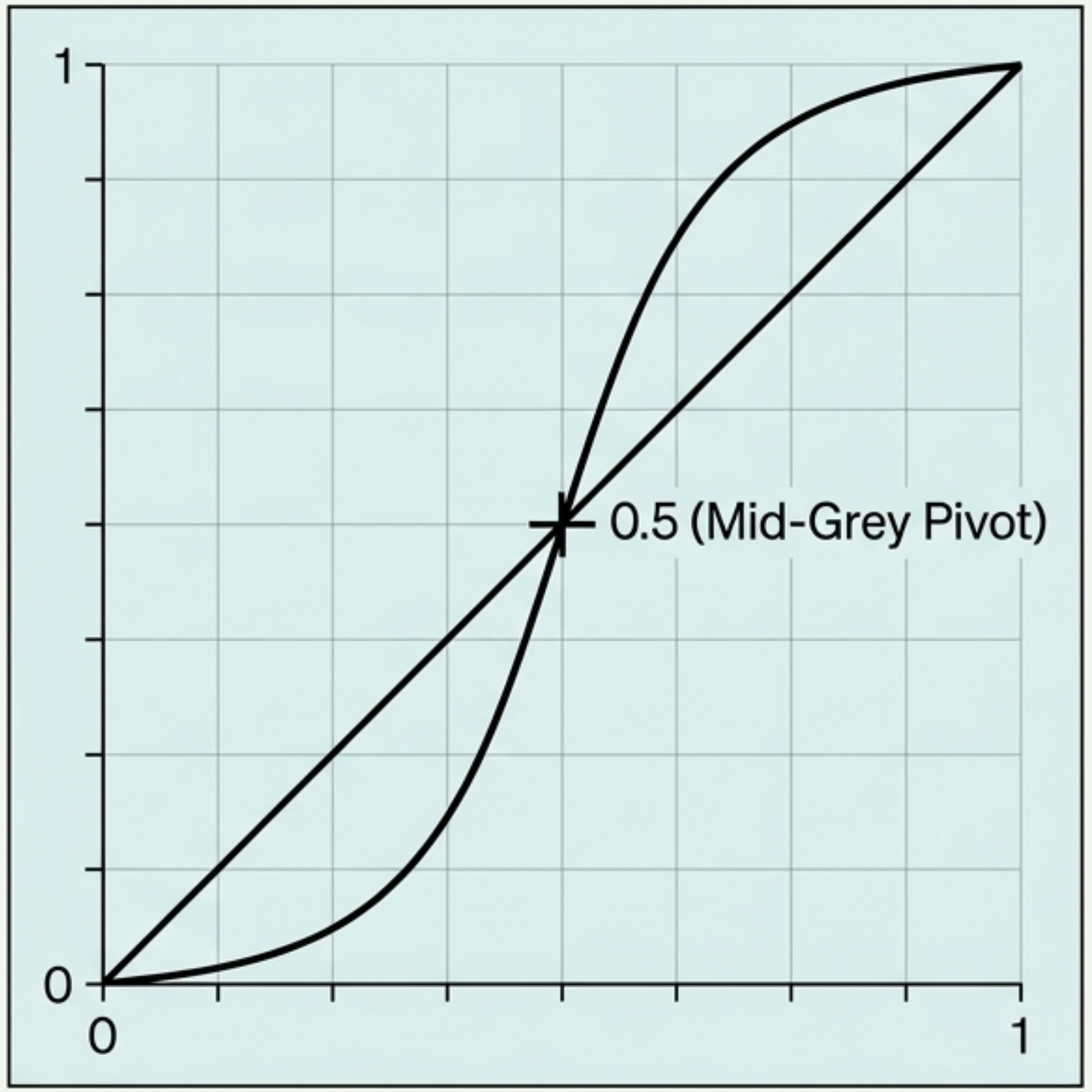
NIGHT

- **Action:** Cool-toned darker treatment explicitly injecting selenium toning.
- **Use Case:** Cinematic, low-luminance rendering.

OVERCAST

- **Action:** Restrains contrast and applies a soft soft platinum tone.
- **Use Case:** Flat lighting environments requiring subtle preservation.

Contrast and Tonal Shaping Pivot Around Absolute Mid-Grey

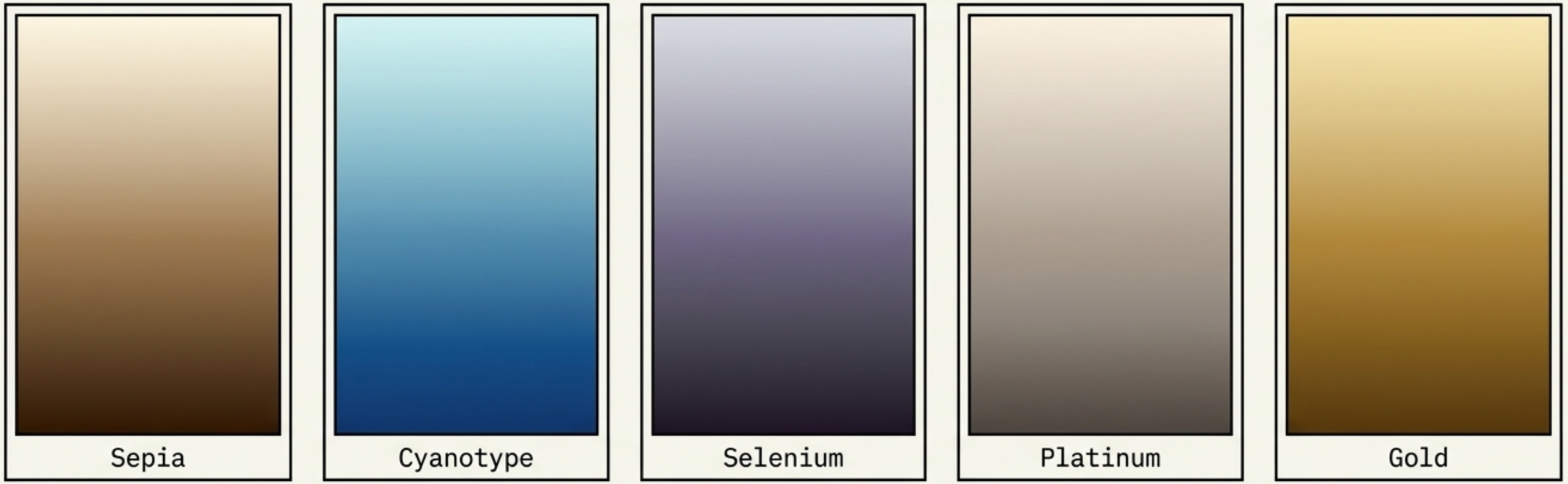


Contrast adjustments (–100 to +100) are not linear clips. Positive values apply a normalized hyperbolic-tangent curve, approximately preserving endpoints to prevent immediate clipping.

```
At c>0, transforms are centered
on 0.5.
At c<0, applies Lnew = 0.5 +
(L-0.5)*max(0.05,1+c/100).
```

Workflow Impact: Negative values strictly compress tonal separation; positive values gracefully stretch contrast through a smooth curve.

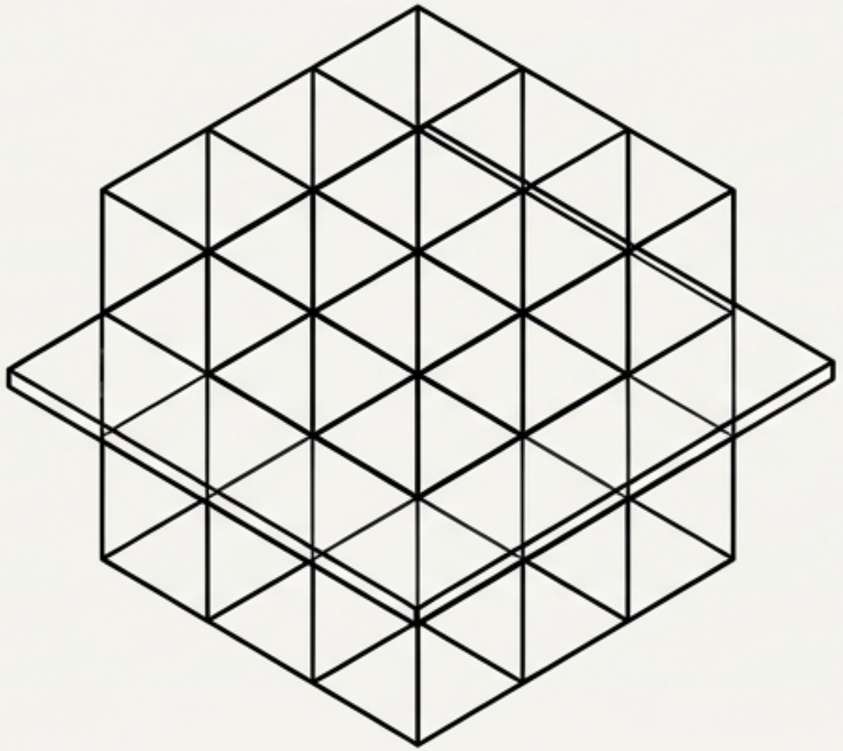
Color Toning Operates via Shadow-to-Highlight Ramps



Tones define two RGB endpoint triplets mapped over the luminance values. The output blends the neutral grayscale triplet [L,L,L] with the interpolated color ramp.

Tone Strength (0-100) controls the strict mathematical blend. At 0, the result is purely neutral. Toning explicitly affects both PNG exports and saved LUT transformations.

The 3D LUT Stack Imposes Strict Validations and Limits



Parser Constraints

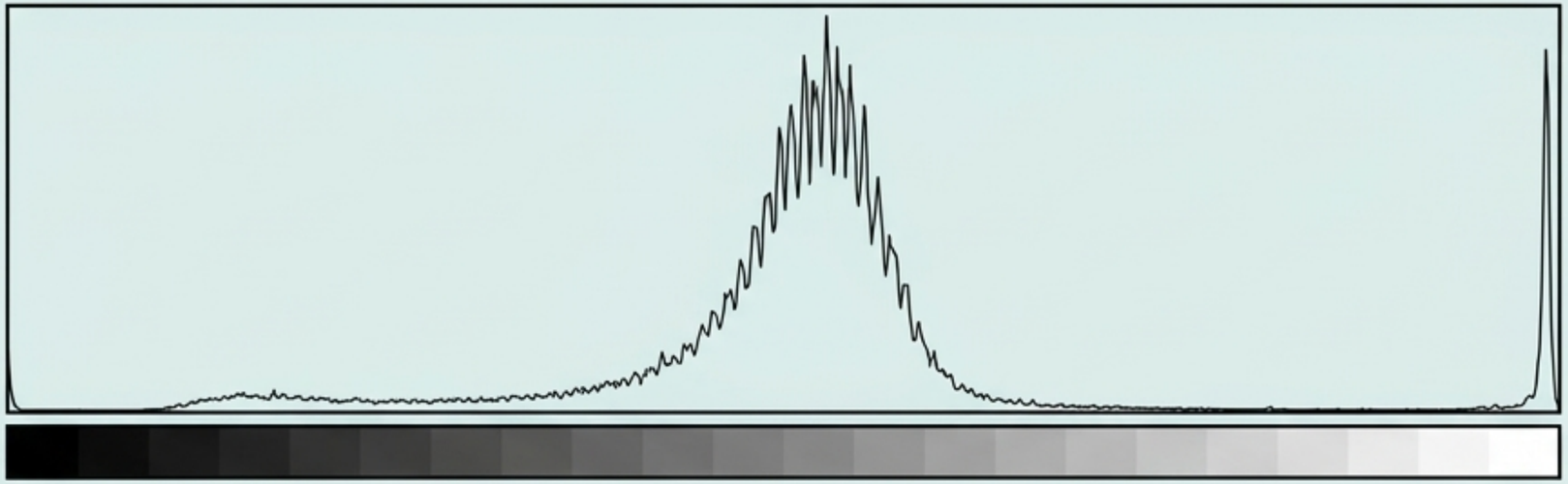
- **Max file size:** 12,000,000 bytes (12MB)
- **Dimension:** Exactly 2 to 65 samples per axis (LUT_3D_SIZE)
- **Domain:** Every output component must be finite and clamped between 0 and 1. 1D LUTs are rejected.

Crucial Limitation: Imported .cube files are applied via trilinear interpolation after the primary monochrome conversion. While the stack holds up to 100 loaded LUTs, **ONLY ONE** imported LUT can be active at a time.

Trust Diagnostic Data Signposts Over Screen Perception

The canvas only shows what the monitor can render. The diagnostic tools reveal the actual mathematical pixel values.

Output Luminance Distribution (Computed before Zebra overlay).



Baseline Luma

Calculates the absolute mean luminance of nontransparent source-preview pixels.

Green Zebra Overlay

Flags crushed near-black pixels (<=2). Preview Only.

Magenta Zebra Overlay

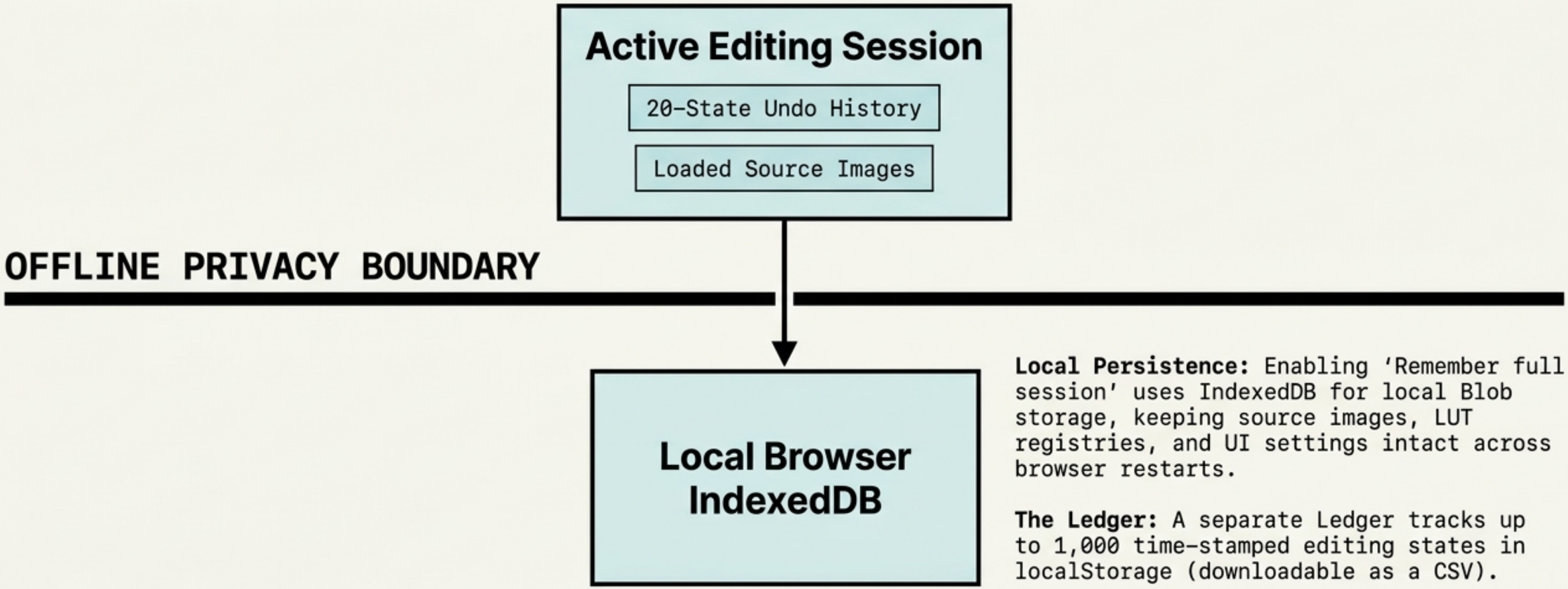
Flags blown near-white pixels (>=253). Preview Only.

The Export Divergence Determines What Gets Baked In

Processing Feature	Save Image (PNG)	Save Look (LUT)
Full Monochrome Transformation	YES	YES
Color Toning Ramp	YES	YES
Active Imported Stack LUT	YES	**NO**
Zebra Clipping Overlay	NO	NO
Output Format	Source Pixel Dimensions	33x33x33 .cube generated from B&W LITE transform

The Local Ledger Guarantees Absolute Offline Privacy

B&W LITE contains zero remote endpoints, APIs, or cloud uploads. All processing is strictly local.



Local Persistence: Enabling 'Remember full session' uses IndexedDB for local Blob storage, keeping source images, LUT registries, and UI settings intact across browser restarts.

The Ledger: A separate Ledger tracks up to 1,000 time-stamped editing states in localStorage (downloadable as a CSV).

B&W LITE Operates as a Precise, Transient Calculation Studio

Because local browser storage is inherently volatile and subject to cache limits, the application is a temporary **architectural** workspace. The ultimate source of truth is your exported full-size PNG and your generated 33-cube LUT.

Pillar 1: Know the Math

Understand the zero-sum channel weights and non-linear contrast curves.

Pillar 2: Check the Diagnostics

Rely entirely on histograms and Zebra overlays to verify tonal endpoints.

Pillar 3: Export the Truth

Secure your PNGs and .cube files directly to your permanent file system.