Draw This First

From prompts or pixels to replayable, language-directed vector drawings

Dazhi Zhong · Rowan Bradbury · Grant Davis
Krea.ai · Bradbury Group · Wand Technologies

Text or raster in. Ordered, replayable vectors out.

Create a new sketch, derender an existing one, or direct which part is drawn first—within one output contract.

01 · ONE OUTPUT CONTRACT, THREE MODES

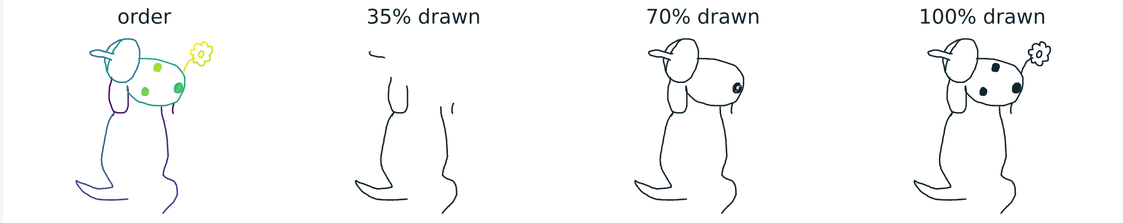
Create. Derender. Direct.

CREATE · text → new ordered sketch



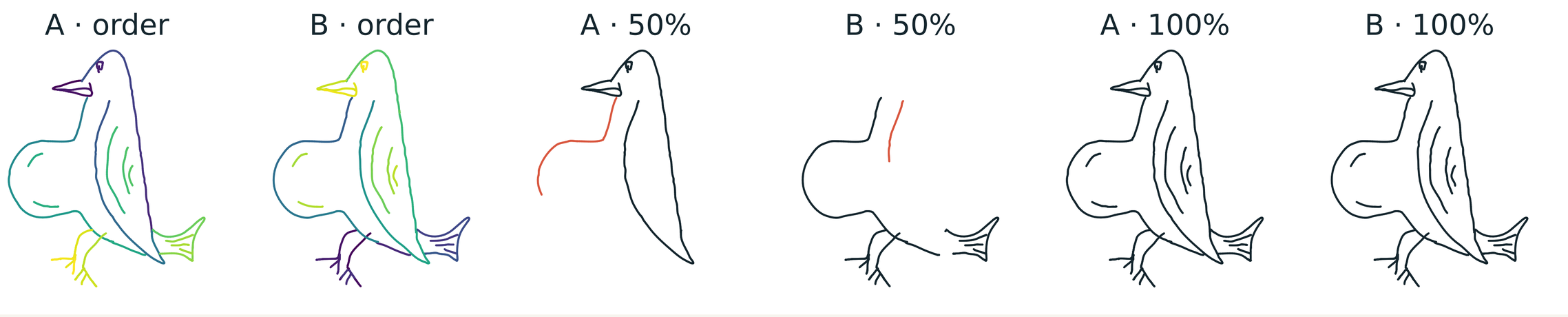
A prompt becomes a replayable vector sketch. Text-to-vector demonstrates the retained image prior.

DERENDER · raster → ordered vectors



An existing sketch becomes fitted paths and a drawing process—not only a traced outline.

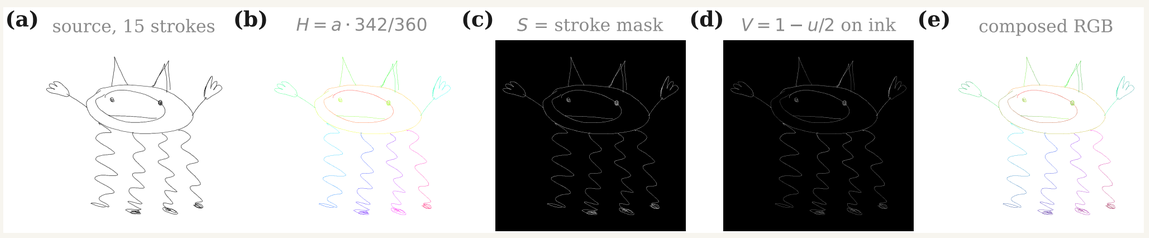
DIRECT · language → a different process



A follows the recorded order; B reverses it. Same input and seed. Fitted path order and cumulative replay make the process explicit.

02 · HOW IT WORKS

Order becomes an image-native field.



Global drawing progress becomes hue; progress within each stroke becomes value. A pretrained image model can therefore generate the whole order field.

Without a stroke log, the model infers a plausible or instructed process; it does not recover an original human one.

47,318 drawings · 50 commissioned artists

Region and subject annotations let us permute named parts and rewrite the order caption while preserving natural order inside each part.

1 · **Generate** the order field from text or an input sketch.

2 · **Decode** global arc, foreground, and stroke instances.

3 · **Recover** ordered, smoothed vector polylines.

03 · THE CONTROLLED INTERVENTION

Language moves order, not geometry.

Creative Birds + Creatures · fixed input and seed · $n = 100$

Recorded instruction

+0.373

The same instruction, reversed

−0.267

Matched Kendall τ compares produced and recorded order: positive follows, negative reverses, zero is unrelated. No order caption gives 0.139.

Across recorded → reversed, stroke match stays 0.934 and mask IoU stays 0.601.

0.838 region-level instruction τ

A bridge from images to drawing processes.

Raster sketches can become synthetic ordered-vector supervision for future sketch-native models. This is bootstrap supervision—not human-process ground truth.

Ordered vectors support replay, editing, and a process that language can address.

Where control ends

Strongest between named regions; weaker local order. Paths fragment 1.7–$2.5\times$. Text-to-vector lags derendering. Order excludes timing, pressure, tilt, and brush width.

elea@krea.ai