Simulating a Traditional Airbrush in Corel Painter

John Derry

In the last installment we examined the technology behind Continuous Stroke dabs in Corel Painter. We specifically looked at the emulated hair-based brush dabs: Camel Hair, Flat, and Bristle Spray. These dabs create strokes with a cluster of anti-aliased lines resulting in the simulation of traditionally brushed paint strokes. In this installment, we'll investigate another member of the Continuous Stroke Dab category: the Airbrush. Let's get started!

The Continuous Stroke Airbrush Dab

The airbrush, as it appears in many digital applications, is a simplified cousin of its traditional counterpart. The digital airbrush stroke is made by closely spacing a round soft-edged dab of concentrically graduated density. This brush is highly useful for many subtle density-building tasks like photographic dodging and burning (shadow and highlight addition). However, it lacks the graphic grittiness found in the traditional airbrush. The Continuous Stroke Airbrush dab encompasses many attributes associated with the traditional compressed air-driven airbrush. This dab, like the other dabs in the Continuous Stroke suite, is tilt and bearing sensitive.

The process used by the Airbrush dab is analogous to *ray tracing.* The output of the Airbrush is a continuous stream of sub-pixel accurate "droplets" (sub-pixel accuracy means that droplet sizes less tha a pixel are represented by semi-transparent pixels. This produces is a visually superior result). The shape of the Airbrush footprint is controlled by Tilt and Bearing data.

Like the light rays modeled with ray tracing, the droplets emerging from the brush tip are dispersed over a larger area as they are projected farther from the tip. Additionally, the output of the Airbrush is continuous (set in the Spacing palette). When set to Continuous deposition, the airbrush sprays as long as it is triggered (usually by pressure). These physical modeling attributes combine to provide a very realistic simulation. A good representative variant illustrating the characteristics of the Airbrush dab is the *Fine Spray* (Brush Selector Bar: Airbrushes).

Tip Shape: Density Adjustment

The density distribution of the *Airbrush Dab* is controlled by the top six profiles in the *Size palette* (Brush Controls). These profiles are representations that graph the amount of density across the width of the dab. Each profile weights the density distribution differently, resulting in a unique visual character.

Spread and Flow

The *Airbrush palette* provides additional control over the distribution of individual droplets: *Spread and Flow.* These controls mimic similar adjustments that can be made on a traditional airbrush and are found in the *Airbrush palette* (Brush Controls) as well as on the *Brush Property Bar*. The *Spread slider* controls the maximum angle of dispersion of the airbrush spray. Conversely, the *Min Spread slider* limits the minimum allowed dispersion. The *Flow slider* controls the rate at which droplets are emitted from the Airbrush. As flow is increased, droplets are deposited more quickly. Conversely, the *Min Flow slider* limits the minimum allowed flow.

Using Feature Size to Control Droplet Size

Continuous Stroke brushes that render lines use *Feature Size* (Brush Controls: Size) to adjust the hair density of a dab. Because the *Airbrush* dab is applying individual droplets, this control is used to control the size of the droplets. For variety, the *Random* option of the *Expression pop-up* can be used to randomize the droplet size.

The Wacom Airbrush Stylus

For enhanced airbrush simulation, the *Wacom Airbrush Stylus* is an option. This stylus replicates the shape and wheel control with respect to many traditional airbrush designs. Painter recognizes the wheel control when an airbrush stylus is present. The airbrush palette's *Expression Pop-up* includes the *Wheel option*. Used in conjunction with the *Wacom airbrush stylus*, this option is used to control flow rate with an ergonomically correct interface.

Airbrush Dab Variations

Besides the sub-pixel droplet enabled *Airbrush Dab*, there are three additional dabs that enable a wide variety of expression.

Pixel Airbrush

The *Pixel Airbrush* operates the same in all respects to the above-described Airbrush, with the exception of the droplet output. Droplets from the *Pixel Airbrush* are not sub-pixel accurate. Rather, all droplets are represented by a single pixel. This method requires less processor bandwidth and is particularly useful on slower machines. However, the quality of output is not as high as the Airbrush dab.

Line Airbrush

The *Line Airbrush* operates the same in all respects to the above-described Airbrush, with a major exception being that the actual droplet paths are rendered instead of the droplet's final landing spot. The result is a novel mark-making tool that approximates natural growth phenomena like hair and grass, as well as energetic dispersions like sparks. The *Furry Brush* (Brush Selector Bar: FX) uses this dab with the addition of Color Variability to differentiate the individual lines. The *Hair Spray* (Brush Selector Bar: FX) doesn't apply color; it moves existing color on the canvas or layer in an energetic fashion. For *Line Airbrush* dabs, the *Random slider* can be used to adjust the character of the emanating lines.

Projected

The *Projected Dab Type* operates the same in all respects to the above-described Airbrush, with the exception that a filles the conical area of the dab with the current color. This largely approximates Painter's earlier dab-based airbrush with the addition of *Tilt* and *Bearing* control over the eccentricity of the circular shape.

Go Forth and Experiment!

The Airbrush Dab suite offers a lot of expressionistic variety depending on the settings discussed above. I suggest that you start experimenting with these dabs by trying out the variants found in the Airbrushes. Keep your Brush Controls palette open and watch how the settings change as you select various Airbrush variants. Try making adjustments of your own. Pretty soon you'll be an Airbrush Wizard!

Viva la Painter!

John Derry is a pioneer of digital painting and one of the original authors of Corel® Painter™. Since 1985, he has leveraged his background in drawing and painting to advance the look and experience of traditional art-making tools on the computer. John has a bachelor's degree and a master's degree in Fine Art and is a practicing artist and photographer. He is currently serving as Corel's Painter Ambassador-at-Large. John's Web site is at www.pixlart.com.

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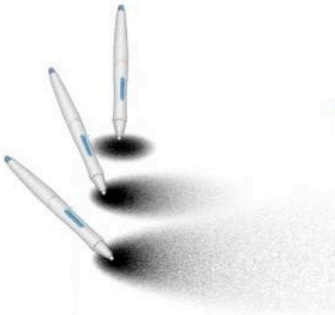
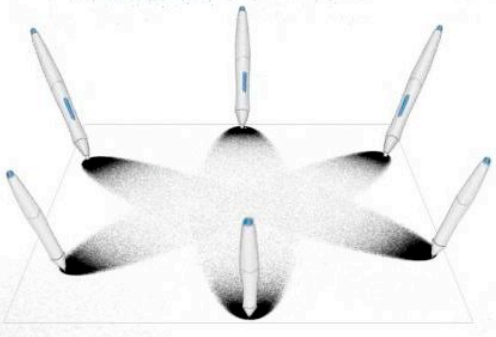
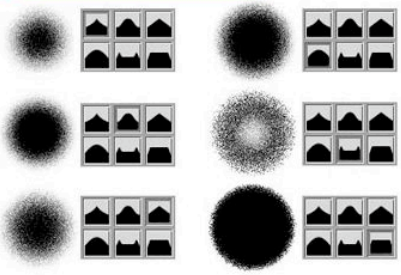
1 Tilt & Bearing Control

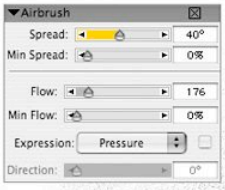


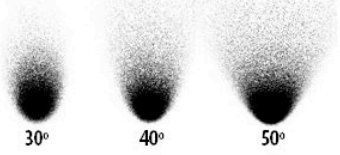


2 Tip Shape Control

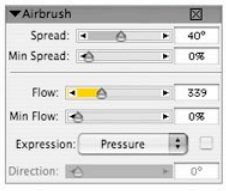


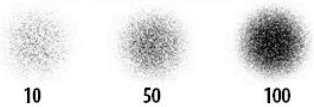
3 Spread Angle Adjustment



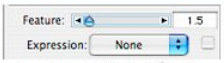


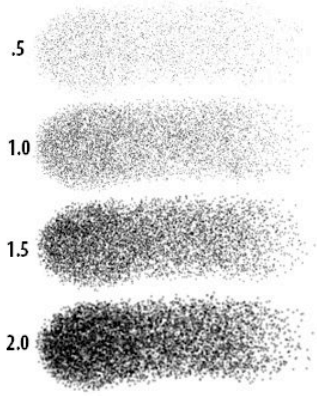
4 Droplet Flow Adjustment



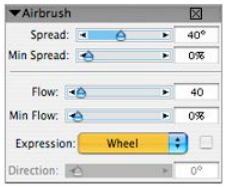


5 Droplet Feature Size



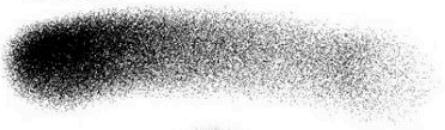


6 Wacom Airbrush Wheel Control



7 Airbrush Dab Variations

Pixel Airbrush



Line Airbrush

Projected Airbrush