

Coloring Outside the Pipeline: Stylized Pastel Techniques in Disney and Pixar’s *Toy Story 5*

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Figure 1: © 2026 Disney/Pixar.

Abstract

In *Toy Story 5*, the “Playtime” sequences presented the unique challenge of visualizing the pure imagination of a child and their toys at play. While previous *Toy Story* films depicted Playtime scenes in line with the aesthetics of the rest of the film, the creative direction for *Toy Story 5* pursued something distinct. These sequences leaned into an ephemeral, hand-drawn style inspired by both pastel artwork and the loose, energetic quality of children’s stage plays and drawings. Achieving this vision ventured outside Pixar’s traditional pipeline, with each department working collaboratively

across conventional role boundaries to build a non-linear workflow that balanced stylized abstraction and artistic control. This paper presents a variety of strategies developed to realize these sequences, focusing on three interconnected teams: an FX-driven environment process that leveraged pre-lit geometric pastel assets and point cloud brushstroke instancing, NPR character shading combining static and camera-dependent painterly textures, and a bespoke compositing approach designed to mimic the layered construction of a pastel drawing itself.

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1 Environment Assets

In response to pastel-based color keys delivered by the Art department, we developed a series of techniques in FX that defined a large part of the painterly environments seen in Playtime sequences. Central to this approach was a "pastelification" workflow that processed conventional sets and props into polygonal cards of pastel textures infused with the lighting response of the base models. These sets and props were pre-rendered with simplified shading to generate intermediary lighting data which, after baking into world-space point clouds [Finch et al. 2026], were transferred onto collections of form fitting curves sourced from artist sketches, procedural generation [Bartsch et al. 2023], and asset department modeling. Custom Houdini tools processed these into UV-mapped ribbons textured with atlased libraries of scanned pastel strokes, producing assets that maintained shading, lighting, and modeling fidelity while breaking CG silhouettes and abstracting details with painterly texture.

Alongside the pastelified geometry, we generated supplementary USD [Pixar 2026] point clouds for direct use in Nuke, providing compositors with granular control over additional brushstroke instancing. These point clouds were similarly broken out by sets and prop elements and leveraged both simple spatial and adaptive scattering techniques that concentrated detail in the desired focal areas. Per-shot point occlusion masking was calculated to preserve the illusion of solid form and maintain proper parallax. Finally, we integrated traditional environmental effects elements like rain, clouds, and debris through bespoke setups that blended procedural curve generation with physical simulation, each treated to match the Playtime aesthetic.

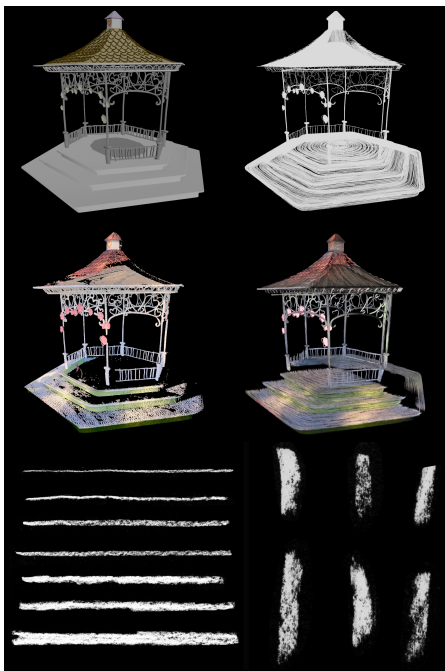


Figure 2: © 2026 Pixar.
Environmental FX processing.

2 Characters

For *Toy Story 5*, we reimagined classic characters for "Playtime" fantasy sequences by establishing a distinct visual language. Inspired by archival "Pastel" aesthetics, we replaced hyper-realistic physical details with handcrafted brushstrokes. This transition achieved an expressionistic, painterly feel that breathes new artistic life into the characters within a 3D space. Regarding structure and line work, we introduced a dual line system:

1. Internal and Attached Lines: We attached hand-drawn sketch lines to the character's rigged surface using a newly developed workflow called Sketch Pad.

2. Dynamic Outlines: Sharp silhouette edges on the characters stood out against the more broken up pastel look, so we did per frame silhouette detection to generate a piece of geometry to break up the edges.

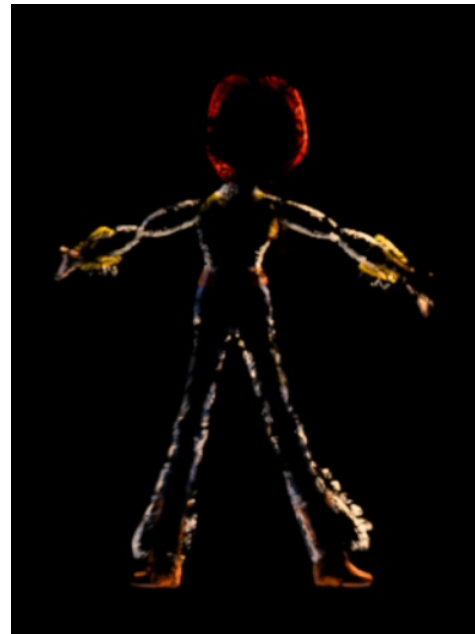


Figure 3: © 2026 Pixar.
Silhouette edge breakup.

The core technical approach on the character surfaces lies in stylized normal manipulation. Through stylized normal mapping, we ensured that characters maintain clean, minimalist, and hand-painted color blocks under varying lighting conditions. Finally, through deep cross-departmental synergy, we developed a customized public interface. This workflow allows lighting artists to precisely control the normal effects in different shots, and redesign the lighting terminator. This end-to-end control from asset creation to final rendering not only overcame technical barriers but also achieved a highly controllable and visually consistent stylized expression. For the Dynamic Outlines we used a procedural Houdini asset [Rice et al. 2023] as the silhouettes are pose and camera dependent.

3 Integration

Pixar artists have a longstanding tradition with pastel as a medium, which inspired us to construct our Playtime images in a manner similar to the buildup of pastel strokes on textured paper. Our challenge was to invent artifacts intrinsic to pastel — fuzzy edges, transparency, and optical color mixing — while preserving the dimensionality of 3D renders.

Rather than generating final pixels in the render, we adopted a constructed approach to accommodate separate stylization methods for the backgrounds, sets, and characters: environments would be sketched as thinly as possible, props would be more defined but retain a sense of irregular and transparent edges, and characters would be most fully realized.

We used a spherically-mapped scanned texture provided by our Art Director as the "paper" layer, over which we merged the most abstract and least-resolved background layer, comprising pieces of the set that characters didn't interact with. A crucial tool in achieving this look is a proprietary Nuke node that generates a texture card per point. With it, we were able to "stroke" point clouds created by FX, with color inherited from scene lighting and textured with scans of pastel markings. These colors could be overridden in comp arbitrarily to introduce the hue variety characteristic of past drawings. Control over depth scaling of strokes allowed fine attenuation of apparent parallax without disturbing the illusion of a pastel surface.

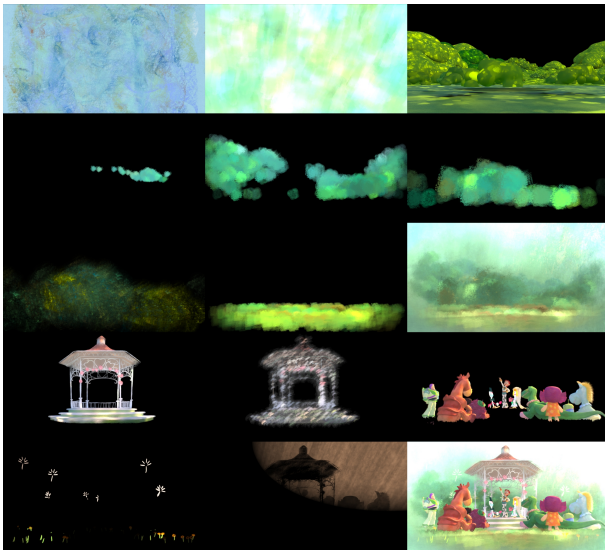


Figure 4: © 2026 Pixar.
Composite breakout.

To better integrate the FX-processed layer, we created an alpha matte using our Nuke texture card tool. Leveraging the scanned brushstrokes described above, we could scale a matte to introduce additional transparency and breakup in targeted areas. Aligning the scale of the pastel texture cards to that of the background helped give the illusion that the FX-processed props were sketched, adding the sense of an uneven hand at work.

Inspired by illustrated children's books and concept art, we simplified character lighting to ambient illumination and a directional

rim light. We relied on the stylized shading of the characters to integrate them into the pastel world, as this proved to be the most effective approach for reading subtle animated expressions and gestures clearly. Additional steps were taken in the composite to reduce the amount of modeling using two passes: the shading albedo lobe and a "fake albedo" derived by dividing the rendered output by scene luminance which helped to preserve the presence of the scene's indirect illumination. Control over "flatness" in comp allowed us to adjust characters both spatially and with deliberate intention.

The final step was introducing a vignette element to give the impression of a "mind's eye" camera view, where the center of focus is equated to the center of attention. Using our card texture node in Nuke, we created a pastel-textured vignette matte to reduce the opacity of scene elements. Beneath this layer was an abstracted, pastel-textured version of the scene elements, which faded to the base paper layer. Having control in the composite of the transition area from definition to abstraction allowed for a directability that would have been difficult to achieve in render. The combined effect is similar to the loss of detail seen in pastel drawings as elements outside the area of focus are simplified.

4 Conclusion

The Playtime sequences presented an opportunity to pursue an unconventional approach to stylized animation production. Exploring what could be achieved with minimal resources naturally led to a collaborative, generalist-oriented workflow that dissolved conventional boundaries between FX, characters, and compositing. In many cases, the most effective techniques came out of that push toward simplicity, favoring the most direct path between an artistic goal and a technical solution over more elaborate tooling.

The environmental FX workflow, stylized character shading, and layered compositing approach described in this paper are interconnected strategies that depend on being developed in concert, with each department remaining responsive to the work of the others. With further automation of the more labor-intensive per-shot work, we look forward to extending this constructed, texture-first approach to a wider range of imaginative looks, bringing more expressive qualities of traditional media into 3D space with greater efficiency and artistic control.

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