AQC0332 | NAN-CTX000089

Nanopublication — Wood Grain Simulation Through Print Orientation

by Arnaud Quercy · Ariel - The Spirit · 2022

CLAIM 1: WOOD GRAIN SIMULATION THROUGH PRINT ORIENTATION

I achieve organic wood-like grain patterns in Wood PLA sculptures by orienting the [2] 3D model non-horizontally during slicing and curving all faces, causing extrusion layers to follow diagonal and non-linear paths that mimic natural wood grain without literal imitation.

CONTEXT

Wood PLA filament contains actual wood particles suspended in polylactic acid, giving it a wood-like texture and color variation. However, standard 3D printing produces horizontal layer lines that create a distinctly artificial, stratified appearance—the opposite of natural wood grain, which follows the growth patterns of trees in curved, diagonal, and irregular formations.

To overcome this limitation, I developed a technique that exploits the layer-based nature of fused deposition modeling (FDM) printing as an aesthetic asset rather than accepting it as a technical constraint. By deliberately positioning the 3D model at non-horizontal angles during the slicing process, I force the printer's extrusion path to travel diagonally across the sculpture's surfaces. Additionally, I model all faces of the form with curves rather than flat planes, ensuring that no surface aligns parallel to the build plate.

This combination produces layer lines that flow across the sculptural surface in varied directions—sometimes diagonal, sometimes following the curvature of the form—creating patterns that evoke the irregular grain found in natural wood. The wood particles in the filament catch light differently along these non-uniform layer paths, enhancing the organic appearance. The result is not photorealistic wood simulation but rather a material quality that references natural wood grain through structural logic rather than superficial mimicry.

In "Ariel [1] - The Spirit," this technique serves both formal and conceptual purposes: the wood-like surface provides tactile warmth to an otherwise geometric, abstracted form, while the material's inherent contradiction (plastic pretending to be wood through deliberate technical manipulation) parallels the sculpture's subject—a spirit made temporarily corporeal.

REFERENCES

[1] Arnaud Quercy (2022). Ariel - The Spirit — Catalog raisonné. https://arnaudquercy.art/en/catalogue-raisonne/AQC0332.html

[2] Shakespeare, William. *The Tempest*. Act IV, Scene 1. ca. 1611.

WHERE THIS WORK LIVES

Series: Shakespeare

Collection: Spells and Magic

Technique: 3D Printed Wood PLA

OTHER WORKS IN THIS SERIES

Sir Galahad

Sir John Falstaff

Bertram

Ariel, the spirit

Ariel - The tempest

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Catalogue Raisonné — Ariel - The Spirit — Ariel - The Spirit — 3D Printed Sculpture — Arnaud Quercy (2022)

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THEMATIC ELEMENTS

3D printed wood PLA · geometric abstraction · Shakespeare The Tempest · Spells and Magic · Arnaud Quercy · elongated form · compact sculpture · diagonal layer printing · contemporary sculpture

EPISTEMIC PROFILE

Claim type	artistic statement
Voice	first person
Epistemic status	embodied practice
Methodology	material experimentation
Certainty	high

CHECKSUM (SHA-256)

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