# Twister: A Parametric Approach to Floral Design

Twister is a flower pot designed using a parametric approach, blending organic inspirations with the precision of computational design. Created by [SCAD](#) student Berfin Erdogan, this piece uses natural growth patterns as its source of inspiration, incorporating dynamic forms and structural innovation in a digital model crafted with [Rhino](#) and [Grasshopper](#).
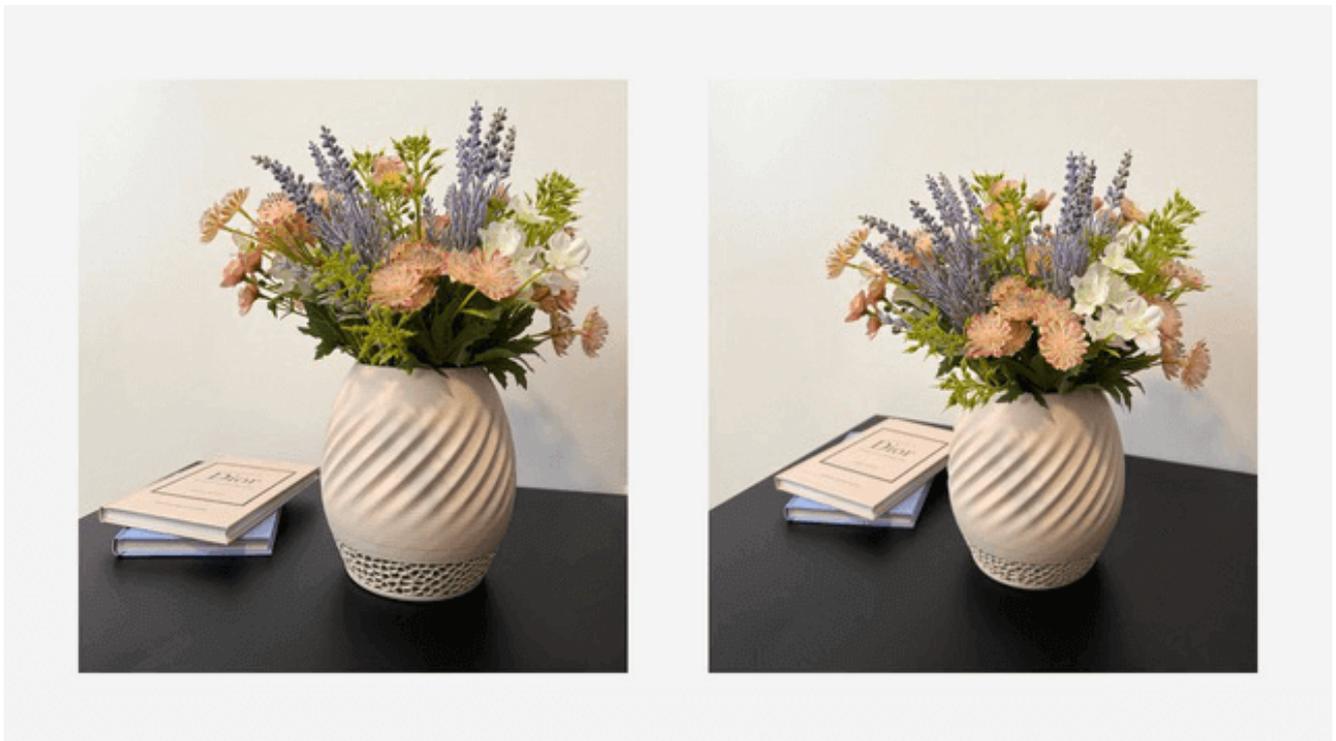

ORGANIC DESIGN WITH COMPUTATIONAL PRECISION

The upper portion of *Twister* features a twisting wave texture, taking inspiration from the spiral growth seen in seashells. This design reflects fluidity, movement, and continuous transformation. Utilizing Grasshopper's parametric controls, Erdogan achieved real-time adjustments to key design elements, such as the curve count, rotation intensity, and height. This flexibility enabled the design to be scalable and customizable, making it adaptable to various sizes and proportions.

STRUCTURAL INNOVATION

The base of the flower pot incorporates a Voronoi structure, inspired by natural phenomena such as tree roots and intertwining vines. This design enhances airflow and drainage while reducing weight, without compromising structural integrity. The contrast between the fluid, twisting top and the intricately perforated base creates an interesting visual dynamic where form and function align, yet are distinct in their expression.

Polyline   List Item   Weaverbird's Catmull-Clark Subdivison
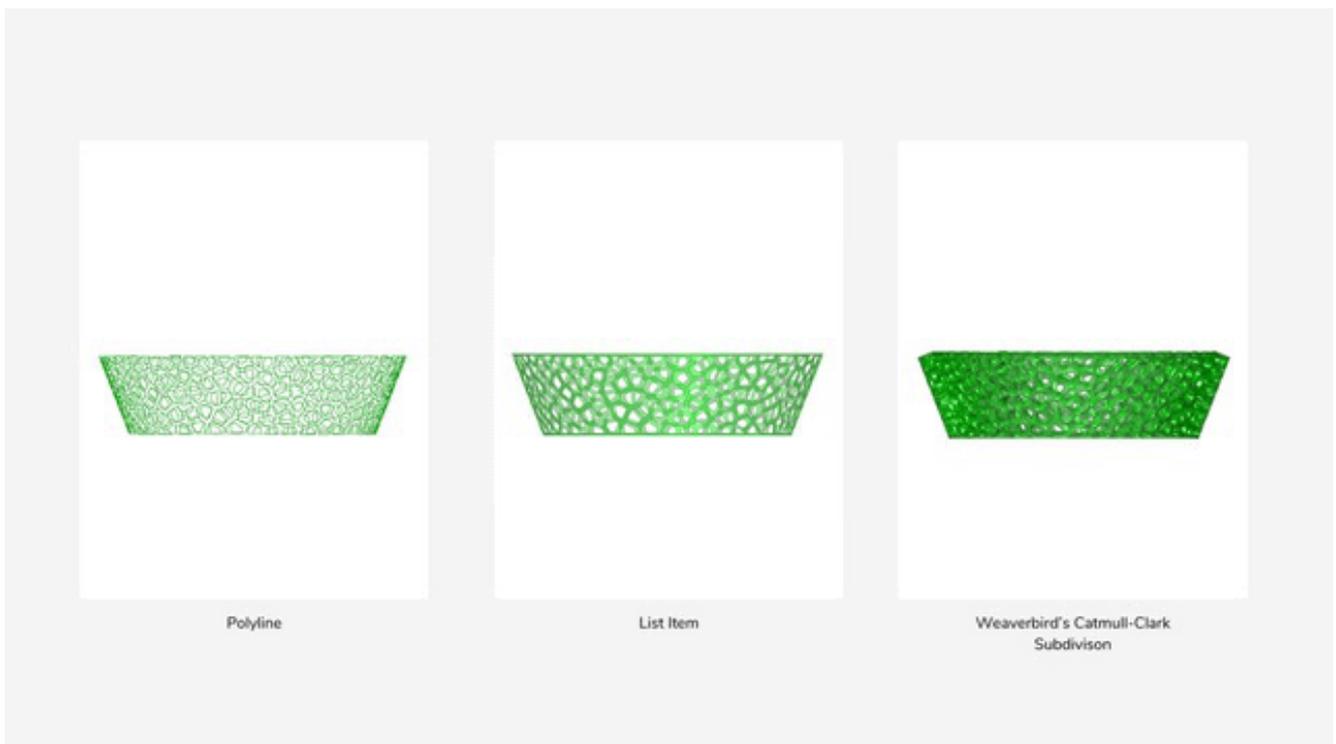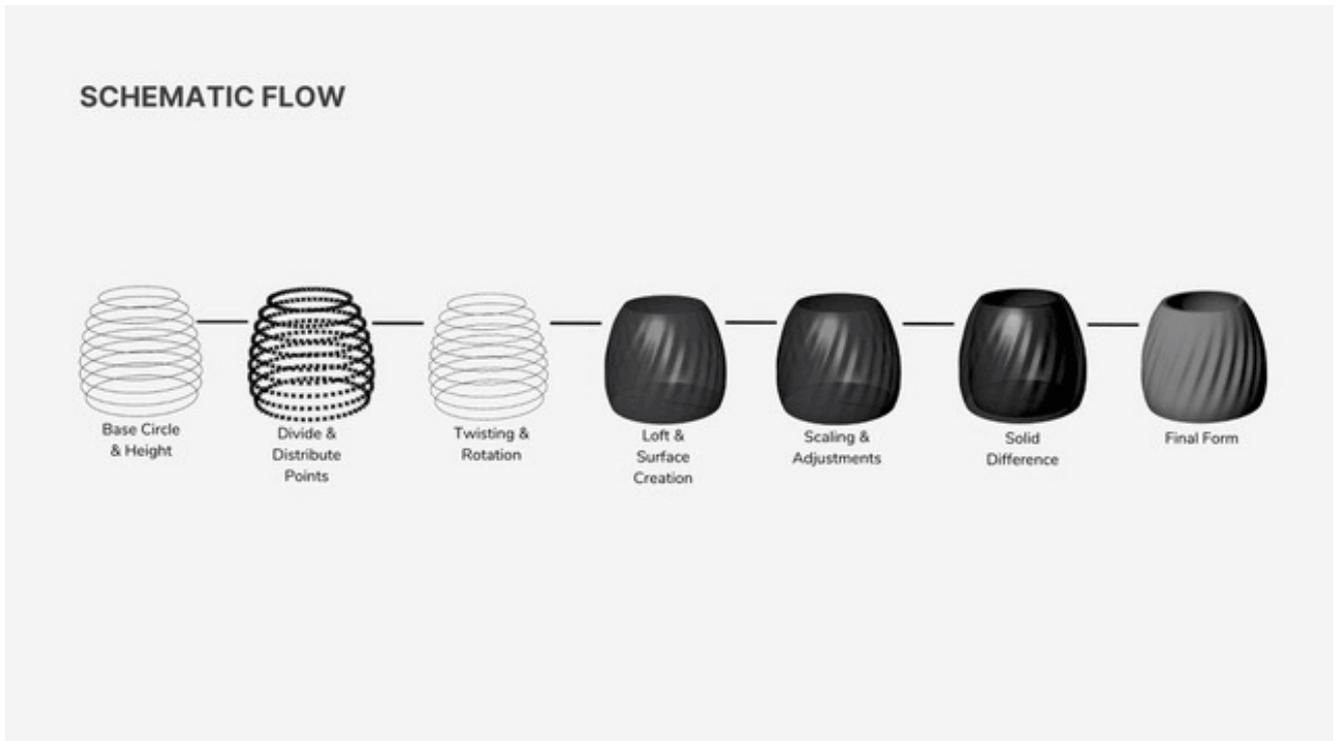
DIGITAL MODELING & FABRICATION PROCESS

The fabrication journey began in Grasshopper, where multiple iterations of the design were tested for structural feasibility and manufacturability. The [Weaverbird](#) plugin was employed for subdivision smoothing, ensuring the surface retained a clean, organic aesthetic, suitable for 3D printing.

Through this process, each version was refined, enabling precise control over geometry, material distribution, and fabrication parameters.The twisting motion of *Twister* was achieved using lofted curves that rotated incrementally along the Z-axis, while the Voronoi

structure in the base was created by mapping populated points onto a surface and refining them with Weaverbird's Catmull-Clark subdivision technique. These iterations ensured the design's adaptability to various materials and scales.

SCHEMATIC FLOW

Base Circle & Height — Divide & Distribute Points — Twisting & Rotation — Loft & Surface Creation — Scaling & Adjustments — Solid Difference — Final Form

OVERCOMING DESIGN CHALLENGES

A major challenge during the project was ensuring structural stability in the perforated base. Early iterations were fragile, prompting adjustments in Voronoi cell density and thickness. This refined balance enabled the design to sustain both its visual openness and mechanical strength. The transition between the twisting upper section and the perforated lower portion also required careful attention to surface intersections and mesh smoothing to maintain an aesthetically pleasing flow between elements.
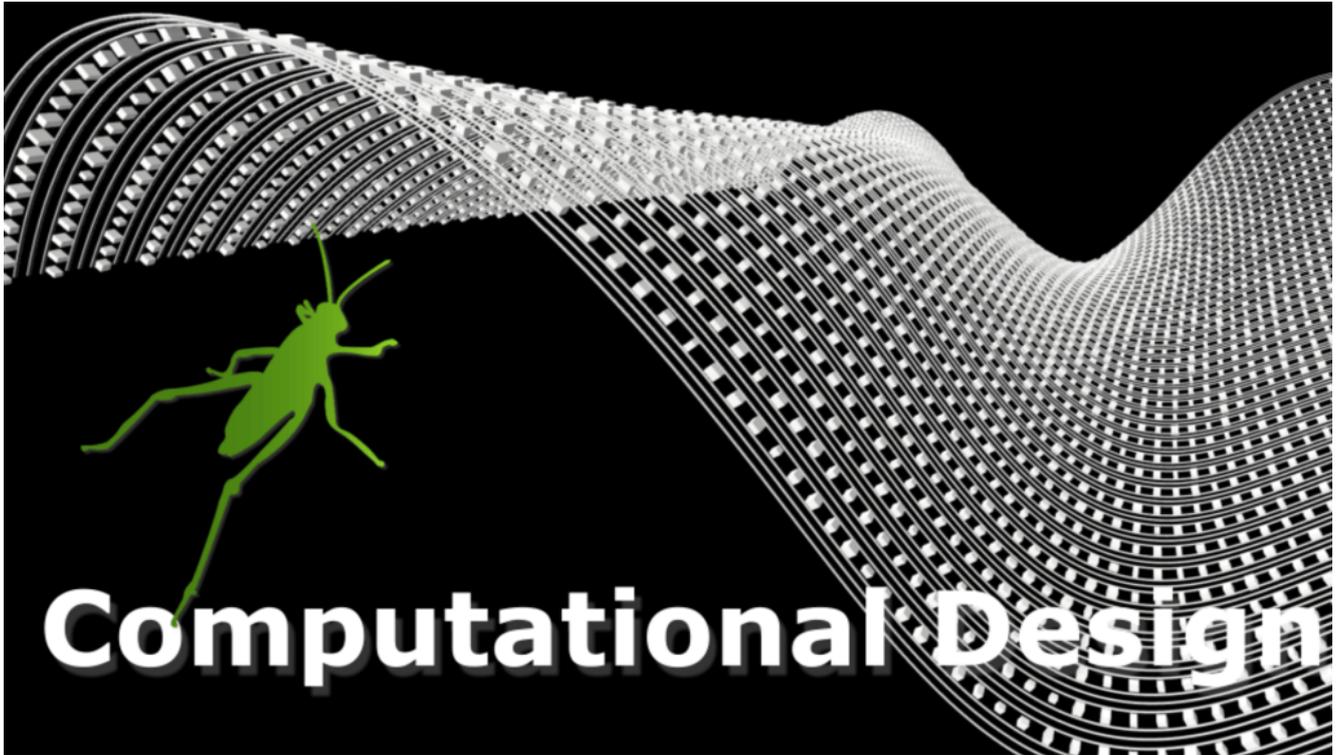
A FUSION OF NATURE & TECHNOLOGY

Twister symbolizes the convergence of biomimicry, computational design, and digital fabrication. The project demonstrates how parametric design tools can enable both aesthetic flexibility and functional efficiency, showcasing their applications in real-world product development. The ability to control form, structure, and material distribution opens doors to customizable, scalable, and sustainable design solutions.

CREDITS

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