Ceramics-based Mixed-media Möbius-band Sculptures

Robert Fathauer

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Date Created: 2023/4
Dimensions: Multiple pieces, each measuring 18-26 cm in all directions
Materials Used: Ceramics with wood, stone, raffia, leather, metal wire, and/or cane

Statement

My work explores the mathematics of symmetry, knots, fractals, tessellations and more, blending it with plant and animal forms as well as inorganic forms found in nature. This synthesis allows me to create innovative prints and sculptures that derive their beauty from a combination of complexity and underlying order. My goal is to use mathematics in my work in a manner that is compelling to those who understand it but does not serve as an impediment to those who don't.

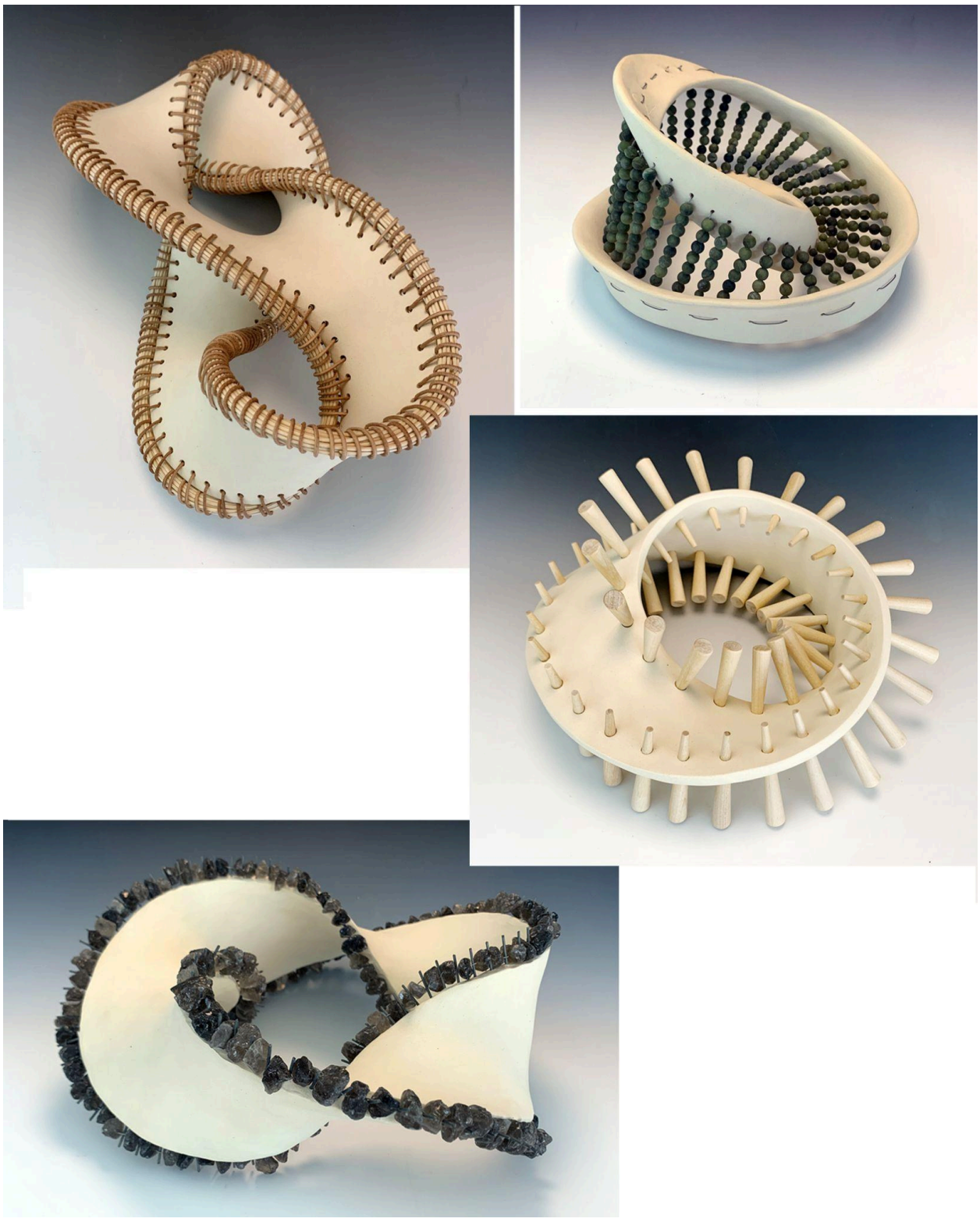
Description

I present a group of four hand-built ceramic topological sculptures that make use of additional materials, including cane, leather, raffia, wood, metal wire, and stone beads. These other materials add uniqueness and interest in addition to delineating aspects of the mathematics underpinning the work. In particular, the different materials distinguish edges from surfaces in pieces based on Möbius strips and on knots with their associated Seifert surfaces.

In the first piece, the ceramic portion is based on the Seifert surface for the figure-8 knot, while the knot is formed with cane strips and affixed to the ceramic part with leather cord. In the second, a bowed ceramic ribbon describes the edge of a Möbius band, while rows of natural jasper beads strung between portions of the ribbon define the band itself.In the third, wooden pegs are used to add interest to a Möbius band and to emphasize the single edge. In the last piece, rough natural smoky quartz beads are woven along metal pegs to decorate the edge of a three-half-twists Möbius band. The line of quartz describes a trefoil knot.

Designer(s) Biography:

Robert Fathauer has a PhD from Cornell University in Electrical Engineering and has been making art incorporating mathematics for over 30 years. He has written numerous papers on his explorations in recreational mathematics and took the lead in making art exhibitions an annual feature of both the Bridges Conference and the Joint Mathematics Meetings. He is the author of the 2021 book “Tessellations: Mathematics, Art, and Recreation”.



Clockwise from upper left: Figure-8 knot formed with cane strips, with ceramic Seifert surface; Möbius band defined by jasper beads supported by a ceramic ribbon; ceramic Möbius band with wooden pegs, and three-half-twists band decorated with rough smoky quartz beads.