Minimal surfaces defined by simple border curves on regular polyhedra.

Soap-film surfaces in tangled, knotted border curves.

Soap films on multi-level Borromean rings.

"Artistic Geometry" by Carlo Séquin

Carlo Séquin has been a computer science professor at UC Berkeley since 1997. He is a physicist, hardware electrical engineer, and not a computer scientist. For much of his career he has focused on computer graphics, geometric modeling, and on the development of computer-aided design (CAD) tools for visual designers, architects, mechanical engineers, and software engineers. In his collaboration with sculptor Herb Golds and other artists, Prof. Séquin has found an exciting environment for isolating design ideas – the use of computer-aided design tools.

His exploration of the interplay between art and mathematics results in both directions: inspired by abstract sculptures by Henri Matisse, Pablo Picasso, or Orhan Pamuk, Séquin looks for the underlying geometric principles that can be captured in a computer program in order to produce similar shapes and many other pleasing forms that he has seen in the same source family. Physical representations of these designs are typically realized on 3D printers. Some of these models have been cast into bronze sculptures in Steve Rappolt’s Bronze Studio in Laguna, CA, using a classical investment casting process.

Other mini-sculptures emerge when Séquin creates a visualization model to explore some mathematical concepts in 3D. Examples may concern mathematical limbs, minimal surfaces, or topological transformations. An extra effort is invested in the aesthetic qualities of these models, some held by others that can stand on their own as artistic artifacts, even for viewers who are not familiar with the underlying mathematical story.

Carlo Séquin, Biography and Artist’s Statement. -- Paul Suciu and Séquin with “Pillar of Engineering.”
Work inspired by Brent Collins, based on Scherk’s 2nd minimal surface.

Sculptures based on mathematical knots

“Pax Mundi” and “Evolving Trefoil” with Brent Collins. --- Snow Sculpture “Knot Divided”