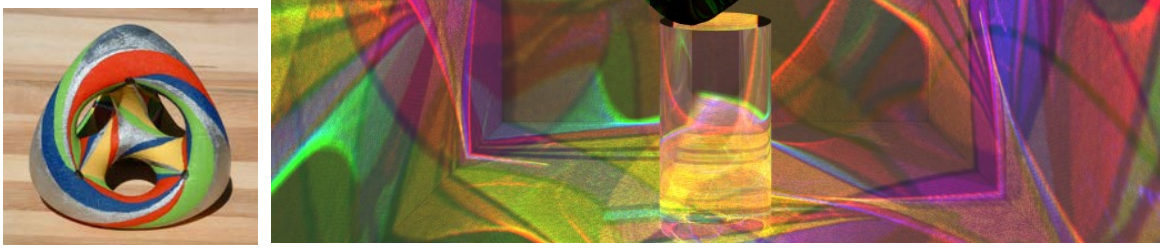
“Light Field of a Genus-6 Tiffany Lamp”

Carlo H. Séquin (2004) 2D computer print, 24” × 18”



A smoothly rounded frame of the cell-first projection of a 4-dimensional simplex (i.e., a “Five-cell,” represented as a regular tetrahedron with four additional edges converging in its centroid) forms a surface of genus 6 (i.e., a spherical lump of genus zero, with six handles attached). This genus-6 surface has sufficient connectivity, so that the complete graph “K12” (twelve vertices, where everyone is connected to every other one) can be painted on its surface without any edge crossings. These edges divide the surface into 44 triangular domains, which have been painted in five different colors (see small inset).

A virtual computer model of such a surface, made from colored glass, has been constructed and enhanced with some point-light sources (e.g., LEDs) that have been placed into the four outer tetrahedral corners. The resulting construction may be described as a “**Tiffany Lamp of Genus 6**.” The light-rays emitted from the four light-emitting diodes (LEDs) have been traced through the glassy surface and intersected with the walls of a cuboid room. The image conveys the colorful display that would result from the four overlapping light projections.