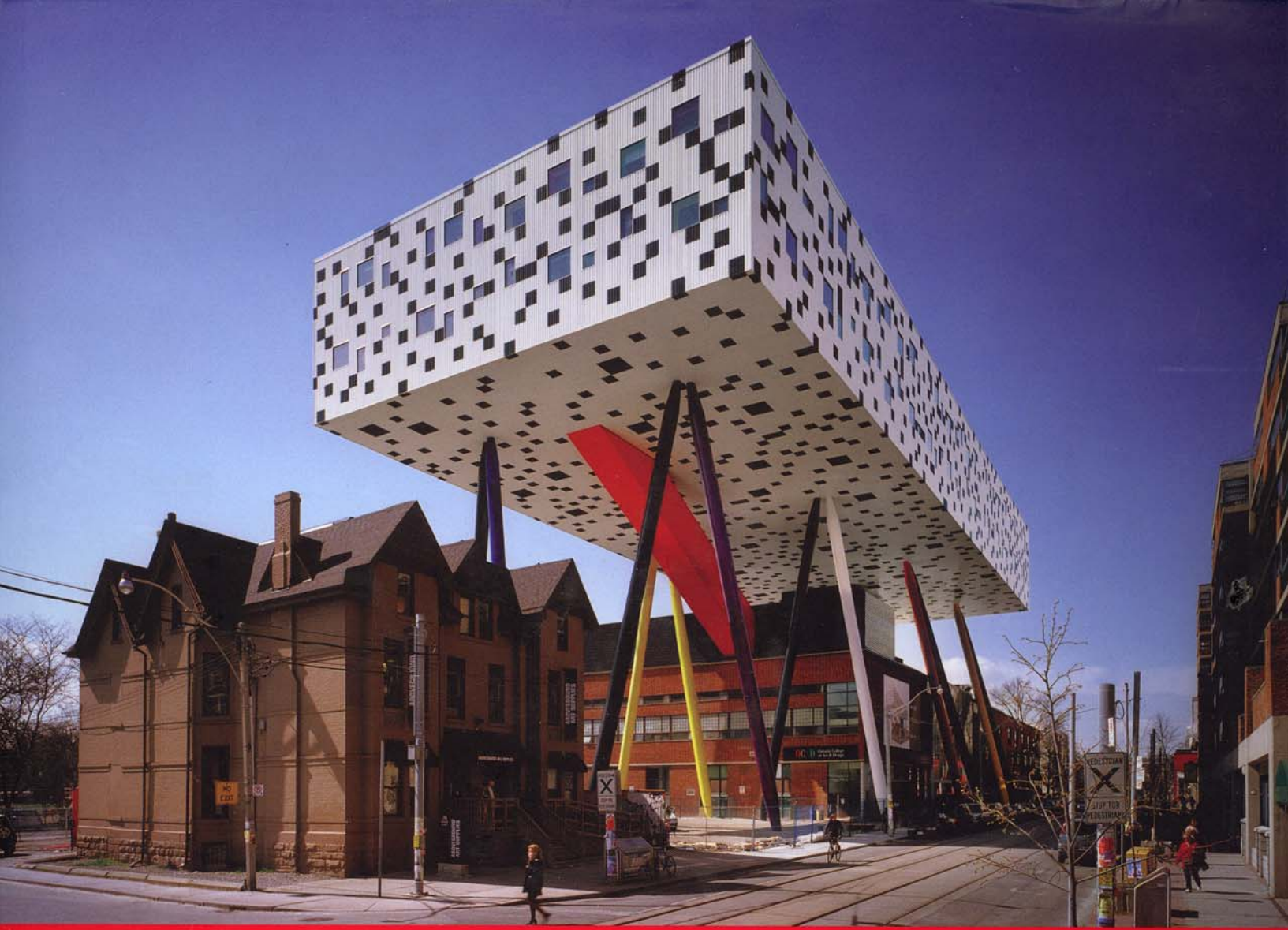


Details in Contemporary Architecture

Christine Killory and René Davids

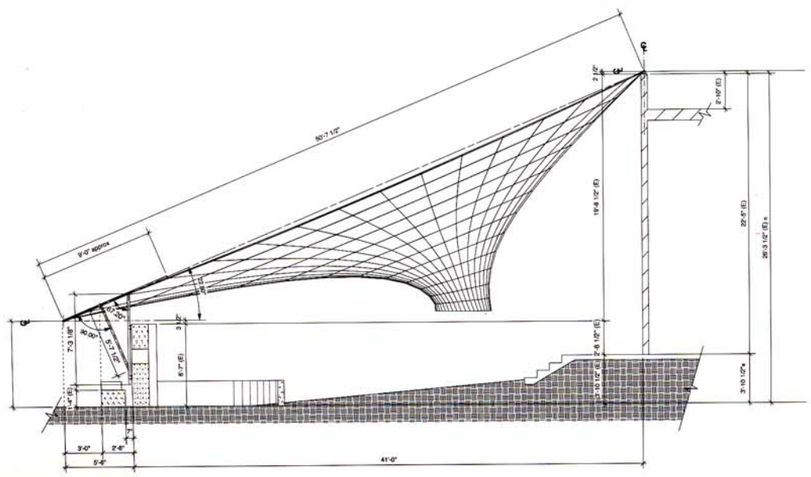
AsBuilt

Maximilian's Schell, Los Angeles, California
Ball Nogues Design, Los Angeles

Maximilian's Schell, an outdoor installation of tinted Mylar simulating a celestial black hole by designers Benjamin Ball and Gaston Nogues, functioned as a temporary shade structure and outdoor room during the summer and fall of 2005. The interior of this experimental installation created an outdoor room for enhanced social interaction in the Materials & Applications courtyard on Silver Lake Boulevard. During the day as the sun passed overhead, the canopy cast colored fractal light patterns onto the ground. When standing in the center of the piece and gazing upward, the visitor saw only sky. In the evening when viewed from the exterior, the vortex warmly glowed, partially obscuring the building behind it.

The project required more than a year of development and involved several prototypes, although actual fabrication took only two weeks. The result was an installation that functioned not only as architecture and sculpture but also as a "made-to-order" product through a unified manufacturing strategy. The designers achieved their aesthetic effects by manipulating Mylar—internally reinforced with bundled nylon and Aramid (a manufactured high-strength, high-modulus fiber, known commercially as Kevlar) with a sophisticated computer numerically controlled (CNC) cutting machine. Simultaneously reflective and transparent, the amber-colored film achieved UV-resistance from the application of a laminated golden metallic finish.

The result was neither a tent-type membrane nor a cable net structure in the manner of Frei Otto, but a unique tensile matrix comprised of 504 different iterations of a parametric component, or petal, each cut and labeled using the CNC system. Every petal connected to its neighbors at three points using clear polycarbonate rivets to form the overall shape of a vortex. As though warped by the gravitational force of a black hole, the petals continually changed scale and proportion as they approached the center. An integration of structure and skin, the vortex behaved as a minimal surface: prestressed, always in tension, yet mathematically definable. Its origin lay in the soap-film surfaces modeled by Otto in the 1950s and 1960s, a process now typically accomplished using software that performs finite element calculations. After receiving hand sketches and computer models made by the designers, a structural engineer digitally created and refined the minimal surface model, quickly and precisely manipulating it during the form-finding process, while taking account of the distorting effects of gravity and enabling the finished vortex-shaped canopy to be in tension across its top surface. This gave the final form its purity and smooth appearance when viewed from the exterior. Seen from the interior, the piece resembled an enormous transparent flower with its petals lightly draping and curling downward.



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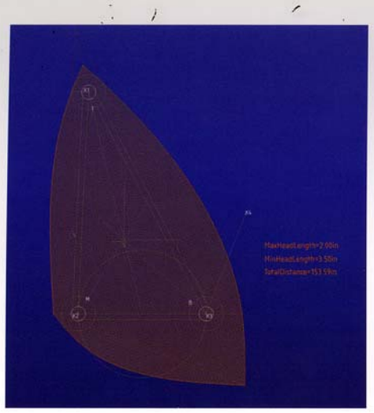
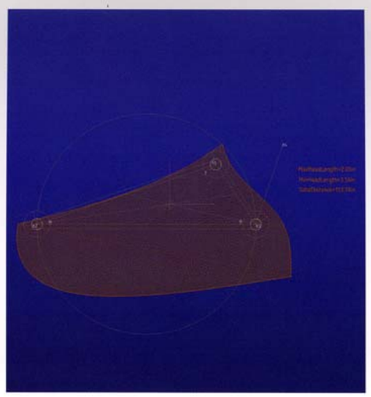
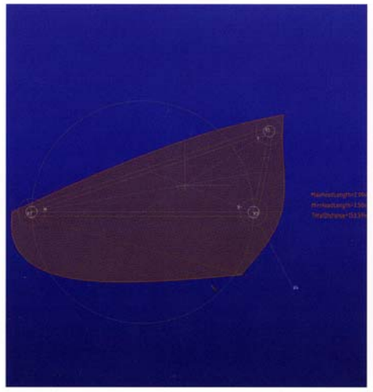
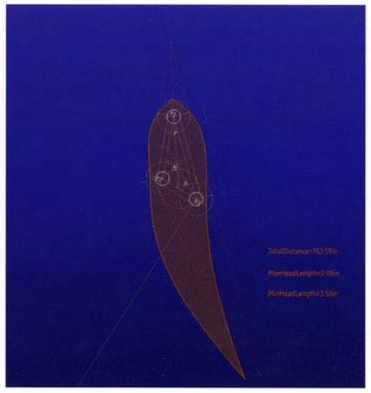
Section

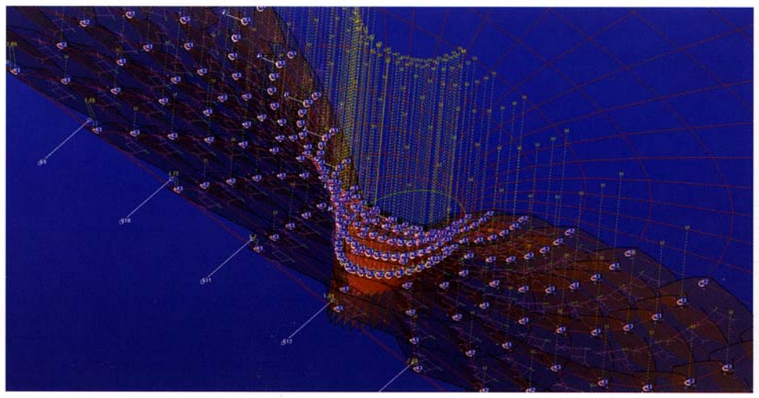
Opposite
Interior with canopy











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Top: Section detail
Bottom: Cross section

Opposite
Silver Lake Boulevard elevation