This project uses folded surface as a mechanism to make a historically non-structural system, Muqarnas, into one that combines surface and structure. The resulting forms are structurally optimized while operating as skin, aperture, circulation core, etc. In recent years, ornament has captured the attention of artists, architects, scientists and literati alike, as the site of ideas that span disciplinary boundaries and are operative in constructing culture. This research begins with a study of traditional methods of pattern generation and construction techniques still practiced by artisans. Traditionally, Muqarnas has been used as a way to negotiate between two disparate geometries, that of a rectilinear base and a curvilinear top, i.e. dome, vault, half dome, et cetera (Lur’zadah, 1979). It consists of an often-elaborate geometric pattern, which is then translated vertically to span between the two geometries. This translation happens by way of utilizing pre-determined “units”—or Girih—that are within the lexicon of Muqarnas styles, depending on period and region (Lur’zadah, 1979). The structural and geometric logics of Muqarnas are tested through digital and physical modeling. Using computational techniques, two-dimensional patterns incorporating “girih” tiles are generated, and translated into three-dimensional constructs.
The system is adapted geometrically, materially and structurally to create a viewing platform in the San Francisco Bay Area. A peri-style hall emerges, drawing on the structural grid of the existing pier while responding to program and urban grid as well as the slope and depth of the ground below the surface of water. As the bay slopes away from the shore, the piers become farther apart from one another while becoming deeper and wider. While the bays operate within a variable repetitive grid, creating smaller apertures, furniture and circulation cores, the symmetrical geometry gives way to an unfolding that translates to stairs, ramps and canopies where needed.

WORKS CITED


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