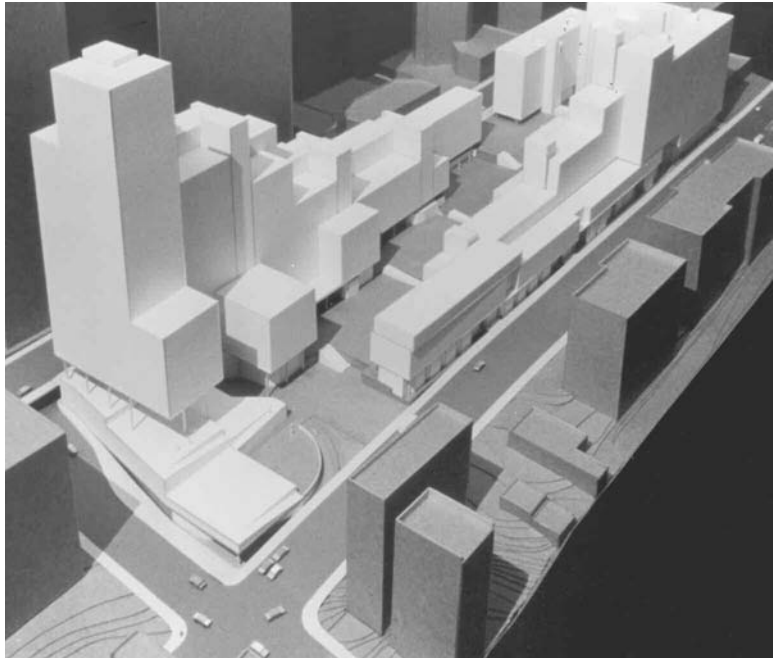
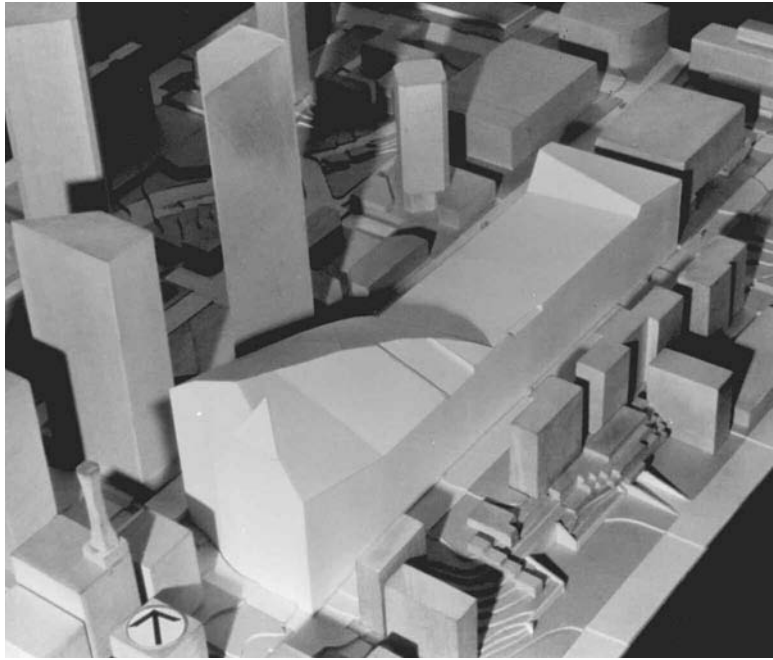


Bunker Hill Project: (Top) The solar envelope, viewed from the south, varies in height from 100 ft to 500 ft (30 m to 152 m); (Bottom) A close-up view of an exemplary design, with floor to area ratio (FAR) of 7.5, trades off some of the development potential of the envelope (FAR = 20) for solar access to buildings and spaces within project boundaries. (Designer: Randall Hong in *Sun Rhythm Form* by Knowles 1981, 268f, 28of.)



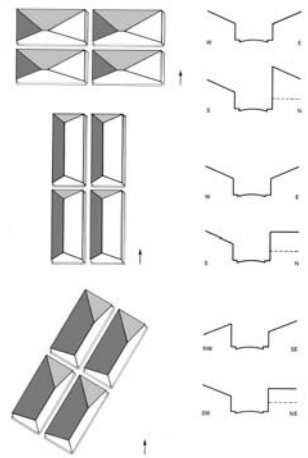
ban densities and would be consistent with the densities of most urban areas in the United States, with the exception of such high-rise centers as Manhattan.

The solar envelope does not abolish tall buildings but rather affects the scale of urban growth. Density can increase over time, according to public values, but violent disruptions of city scale are avoided. Where high-rise development already exists, the solar envelope can be used to protect rooftops and upper-floor solar access. New construction is always shaped and proportioned with reference to the old.

The solar envelope liberates and challenges the architect to design with nature. Because sunshine is assured, designers can make use of the changing directions and properties of light without fear that a taller building will one day cancel their ideas. The potential exists to conceive of architecture in other than static terms of form and space.

Architects can commit to building and urban form in response to orientation. One side of a building will not look like another and one side of a street will not look like another. Development will tend to be lower on the south side of a street than on the north where a major southern exposure is thus preserved. Streets take on a directional character where orientation is clearly recognized. Buildings and streets assume separate identities, providing a basis for what Kevin Lynch called “way finding.”<sup>6</sup>

The way shadow fences are set determines the character of streets. When set at all property lines, sides as well as front and back, building façades rise and fall. A design research project that shows this condition within the diagonal Spanish grid of downtown Los Angeles results in densities of 80 to 100 du/ac (198 to 247 du/ha). The envelopes are generated to provide 4 hours of sunshine in winter and 8 hours in summer; they slope downward to a 20-foot (6.1 m) shadow fence at all property lines to accommodate



Street orientation changes the solar envelope's form and thus street sections.