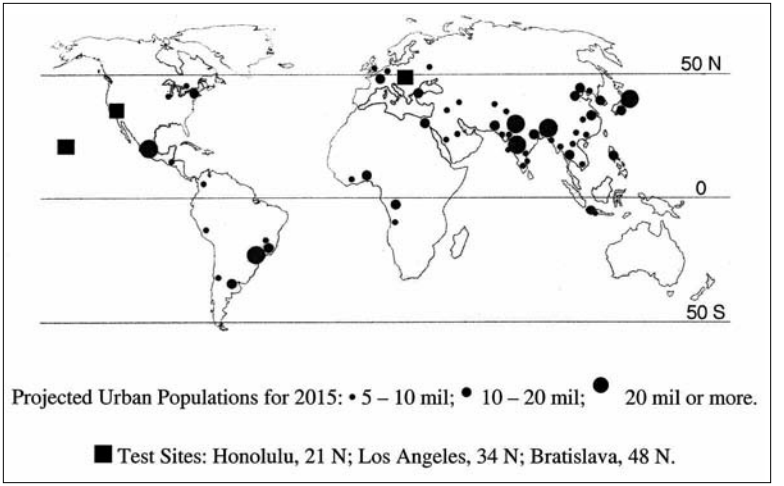


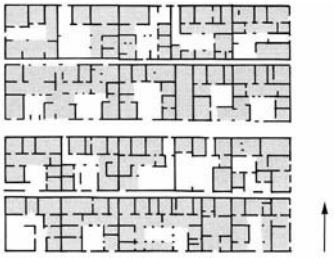
Tests of Solar Envelope: Confirming that the solar envelope is practical for most of the world.

In many places, architects who are interested in energy conservation are already working with dynamic systems that can vividly change the aspect of a building.[5] Some are using such mechanized devices as outside sunscreens that are programmed to rotate on a vertical or horizontal axis, transforming roofs and façades from light to dark, opaque to transparent. Others are rediscovering the use of deciduous vines that grow directly on a building, adding color to a pallet of seasonal changes. Still, such important explorations often seem to involve freestanding buildings either in cities or in rural locations, not buildings that need to relate closely to their neighbors.

A dynamic interpretation of the solar envelope will expand possibilities in dense urban settings. And while the map only shows cities of 5 million or more, many smaller cities around the world can also benefit from solar-envelope zoning and the use of the interstitium.

Frameworks for building have always been as important as the buildings themselves. Besides the aforementioned examples of Acoma in New Mexico and Rajasthan in northwestern India, a

case in point is the layout of Olynthus, a colonial town in ancient Greece. At a time of unprecedented expansion of settlements along the Mediterranean shores, Greek planners made orderly arrangements that not only allowed for rapid development but that also took best advantage of the sun. Streets that ran long in the east–west direction framed blocks of 10 houses, 5 on each side of the street. As with Acoma and Rajasthan, the framework was spatial, not simply planar. With building heights controlled, the sun could reach into the south-facing courtyards of many different shapes and sizes.



Olynthus, Ancient Greece: Typical 10-house-block layout, each house centered by a south-facing courtyard. (Based on a drawing by J. Walter Graham from plans by Donald N. Wilber in *Excavations at Olynthus: the Hellenic House* by David M. Robinson and J. Walter Graham.)

The interstitium of the solar envelope adds measures of time to the spatial dimensions of such older frameworks. It offers a dynamic reference in which buildings may change: growing, decaying, moving, or disassembling with the seasons. Designers and dwellers alike thus have the opportunity to explore new possibilities for self-expression that derive from the rhythms of a place.

With boundaries that pulse, urban designers may conceive a kinetic landscape. In winter, the lowest envelopes outline a compact and undulating landscape. Spring and fall bring an additional layer of architectural space. Finally, summer adds a third layer of space into which sheltering systems can expand to complete a yearly cycle for seasonal programming and for climate control. The effect is a collective rising and falling of the scene—like breathing.

Overlapping Seasonal Envelopes: The lowest envelope (left), representing winter, is usually employed by municipalities to guarantee year-round solar access, but the interstitial space between the winter and summer envelopes allows buildings to transform with the seasons.