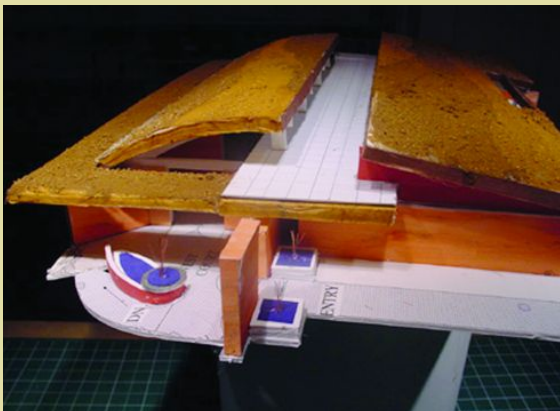
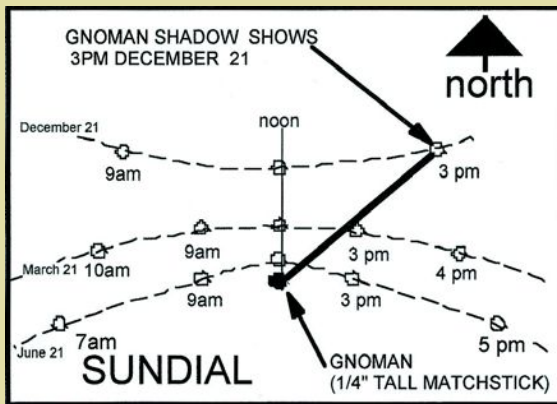




Michael F. Frerking

Painting with Sun-light: Learning to Add by Subtracting

Meet Zene's Michael Frerking at *SolFest Southwest*,
April 17th and 18th - solfestswest.org



As we rediscover the sun and seamlessly weave it artistically and technically with earth-friendly building technologies, we create living environments that encourage us to slow down and enjoy those timeless moments of intimate connection with nature.

As most of us face a faster and faster-paced life, why should we spend any of our precious time thinking about the sun...especially how to light our homes with it? Isn't it simply a matter of putting in a myriad of windows and letting the sun shine in? Yes, to a degree. **Where we place our windows and how sunlight comes in to our homes makes a big difference in our comfort level and in the aesthetic of our home.** It also makes a big difference with regard to our heating and cooling bills. So, it is worth taking another look at how we "light" our homes with the sun. Using natural day lighting in a more efficient and aesthetic manner allows us to experience an elegant solution to problems created by our present mode of electrical power use.

Here in the Southwest, the sun impacts our homes daily with unrelenting ferocity. Many times in an effort to capture spectacular Arizona views with our windows, this impact is overlooked. We end up creating hot spaces with glaring light. Moreover, we tend to address the problem by simply adding more heating and cooling, high tech windows and, in some cases, heavy shades that ultimately cost us our views. Certainly not what was planned when building or remodeling for our southwest lifestyle.

A Simple Way to Understand Day-lighting with the Sun

Minute by minute throughout the seasons, the position of the sun in the sky changes radically. The impact of this variability on your home is complex, yet there is a simple way to understand this dynamic force. Building a scale model of your existing home or new home design allows you to see in detail the many moods the sun will impart. The key is creating a gnomon (see inset) on the model base and then taking the model out into the direct sunlight. Once you have oriented the model to the sun using the gnomon, you can look inside the model to see the quality and quantity of sunlight for any day of the year. The impact of light will immediately become apparent.

Skylights

Too often skylights (put in for more light) end up overheating in the summer but also losing all effectiveness in the winter when most needed and desired. Well-intentioned plans gone awry. The solution, however, is not to mask the problem by bumping up heating and cooling systems. Rather, it is to look at the need for light in another way.

In general, ambient day lighting requires as little as one square foot of skylight to 150 square foot of floor area. I, therefore, urge my clients to look at skylights in a new and “smaller” way. Using small glass blocks that are correctly south-oriented create perfect pools of light. So do plastic domed skylights or solar tubes less than a foot square. All three alternatives create dramatic background day lighting. High efficiency fluorescent lights can also be integrated into the skylights and attached to a light sensor that maintains the lighting level even as clouds pass over.

Reflector Decks


A reflector deck or reflector awning on the north or south side of a building helps shade lower view windows while still reflecting sunlight up to the ceiling. The result is a wonderful glow in the living space. Proper design of such decks will provide indirect day lighting in the summer and direct day lighting in the winter, thus minimizing overheating in the summer but helping to heat in the winter. It is important to have the reflective surface on top of the deck be bright white or a silvered surface to allow as much diffusion of light as possible. It is important, also, that you are thoughtful during the design of reflector decks to mask the reflective surface from a neighbor's view.

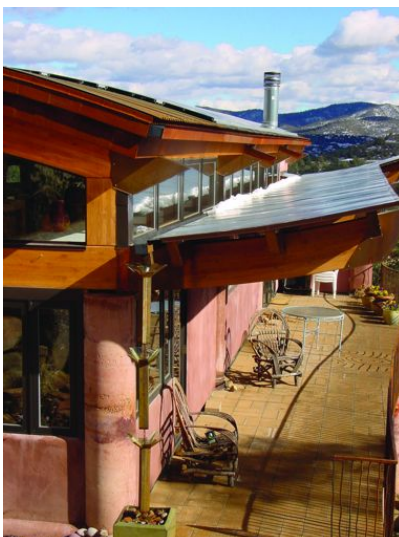
Outdoor Rooms

East and west windows pose the biggest challenge when it comes to controlling sunlight. In the summer, a modest amount of glass on either of these directions can create glare and overheating. Heat reflecting windows (i.e., Low E) can help greatly. The best architectural solution, however, is to create outside patio “rooms” on either or both sides which shade the windows yet allow views through them. Trellises are fabulous for this. Growing deciduous plants on them helps create a cool retreat space during the summer but lots of light (and heat) dur-

ing the winter. The placement of deciduous trees has a profound effect on taming the sun. The leaves provide shade and cool during the summer but allow light and heat in the winter.

Conclusion

“Painting” with sunlight is truly an art form and a wonderful example of doing more with less. The allure is the drama and liveliness that just the right amount and kind of light can bring to a living space...and, at small cost. It is available to all who choose to understand the sun, its movement across the sky and the impact of this movement upon our homes and lives. 



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