

This was done very much by trial and error: we laid it up dry, as we went, to see what would complete the existing structure in the most harmonious way. However, it is worth paying attention to a couple of details. The brick was laid in a diagonal herringbone pattern. This is an old traditional method. But the fundamental idea that an ALTERNATING REPETITION of this kind is a natural way to embellish a flat rectangular panel comes straight from structure-preserving ideas. On either side of the window opening a latent structure appears which is asymmetrical, pointing away from the window, and upwards (see upper diagram, page 597). Thus, the mor-

phological field which is there, before the bricks are laid, already points to a structure of this kind. The bricks just implement, embody, that structure. That is why they look harmonious. And the thistle shape we had cut to go above the arch (photo, page 597). That is an archetypal center, it has GOOD SHAPE, and many smaller STRONG CENTERS within its own perimeter. That is why it strengthens the arch shape, ties it into the horizontal bands of stone and concrete — and thus makes POSITIVE SPACE. Again, that is why this looks so harmonious there, because it comes from a structure that was already there, latent, before we invented this embodiment.



6 / HAND-GLAZED TILEWORK

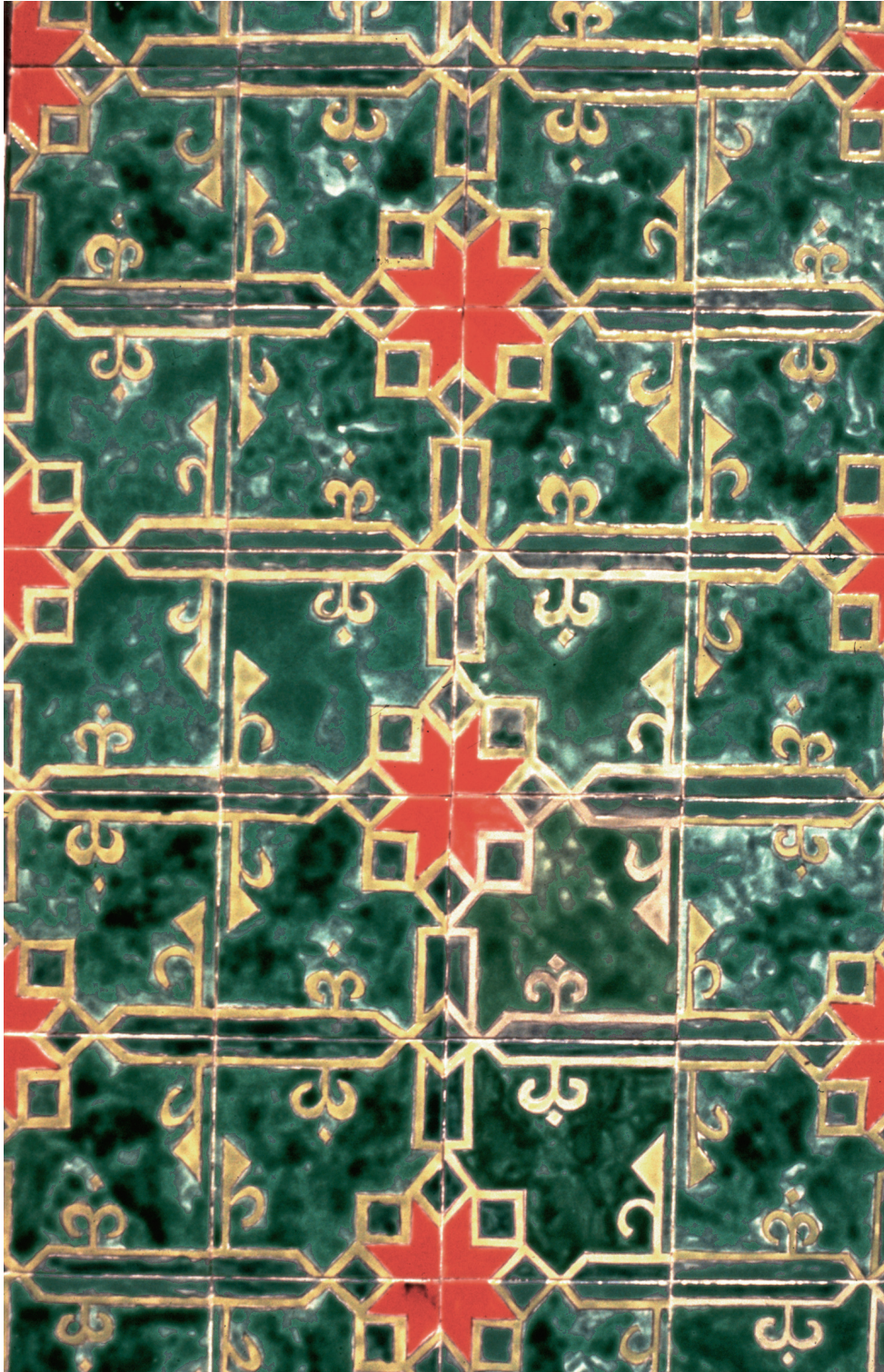
Elsewhere (chapter 19) I have made it clear that color is an essential part of building. Paint, which is our modern way of making color, has a very short life. The very use of paint already implies that color is not being taken seriously.

If we put the amount of effort into color, which is required— days and days of concentra-

tion — to get the light to shine just right, it is discouraging and impractical to accept that the paint might have to be repainted after a few years. It would in any case be difficult or impossible to get exactly the same colors again. The very use of paint, too, somehow implies a short-lived building — once again, at odds



Hand-painted, hand-glazed tiles on the fireplace of the Upham house. Christopher Alexander, 1986.



Ornamental tile panel, with a green and red seljuk pattern, made in our workshops. Panel size 2 feet by 3 feet. In this panel all fifteen properties are intensely present, each many times over, and each at many levels of scale. Christopher Alexander and Kleoniki Tsotropoulou, 1988.

with the seriousness of intent that I have described.

So the question arises, How can color in a building be given a lifetime of centuries? The use of marble dust, which I have described already, is one way. Gouache, mixed with egg and worked into plaster, is another. The most obvious, and the longest lasting, is tilework.

How can we get the necessary tiles? Modern, mass-produced commercial tiles are often almost obscene. Also, their modular and standard commercial colors and patterns are in most cases at odds with the possibility of creating a field of centers.

Even at the level of ornament, the field of centers is very sensitive, both to variations in color and to variations in shape. It is necessary, therefore, to have direct control over the tiles, and for this reason, to paint and glaze the tiles by hand.

For myself, I have found, at least for the moment, that it is not necessary to make the tiles

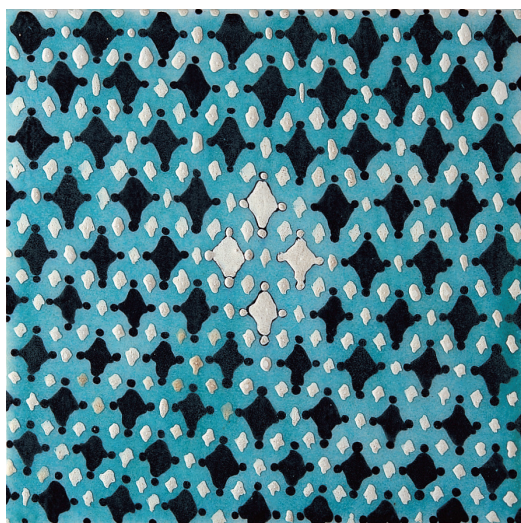
themselves. I buy unglazed blank tiles, which are already bisque-fired, and glaze them in my own workshop. But the color work is very complex. We have two test kilns, tiny kilns, in which we can fire one tile at a time, and one large production kiln, where we can fire as many as 80 tiles.

It may take five or ten experiments to produce a new tile. First the design doesn't work right. Then the colors aren't right. Sometimes an old glaze color is no longer available. Then, once we have the tile in production, it is still necessary to make variations for the center of the work and for the borders. As the tiles are laid, it is easy to see how simple variations will intensify the center and the edge, or how an occasional, slightly different tile, inserted into an array of similar ones, will give it life.

All this can be done, as needed, in our own workshop. We find that we can produce beautiful handmade tiles for about \$4 each — the same price as ordinary mechanical tiles imported from Mexico or Portugal.



Green, red, yellow and blue star pattern made in our workshops. Christopher Alexander and Seth Wachtel, 1988.



A tile I made for a frieze around a room.



Another tile for a frieze around a room.

In tilework, the most beautiful patterns often come about because of repetition. Here we see alternating repetition come to life in the most wonderful way. First, I make sketches of an endless repeat with color. Once it seems promising, the question arises, How can this endless repeat be created by repetitions of a simple tile?

The individual tile which creates some of the most beautiful repetitions is often very surprising and not like the actual pattern at all. For example, the individual tiles which produce the patterns on pages 599 and 600 are very surprising.

In order to study the individual tiles as I produce them, I have invented a little box with four mirrors. When you put the tile in the box, the mirrors reflect it endlessly, like a kaleidoscope, and you see the pattern for the first time. I wonder if the old tile makers in Persia had something like this.

The biggest difficulty in making the field of centers in tilework lies in the colors. Raw glazes, when you apply them, are quite different from the finished glaze. You can't see what you

are doing while you do it, and therefore can't correct and improve immediately as the process of making the field of centers requires.

To make up for this problem, I put a finished tile which is not yet quite right in my mirror box. Then I paint on it in gouache, trying different modifications of color, on top of the existing glazes. When they are wrong, I just wipe them off and keep trying till they come out right. This is fast, and doesn't take several hours of effort to get each new combination the way experiments with real glazes do. I use gouache colors that correspond to real glazes which I know how to produce. Then, when the color balance of the tile is right, I make another one with the real glazes.

This sounds simple. But it has powerful effects, which make it quite different from the normal process. It is almost like computerized truss design. The process lets you get to the right answer so much faster (by a factor of ten or even a hundred), that it becomes possible to probe more deeply and get much more profound results.