

that allows fine tuning so that once it is being built, it can be adjusted in size, shape, and character to make its existence as a center more deeply felt. Then the detail can come to life, and the larger centers made of these details may themselves be intensified.

It is only possible to do all this by means of a method of construction in which we gauge the wholeness which exists while the building is laid out, room by room, and then modify it gradually to get the living structure right in its microstructure, too.



8 / DETAILED SHAPE AND SIZE OF CAPITALS AT BACK-OF-THE MOON

Let us look at a concrete example: the process of sizing and shaping the column capitals on the three houses at Back-of-the-Moon in Austin, Texas (see pages 365–81).

After deciding that the porch columns were to be eight-by-eights, knowing their height, I had a rough idea of the shape and size of the capitals. Drawings, however, did not really provide the necessary tool for deciding how big, how thick, how long, to make these capitals. The feeling created by such a capital, after all, comes from a direct experience, standing in front of the thing, and it is in this position that the capital must make its impact. The bay spacing is a critical variable too, since the capital looks right, or not, according to the spacing of the columns, since it is the positive space in the hole made by base, columns and beam, which has to come out

looking right before you know the capitals are OK. That depends on the centers. And the state of the centers can only be determined by looking at them in a real situation with real dimensions.

So, to test the feeling created by different shapes and sizes, we made a cardboard beam, a pair of cardboard columns in the yard (cheaper and easier to move around than full-sized eight-by-eights). We made a series of capitals (also in cardboard) of different height, thickness and so on, and looked at them. Within a matter of about half an hour's work, we were able to settle which one was best, which carried the most feeling — and, of course, which was the strongest and most powerful living center, especially because it also made the space between the columns strongest, and it made the space next to the capital (the “negative” space) strongest. The one



Cardboard mockups in our Berkeley yard, 1500 miles from the building site where our crews were working. On the left, our first try, a capital that is too shallow, not substantial enough to work with the beam. On the right, our second try, a capital that is too deep, too fat.

A VISION OF A LIVING WORLD



Third try, another version of the same capital. This time we got the proportion, size, and spacing just about right. This is what we then built in the actual project. See photograph below.



The shape of the finished column capitals, showing the result of work in the Berkeley yard, translated into actual construction. Here we see the powerful impact of these carefully-shaped columns and capitals on the space of the porch of the Goddu house, Austin, Texas. In this picture the house was still under construction.

we chose is shown in the larger picture at the top of page 500.

If we ourselves had not been the contractors — hence the makers of the buildings in the true sense — it would have been inordinately expensive to follow this process. It would have cost immense time and effort to get the changes

made, to persuade the contractor to do it, then to pay for the change orders, and so forth. In practice it would have been wholly unfeasible.

Since we were makers — since we were building the buildings ourselves, and had responsibility for both money and construction — it was possible for us to do it.



9 / MONEY AND CONTRACTS

The main point is this: *The idea of the architect as a maker has to be backed by a new kind of contract in which he is recognized as the maker, and has the expertise, experience, and desire to work every day with money and to take actual responsibility for pouring concrete, placing steel, building the structure, and so on.*

The key issue in the contract needed to create life is control over money. Within the normal construction contracts common in the 20th century there were two fundamental problems. (1) The typical contract has a contractor making a bid, on a set of architectural drawings. The contractor makes a bid of say, \$1,200,000 for the building. He has to deliver according to the contract and specifications. This means that the architect has to tie down millions of pointless de-

tails (which cannot possibly be known in a true way, at this early stage), only so that the contract is legally binding. The contractor makes his money according to how cheaply he can meet the specifications and get away with it. If he can build the building for \$1,000,000, he puts \$200,000 in his pocket. If he can build it for \$850,000, he puts \$350,000 in his pocket. This is the craziest conflict of interest, but it is the basis of nearly all modern construction contracts. The less the contractor can put into the building, and satisfy the architect's drawing, the more money he puts in his pocket. (2) Second, in this system, it is difficult to make changes. The changes can only be arranged by change orders. Since the contractor already has the contract, he can make the cost of the change orders high (and nearly always does so). Effectively, this discourages changes from being made *and* bleeds the client.

What is needed as an underpinning for a kind of construction which is truly based on *making* — hence is responsive to feedback, and allows shaping to occur dynamically during the making process, consistent with the fundamental process. This requires a new form of construction management contract. The construction manager is not paid by profit, but by a fixed amount of money (we typically use 20% of hard cost, or about 17% of the contract). The rest of the money, 83% of the construction contract, is also a fixed sum. It is the manager's responsibility to do the most he possibly can to make a beautiful building, within that money. The system has



The flower mold for a repeating tile in terrazzo which we made