

wooden columns, hollow beams, and light-weight concrete basket vaults. This early version was built about 1973. In 1976 we began a

more carefully worked out process, described in the next few pages, where this kind of thinking was tested on a larger scale.



10 / THE PARADIGM OF SMOOTH UNFOLDING AS A TARGET FOR EVERY CONSTRUCTION TECHNIQUE

One of our greatest tasks for the 21st century — I believe — is to invent high-technology versions of such an unfolding process, so that it is easier to specify buildings cheaply, while giving each one the chance to be adapted uniquely to its conditions. You start with a set of points in the ground, hardly more than that, and everything is generated from these points, but with attention and with adaptation, so that as it unfolds, each building becomes unique, and its adaptation works out naturally.

I have only rarely succeeded in such a beautiful unfolding using ultra-modern materials. One of the purest systems I invented that did have this quality was a system for the construction of houses in Mexicali. We developed (and fabricated) spe-

cial interlocking blocks which could be used initially to lay out the building, and then cast in with the slab that was poured over them to form the foundation. These blocks were cast with protruding reinforcing steel which stuck out and could be connected to slab reinforcing next to them. The blocks were placed on the ground and the protruding steel was tied to the slab mesh. Then one could simply pour the slab.

The walls came next. In the walls, the blocks which formed the corners were special corner blocks. These blocks, castellated like a four-sided turret, fixed the corners. Then the ordinary wall blocks were fitted into them, stretching from corner to corner.

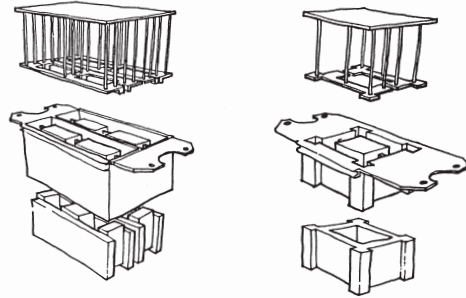
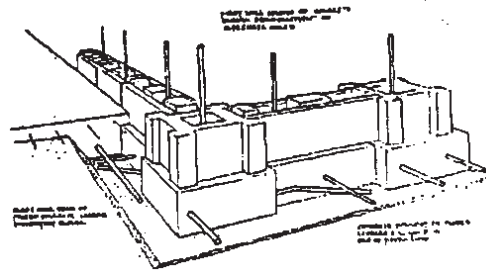
The perimeter beam on the top of the wall was made so that one could “wind-in” the basket lath to curve the vaults. Once the wall top was made, two two-by-ten boards were placed. The vault strips were trapped between the two boards, curved over the room, and then trapped between the two boards on the other side. As each vault basket was woven, it took its shape from the weaving process. Each basket took a different three-dimensional curve according to the shape and size of the room.

Next burlap was stapled onto the basket laths, then chicken wire was stapled over the burlap. Then an application of a thin, very light-weight, frothy concrete went over the burlap to form a half-inch shell. That thin shell became the formwork for the second, heavier concrete vault. Then the two boards which had anchored the basket edge became formwork for a beam that was now poured along the top of the wall and held the vault in place.



Foundation blocks after molding curing in our yard.

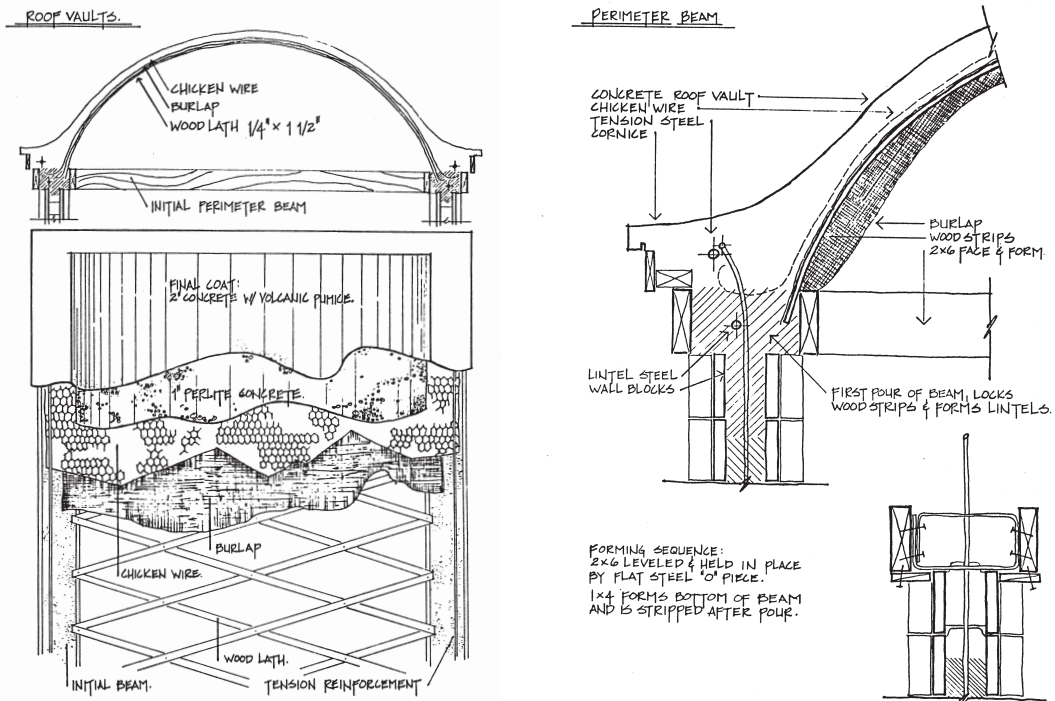
A VISION OF A LIVING WORLD



Left: Special blocks for the Mexicali project as we manufactured them. The design of these cylindrical blocks allowed round columns to be made, both beautiful in design and easy and cheap to make, thus allowing "making" to go on rather easily. Right: Two of the special molds we made for fabricating blocks. In the illustration on page 551, the protruding reinforcing steel is clearly visible coming out of the side of each foundation block.



Dry stacked blockwork when walls are almost complete and have had some cells filled.



Left: Overview plan and section, showing vault laid over basket of lattice strips. Right: Section through column and perimeter beam showing individually stacked hollow column blocks, reinforcing steel, and the wooden forms for the perimeter beams which stay in place after the concrete is poured.

So the whole house grows. To start things off, one merely fixes the outline of the house by laying down corner foundation blocks. From there, each act follows the previous one, step by step, allowing a unique form to emerge.

SEQUENCE OF CONSTRUCTION OPERATIONS

1. Stake out the house with rebars driven into the ground to mark the corners.
2. Place corner rebar-blocks over each corner re-bar.
3. Place a line of bar blocks between each corner block.
4. Place steel and mesh, then pour the slab.
5. Place corner turret blocks to form corners.
6. Place wall blocks fitting into corner blocks.
7. Locate windows and window sills as the walls are going up.
8. Place a pair of two-by-tens to form perimeter beams.
9. Place reinforcing steel in the beam, place conduit and plumbing lines, and pour the beams.
10. Use the perimeter beams to place lattice strip to weave baskets for vaults.
11. Once the baskets are woven, fix each crossing of lattice strips with one fine nail to stabilize the flexibility of basket.
12. Staple burlap and chicken-wire over basket.
13. Pour a thin, ultra-light-weight frothy concrete to form a one-inch shell (aggregate is perlite and insulation fiber).
14. When the one-inch shell is hard and cured, place a second shell of about three inches in a heavier and denser lightweight concrete.
15. Fit window frames and door frames.
16. Using special simple sash construction made out of two-by-two material, build sash and doors to fit the openings.
17. Place finish material on floors.
18. Whitewash the interiors.
19. Complete plumbing and electrical fixtures.

We have invented several high-tech versions of this kind of unfolding process. They are cheap.

A VISION OF A LIVING WORLD



Stapling the burlap over the woven baskets once the baskets are complete.



Our manufacture of special interlocking earth-cement blocks designed so they could be placed in a way that allows unfolding to proceed smoothly and without backtracking.



Fountain and community building, Mexicali. Christopher Alexander, Julio Martinez, Howard Davis, Don Corner, students and families, 1976.

They allow houses to be different. They require no drawings. They are technically sophisticated. In general, I believe that *the most sophisticated building techniques of the future, will be those where each operation modifies, without backtracking, the*

product of the previous operations. Such processes can generate well-adapted variety, cheaply and easily. There is no need for complex drawings, because each operation is sufficiently well-defined by the context of the previous operations.



Variety of houses as a natural part of the community of houses built using this technique of unfolding. Without introducing any additional construction cost, each house turns out unique and different according to its situation.