



25 / PLACING AND FINE-TUNING FIRST-FLOOR ROOMS

A MONTH OR TWO LATER, MOST OF THE FOUNDATIONS AND SLAB WERE IN. WE COULD BEGIN TO VISUALIZE THE HOUSE IN EARNEST.

The essence of what we did now was to reform the rooms while standing on the newly poured slab, and give them their final shape according to what we experienced there.

Standing on the slab, we could see the wholeness, as it then was, of the ground floor of the house. We could sense, feel, the right way to divide this up into rooms. Even when they were

roughly the same as the division we already had in mind on the drawings, we could now see *exactly* where to place each partition wall, because the space was real and each room could be felt — and then established — as a real center in its own right.

We laid the rooms out in chalk, on the slab. Several partitions moved a few inches. The main thing is that we did it in such a way as to make each room a beautiful and solid center in its own right, where we *felt* comfortable.



Settling positions of columns, to form the bays and window openings of the living room bay window



26 / MAKING AND PLACING THE FIRST-FLOOR WALL

FROM THE NEW FIRST-FLOOR PLAN, WITH ITS ROOMS CHALKED OUT, WE NOW WENT ON TO FIX THE COLUMNS AND WINDOWS WHICH WOULD DEFINE THE FRONT WALL OF THE HOUSE.

This front wall was the poured concrete wall which was going to determine the load-bearing structure and appearance of the house. We had already decided earlier (see pages 588–89) that the wall of the house was to consist of articulated columns, beams, panels, and windows within the panels.

The method we used to make the decisions was ingenious. We had worked it out so that we would use the actual plywood forms into which the column concrete would later be poured, as mock-up columns to play with during the decision-making stage.

I had asked Carl Lindberg, the man who did the major concrete work, to make the column forms in a way that each column form would be a loose, movable, plywood box roughly nine feet long, and about 12 by 12 inches. We had about fifteen of these boxes, ready-made. They were made so each contained offsets and flashings to form a waterproof joint where wall panels would later come into the column.

These column-form boxes were stacked on the slab. Each was stable enough, by itself, to be moved, carried, placed, and braced, wherever we wanted it.

The whole ground floor of the building thus had an amazingly simple and elegant way of being formed. To get the wall right, now that we had the final room divisions, we used the column



Walking into the room, testing the position of the door, and trying to find out if the positive space of the bay window is large enough, when the door is in a certain position. We moved this door several times, and finally tuned it to within about two inches to get its best position.

forms themselves, moved the columns until we liked their positions (from both inside and outside) and then set and braced them accordingly.

PLACING THE COLUMNS, THE MOST IMPORTANT THING WAS TO RECOGNIZE THAT THE DECISIONS ABOUT COLUMNS WAS, IN EFFECT, A DECISION ABOUT POSITIONS AND SIZES OF WINDOWS.

Experience has taught me and all my crews that there is no foolproof way to decide window openings until one is standing in a room. In this house (given the column/beam construction) the rooms *could* not be there until the columns existed. But using the column forms as mockups gave us a way to break the vicious circle.

Each column form was a box. We had made these boxes, one for each column, and had them standing upright, but loose, on the slab. We had made them so they could be placed, moved, and adjusted, until the window openings were where we wanted them. Once we had them right, we connected them with horizontal 2 x 10's, which stabilized them, and could then be used as beam forms.

This was tremendously useful. It meant that we could stand in the main rooms of the house, adjust the column forms by eye, see how the windows had to be to make the room just right. Once we got it right, these forms were nailed in position, fixed, set with the horizontal members.

The steel was set, and within two or three days, the whole thing was ready to pour.

The design is such that the panels, corner panels, and the whole structure was prepared — and then poured — at the same time. When we were finished, and had the rooms just right, to our satisfaction, the position of panels and windows was quite different from the permission drawings we ourselves had made earlier. Not one room was the same.

We did one room at a time, placing the column-forms until the column positions and the shape and size of wall panels between the columns felt just right. We checked them from inside and outside until we were satisfied. Then we braced them, and tied them together with pairs of horizontal boards that would work as formwork for pouring concrete beams.

Thus we were able to move the columns around, by eye, using the column forms as if they were the columns themselves. When we were satisfied we stabilized them, and tied them together with beam forms. Then we placed the steel. Then poured the concrete. This technique allowed us to perform the unfolding just as it should be done. The larger configuration of the rooms created the context in which the exact position of the columns and column-bays as centers could be judged. The physical technique allowed it to be done, judged, and then set, without extra cost or time.

It was a nearly perfect embodiment of a natural unfolding process.



27 / FIXING THE LIVING ROOM: ITS DOOR AND FIREPLACE AND WINDOWS

DURING THE PROCESS OF PLACING COLUMN FORMS, THE DETAILED CENTERS WHICH FORMED EACH OF THE FIRST FLOOR ROOMS CAME FROM WHAT WAS THERE, NOT FROM THE PLAN DRAWN ON PAPER.

In order to get the first-floor centers right, we had to make very important decisions about

the layout. We had a rough layout, obviously, in the floorplans chalked on the slab. But we had to make the centers real; that means we had to make them into real rooms, in three dimensions, with beautiful light.

We started with the living room, the most important room. In this room, the position of the

fireplace, the detailed character of the big bay window, and the position of the door from the entry hall to the living room were most vital. The door from entry hall to kitchen also played a role. We needed to place the two doors so that they didn't exactly line up, but gave a nice partial view through. One wanted to be able to sense the kitchen from the living room, but not see into it directly. One also wanted to sense the fireplace of the living room as one entered the house: but still that fireplace and the big bay window had to be protected, so that once inside the living room it was a comfortable and cozy spot. That meant the living-room door had to be far enough back in the house so that the living room and its bay window area were protected, not uncomfortably exposed.

To get all this right, we made many experiments, using cardboard for mockups, and sitting



Looking through the living-room door, towards the entrance room, to see what view of the front door is most comfortable



Sitting in a circle to get the 'feel' of the living room, and to find out exactly how to place the fireplace so that fireplace, bay window, and door are all comfortable

around in a circle as if we were in the finished room. The fireplace (shown in the picture on page 603) is made of cardboard. We located that first, and gave it size and mass and dimension. Then we used cardboard walls to check and recheck the impact of the two door positions and the fireplace position, until we had them all just right.

One of the rather surprising things which materialized from these experiments was the need for a row of small interior windows in the back wall of the living room, between the living room and the passage behind the living room.

Finally — and as it turned out, very significant in the finished room — we changed the five

windows of the beautiful bay window. When we first tried placing the columns to make this window, using the assumption that all five parts were equal in size, we found that the window did not work so well. It did not have enough sense of focus. It was not, as much as I felt it could be, a living center. So, instead, I made the middle opening bigger than the others, then the openings next to the middle slightly smaller, and the openings on the outside smallest of all. We played with the proportions of the variation. Everyone checked it. It was much better. That is how we finally set the columns, and how the room is built.



28 / REMAKING OTHER FIRST-FLOOR ROOMS

ONCE WE HAD THE LIGHT IN THE LIVING ROOM RIGHT, WE WENT ON TO CHECK THE LIGHT IN ALL THE OTHER FIRST-FLOOR ROOMS: ENTRANCE ROOM, KITCHEN, AND THE TWO ROOMS AT THE EASTERN END OF THE HOUSE. THE LIGHT COMING INTO THESE ROOMS TOLD US WHERE, AND HOW, AND HOW BIG TO MAKE THE WINDOWS IN THE FRONT WALL, AND EVEN MADE US MODIFY PLAN, INTERIOR PARTITIONS, AND BOUNDARIES OF THE MAJOR ROOMS.

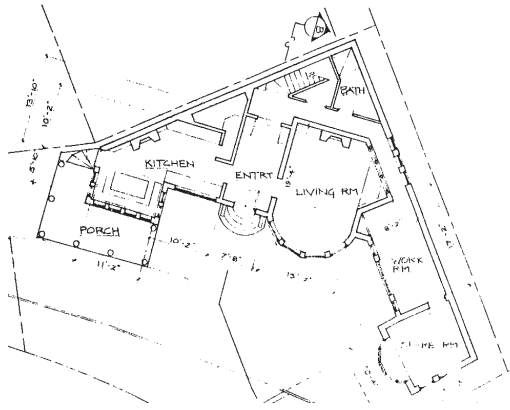
Recall that we could not see the actual light as it would ultimately be in any of these cases. The ceilings of these rooms were not yet built, nor was the front wall complete. But, using the column forms to represent the columns, we could for the first time guess at the light that would come in, because we had enough information from real walls, floors, trees, sunlight, reflections, orientation, to sense roughly what the quality of light at each point would be like when the house was finished. It was this partial, but real information, which provided enough feedback to help us make good decisions.

The entrance room provides an example. We could now see that the light in the entrance

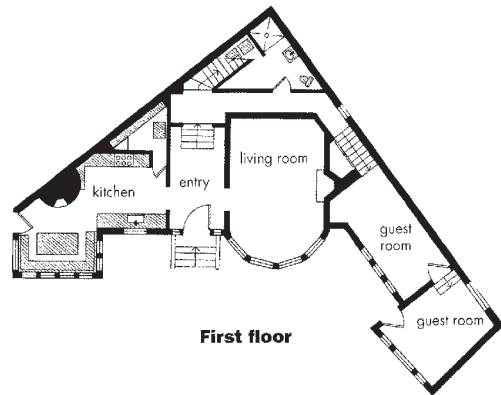
room, if built as shown on the drawing, would have been catastrophic.

As usual, we started with a mockup that showed us what was on the drawings. In this case, using cardboard to close in walls, we could see that what was on the drawings was dank and awful. The room was unpleasant and far too dark. What was needed was obvious: a big window in the front wall, all around the door, so that the entrance room would be bathed in light.

But there was a difficult structural problem. On the design as submitted to the building department, we had placed a massive concrete moment-resisting frame in just that part of the exterior wall which formed the front of the entrance room. To make the entrance room light, we would have to take this away. But the shear resistance was essential to the building. It was just this one element which we originally intended to use for resistance to horizontal motion along the whole front of the house, especially critical there because this face of the house was mainly made of windows and openings. Something solid had to be there, somewhere. And to work, it had to be massive.



*First floor as drawn for submission
to the city of Berkeley*



First-floor plan as finally built

The anticipated forces were huge and could not easily be taken up elsewhere, since the whole front of the house had openings, doors and windows, all along its length. What to do?

Before trying to solve the problem we went on to the kitchen to see if there was any possible interaction which might help. In the drawings, we had the window above the kitchen counter huge and open. Standing in the room, this seemed far too big — almost grotesque. The kitchen needed containment, even a little darkness, to make the light spot in the big eating area at the western end of the room more attractive as the main center. So we set about sizing a much smaller window above the kitchen counter that would make the kitchen warmer, darker, and cozier and more contained.

So, suddenly, the solution of the shear problem fell into our hands. Since the kitchen window had to be smaller, we had room in the exterior wall for the extra columns and the very deep massive beam which the moment-resisting frame required, thus moving the shear-resisting element from entrance hall to kitchen. This needed some extra effort on computer runs, and a new drawing submitted to the building department, but we were able to solve it just nicely.

Things like this do not always happen. The shear-resistance problem caused by opening the entrance might not have been solved so easily.

But then we would simply have done something else — some other drastic change — to make the entrance room come out right.

The big windows at the western end of the kitchen got modified too. We found out just what sill height was needed to create a sense of privacy. That was quite subtle. Also, we put in an extra window looking towards the front door, looking east. And we put a door leading out to the little plum tree.

The strange L-shape of the kitchen was complicated and needed a lot of work. We more or less got it right at this stage. It would finally be resolved, later, by the construction of the big cylindrical fireplace (see pages 612–13, below).

In the two rooms to the east, the plan changed completely.

The long thin room — Stephanie's work-room — had originally had a French window opening to the garden. This was absurd in practice. The room was too narrow. It needed to be contained. We replaced the French window with a bank of four windows that made the room feel usable, pleasant, and not too exposed.

And the last room, the square room which drops down, was also quite wrong. On the drawings, we had shown it with a bay window looking out over the garage. This bay window seemed to be overdoing it entirely. And besides, one really didn't want to orient quite like that. We replaced

it with a simple wall with windows, making the room square. It is now one of the nicest rooms in the house. And from the side, in an insignificant corner, we put a narrow French window out to the terrace, to make up for the one we had removed from the long thin room.

Finally, the back of the entrance room also had to be adjusted. To make the room have a beautiful shape, the way it narrowed to a neck, and then a landing, before reaching the bottom of the main stairs, was — in reality — entirely different from what we had shown on the plans. We had simply not been able to grasp the impact of the three-dimensional intersection of stair, entrance, passage, and walls, coupled with the change in floor levels. Being three-dimensional, it *could* be grasped only in the actual situation.

Every one of the five main rooms on the first floor changed fundamentally during this

process. The position of walls changed. The spacing of windows changed. The positions of doors to the outside, the position of doors to the inside, the relative integrity of different centers in different rooms, *all changed*. If we had built the rooms that were on the plans, the house would have been all right, but barely acceptable — perhaps acceptable within the terms of reference of contemporary modern architecture, because this has become the acceptable level of what people get — but not acceptable in the true sense of something working well and being comfortable and beautiful.

The life which is now visible in the finished house as we built it simply would not have been achievable if we had followed the drawings. It came about only because we could see what we were doing in the actual situation, respond to it, change it, and make it live.



29 / COMPLETING THE FIRST-FLOOR STRUCTURE

WHEN THESE DECISIONS HAD BEEN MADE, WORK WENT AHEAD TO FIX AND BRACE ALL THE COLUMNS, FORM THE BEAMS, POUR THE CONCRETE STRUCTURE. THE STRUCTURE WAS THEN READY TO RECEIVE THE SECOND-FLOOR FRAMING.

As we began the second floor framing, one could begin to see the entire exterior volume of the building. This made it possible for the first time to take in the building as a whole, and to pay attention to qualities which were needed to complete this whole.



30 / POURING AND FORMING THE GARAGE

SUDDENLY ONE DAY I GOT A CALL FROM CARL LINDBERG, ASKING ME TO COME TO THE SITE. I WENT UP; HE WAS JUST FORMING THE GARAGE WALLS IN THE LOWER RIGHT-HAND CORNER OF THE SITE.

He wanted to get it in fast, so the upper part wouldn't collapse: As he started forming, he realized there were several open questions, unresolved by whatever sketches existed at that moment.

In order to form the garage roof concrete work, Carl had to know the final level of the terrace which will be above the garage. We had never decided it. The big issue was that it felt uncomfortable if low — because if it was too far below the house, it would not be used or usable. On the other hand, if it was high, several feet of earth would be required above the roof, resulting in a huge weight on the garage roof slab.

Or the garage could have a high ceiling, which would be very uncomfortable in feeling.

In addition, we had to check the appearance of the house from the southeastern end of the street. I had never done this before. It was vital that the structure of the garage plus terrace as seen from that end not be too high; otherwise, it would intrude on the house and look too huge and formidable.

We settled for a low ceiling in the garage, a thick slab to take a big weight, and several feet of earth on top, thus bringing the terrace to a nice position for the house.

Finally, we shaped columns and brackets, and flared entry walls, to make the entrance to the garage a STRONG CENTER. Mockups to de-

cide the shape of the concrete work. Cardboard cut-outs. The thing was heavy, very nice. Massive. Built after making the cardboard shapes.



Formwork on the massive concrete brackets which frame the garage



31 / GETTING THE ENTRANCE PATH JUST RIGHT

THE NAGGING PROBLEM WITH THE ENTRANCE STAIRWAY STILL EXISTED.

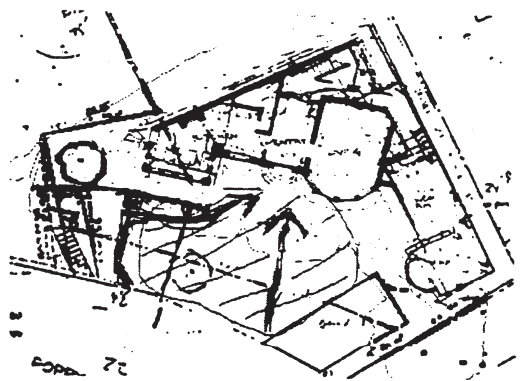
From the very beginning of the project, I had been wondering how to climb up the hill, from the left of the garage, to get to the front door. At an early stage of the project, I had assumed I knew how it went (from the left of the garage more or less straight to the front door), and had Randy place rough working mockup stairs in those positions, so that we could try walking up and down that path. It was never very comfortable. More recently, with the trench open for the gas and electric lines, Carl had built a rough stair going absolutely straight up to the left of the garage (photo page 608). This also was very unsatisfactory. It was far too steep, abrupt, and rather unpleasant.

Just before pouring the top retaining walls to form the terrace over the garage, we had to make a decision. None of the paths we had looked at seemed pleasant or graceful.

The one path which had always been pleasant — for everyone — was the forbidden one, which went on the neighbor's land at the left

end of the lot. Recently, she had locked her gate because our crews going in and out disturbed her — quite reasonable. But still, if we wanted to sneak in by the most comfortable route, that was the way to go.

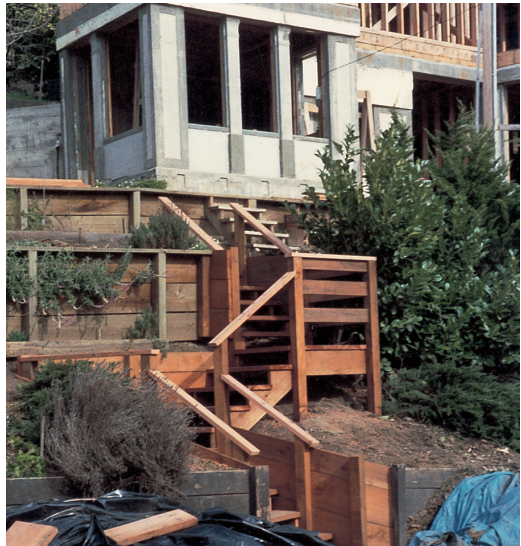
I had tried to prevent myself, and our men, from going that way, so that we could experience



Two paths from the garage to the front door: The right-hand one crosses and destroys the positive space; the left-hand one goes around it and leaves the positive space intact. The garage is visible lower right. Hatching shows positive space.



As planned, and tested: entry at the right of the site, direct from the garage.



As finally built: entry at the left-hand end of the site, then entering past the kitchen.

the real options and get a feeling from the actual process of walking which ones were most pleasant.

But now, faced with the need to make a decision, it was this path, over to the extreme left, which seemed the only one that had a really comfortable quality. We were able to try a second path, not on the neighbor's land, but along the property line. We tried it, made a few tests. When we were sure, I called Chris and talked it over with him and Stephanie. They were quite comfortable about it, too — to my surprise. As it turned out, the conventional idea that the entrance must be near the garage meant very little to them. So the problem was solved. Randy be-

gan to build the stair (see photo). The only thing that we had to overcome was our own assumption that there would be something wrong if the path did not go directly from the garage.

One might say that it was POSITIVE SPACE which helped us to get this right. The space formed by the stairs going across the chasm near the garage was never positive. What we finally understood was equivalent to understanding that the only way to make this space positive was to treat it as a single inviolate lump of space, not to be cut by a stairway. The stairs then, instead, encircled the bushes and the main front part of the site, instead of crossing them, and so made the space and the system positive.



32 / REMAKING THE UPSTAIRS ROOMS

WE WERE NOW ABLE TO STAND IN THE UPSTAIRS, WITH AN OPEN FLOOR AND EXTERIOR WALLS GIVEN BY THE ROUGH FRAMING OPERATION.

Framing the upstairs was, in our contract, divided into two operations: rough framing, which was to go very fast and cheap, and finish

framing, which was to be slow to allow for subtle adjustments to partitions, windows, and doors. We gave the finish-framing contract to James Maguire, one of our own most trusted people.

I had James construct rough mockups of the partitions, as shown on the plan, so that we could

see them. Many aspects of the space which they created were surprising, even shocking. Because of the way the walls were placed, the whole upstairs seemed tiny — not right at all for such a large house — almost as if the Uphams weren't getting their money's worth — but in any case, definitely wrong in feeling.

Also, there was nothing really beautiful up there. Just a bunch of rooms. I decided to spend a few days letting the problem sink in.

The most crucial thing to get right was the beauty and shape of the main bedroom. I tried to imagine what would make this room beautiful, especially in relation to the terrace outside. I got a clear sense of its shape, with a big bed alcove and windows to the south and east. Then other things fell into place. The terrace had to be a little smaller, and the light on the terrace was amazingly harsh. We decided to extend the roof overhang, to give more shelter there and make the light softer. The space at the top of the stairs

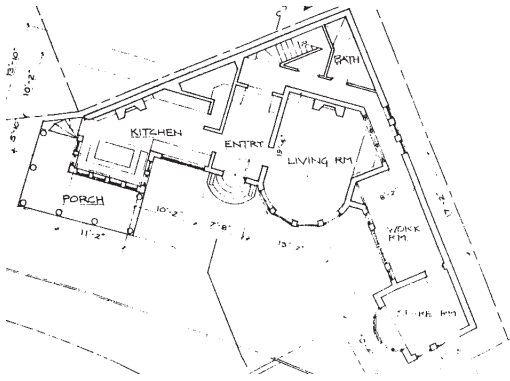
was given a more beautiful shape. I reshaped the end of the bedroom so that it formed an octagonal shape that made sense with the door from the stairs. The bathroom was placed in the leftover triangular space, at the top of the stairway.

Now that the main room was beautiful, with its own shape, and coming nicely off the passage from the top of the stairs — that was the thing which brought the upstairs into a good state (STRONG CENTERS, GOOD SHAPE). I could now put a bed alcove opening off the main room. Chris's study was also in a totally different relation to the master bedroom, and to this alcove. And the bathroom was now in a totally different position.

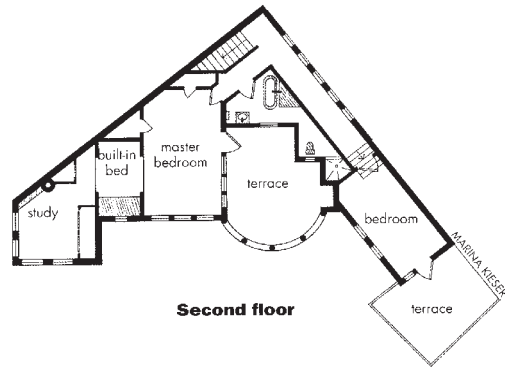
It should be emphasized that, just like the downstairs, the arrangement of rooms on the second-floor level changed completely once we began looking at the real space in three dimensions. The main bedroom was entirely different. The bathroom was in a different place. The toilet



The upstairs after rough framing, and before new decisions were made. The cardboard walls and mocked-up partitions showed us clearly just how bad it was.



Upstairs plan as drawn for building permit



Upstairs plan as finally built

was in a different place. The main terrace off the master bed alcove was different in character, and even the wall bounding it was moved. The bed alcove was entirely new. Chris's study was to be approached in a different fashion. The stairs and the stairwell and landing were all new. As a result of our work on the second floor, the plan had become totally different, in almost every single room layout, from the way it appears on the permit drawings — all except Sasha's room, which, being in a wing by itself, stayed more or less the same.

Again, as with the first floor, if we had built what was on the plans it would have been acceptable, within the very low level of standards we have come to accept in contemporary architecture. But it would have had no significant life,

because it would have contained no significant centers. They were not visible, or, I believe, even imaginable at the time we laid out the plans on paper.

On the left is the plan as drawn and as submitted to the building department. On the right is the plan as actually built. Almost nothing is similar.

The significant life which the house now has, as built, comes about entirely because we were free to feel the centers that were needed and that were latent in the emerging structure, and we were then free to conceive them, refine them, and build them, all within the real three-dimensional space of the building envelope while we were constructing it.

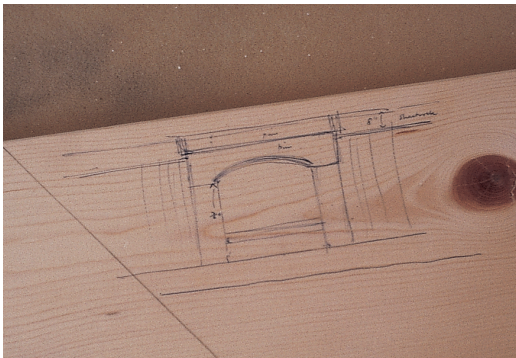


33 / THE MASTER BED ALCOVE

PERHAPS ONE OF THE MOST CHARMING THINGS THAT HAPPENED DURING THE PROJECT WAS THE DECISION ABOUT THE MASTER BED ALCOVE.

Chris and Stephanie were standing with us upstairs, one day, studying their bedroom. We had a way of getting from the bedroom to Chris's study, but it made a passage where we didn't really want one. Then Chris mentioned Jefferson's bed at Monticello — a bed which was the only path to get to his study — and wondered if this

approach might work for him. At first I dismissed it as a charming but nutty idea. Later, however, we made a mockup of the bed alcove in the bedroom. The alcove was beautiful as far as its position was concerned; but it left the room dark and it was dark itself. I had to clear the darkness away. To do it, I just kicked out the back of the mockup. Suddenly the light changed, the room was filled with light, the light came streaming in from Chris's study beyond, and the



Bed alcove as I first drew it on a plank of wood that was lying there

annoying passage that had been ruining things was gone.

This was really a stroke — coming entirely from Chris's original idea. I called him to tell him about it. Now *he* got nervous. Couldn't we make a passage. Would it really work, to get into his study, only by crawling across the bed. I asked him, joking, if he had any women clients. He joked back that that was probably the reason why



Setting the position of the bed-alcove opening in the room



Checking the feeling of the master bed alcove, from inside and out

Jefferson built his bed at Monticello that way originally. Finally, after a lot of hemming and hawing, Chris agreed to do it: a wonderful stroke, which makes the upstairs of the house beautiful, just right, and very sensible; filled with light, it is an inspiration to be there.

When we got ready to build the bed alcove, we made a variety of cardboard mockups to determine the size of the opening, the arch of the opening, the exact width of the bed, the soft edge between the mattress and the wooden platform, and the position of lights inside. The most criti-

cal thing was the exact position of the alcove in the wall. The view through the bed alcove into Chris's study depended on very slight movement up and down the room. And the strengthening of the part-octagon shape of the master bedroom also depended on the position of the bed alcove. Finally, it turned out that the opening needed a very broad set of boards — this showed up first in a small sketch, as when we were standing there a too narrow set of boards around the opening looked funny. The wide boards gave the bed its proper weight.



34 / THE KITCHEN FIREPLACE SHAPE

IN THE KITCHEN, A MAJOR NEW CENTER HELPED TO RESOLVE AWKWARDNESS AMONG EXISTING CENTERS.

We came to the kitchen fireplace. The Uphams had told us they wanted to bake pizza

in it, every night. That made sense. It became a kind of oven. All along, the kitchen had had a strange and awkward L-shape, already discussed earlier. I looked and looked, what to do, but couldn't make it just right. To resolve the two



The kitchen mocked up in its entirety in cardboard, so we could see just how to make the kitchen fireplace. The idea of a cylinder had already occurred to me from seeing the room shape and recognizing its two lines of sight. Now we had to make the cylinder work, and to do that we had to have the full three-dimensional configuration, as it was going to be. We had to make many many versions before it all sat right.