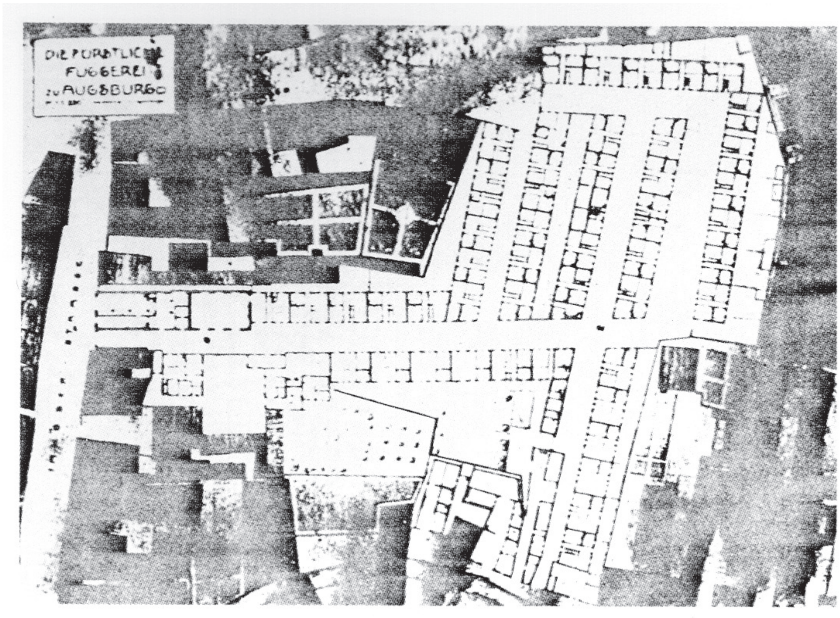


3

Aperiodic grid visible in the ground plan of the Fuggerei, Augsburg

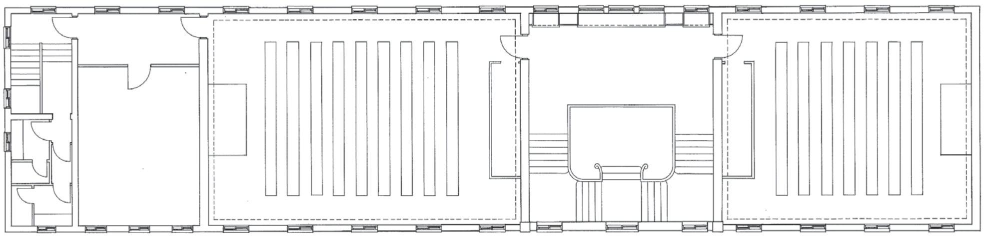
16th century) contains a series of small rows of workers' houses, arranged in very strict rows. Yet because of the site, its boundaries, and an orientation created by originally existing orchards, the rigidly drawn lines and repetition fit the land, fit the boundaries, and create a unique and unforgettable internal configuration — one of the most beautiful small in-town villages in Europe.

In both cases (the Fuggerei and the Sala house), the principle is the same. A rigid and definite geometry is introduced in a nearly brutal manner, but is then treated, bent, filled, and modified, so that its coherent existence, while being adapted to rooms, circumstances, needs, and land, is nevertheless able to happen beautifully within a visible and satisfying order.

8 / A FURTHER STRUCTURAL EXAMPLE

Let us examine one more case in considerable detail. Here I show one of the college buildings from the Eishin campus. Although the presence of these buildings on the site is necessarily loose to fit the land (see site plan in Book 3, chapter 6), the buildings themselves are the simplest possible rectangles, *but laid into the ground in such a way as to make the land harmonious.*

What is the sequence of events that shaped this building? First, the building got its long shape simply from the way it was needed to surround and form space. The simplest response to this shape was that it should be a firm, precise rectangle. There was no reason to make the building bend or wiggle. There was no reason to make it go in and out. The idea that a building becomes more "organic" if it has a more complex form, even when based on notions of the interior organization, is almost always wrong. In this case, the best and simplest solution was for it to be a rectangle of the right length to do justice to the land. Density prescribed that it be two sto-



Upstairs plan of the Northwest college building, Eishin campus, 1987.

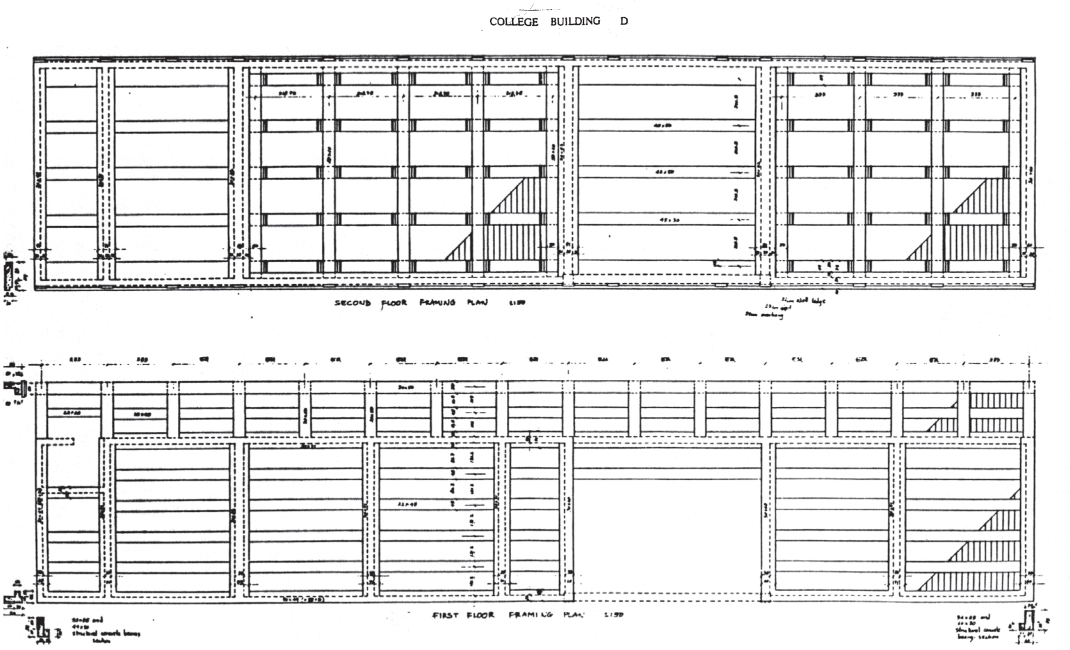
Interior longitudinal cross-section, looking north

ries high; examination of this on a site model confirmed its accuracy. Next the building had to be subdivided to form classrooms. In this particular building, two large lecture halls were required with flexible seating (loose chairs); the two rooms were of different size. These spaces cut across the building at asymmetric points. The entrance, a space in itself, obviously had to be between them. The downstairs plan required a wide arcade. The full dimension of the building, above the arcade, was needed for these two large lecture rooms. Thus an extraordinarily simple division of the rectangle made just the right sizes and shapes for the necessary rooms. Downstairs, below the two big lecture rooms, classrooms are smaller, and simply needed a regular array of small rooms.

Now the arcade required regular spacing of columns. The ceiling, with its massive beams, is an array that creates a horizontal mat of beams, acting as a horizontal moment-resisting diaphragm, to provide resistance to horizontal forces caused by earthquake.

Further subdivision of the main room ceilings by these beams was done in such a way that the space between the beams, and the beams themselves, were also of satisfying shape and dimension. That, as it turned out, worked just right from a structural point of view.

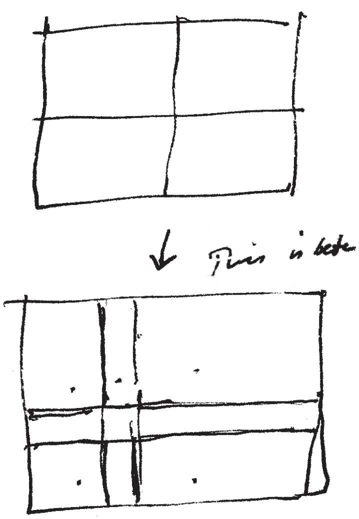
To understand just what I mean by subdivision and the potential which this process has for creating profound order, the following elementary example may be useful. We may grasp what is going on by looking at a very simple problem. Consider two ways of subdividing a rectangle, as illustrated here. First, I might simply cut it into four equal parts (as shown in the upper sketch, page 425). Or, more profoundly, I might divide it



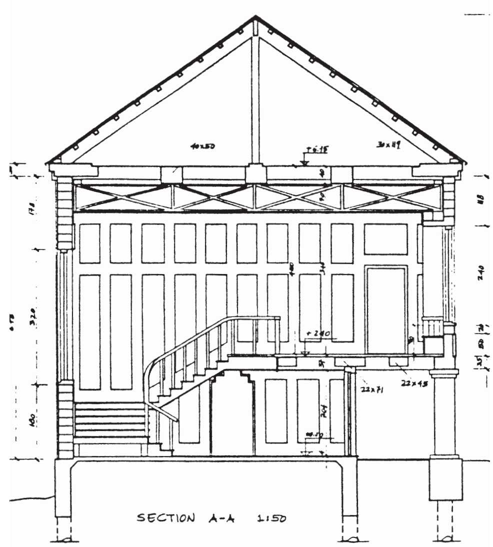
The pattern of beams at first and second ceiling levels which emerged from the orderly process of subdivision. Differentiation, as defined in chapters 6 and 7, here gives rise directly to the needed aperiodic grid.

Interior of Northwest college building, showing the simplicity of form, and the mat of horizontal beams acting to transfer horizontal forces through a moment-resisting diaphragm formed by the beams

Northwest college building from the arcade side, Eishin campus



Simple grid and aperiodic grid. The aperiodic one is better because it is more differentiated, contains more centers, more boundaries, and more opportunities for useful and coherent structure.



Cross-section of the building

as shown in the lower sketch. This is a more profound cut because, by making an asymmetrical division, I already introduce different levels of scale among the room sizes of the four created rooms. But, further, by introducing a thin band of space between the four divided rooms, a second smaller level of scale is introduced, and the diagram suddenly gets levels of scale, and boundaries as well. To be sure, this is a very simple example. But it shows how consideration

Northwest college building, Eishin campus

of geometry alone, taken on its own merits, and acted on with ruthless strength, will generate a more profound, more living form. It is subdivision, and subdivision again, and further subdivision of the parts, which creates the form. A purely geometric process creates the order.

9 / A GLIMPSE OF THE IDEA OF A GENERATING SEQUENCE FOR BUILDING STRUCTURE

In these last two examples we have seen how the order, the difficult, "inspired," geometrical order of a building, comes about from step-by-step application of a relatively simple sequence: the sequence that uses the fifteen transformations to build a highly regular aperiodic grid that fits decisions about volume and interior spaces which have been established earlier.

Since this aspect of buildings — the structural grid — is often treated too lightly, and since the sequence of steps I have described catches the important core of architecture in an almost simple way, we have a glimpse here of what I have stated more generally in chapters 6 snd 7. Namely, as we pay attention to living process, we shall find various fragments of sequence in which living structure of a building is created by nearly routine application of repeatable steps to an emerging form. These will sometimes provide us with a general method of the utmost importance.

We may say that in this case, we have identified a general sequence, which will give us the form of a building, in a powerful and simple fashion, which is repeateable in a wide variety of circumstances.