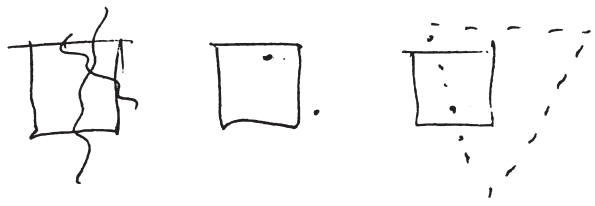
2 / STRUCTURE-PRESERVING TRANSFORMATIONS FURTHER DISCUSSION

Let's start again. On the right, there is a sketch of a square drawn on a sheet of paper. Below that, I show various ways you might modify the square, add something to it, transform it.

The original square

If I ask you to modify it in a way which *preserves* or continues or extends the structure which exists in the square, you will probably draw something like one of the (A) sketches in the first row below.

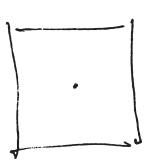
A. Transformations of a square which preserve its structure



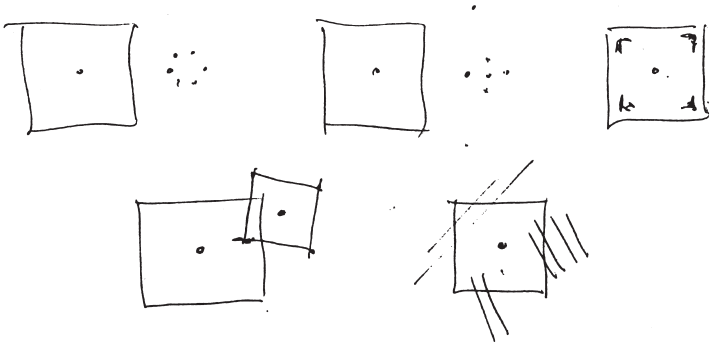
B. Transformations of a square which destroy its structure

If, on the contrary, I ask you to modify the square in a way which *destroys* or damages or contradicts the structure which exists in the square, you will probably draw something like one of the (B) sketches in the second row.

In both cases, your intuition tells you roughly what to do. Intuitively, we understand the concept of preserving or destroying structure. This means, of course, that in some form we must have an intuitive idea of the structure which *exists*. That concept is not new: the structure which exists is, of course, the wholeness as I defined it in Book 1. It is the field of centers. But we must also have an intuitive idea of a transformation which preserves or extends a structure, and an intuitive idea of a transformation which destroys or contradicts a structure. This *is* new. Except in chapter 1 of this book, I have not previously (in Book 1) suggested that the wholeness which exists contains a seed or direction that points the way toward those transformations which are kind to it and away from those transformations which are unkind to it. But the demonstration I have just given shows that there is indeed some way in which a transformation of a structure which exists can be kind or not-



Square with a dot



Upper row: Good transformations of the square with a dot
Lower row: Bad transformations of the square with a dot

kind — structure-preserving or structure-destroying, more consistent or less consistent with the structure that exists.

A preference for movement towards the structure-preserving transformation is almost exactly what we have seen in the examples of chapter 1. Throughout nature, we see a continuous smooth unfolding of the wholeness which preserves structure at every moment, even when it seems to be introducing new structure. That is what happens even when a bullet shatters a piece of glass (page 31). It is what happens when a seed grows into a plant. It is what happens when a waves breaks or a river meanders.

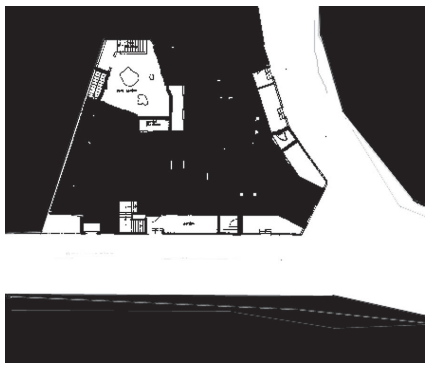
Here are some more examples of structure-preserving transformations. At the top of the page, I take one of the transformed versions of the square: the square with a dot in the middle. I make *further* marks to transform *this* figure further. Again, these marks may be structure-preserving or not. The three in the top row *are* structure-preserving. The two in the second row are *not* structure-preserving. The transformations in the first row, even though they bring in new structure and open up new directions, preserve and enhance the wholeness of the square with the dot. The transformations in the second row also bring in new structure, but they do it in a way which violates the structure of the square with the dot. Its structure is weakened or destroyed.

The idea of structure-preserving transformations is quite general. If we are faced with any configuration at all — simple or complex — and we are asked to modify it by adding elements or making changes, we can distinguish between types of additions and changes which preserve or enhance the structure and types which weaken or destroy the structure.

It is the structure-preserving transformations which give us the key to the creation of wholeness. Look at the situation (below) where

Two trees; two trees plus hammock; two trees with bench around one of them.
Putting in a hammock leaves the wholeness of the two trees intact: putting a single round bench around one of the trees leaves it somewhat less intact.

Plan 1: A first possible site plan, rather conventional in character, which is NOT structure preserving. Although this plan follows typical design character for a typical building in the 1970s or 1980s, the placing of the volumes, the badly formed exterior space, and the lack of structure-preserving done to the two streets and to the sunshine in the south are all negative.



Plan 2, as built: A site plan which IS structure-preserving. It shows the unusual configuration caused by the fork, and two bent streets.

The view of our apartment building in Tokyo after completion. It kept the character of the neighborhood alive because it was structure-preserving in so many ways.

two very similar trees are standing close together (first diagram). If I string a hammock between them, this is a structure-preserving transformation. The wholeness of the two trees with the hammock is similar to the wholeness of the two trees without the hammock (second diagram). Another structure-preserving transformation occurs if I put a single bench around one of the trees (third diagram). However, this transformation is slightly less structure-preserving, since it introduces an asymmetry that was not there before, and changes the larger wholeness substantially.

To explain the point with a complex, full-scale example from architecture, I give the example of an apartment building I built in 1987. It was built at an acute-angled fork in a busy Tokyo street. The fork had an unusual angle; both streets were (and are) narrow. I show two possible plans for the building, considered while it was in the earliest design process. One of them, highly conventional from the point of view of architectural planning, circa 1970–80, and done as an exercise by someone in my office, is made of several rectangular volumes arranged to fill the site as nearly as possible. It is not structure-preserving. The other, following the street contours as they are, forms a volume which was unusual by the standards of 1987; but it is more structure-preserving. It enhances the spatial volumes of

the two streets. The second plan is also more structure-preserving for the neighborhood as a whole. It is the plan which we subsequently built. The photograph to the right of the plans shows the apartment building when it was finished.

On this page, I give a second similar example of real built things, but they are much more modest in scale. This shows how the same principle affects even the smallest things in the environment: the following two everyday illustrations from the Berkeley hills show how ordinary this process is. The photographs are of two mail boxes on a street near my house. The first, on the left, is very simple. The person needed a mailbox, put it on a stick, and let the grass grow around it. It is beautifully structure-preserving and sensitive.

Mailbox which is structure-preserving. The landscape, steps, grass, and their wholeness are preserved by the insertion of the mailbox.

In contrast, on the right, is another mailbox, from a house further down the street. It is almost the same kind of mailbox. You see that the owner of this mailbox has built a kind of pyramidal structure under the mailbox, evidently trying to make it "nice." In our language, you might say that this person was trying to make a STRONG CENTER. Should he not get some brownie points, then? No. The center he created has too little to do with the context of the situation where he created it. The reason is that, compared with the first one, this center has less relation to the grass, flowers, and driveway around it. It did not arise as naturally from the wholeness of its location. Thus it is a more isolated, more self-aggrandizing center, exaggerated and less helpful to its context. It seems a bit overblown. And it seems overblown because it is less structure-preserving than the first mailbox.

As these examples suggest, examples of structure-preserving and structure-destroying transformations are visible all around us.

The difference between the two types of cases plays a fundamental role in architecture and in the evolution of all living structure.

Mailbox which is not structure-preserving. The center which is created under the mailbox does not arise naturally from the surrounding wholeness.