A study of the TIME dimension in Buildings and steps towards designing adaptive buildings.

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ABSTRACT

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### **ABSTRACT**

Buildings, when it is first built, could be seen as an attempt to make a self-maintaining whole configuration. No Building is ever perfect.

But most of the predictions invariably go wrong. People use buildings differently from the way that they thought they would at the inception stage. Therefor a building may not be a perfect creation.

The process of design, in the mind's eye, or on the site, is an attempt to simulate in advance, the feelings and events which will emerge in the real building, and to create a configuration which is in repose with respect to these events.

But the predictions are all guesswork; the real events which happen there are always at least slightly different; and the larger the building is, the more likely the guesses are to be inaccurate.

It is therefore necessary to keep changing the buildings, according to the real events which actually happen there. And the larger the complex of buildings, neighborhood, or town, the more essential it is for it to be built up gradually, from thousands of acts, self-correcting acts, each one improving and repairing the acts of the others.

".... Each act of building, which differentiates a part of space, needs to be followed soon by further acts of building, which further differentiate the space to make it still more whole...."

This is commonplace in nature: and indeed, it is just this which always manages to make the parts of nature whole.

In this framework, we gain an entirely new view of the process through which a sequence of acts of building generates a whole. Broadly, what is happening is that there is, at each stage in the life of any part of the environment, a wholeness which is specific to that moment in its life: and that each new act of building, provided that it is done with an eye to making the overall whole still more whole, more alive, will transform that whole, and gradually give birth to new wholes.

#### **References:**

Alexander, Christopher
 "The Timeless Way of Buildings",1979



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