

and then perhaps forcing us unique creatures into that mold of sameness, is degrading and impossible to bear.

The mathematical concept of wholeness I have put forth in Book 1, has the consequence that wholeness changes dramatically, even from the slightest and most subtle variations which occur in the wholeness field. This is because a very slight change in the configuration, can cause a major change in the centers which are generated. A tiny point, added, can alter the the deep

structure of the wholeness enormously at the scale of yards or even miles.

The necessity of uniqueness, at all levels, in the universe, follows from this mathematics. If then, there is to be a living world of the future, the present processes of fabrication must be replaced by other deeper and more sophisticated processes which, like nature, are context-sensitive from top to bottom, and create unique living structure at every level, so that each part of the world becomes unique.



3 / UNIQUENESS ARISES NATURALLY FROM SEQUENCE FROM DOING THINGS IN THE PROPER ORDER AND FROM THE APPROPRIATENESS OF REPETITION

The uniqueness of the world is connected, deeply, to the sequence of unfolding discussed in chapter 11. When a developer makes a series of apartments which are “modular,” identical units, that are to be arranged like building blocks inside a larger plan, it goes without saying that the units will not be unique. This is closely connected to the fact that the design of the units came “at the wrong moment” in sequence — indeed at an inappropriately early moment, which did not allow each apartment to take its own floor plan, according to position and conditions, as adaptation requires. Similarly, if we place modular windows in a building, the design of the window precedes the moment when the building reached the decision point for size and shape of windows according to their positions, the light, size of rooms, view, and so on. On the other hand, if the emerging building truly unfolds in the fashion I have explained for living process, then of course the apartments must be given their shape, plan, design, only *after they have been placed*, and in response to the unique conditions arising, each in its different position (For such a scheme see the process and plans illustrated on pages 306–16). And similarly, if we do things in the right order, when it comes to

window design, then each window will be designed only at a moment *late enough in the unfolding* so that each room knows what its needs are, the view, the light, the room size, the most important place in the room.

The organic unfolding of a building tells us *when* these various decisions must be made. And the *consequence* of deciding things at the right moment, when correctly done, is that the building and all its parts become unique. The sterile modularity and inappropriate sameness of 20th-century parts came about directly as a result of taking things in the wrong order.

What kind of repetition, on the other hand, is generated by a living process? In the products of a living process, what is the relation between repetition and uniqueness?

The way that the fundamental process creates living structure is like biological and natural unfolding, but *unlike* much modern architectural design and construction, in the all-important respect which concerns the size, character, repetition, and non-modularity of component elements.

I can illustrate this through an example, by referring to an ultra-high-tech furniture system which my colleagues and I worked out for the



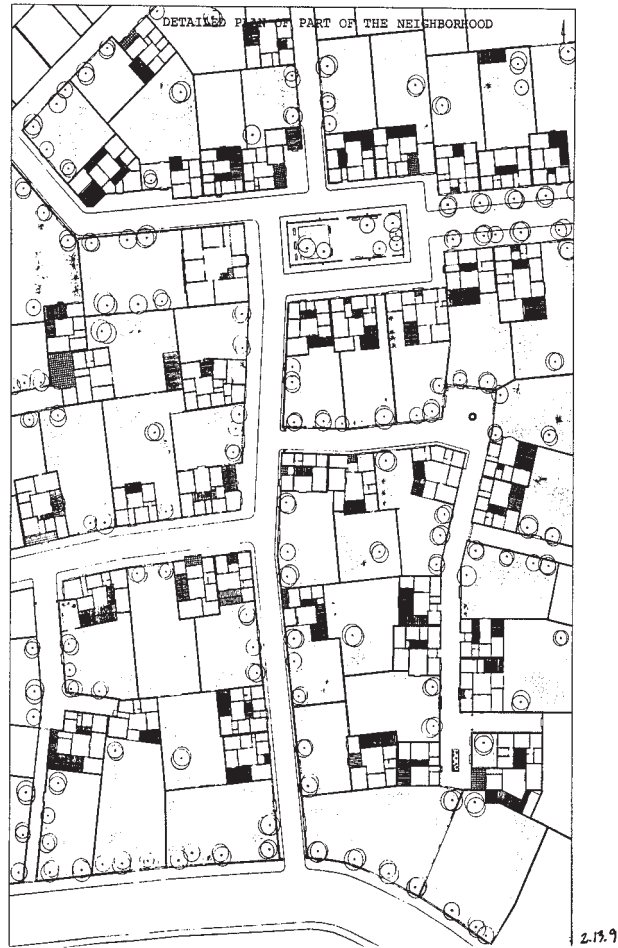
Repetition—but not modular repetition—in the interior of the Sweet Potatoes clothing factory. Christopher Alexander with Gary Black, Artemis Anninou, Kleoniki Tsotropoulou, 1988.

furniture companies, Haworth and Herman Miller.⁶ We were trying to find a way of making a furniture system which would allow each worker in an office to create an environment that was well adapted to that person's needs; personal, particular, and well adapted to the room, or space, where this was happening.

The prevailing type of office furniture system which existed at that time was one built from modular units: Standard desk, filing cabinets, etc., each in two or three standard sizes, which could be freely placed and arranged to furnish an office. It was the prevailing assumption that by arranging and re-arranging these fixed elements, each person could create the environment they wanted in a “unique” configuration (I have put the word “unique” in quotes, for a reason that will be obvious in a minute).

I became convinced from many experiments with people laying out their own offices in different spaces, that in order for them to realize the configuration that suited them, and suited the room, what was required was a different kind of furniture in which both the configuration and the pieces of furniture themselves arose by differentiation *from* the general configuration of the space. This means that the pieces, in the positions they took, were sized and shaped by subdivision of the whole, according to the needs of the position they were in, just as kernels of corn are squashed up against each other in a growing ear of corn.

Years ago, I wrote a computer program which allowed people to create a room layout in this way, by differentiation.⁷ My colleagues and I also created a layout procedure, and a system of dimen-



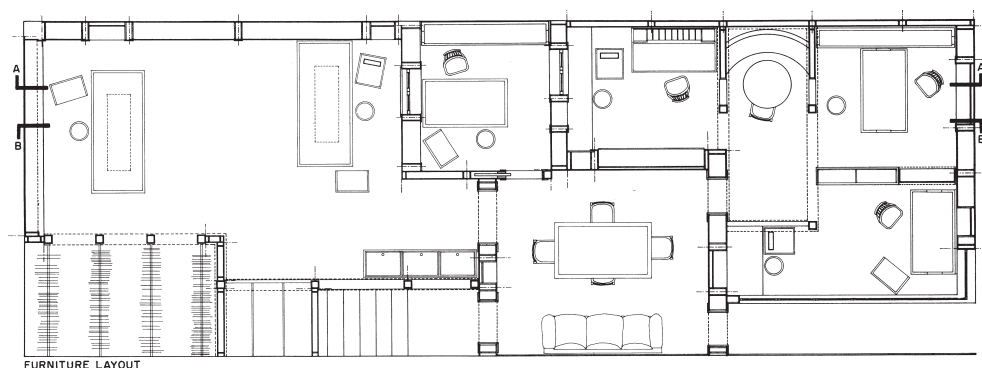
My plan for a neighborhood in Guasare, Venezuela (Christopher Alexander, Artemis Anninou, Hajo Neis, Ingrid King, Jonathan Fefferman, 1982).

sionally changeable components which could be delivered cheaply and quickly to each client, and then re-sized with infinite variations to match the configurations developed in this fashion. The room arrangements that people generated in this way were genuinely personal, genuinely well-adapted to the rooms, or corners where it was being done. They were altogether different in character from the stiff and unworkable arrangements that can be created by arranging a few standard components in a few rigid arrays. They were richer, contained a potential for more variety, had the capacity to seem and be “whole,” and had a geometric structure which was more reminiscent of biology than of modular-component art.

Above all, the richness was greater than the

combinatory richness of a normal modular system. This occurred because the infinity of configurations that can be created in a differentiating system, is a richer and *larger* infinity than the infinity of geometrical arrangements that can be made by arranging and re-arranging standard components.⁸ But, in addition, the *character* of a whole formed by splitting and differentiation, is more genuinely organic, and more unified, than anything that can be achieved by combined and rearranging fixed parts. The illustration of the mouse foot on page 33 (from a phase of biological growth), explains this point in a single image.

It may be said that any living process, built up from repeated applications of the fundamental process, works, by creating configurations



*Subtle rectangles in the differentiated plan-form of the Sweet Potatoes factory:
This is the plan of the factory shown in the photograph on page 333.*

from within this much larger infinity of possible configurations. It is — for this reason — able to create genuinely adapted results which, incidentally, also look more natural and more organic, because of their unfolded character.

What emerges from differentiation is not a loose, funky, rounded, kind of organicism. The buildings which the fundamental process creates, in the sphere of building, are still dominated by rectangles or near rectangles — because the rectangle is, after all, the main shape of easily built inhabited space that has positive space on both sides of every wall. But the differentiated

complex of rectangles is a richer and more subtle texture of configuration, a more profound morphological substance. This may be seen in the photograph of Jerusalem (page 329), where traditional forms are chiefly made from such complex rectangles. Like the furniture layouts, the building configurations which arise from a differentiating process are better-adapted. They come closer to doing what is wanted, fit the circumstances, and pay attention to the vastly larger system of constraints and needs and local centers, which is needed to create true living structure in the world.



4 / EVERY LIVING PROCESS IS — AT ITS CORE — A PROCESS WHICH IS DEVOTED, THROUGH ADAPTATION, TO MAKING EVERY PART UNIQUE

Why is uniqueness of all parts in a living structure so hard to understand? I am constantly astonished that students — even artists and architects who seem to understand wholeness — continue to have trouble understanding the balance of repetition and uniqueness.

I remember one group of students, advanced students, very good students, who had been doing beautiful work with me. Professor Hajo Neis and I asked them to make a model of a housing project we were working on: 300 apartments, a big site. We asked them to make a model at 1/4

inch scale — rather large. Each building was about seven inches high; the whole model was the size of a room: ten feet by fifteen feet.

For a week the students struggled. They made many cardboard models, but there was nothing very worthwhile there, still just a bunch of cardboard buildings. Nothing particularly good. The students were frustrated. They didn't know what to do. They couldn't grasp what it was they hadn't done. I kept asking them to do better. But they had no idea what was actually needed to make it better.