

From Small-Scale Human Minutiae

As Important In Architecture,

To A Changed View Of The Universe

*A scientist's journey*

## PART 1. STARTING OUT (1958-64).

From 1954 to 1956 I did the mathematics degree at Cambridge. From 1956 to 1958 I did the architecture degree at Cambridge. The architecture program was so bad, and so nonsensical, at least to someone trained to expect at least some rigor and common sense of thought, that I arranged with the school to let me work very fast and complete the architecture degree in two years: I finished the second degree in 1958. I was convinced by then that the whole intellectual structure of architecture, as then taught, was nonsensical and could not be relied upon. In the summer of 1958, I went to Harvard to start a PhD in architecture, and with the express idea that I would, for myself, build the intellectual structure and underpinnings of a clear way forward, by myself, starting from scratch.

My intention was, then, to build a new view of architecture, starting only with things and ideas that were clear, and unequivocally true. The view of architecture current at that time (mid 1950s) was built on all kinds of notions, not proved, not explained, and not even faintly reasonable to a person who started with an open mind: intersecting planes of glass, the use of giant prefabricated components, reflections, roofs that resembled industrial structure to be used on a house, intersecting walls and planes with purpose only to resemble the paintings of Mondrian and Van Doesburg. All interesting enough, but entirely without justification or commonsense purpose. None of it capable of providing an inevitable, and solid foundation, for the progress of ones thought.

At Harvard, I wanted to start only from things that I could be certain of: no grandiose statements that were of questionable value, even questionable as to whether they had meaning at

all. I felt I needed to start with things which were so simple, and so obviously true, that I could build a new and workable intellectual foundation for myself, something that could satisfy an honest and passionate skeptic, and a new way of doing architecture that would lead to successful results in buildings – all this, in a way that was empirical, and could be trusted.

So, as I began work in the late summer of 1958, I began only with the smallest statements. If I wanted to design a house, I began from statements so small, that I could be certain they were true. If there was to be a front door, I knew that it would be helpful to have a shelf, to put down your shopping, while you were hunting for your keys. I knew that sometimes a room benefits from the splash of sunlight on the floor. I knew that the light coming into a room, on an my desk, was a pleasant and nourishing thing.

So I began writing down such things, tiny statements, in long lists of them, never writing down anything that was not concrete, and of whose value I was not certain. In writing these lists I was inspired to some degree by the work of the early 20<sup>th</sup> century anthropologists and ethnographers, who also write down small minutiae, and built a picture of real life, from very concrete details. In some respects I felt myself also inspired by Dostoevsky and Virginia Woolf – who both wrote down concrete detail, detail upon detail, and used these tiny concrete details, to build a burning picture of reality and of the whole.

But mainly I was inspired by the empirical. I tried to write down nothing that was not certain, concreteness of observation and detail that was true, and unassailable, because it was so detailed, so true, and so ordinary.

PART 2. (1965-2003) THE STEPS OF THE NEXT FORTY YEARS.

What progression of small steps led from small scale empirical details about architecture, to the necessity of revising our picture of the universe?

- Starts with small scale empirical interest in features of well-being – tiny nuggets of information saying things that one could be sure of.
- Ends with a conception in which space itself and wholeness are perceived as rooted in the “I”, the plenum of humanness which underlies all matter.

What is the path that led, necessarily, from one to the other?

- First the small steps had to be related to physical space – patterns or pattern like things.
- Next, these patterns had to be understood as building blocks which could, in combination create greater structures.
- Third, the sequence of assembly was essential: in what order can one successfully combine them.
- Fourth, experiments with design and assembly of patterns showed that the geometry of the result was inadequate – not profound, not simple enough.
- All these aspects began putting the emphasis on the whole -- I discovered one could not understand the patterns as fragments, but needed rather to see them as part of an existing whole – and that they, and

configurations of them, would then be born, arise out of the seething cauldron in the whole.

- This was because the fragments were unsatisfactory, did not work well, when in isolation or when considered in isolation.
- Gradually realized that the whole – wholeness in the world, though used as a vague term by people, was not something that we understand well enough to describe it as a structure. So I began trying to understand how such a structure might be conceived mentally, so that it could become part of the spread of science.
- I realized that to build up something like that as a consistent picture, the whole would have to be built from wholes – and the way these had to be characterized was as edgeless, unbounded centers of action – each spreading out into the world beyond it.

I further began to realize that these whirlpools of life, could be seen as living microcosms, each one, reflecting wholeness in the large.

- The picture of a theory in which the fundamental building blocks are not well-defined finite elements, but fragmentary unbounded whirlpools (induced centers) in the larger whole, was very difficult to stand behind, because there was a need to get more of a grip on the actual physical and geometrical character of these elements of life, when they occur.
- So I began to outline, and define, the features which these particles of life all have. I was lucky, here. It

turned out that I could identify very precisely defined geometrical features -- actually fifteen of them -- which in combination are always present, in some degree, whenever these particles of life appear.

This brought me, inevitably, and unavoidably, to the issue of value -- and very thorny indeed it is. The defect of current mechanist thinking, is that it does not contain an idea of value. That has always been thought a positive feature of mechanist pictures -- but it is actually a serious defect, because it leaves architecture as a riderless horse.

- But the difficulty is more profound than that. The structure of wholeness is of such a nature that its components are wholes which are rank-ordered by the degree of coherence and life they have. Thus, the structure of a living system, cannot even be put on the map, without a concept of livingness or life on the subsystems; and the whole is then the structure formed by the most salient and most living pieces.
- Thus, this kind of thing flies in the face of a non-value-based theory. To go in that direction, and to do it because the momentum of the needed ideas led inexorably in that direction. So I took it because I had to. But that was a huge leap, and yet here, even at the outset of the intellectual journey to build up a coherent picture of architecture, it was necessary to admit to the existing of living wholes, degrees of life among the smaller wholes, and the idea that the wholeness itself was built of just those sets which had the higher degrees of living structure.

For a respectable scientist, brought up in the school of empiricism and concrete attention to discernible structure, this was beginning to be very uncomfortable. But I took the step, because I had to.

- Further, the more I paid attention to this structure, I realized that there was a tremendous difficulty in the prospect of creating living structure as I had defined it; namely, that it cannot be created by assembly (from a kit of parts, say), but that it can only be achieved by unfolding – an entirely different procedure in which the structure of a new whole is produced by differentiation from a previously existing whole, and successive steps of differentiation gradually give rise to a wholeness within the wholeness of an existing order.

- This presented huge challenges – since we do not currently think of the creation of towns or buildings as a differentiating process, but as an assembly process, involving assembly of pre-established prefabricated components – a typical mid-20<sup>th</sup>-century concept, very consistent with mechanist ideas of physics and building, but utterly inconsistent with the emergent picture now developing – and not adequate, in practical terms, of producing living structure.

- The prospect of a new theory, which would also call into being very new processes of implementation as part and parcel of itself, was frightening, and not something to take on lightly.

One of the additional difficulties that the theory faces, is that the structures it describes are not altogether easy to describe, because they are so complex.

- In a small area of say a few hundred yards, where there might be houses, buildings streets, etc, there are enormous number of parts – and, in terms of the wholeness, there are enormous numbers of potentially living centers. In a few hundred yards there might be 100 billion centers. To describe that structure accurately, we need to see these structures, keep tabs on them, so which ones have more wholeness and which have less. This is a hug bookkeeping problem, so we are talking about a structure which is objectively present, but nevertheless very hard to get one hands on in a perceivable way.

- Yet it is precisely the tabulation of all these centers, and their degrees of life, which gives rise to more, or less life, in the landscape as a whole.

Now for another problem. The idea of wholeness can be achieved by counting sets, in space, and by emphasizing, those sets which have more life. This is a non-evaluative theory, just a bit of book-keeping, which keeps track of the most salient, most living centers.

- Sometimes there are thousands or millions of them. Thus, having to keep track of some many, stretches the ability to conceive, and calculate. However, it is not too far away. New generations of computers make it possible; and they enlarge our vision of the interaction of all these centers cooperating, and modifying each other.
- Luckily, some progress could be made in actually counting these structures and demonstrating that their greater or lesser degrees of life, do indeed come from the aggregation, and the number, of the smaller systems, or smaller component centers, which themselves have high degrees of life.
- This idea – straightforward in principle – requires formidable feats of counting. But, luckily, once again, we have been able to show that this counting works. When we look at different examples, we find that the ones which have most life, are indeed the ones which have the largest numbers of and the densest packing of living centers within them.
- Here was empirical verification just when we needed it.



About this time, two kinds of things happened, and made it possible to go further.

- First a long series of practical building experiments, in which I built places, and buildings, all over the world, by means of this differentiation approach. This too hard work, because the processes had to be invented, and were often at odds with prevailing processes. But I persisted, and produced many beautiful results – but only because I used methods, procedures which were unknown or not accepted by conventional architects, builders and developers.

- Secondly, a growing awareness among people in the world, that something entirely different could be felt in these buildings, something that went deeper to their hearts, and to the problem of supporting the inner life and reality of people than they were used to. This was borne out in case after case.

We now had empirical verification from three sources.

- I. Experiments of procedure, which produced a new kind of depth of quality.
- II. Peoples appraisals of the result, which were extraordinarily positive and represented in their eyes, a new departure in level of attainment in architecture.
- III. Counting processes, where we could establish that the number and density of living centers – supported, or back up by density of the

appearance of the fifteen properties, also correlated strongly with the appearance of life in the resulting buildings and artifacts.

- IV. Finally, a growing rootedness in the process where people (clients, users etc) take part in the ongoing decisions about small details – and find themselves able to make them, with a feeling of certainty, so that the task of making the more harmonious detail – size of step, position of window in a wall, width and height of window) gradually becomes established as a real thing, with empirical reality, which almost anyone can participate in on an equal footing.

That was a tremendous step.

Next, I went into a phase of work, where the interaction with the real world of architecture and planning took center stage.

- The ability of this kind of thinking to influence real-world processes was very impressive. That gave further foundation to it, although it also gave pause, because – in some cases – the changes needed in society seemed awe-inspiring in their magnitude, occasionally unattainable.

But most of all, what transpired in the latter phases of the work, went to the depth of people's own inner life, self, soul, well-being and individual and social health. These concepts -- especially those more laden with "spirit" are uncomfortable for a hard-boiled empiricist.

I began to realize a further layer of the unthinkable things which had begun to appear, gradually, in the evolution of my empiricist and scientific thought:

- First, that the core of the issue, the core of the architectural issue, was the extent to which people's inner feelings and desires – their reality -- could interact with buildings. This topic ignored, and rendered almost horrible in the disdain and supercilious know it all of contemporary architects, was vital and quite horrible. The simple proposition that all this has to do with the extent that people feel rooted in the world, was paramount.

- Second, that a well place, a healing environment, a house, or a room, or a village, or a major urban street, are valuable, only to the extent that this environment is made of living centers which resemble, and remind us of the person's own self. Thus in a healthy structure, we have a structure (In a city street, say, or in a window sill) which is like the hundred million buddhas or angels, all crowding into space. This not used as a metaphor, but as a nearly literal description of the condition in space when the density and packing of living centers in a structure is profound. This was startling, and a revelation.

- Of course, this last was particularly difficult to take. As a scientist I had to wonder whether such a concept was really “decent” given prevailing forms of concepts, and empirical ideas. I wondered too, whether on

hearing this connection made, people would turn away and say “this is really too much, it must be nonsense).

- Possibly. But also, it is possible, and I believe likely, that this kind of picture is closer to the truth than the truths we have relied upon in the last 100 years.

- As I began to contemplate the coincidence of the living center, its objective geometric structure, and the presence of a resemblance to the human soul, or of the “I” shared by all human beings, began to suggest a connection between all of us: a substratum or plenum, in which people are united in their similarity (80% of the structure), and in which their belonging to the world, the nearly unattainable goal, depends on the degree to which people are able to create stuff which does resemble them, and which does contain or reflect the I.

What do we have then, in sum and substance.

- We have, for the first time, an empirically grounded theory, which explains facts about architecture, not thought or accepted before. That is substantial, and a profound achievement.

- But it comes at a price. In making the series of steps, linking experiment, and action, and abstract theory, one has been led, slowly, to a view of the world – a view of

the material universe, which is more deeply than before, founded on a connection between the self, and the realm of geometry and matter.

- The split, lamented by Whitehead, the bifurcation of nature, disappears, and we have a common sense view, which works, and which solves problems not previously solved, but it opens the door to a concept in which the realm of matter and geometry, is closely connected to the individual self each one of us experiences.
- This has the potential to create a new architecture, far kinder in substance, than the architecture of the last one hundred years. But it also has the potential to show us, and make us know, feel, and experience, a vision of the world in which we are connected continuously, to the fabric of the living structure, and its capacity to yield living structure from careful adaptation, and injection of deep structures which have been identified.
- It is a world which is alive. So, the path has led from a rather timid and small scale effort to get a few details right, in buildings, and as followed through to its completion, has led to a view of the universe which is no longer based on the idea of abstract, impersonal whirling atoms, but on a connection with the substance of the world, that gives birth, and can be seen to give birth, to whirling living centers in which we find ourselves, and to which – in the last analysis we are connected.

That is a profound task of healing, which might be undertaken, throughout the soul of man, by paying proper attention to the unfolding of these ideas, and their simple, but substantial, empirical reality.