THE STRUCTURE OF THE STRUCTURE

Establishing the order of space

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Alberto Campo Baeza

THE STRUCTURE OF THE STRUCTURE

Establishing the order of space

Gravity is one of the central themes of Architecture. The g, the 9'8 that Isaac Newton studied so hard, that force impossible to avoid is one of the key issues of Architecture.

I have repeated many times, in writing and orally, that GRAVITY and LIGHT are, with the generating IDEA, central themes of Architecture. The IDEA whose materialization gives us ARCHITECTURE, the GRAVITY that builds SPACE and the LIGHT that builds TIME.

When I say that GRAVITY builds SPACE, I am talking about STRUCTURE, the so-called load-bearing structure. Of the structure that throughout history has generated architectural SPACE. Almost always the form of architecture has been, logically, linked to the supporting structure. In fact, structure and form and space have always been the same thing.

And in the same way that most of the buildings that constitute the History of Ancient Architecture are built with load-bearing walls where the bearing, the supporting of the forming, of the shaping (the same material that supported conformed) is indescribable, in modern Architecture, because of the steel capable of concentrating the loads, the punctual structures, the skeletons, are also clearly the base and root of the space: they already shape the space, they announce it, they "structure" it.

And so I never tire of repeating that the STRUCTURE, the supporting structure, more than just transmitting the loads of the building to the earth because of the inescapable gravity, what it really transmits is the order of space, it ESTABLISHES THE ORDER OF SPACE, it builds space. The structure not only SUPPORTS, not only HOLDS, but well resolved, tuned, is waiting to be crossed by LIGHT and AIR to, like a good musical instrument SOUND, and sound well.

And so the freedom of the architect who, forgetting the structure, conceives only forms to which, once defined, he adds or orders the addition of a structure capable of supporting them, will be false.

THE STRUCTURE ESTABLISHES THE ORDER OF SPACE

When I was a student of Architecture, we confused Structures with only the calculation of those Structures. And so perhaps we did not come to understand their central role in Architecture, because we did not understand well, or it was not well explained to us that those structures not only transmitted the loads but also, most importantly, established the order of space.

And this order of space is from the first moment in the genesis of any project. Like the skeleton in the human body. I remember how Alejandro de la Sota, the teacher, explained this to us in those initiatory classes: "Can you imagine that when a child was

born, its mother would exclaim: "You have forgotten the skeleton! And would you have to cut open the baby to introduce the bony skeleton? ". With those very clear examples Sota was trying to convince us that both the Structure and the Facilities had to be part of the Project Idea from the very beginning. What we called the unity of the project. The structure, the load-bearing structure, was therefore not only the transmitter of the gravity loads but, above all, the generator of the order of the Architecture.

And so, when the Idea is generated, whose necessary materialization will give us the Architecture, the supporting structure, the way it is going to be sustained, must be clear from the very first moment.

THE STRUCTURE OF THE STRUCTURE

If the Structure is necessary to support the new building, I would like to propose here how, in order to support the Architecture, the Structure of the Structure is necessary, indispensable.

To support the construction, the structure is necessary.

To support the Architecture, the Structure of the Structure is necessary.

The establishment of the order of Space is more than just carrying, bearing the burdens of Gravity. It is to put everything in order.

To my students, so that they understand it well, I tell them that if Hally Berry is well, she is very well, it is because she has a very good skeleton. She has very well established the order of her body space.

OF THE CAVE AND THE HUT

When, at the beginning of the History of Humanity and Architecture, Adam, expelled from Paradise, needed to find shelter for himself and Eve, he had two possibilities: to take refuge in the cave with the animals or, later, to create a hut with his own hands. The first anchored him to a place. The second allowed her greater mobility and, therefore, greater freedom. Gotfried Semper called the architecture of the Cave Stereotomic and that of the Hut Tectonic. And then Kenneth Frampton continued to develop those clear theories that, to me, came from the hand of Jesús Aparicio when he studied with Frampton at Columbia.

Adam would soon find the CAVE where he could protect himself from the inclemency of the weather, from the cold and the rain and the snow, and also from the attacks of wild animals. There he would level the "ground" to get that "basic horizontal plane" where he could rest and sleep. Then he would make something similar to a "door" to be able to close that shelter. We can imagine that, in the beginning, that door would be a big stone that was rolled as some biblical stories tell us when talking about burials.

Later, man would build that movable door with the wood from the trees. And the same for his "seat". First perhaps in stone and later with wood. And then, the fire with which he could warm himself and make edible those animals he hunted or those fruits and vegetables he discovered. And then, the "table", a plane at the precise height to be able to develop other diverse functions.

And so we could continue collecting basic, key words such as: floor, door, seat, table, bed, fire, ceiling, which are related to the house, to living in that cave, in that "STEREOTHOMIC architecture". And he would certainly dig holes inside the cave to create living spaces. The architect was beginning to emerge. And the structure? The structure was given. Everything worked under compression in a continuous stony organism. The conquest of architectural space, STEREOTOMIC, was to excavate, to SUSTRAY. And one day a ray of sunlight would filter through a crack and LIGHT, solid and radiant, would appear. And our primitive man would enlarge the crack to have more LIGHT and would create the window, also capable of making possible the controlled vision of the outside.

After these first steps, and when the weather was mild, our man would spend most of his time outdoors. And we can with our imagination think that in his head the idea of changing places, as the flying animals did, would cross his mind. And the image of the CABANA immediately comes to mind.

And we can imagine that first primitive construction made with trunks and with branches joined with an elementary system that we now call of knots and articulations. And we imagine it more conical than cubic. And before covered with branches than with planks. As Abbé Laugier imagined it and drew it before us with some accurate reflections on the subject that concerns us. A CABANA, alas the human being! very close in the most essential part to those of our good friend Glenn Murcutt.

Structurally diverse architectures: continuous, working basically in compression, the STEREOTOMIC architecture of the CAVE, and discontinuous, articulated, working in bending, the TECTONIC architecture of the CABAÑA. Two models of structural order that will later give rise to strong spatial derivations.

The stereotomic space will seek to open and will use SUSTRACTION as a mechanism in the same way that the tectonic space will seek to close and will use ADDITION as a mechanism.

We will stick in this text to this first approach from only the structure to these substantial concepts of the stereotomic and the tectonic. We promise to return to the subject.

COLUMNAR SPACES AND UNCOLUMNAR SPACES

As in music there are stringed instruments and wind instruments, so in Architecture there are columned spaces and uncolumnar spaces, without columns.

Due to the resistance of the materials and the dimensions, columns have been necessary to cover spaces of larger dimensions. Hypostyle systems are simply the most logical mechanism for achieving continuous covered spaces of large floor plan dimensions. And when it has been necessary to bring light into these spaces, the upper plane has been perforated. And when the light has touched that structure, the effect has been marvelous. Like when the strings of a guitar are tempered by the hand of man. Music is born. So is the columned space. Well columned and well tempered by light can move us, and not only solve functional problems. The mosque of Cordoba is a paradigmatic example of this type of space, including the irregularities of its plot. Or the perfect columned hall of the Palace of Persepolis. Or in contemporary architecture, the Barcelona Pavilion by Mies Van der Rohe where the columns, on a perfect equidistant geometric grid, hypostyle, and with a cruciform section and a shiny material, conjugate a perfect solution. Mies knows so well the effectiveness of the hypostyle system that even in the freest project ever conceived by him, the Glasskycraper of 1926, includes an equidistant structure to support its undulating forms.

We could talk at length about column-free spaces. Suffice it to mention the Pantheon in Rome or the IIT by Mies as examples of diaphanous spaces, without columns, that proclaim the beauty of stripped architecture, only tensioned by light, sublime music through wind instruments.

COLUMNS OUT, COLUMNS IN, COLUMNS BETWEEN.

And this, which might seem obvious, is of enormous interest. Whether the structure goes on the outside, whether the structure goes on the inside and seen, or whether the structure is at the limit, at the edge.

Mies works in the Farnsworth House with the structure on the outside. In the Barcelona Pavilion with the structure on the inside, seen. And such is his interest in making the columns disappear, in lightening the space, that he makes them cruciform and finishes them in shiny chrome so that by the grace of the mirror effect, they disappear. He does with light what the Greeks did with shadow, by grooving the surface of the Doric columns. And in many other works with the structure at the limit.

I did the Casa De Blas in Madrid with the structure at the limit, with the glass skin all inside, and also the Casa Rufo in Toledo. In the Olnick Spanu House in New York and in the Bit Center in Mallorca with the structure tucked inside and with the little wink of putting the glass behind and in front of the structure, as appropriate, to further accentuate the transparency. And in the Casa Moliner in Zaragoza glass and structure form the same boundary plane.

This question of the location of the structure and the materiality of the columns is not trivial, in order to refine the type of space for the architect.

THE MEMORY OF HISTORY

And I will dare to go further. In the same way that Gravity makes it impossible for us to forget that matter transmits its charges to the earth, Memory makes it impossible for us to forget that Architecture is indissolubly linked to History.

And in the same way that I speak of the Structure of the Structure, essential to be able to control the space well, I would like to see in the Memory of History that essential link with the History of Architecture when architects are conceiving the "new architecture". The connection with History, like the connection with Gravity, is not only not a hindrance but, on the contrary, a guarantee of continuity. To leap headlong into the void. That architecture can never, ever, cease to be a rational creation, a creation of man.