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Paper : **FROM PHYSICAL AND MENTAL OPERATIONS TO GENERATIVE PROCESSES**

Topic: Architecture

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References:

Abstract:

Architecture deals with matter, and, from the first attempts to make shelters to the most sophisticated techniques of our time, a number of physical operations and transformations are carried out in order to transform materials into forms able to accommodate human life.

Progressively, architecture has become a more intellectual activity implying mental, or conceptual, operations, in great part because the scale of buildings implied drawing a project before it was built. Without ignoring the necessities of construction, those operations and transformations have acquired their autonomy, have sometimes become a game, or an art, for itself.

These physical and mental operations resort mainly to topology and geometry, or one could say that they contributed to develop those sciences that constitute our essential knowledge on space and forms.

Generative processes differ from the other ways man has had to fabricate and even conceive forms : they work generally in the digital world (even if the forms obtained may be built), which differs from the physical world, and they function more like the ways nature itself makes forms (growth, recursivity, etc.). But generative processes that tend to generate forms use, as traditional ways man has had to make forms, topological and geometrical operations/transformations ; some processes (IFS) even allow us to define a form *only* by a set of geometrical transformations, which are iterated. That must lead us to question our understanding of space and forms.

This paper focuses on some topographical and geometrical operations, and their physical and conceptual manifestations in the history of architecture and more generally of man-made forms. It discusses their use in generative processes, illustrated through works by the author.

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