1. The scene: the city as a four-dimensional labyrinth of the individual experience

The city is an ecological system of autopoietic nature, generated by interaction involving individuals, the environment and social organization.

The construction of this system involves characters relating to social organization, with the same time the physical configuration of the cities (layout of the buildings, structures of the net of streets) promotes some organizational dynamic, potentializing to social life. In the relationship existing between the constructed component, the environment, and social organization lie the generative principles of urban dynamics in those conditions in which the stochastic processes of the street importance.

The structure of the physical elements -buildings, blocks of a city makes up a tridimensional system, very close to equilibrium, that interacts with the environment in which it maintains a series of ties (s). Therefore, its adaptive capacity, in those cases, but its configuration exerts a great influence on movement, by the configuration and its construction, economic activities and services, and it is the social use of space by marked differences, gives the net of streets a geometrical and topological structure.

The nodes and the spatial interactions of the individuals

The diversity for the whole city (H1) is of 1,054 km²/node, which may be divided as quite normal, but very low with regard to complex natural systems.

That is the function that relates the order of the nodes with its frequency.

On the map we may observe the local variations of diversity exist, that is to say, the values of diversity depend on the extension of the sample area. Therefore, the complexity of a system is represented by a more complete form when it is calculated for spaces of variable dimensions that form a specific function. These indices lead us, in fact, in the way in which the complexity is generated by the network of streets, from two extreme, nonexistent, situations.

If CN is the measure of the complexity and H the frequency, then:

\[ CN = H \times (1 - p) \]

where:
\[ 0 < p < 1 \]

is the probability of occurrence of an event.

The result is increased in Manhattan.

2. The actors: the measure of the complexity and the quantity of information

The extraordinary complexity of the distribution of the streets, buildings and other physical elements of the city, although it may seem at times chaotic (and even irrational), always submits some organizational qualitative, with great difficulty, as reflected in the conceptual phase of the cities.

The "schematic model" of a city and the measures describing it, express, both, the order and urban structure. The properties of the "schematic model" allow us to relate the generative and functional properties of the constructed space with certain features of the socioeconomic organization.

Our hypothesis also maintains that the measure of the geometric complexity is an indicator of the organizational amplitude of the built space and, therefore, it is very useful when interpreting interaction among the fluid, or quasi-fluid parts: streets, buildings and the social and economic activity of people.

Spatial complexity is linked to the presence of events and its sequence along a given path. Among the possible events selected I have selected the nodes, because they are localizations which carry a wide range of information; besides, they are in relation to spatial microenvironments of the individuals; they have therefore, the added value of contributing to the formation of mental images of the city.

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3. The characters and their function: the vertical and horizontal distribution of the complexity

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4. The play: "space syntax" and information at work

The models make up the "space systems" and the measures of the content of information expose part of the relationship between the structure of the physical space and the daily activity of people in the city: the two categories contain aspects of the organizational line defined by socioeconomic activities and the organization of the built space.

Different theories have been advanced in order to explain this association. The ones that appeal to a single line and simple cause do not provide satisfactory results. In the presence of such a complex phenomenon, the most appropriate theories are those that try with the complexity and the self-organization, that is to say, a system of movements that requires itself around poles or structures. The myriad of movements generated in the city is ordered and divided by means of traps of action, restrictions/compensatory, randomistic/miesen, with spontaneity and the also always playing as an organizational line that is clearly defined in the city.

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