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FRACTAL HOUSE AND HERITAGE**Abstract:**

Twentieth century was a failure in matter of architecture and urban design in Algeria and particularly in Algiers, the capital. “Modernist” principles were experienced by French colonizers everywhere. Unfortunately, they are revealing many problems caused by disconnection, simplification, reduction and lack of complexity. Sprawled urban territory has made neighbourhoods non liveable spaces: quality of life disappeared completely. Now very serious social problems are emerging and development cannot take place.

Scientists are changing their ways of thinking and many new methods are being tested. All fields are working as teams and trying to share new ideas about managing cities and use sustainable development principles.

In our thesis, while observing heritage architecture (a restored eighteenth century house), we found out that it was designed with a strong analogy to laws of nature and cosmology. Magic square, peer and odd numbers, golden number, golden proportions, connections to cosmos and relation to human body structure characterize this architecture. Body and spirit, it is actually alive and durable. Three century old, it is still comfortable. Spaces are in right measure, optimizing and allow many different uses over time. Mathematical beauty and fractal geometry could be demonstrated. Symmetry of scale, iterations, high level of complexity and harmony between parts (holistic method) appear through observation. Finding the whole in a part (the city in the house) is not a common thing today. This house is typical and unique: it **belongs** to this particular city. Like a living cell or a galaxy, it looks like a sponge, a lung or a bone. It is part of universe; it is understandable through new sciences that are emerging in this starting century.

While talking about natural organisms, we found out that columns in the heart of the house have screwed forms. They recall DNA molecule. Rooms around centre have a spiral arrangement. Tiles also show spiral forms, etc. We find also numbers of Fibonacci (serie) that are present in many flowers or fruits and DNA. Our house is mathematically definitely alive and sustainable.

Keywords:

Complexity, fractals, belonging, geometry, sustainability, heritage, emergence.