Re-morphing the Amorphous. Creating New Urban Substance

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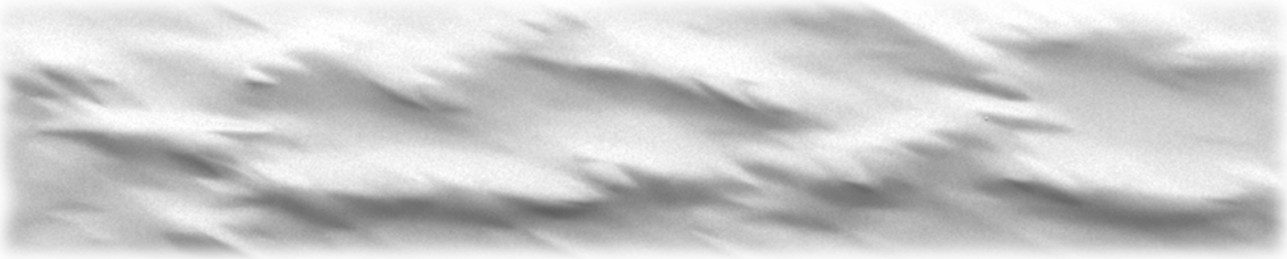

Stelios Passos, Emerging Urban Matter, in ArchitectScripta *Workshop Precise Inaccuracies*, Athens, 2016

Introduction

Design is viewed as a dynamic process whereby "amorphous" situations of the urban context are processed towards some kind of "re-morphing." Metaphors from geology and biology are borrowed as an asset of references, concepts, ideas, modes of organisation, tools and techniques, aiding to develop strategies and propositions that are meaningful in architecture and the urban environment.

From amorphous to re-morphing

Amorphous, meaning without form or shape, describes latent systems related to inertness due to high entropy, even to decay and death. In geology, amorphous refers to non-crystalline elements (solids or liquids) that lack the long-range order characteristic of crystalline structures, due to the fact that atoms and molecules are not organised in definite lattice patterns. Amorphous may describe sediments, residues, magma, or pulp of high viscosity and dormant matter, being the result of destructive processes such as deterioration, oxidation, erosion, sedimentation, solubility, dissolution, dissipation, decomposition and disintegration. From a chemical point, it also refers to materials such as glass, gel and plastic also due to the lack of crystals in their molecular structure. In biology, amorphous may be used to describe irregular, vague, anomalous, or undefined shapes and structures, also ones without purpose.

Through re-morphing, amorphous may turn to re-crystallisation, new substances and new species. Related natural phenomena include diagenesis, metamorphism and other geo/biogenetic operations such as dislocation, lithification, dolomitisation, liquefaction, porosity, alteration, transformation and mutation. Re-morphing reduces a system's entropy. It may refer to mechanical (macroscopic, extensive traits) and chemical (micro/nanoscopic, molecular, intensive properties, DNA) processes enacted by forces, temperatures, pressures and environmental constraints, leading to the genesis of new order, materials and properties alike. Data inputs and external factors act as dynamic agents affecting consistency, inner code, structure and form towards more active behaviour, interaction with the surroundings and overall resilience.

In analogy, re-morphing in the urban and architectural context talks about the activation of processes of form-finding towards new structures, organisations and meaning, as a result of new interactions with the environment at macro (urban, permanent, long-term) and micro/nano (local, architectural, ephemeral) scale.

The purpose is to introduce scientific-driven forms of analysis leading to synthesis, along with rigorous toolsets into architectural practice and discourse as ways to simulate, express and study the various agents influencing design; also, to propose the integration of dynamic tools studying behaviour, interaction and performance especially in the initial phases of design; to expand the architectural vocabulary with notions and concepts of scientific origin being applicable across various scales of the physical space, also with regards to its dynamic character; to explain the urban phenomenon as one being highly sophisticated, constantly informed by inputs and energy exchanges among the participating agents of the greater context.

Natural sciences informing geo/bio-systemic thinking in architecture

In architecture, as in natural sciences, advanced modes of study such as computation, parametrics and simulation dynamics are often appointed to understand the influences, the performances and the behaviours of various agents with regards to the landscape, the ecosystem, the energy resources, the geo-political site and the socio-cultural dimensions of physical space seen as a system. The subject of focus is identified and is analysed to its constituents; these are recorded and reduced to data, in order to calculate and to address the actual complexities about any phenomenon as a result of mutual compromises and load-sharing. The proposed models and formulas may offer alternative pathways to examine intricate spatial conditions and to better integrate them with the existing fabric, effectively carried out onto architecture's substance with regards to order, structure, body and skin. New architectural and urban themes of scientific reference may be generated as ways of dealing with the natural and the urban milieu, altering the code consistency of the human-made environment, offering novel solutions to problems of no prior reference.

Design research process and assessment items

Assessment 1. First, a theme of natural origin will be chosen. It may be of any scale, as it has to carry amorphous' main characteristics. Through analysis and model testing (analogue and digital), the selected theme will be broken down to its parts and the rules setting the relations between them. Such a process often refers to reverse engineering, whereby a fixed entity is reduced to its parts through data gathering and series of abstractions. A **Design Research Hypothesis** is weaved by stating the generative strategies in response to the entity's potential for reorganisation. This assessment is individual.

Assessment 2. The above theme will be related to amorphous-like situations of the urban fabric. Sites at a latent state will be chosen, by also showing their potential to address issues and findings such as those raised before. An argument at a **Schematic Design** level is crafted in response to Design Research Hypothesis and also the site. The design problem is described by a set of agents being potentially active, interacting with generic formations to produce alternative schemes via form-finding. These agents refer to activities, site conditions (urban and natural alike), proximities and any other element acting as generative forces to re-morph the amorphous. Processes and techniques push the study towards ideas of architectural significance. This assessment is individual; however, collaborations are reinforced as small groups working on a similar topic in preparing for the final phase.

Assessment 3. Re-morphing will be further studied and applied to the selected sites, aiming to define and refine new architectural traits, also living conditions, activities and their relationships. **Design Development** leads to a proposal as a form of re-crystallisation, produced by progressing selected schemes through their interaction with the agents via recursive testing at larger scale. The design agenda shows evidence of research methodology consisting of a hypothesis, argumentation and strategies of resolution. The project should demonstrate a clear view of its focal points and the ways these have led to design solutions. The proposal is also supported by a prototype model of the general logic fabricated in large size. The students will work in groups of maximum four, with reference to the themes pursued earlier.

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