Nucleus; romantic scientific novel about architecture in a dystopian urban future.

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The intention of this architectural work was to react on climatic changes and, along with this, environmental changes on our planet.

The scenario is set in a dystopian future where resources get short and cities begin to decay. The “Nucleus Project” should be seen as a new starting point to vanquish climatic and resource crisis. The aim is to create architecture that is able to develop itself in various surroundings with varying environmental influences.

To obtain this Nucleus adheres close to nature, its base code is leant on a chemical reaction which is transformed into digital, driven by parameters of the „host environment“. The fractal appearance tries to simulate the natural behavior of cells, membranes and their growing properties.

The architectural process itself starts with gathering information about the site. Since Nucleus could be placed everywhere on this planet, grabbing information is vital. With this information about specific parameters of the site [e.g. density, headroom, pollution, still existing infrastructure] Nucleus is able to develop itself in decent directions. This development process is leant on state of the art mechanical and biomechanical apparatuses which are specifically designed for this intend.

Nucleus literally acts as a single „cell“ which could be placed in e.g. a decaying building. From the time of the placement the building [and site] acts as a host for the growing Nucleus. A multi-axis drone inside Nucleus is liable for the [bio]mechanical development process via printing units. Feeding this system is inalienable, so the Nucleus nutrition system gathers nourishment from its surroundings. It is connected to its site by a vein like pipe system, driven by mechanical cutterheads. This ducted system feeds Nucleus by chemically dissolving construction material and moving it towards the cell.

To react at a fast changing environment this architectural sequence is able to change its appearance during a lifetime cycle. By the provided information of its surrounding, Nucleus is able to react similar to a Taxis in nature.

E.g. if the lighting situation is changing radical during the development process the growing Nucleus is able to change its faces, openings in the faces and alignment of the extrusion to the light source. This is provided by steady lightning analysis during the recursive growing process.

The created architectural environment is stable in all conceivable surreal, hostile, contaminated, earthquake prone or desert alike peripheries. Its created space gives human kind host and shelter. The fractal design of the outside reflects to the inside of the object and offers a vast amount of layouts for all different needs of human residence. Because of the ongoing development and growing process human needs could be easily implemented into the architectural program of a object.

Architecture designed around life.
The nucleus needs a solid support structure to develop itself. The infrastructural bonds which is gathered around the nucleus connects it to the surrounding buildings and infrastructure to support the chemical process with nourishment. The more existing connections available, the more robust the building gets for the nucleus.

With each sequence the biotechnical nucleus is developing itself on base of the (chemical) space and on base of the nourishment it gets from its surrounding and it gathers from its environment.

When processing through the chemical and mechanical sequences the nucleus tries to develop its host building to drive its developing sequence.

This process occurs along with a spreading network system between the nucleus and its real environment. The growing process is very mobile and affects every building which fits in the preceding analysis.
The biomechanical organism could be told as a digital tool. The nucleus responds to external stimuli from the outside and feeds to arrange itself in relation to the stimuli.

Starting with the first iteration of its development process, the nucleus further manipulates its environment; it is set in motion with the parameters for the NADs contained in the development of its structure. The development hinges on the possibility of changing the nuclear unit with information from the outside and the outcomes of the growing process. The loop could be told as a closed loop because every change in information causes a change in the growing process.

This behavior allows the biomechanical organism to spread in a vast amount of environments and ensure a life-friendly habitat in every surrounding condition.
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