

## The Workings of Complexity within the Architectural Discipline

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Ideas of fluidity, pliancy, process, indeterminacy and change in real time are prevalent terms describing recent works in architecture, in particular works of non standard architecture. Either directly or tangentially, these terms relate to ideas within the theory of complexity. Even though aspects of complexity theory are latent in recent architectural works, currently, except for firms such as ONL Office, explicit reference in architectural text is scarce. Positioning initial explorations within architectural theory assists in revealing the potential complexity provides for framing future critical work within the architectural discipline while also acknowledging the potential for architectural investigations to be reterritorialized by scientific and other disciplines for further refinement of the theories. This paper critically and openly investigates the potential and implications of integrating ideas of complexity theory, with an emphasis on the micro scale of the individual architectural work, within the architectural discipline.

For example, a creation that is formed from a structured pattern which is predictable to a degree, could be an alternate process of form creation, emphasizing process and not the form itself, furthering explorations of influence through indeterminacy and limited control rather than determinacy and absolute control. Complexity also offers the idea of form being open dynamically to its environment which could provide an alternative to the prevalent exact delimitation of most architectural works, and thus potentially influence a different human negotiation between the built and the non-built. The idea of a structure of creation which could then be related to ideas of structure in other disciplines inspiring architectural form, for instance that of linguistics, could further architectural investigation begun by Eisenman Architects in the twentieth century. Ideas of a network which is connective while simultaneously being disconnective might allow for new explorations into the ideas of boundary, territory, otherness and the in-between. An additional area of interest being revealed through complexity is the physical nature of memory, memory functioning through nodes which are differentially weighted and could potentially be integrated into an enhanced architectural experience. Architecture's relationship with entropy could also be provided with a foundation for critical evaluation.

An alternative strategy of connection through the experience of architectural works could be explored in the familiarity produced through a similarity of design process. For instance, if architectural space were 'designed' with the same 'design' process as the un-built, the space might seem connected to the occupant on an inherent level. A space designed with a process similar to that which created the inhabitant and that which created the 'un-built' environment in which the work is situated, might seem on some level connective. If this were the case, architecture would potentially negotiate a seamless connection between body and environment thus challenging traditional ideas of the in-between. An architectural project of complexity, might be physically able to occupy an idea of the in-between, blurring territories and potentially eliminating ideas such as the in-between.

Alberto Pérez-Gómez in "Chora as Architectural Meaning: The Space In-Between and its Disappearance in Instrumental Representation", introduces Plato's ideas of chora, a "third distinct form" which is "the nurse of all becoming and change." Plato's description of chora is very intriguing through the context of complexity, as it seems to be an exact description of complexity. Pérez-Gómez, places chora as meaning in architecture. He concludes with addressing its aspect of impenetrability and asserts that this aspect should be preserved. If through complexity,

architecture physically could occupy an in-between, the impenetrability erodes but also potentially exposes an unrecognized limitation, maybe a dependence in some way on the idea of the in-between.

The most significant difference between many algorithmic explorations and that of complexity is the notion of the open system. Two recent architectural examples are Diller + Scofidio's Blur Building, as a latent exploration into this aspect of complexity via the fog 'enclosure' and MUSCLE, exhibited in the recent "architectures non standard" show at the Centre Pompidou situated explicitly within explorations of complexity theory. For an understanding of the lesser known work of MUSCLE, persons 'connect' to the MUSCLE through sensors which are attached to the reference points on the construction and by input through sliders on a computer screen. Actions by participants influence the tensile Festo muscles wrapping the exterior however, the MUSCLE has been programmed to have a will of its own in addition to responding to stimulus.

There is something 'messy' about open systems and possibly is the aspect of complexity which is troubling to the architectural discipline; one reason for the scarce mention of complexity theory, while latent in the works. This 'messiness', is particularly apparent in contrast to the huge body of recent 'smooth works.' The openness of this messiness, however, could more easily engage in ideas of for instance, noise, that seems to be getting eliminated through the process of smoothness.

An additional area of investigation is the idea of limited control. Complexity offers ideas of influence rather than total control and determinacy. In architectural discourse, explorations in the erosion of control, also challenging ideas of authorship and readability, are already being experienced in works such as Lattice Archipelogs created in 2002 by SERVO in which an interaction between the observed and observer create the work. As persons interact with the piece, the lighting and therefore the atmosphere of the gallery, change in real time. This installation also collects and stores information on the interaction, which then could form the basis of a transformation of the work.

With investigating the gains, assessing the implications also needs to be developed. Complexity theory offers a scientific basis for ideas of limited control and indeterminacy, but leaves open the question as to whether this is a beneficial practice for our built environment. Limited control is arguably a more accurate reading of reality, maybe shifting in perception post 9|11, but the critical discourse as to why this is important specifically to the architectural discipline seems minimal. It is possible that current investigations of indeterminacy are so fundamentally transformative to architectural traditions, that it becomes difficult to precisely compose the questions prior to investigation. This research, however, exposes possible implications of the discipline's inspiration from the ideas generated from complexity theory.

Nevertheless, complexity theory is already influencing architectural theory rebasing potentially limiting aspects of the architectural discipline, such as legibility, fixity, strength, context, representation and presence. To fully explore the potential of complexity as a framework for future work, would include, however, engaging not only with indeterminacy but in the 'messiness' exhibited by open dynamical behaviour.

In an article written by Jacques Vink and Piet Vollaard titled 'On sustainable building: The green challenge' published in the journal *Architecture*, they contend that "the environmental issue is, irrefutably, a social issue of a scope and magnitude similar to, say that of the housing problems at the start of this century and during the post-war period. In the past, thinking about such problems served to guide and vitalize the profession...Apart from the proverbial exceptions, the

architectural community is producing disappointingly few ground-breaking concepts, strategies or typologies which might provide an answer to the ecological dilemma.” For one initial positive implication, complexity theory, revealing the structural pattern for the process of creation, could, at this point in my research, reasonably be this ‘ground-breaking’ strategy.