

DYNAMICAL SYMMETRIES: AUTOPOIETIC ARCHITECTURE (S)

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Autopoietic architectures in numerous natural dynamical systems appear to spontaneously self-organize to criticality (a self-similar fractal poised, a non-local, global process poised in an ultra-sensitive quasi-periodic region), on the edge of chaos by symmetry-breaking and energy optimizing in a manner which yields universal and nontrivial geometry's often relating to the divine proportion, golden mean or golden section - all terms for this primordial fractal.

One can conclude from several of these models, of celestial mechanics, population dynamics, complex geometry, cellular automata and number theory - that the emergent and increasing spatial complexity we see about us is the result of a temporal evolutionary process achieved as the most optimal means of generating hierarchical information architectures of matter and energy.

The geometry's which emerge are therefore fleeting spatial attractors, optimally embedded within temporal processes which we may occasionally condense into spatial form; into sediments of the universal flux.

From these perceptual spatial insights, especially considering the history of intuitions about self-similar geometry's dating from Pharonic + Hellenistic Egypt at least (in the Western hemisphere), we can then build a paradigm based on the temporal evidence that these geometry's are fleeting glimpses of nature's abhorrence of profligacy of use of energy or matter.

These geometry's express elegance, economy and emergence as universal behaviors of nature at criticality; complex matter and rich spatiality becomes the result of a broken-symmetry cascade of Spartan, temporal energy synthesis - sustainability is a non-equilibrium process.

The key to the persistence of such extended transient structures (such as the living human body, all 3-score + 10 of it), is in the fractal self-similar spatial and temporal structure of them, they are mnemonics, mimetic holograms of themselves at differing scales, conserving energy and matter resources but also becoming reflexive memory-encoders of themselves, this applies from RNA up to religion.

If architecture proper is to fabricate these archetypes truthfully then it must inform itself with them, and understand that, to paraphrase Venturi at the close of *Complexity and Contradiction*: "the nearness, but avoidance of chaos - gives force".

As a corollary, art and science both have an increasing use for geometrical visualizations, models, simulations and the conceptual: the archetypal fractal of the golden mean becomes an apt, self-similar logo(s) for both (as Da Vinci espoused through his book *Divine Proportione*), in our current search for a sustainable future for humanity and life itself on this planet.