



4th International Nanotechnology Conference & Expo

April 3-4, 2019 Philadelphia, USA

Giant T-Patterned Strings in Protein and Human Mass-Societies: Bio-Mathematical Self-Similarity from Nano to Human Scales

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This talk relates two relatively recent fields, that of the biology of behavior (Ethology) and nanoscience, many orders of magnitude and levels of organization apart. The first Nobel Prize awarded for research in Ethology was shared in 1973 in Medicine or physiology by N. Tinbergen, K. Lorenz and K. von Frisch. In 1975, E.O. Wilson's milestone book, *Sociobiology*, focusing on the social behavior of insects, the smallest organisms studied within Ethology. None were parts of any others and there was no talk yet of self-similarity, fractals or nanoscience. The present project starting in the early 1970 with a focus on interactive (social) behavior, led to the T-pattern type, a flexible hierarchical self-similar pseudo-fractal 1-D pattern type recurring with significant translational symmetry. Special algorithms have since allowed abundant detection of interaction T-patterns in humans and animals as well as in brain cell networks (rat olfactory bulb). Similar spatial 1-D patterns were then discovered on DNA. A "T-string" contains T-patterns exemplified by the "T-stringomes", genomes vs. texts, the giant durable physical objects essential for the mass-societies of respectively, proteins and humans. This apparently unique T-string based self-similarity found nowhere else in nature constitutes bio-mathematical continuum from molecules to culture. The T-pattern is widespread in time and space and its functions are often essential. What is then the origin of T-patterns? At what level of physical/chemical organization do T-patterns and T-strings first appear and why? Are they possibly an illusion or special cases of more fundamental patterns?

Biography:

Magnus S. Magnusson, PhD, Research Professor, founder of the Human Behavior Laboratory, University of Iceland. Author of the T-pattern, the T-system and the corresponding detection algorithms and software THEME™ (PatternVision.com) initially focusing on real-time organization of behavior, Co-directed DNA analysis. Numerous papers, keynotes in ethology, neuroscience, mathematics, religion, proteomics, mass spectrometry, biotechnology and nanoscience. He was a Deputy Director since 1983-1988 in Museum of Mankind, Paris. Invited Professor at the University of Paris V, VIII and XIII in Psychology and Ethology. He works in formal collaboration between 32 European and American universities initiated 1995 at University of Paris V, Sorbonne, based on "Magnusson's analytical model".