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## From the RNA world to protein and human mass societies: Self similarity and giant T patterned strings as candidate organizational principles

his talk concerns spatial and temporal self-similarity across more than nine orders of magnitude, implicating a self-similar fractal-like pattern, called T-pattern, a natural or pseudo-fractal pattern, recurring with statistically significant translation symmetry. The T-pattern, the core of the T-system of structural concepts is a result of an ethological (i.e. biology of behavior) project started in the early 1970's primarily on social interaction and organization in social insects and primates including humans inspired mainly by the ethological work of Lorenz, von Frisch and Tinbergen for which they shared a Nobel Prize in Medicine or Physiology in 1973. Notably, in this context, their smallest subjects were social insects and thus no consideration of selfsimilarity. The present project has focused on developing time pattern definitions with corresponding detection algorithms resulting in the T-pattern type and the dedicated THEME software, which has allowed their abundant detection in many kinds of animal and

human behavior and interactions and later in neuronal interactions within living brains, thus showing T-patterned self-similarity of temporal interaction between and within brains. The RNA world invented its evolving external memory as the purely informational giant T-patterned DNA strings and now there is only a DNA world. Similarly, billions of years later, humans invented their evolving external memory as the purely informational T-patterned strings (T-strings) of written language that have made possible, in a biological eve-blink, the development of modern science and technology and the creation of extremely populous and complex human mass-societies, the only mass-societies among large-brained animals and recent discoveries of the nanoworld of cells and molecules. Protein and human mass-societies seem to be the only ones using such durable giant T-strings external to their citizens. Human and protein masssocieties create their specialized citizens using various sub-sections of such T-strings, not found, notably in social insect societies. Extensive temporal and spatial self-similar patterning thus seems to exist in form and function from nano to human temporal and spatial scales suggesting structural, functional and organizational principles.



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## Biography

Magnus S Magnusson, Research Professor. PhD in 1983, University of Copenhagen. He is the author of the T-pattern and the T-systeem model, initially focused on the real-time organization of behavior, that forms the basis of his corresponding dedicated pattern detection software THEMEtm. He has co-directed a two year DNA analysis project. He has published numerous papers and given invited talks and keynotes at international mathematical, neuroscience, proteomics, A.I., bioinformatics and science of religion conferences and at leading universities in Europe, USA, and Japan. Deputy Director 1983-1988, Anthropology, National Museum of Natural History, Paris. Then he has repeatedly invited temporary university Professor in psychology and ethology (biology of behavior) at the University of Paris (V, VIII & XIII). Since 1991, founder and director of the Human Behavior Laboratory, University of Iceland. He Works in formalized collaboration between now 32 European and American universities based on "Magnusson's analytical model" initiated at University René Descartes Paris V, Sorbonne, in 1995.

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