From Cell Cities to Naked Apes to String Controlled Mass-Social Humans: T-Patterns and Self-Similarity over Nine Orders of Magnitude of Time and Space

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In 1973 Konrad Lorenz, Niko Tinbergen and K. von Frisch won the Nobel Prize in Physiology or Medicine, the first for work in Ethology, the Biology of Behavior. Lorenz and Tinbergen mostly for their studies of the behavior of birds, fish and humans, and there was also much interest in the communicative behavior patterns, in their mass societies, of the tiny bees discovered by von Frisch. Development was needed of more adequate ethological computational methods and tools for the discovery of interaction patterns in humans, initially mostly in children. In 1975, E. O. Wilson's famous book *Sociobiology* turned the attention further to similarities between mass-social phenomena in humans and insects, generally the smallest creatures yet studied within the biology of behavior. But none of these creatures or their societies were parts of the others and there was no talk of self-similarity.

It was in this context that the recurrent scale independent hierarchical self-similar *T-pattern* and related structural types, together called T-system, were developed together with detection algorithms implemented in the THEME™ software (Magnusson, 1981-2017; see hbl.hi.is) resulting in abundant detection of complex repeated interaction T-patterns in animals and humans and within neuronal networks in living brains (Nicol, Second-Pichon, and Magnusson, 2015).

The nano-world was still mostly out of reach and thus the behavior of proteins within biological cells, now sometimes called "cell cities" or more logically, protein mass-societies, existing billions of years before the appearance in a biological eye-blink of the human and only large-brain mass-societies with strong analogies regarding organization and control to protein cities, aspects absent in other animal mass-societies.

Abundant T-patterning in DNA and proteins has now been realized (Magnusson, 2005, 2016, 2017) and T-pattern based self-similarities can be seen between behavior and social structures from nano to human scales that may greatly influence the view of behavior and interactions in human mass-societies and possibly lead to a nano scale biology of behavior.

Biography:

Magnus S. Magnusson, PHD, Research Professor, created the T-pattern model with detection algorithms (THEME™, PatternVision). Co-directed a two-year DNA analysis project. Numerous papers and invited talks and keynotes at conferences within ethology, mathematical sciences, neuroscience, bioinformatics, proteomics, mass spectroscopy and at leading universities in Europe, Japan and the US. Deputy Director 1983-1988 in the Museum of Mankind, National Museum of Natural History, Paris. 1988 to 1993 invited Professor at the University of Paris (V, VIII & XIII) in Psychology and Ethology (biology of behavior). Since 1991 founder and director of the Human Behavior Laboratory, University of Iceland, leading member of a formalized network of 32 universities based on "Magnusson's analytical model" initiated at the University of Paris V, Sorbonne, Paris, in 1995.

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