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## Magnus S Magnusson

*University of Iceland, Iceland*

### Detection of recurrent self-similar structured clusters in human and neuronal interactions, DNA and proteins: T-Pattern Analysis (TPA) with Theme™

The structural concepts that are the basis for the corresponding detection algorithms implemented in the especially developed Theme™ software for T-Pattern Detection and analysis (TPA) are presented and some explanations are suggested for their apparently wide applicability. The core pattern type within a set of related statistical structural types, called T-system, is the T-pattern, which may be regarded as a particular kind of recurrent statistical (pseudo) fractal objects characterized by statistically significant translation symmetry. Another T-system concept is the T-packet, which combines the T-pattern with other T-system concepts called positive and negative T-associates, making the T-packet a particular kind of sequential and non-sequential repeated structured cluster. T-Pattern Detection and analysis (TPA) with Theme™ has been successfully applied in the analysis of highly varied kinds of behavior and interactions, such as networks of brain neurons in living brains and human interactions in three-way (military) problem solving. All T-system concepts are defined on a single discrete dimension, such as discrete time or positions within molecular sequences (DNA or proteins). Attempts are being made to apply TPA with Theme™ to the search for molecular T-patterns and T-packets and encouraging results will be presented. Essential aspects of using Theme™ in molecular analysis, including data preparation and entry, the setting of search parameters and the reading of the graphical pattern presentations are described.

### Biography

Magnus S Magnusson completed his PhD in 1983 from University of Copenhagen. He is a Research Professor and creator of the T-system model and algorithms implemented in Theme™. He focuses on real-time organization of behavior, co-directed a two-year DNA analysis project and published numerous papers. He gave invited talks at numerous conferences (including AIMS, IFNA, Neurotalk, Proteomics) and Universities in Europe, USA and Japan. He is Deputy Director between 1983 and 1988, Anthropology Laboratory, Museum of Natural History, Paris. He is a repeated invited Professor at Universities of Paris (V, VIII, XII). Since 1991, he is Founder and Director of the Human Behavior Laboratory, University of Iceland. Since 1995, he focused on collaboration between 24 Universities based on "Magnusson's Analytical Model" initiated at the Sorbonne, Paris.

[msm@hi.is](mailto:msm@hi.is)

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