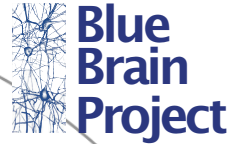




Human Brain Project



# Steps to the physics of language

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The study of complex systems seems to affirm the Thompson-Turing claim that “some physical processes are of very general occurrence.” Notably, those involving Fibonacci-based “golden” forms, ubiquitous in nature, and a number of mathematical models standard in modern physics (matrix representation of operators, with associated eigenvalues and eigenvectors expressing directional stability, models from Quantum Field Theory). This lends immediate interest to the observation that the repeated structural motif in the human syntactic system, the X-bar schema, is likewise a “golden” form (Piattelli-Palmarini and Uriagereka 2008, Medeiros 2008, Piattelli-Palmarini and Vitiello submitted) and leads us to inquire whether whatever is behind the natural ubiquity of such phenomena, in other domains, might possibly be at work in language as well. If so, some “deep” peculiar aspects of human language (recursive Merge, the Labeling Algorithm, phrase structure and the X-bar configuration) would fall under Chomsky’s (2005) “third factor”, a factor about language which is neither encoded in the particulars of our genome, nor learned from the environment, but determined by domain-general principles also found in physics and in biology, beyond the particular organism.

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