ANTI-INTUITIVE ASPECTS OF DISORDER AND HIERARCHY

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"Organized" is opposed to "amorphous". At a first glance, the objects around us may seem as forming an amorphous set and perhaps the first, fresh look of a child may capture the world as an amorphous aggregation of heterogeneous objects. "Disorder" is, in its extreme variant, understood as "maximal entropy", as "randomness" or as "chaos". Using the most recent results from combinatorics (mainly Ramsey theory), from information theory, from the study of randomness (in both the probabilistic variant, started by Emile Borel, and its algorithmic-complexity variant, started by A.N.Kolmogorov and Chaitin) and from the science of chaos (conceived as a chapter of the theory of nonlinear dynamical systems, combined with the fractal theory), we prove the validity of a Bohr-like semiotic effect (in the manner in which Niels Bohr has shown that the simple fact of observing a quantum object is disturbing it) introducing strong limits to our capacity to capture disorder phenomena.

Hierarchy, in its turn, proves to be dominated by an anti-intuitive constraint, of the type occurring in the famous Arrow's impossibility theorem and G. Paun's result on aggregation of social indicators. In contrast with disorder, which can be never total, hierarchy seems to be never avoidable. Despite the references to many mathematical facts, our presentation reduces technical considerations at minimum.