

Self-Organisation of Symbolic Information

Information can be stored or transmitted in two different ways, either in native form by physical structures or in symbolic form by coded sequences of letters, images etc. The latter form may be attributed to the existence of life; there is no life without symbolic information processing, and there is no symbolic information without life (Feistel & Ebeling, 2011). In contrast, structural information may be attributed to physical processes or structures independent of life. The self-organised emergence of symbolic information out of structural information has typical features of kinetic phase transitions of 2nd kind and is referred to as "ritualisation" transition, a term coined in behaviour biology by Konrad Lorenz and Günter Tembrock for the development of signal-activity out of use-activity, a phenomenon first studied by Julian Huxley a century ago. The origin of life, the appearance of human language or the establishment of emergent social categories such as private property or money can be described as ritualisation transitions. All these transitions have in common that arbitrary symbols are produced and recognised by information-processing devices, a "sender" and a "receiver" in the sense of Shannon, which along with actual set of symbols had replaced a non-symbolic causal chain at some point of time during an evolutionary process.

Feistel, R., Ebeling, W. (2011): *Physics of Self-Organization and Evolution*. Wiley-VCH, Weinheim

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