

DISORDER, AMBIGUITY AND SYMMETRY REDUCTION LEADING TO ORDER AS BASIC INGREDIENTS OF BEAUTY

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A map of our working brain can be obtained nowadays by amplifying tiny biomagnetic signals by the SQUIDS. This map changes suddenly its pattern e.g. when, while listening to a repeated ambiguous acoustic signal, a mental switching occurs between one percept to the other one.

We believe that the changes of the SQUID and mental patterns across the critical stage of the process of perception leading to an *auditive thinking* occur also at the critical stage of the perception process of an image leading instead to a *visual thinking*. We believe indeed that such features of the perception process are independent of the specific sensory organ (ear, eye, nose etc.) : they score the onset or the re-orientation of the thought leading to an emotion - e. g. an aesthetic emotion -.

As shown in a previous paper (1), the perception process occurring in our mind and its critical stage can be analyzed in terms of a nonequilibrium dynamic instability implying a *symmetry reduction* and, with it, the *onset of order*. In particular, *visual* perception is controlled by curiosity and attention. At the critical stage, mental order sets in as soon as *visual* thinking is formed : the interiorized image, as a whole correlated unit, merges into an archetype genetically hidden or culturally built in the depth of our consciousness and a sort of resonance occurs.

Taking advantage of a well established analogy between the equilibrium phase transformations of classical thermodynamics of isolated systems and most nonequilibrium dynamic instabilities of nonlinear thermodynamics of systems open to ongoing fluxes of energy, matter and/or information, this contribution focuses on aesthetic emotions promoted by our sensitivity and the sense of beauty. It is proposed that an image could be classified as *beautiful* if it is disordered and ambiguous enough as to present many possible interpretations or different nuances and at the same time if it is susceptible of being mentally organized or reorganized in such a way as to merge into one of the above archetypes.(2) These conditions imply that a basic ingredient of beauty is the freedom inherent in the large variety of interiorized images stimulated by a form which must be disordered enough as to be susceptible of being transformed into order by an appropriate mental action of symmetry reduction.

(1) Giuseppe Caglioti, From perception to thought. A nonequilibrium dynamic instability implying a symmetry breaking, in T. Ogawa, K. Miura, T.Masunari, D Nagy (Eds.) *Katachi U Symmetry*, SpringerVerlag, Tokyo, 1996 pp. 355-361

(2) Giuseppe Caglioti e Tatiana Tchouvileva, Alle radici dell'estetica, in *Una rotta verso il terzo millennio, L'uomo, i limiti e le speranze*, a cura di Giulio Giorrello e Elio Sindoni, Piemme, Casale Monferrato, pag 6881, 1995 (Available only in Italian)