



*For*

# Symmetry of STRUCTURE

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Abstracts

II.



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SYMMETRY AND ASYMMETRY AND SELF-ORGANIZATION IN THE WORLD  
PICTURE

In the present-day scientific world picture the problems of identity between being and thought are bound up with the analysis of applicability limits of adequate means for theoretical reproduction of the development processes.

Materials for such an analysis are obtained through scientists' associations, which display their interest in one or another method of synthesising scientific knowledge valid at a definite stage for universal usage. This might be said referring to fairly general methods such as symmetry and asymmetry or order and disorder.

In the present-day world picture is evident that symmetry is order. It is also evident that it does not exist in perfect hypothesis, only as an ideal construction. Hence, the natural assertion that the asymmetry exist as an absence of symmetry, as a deviation from symmetry. This deviation can be at random, with probabilities near to nought and this case it is nearer to disorder, but it can be characterized through repetition, through a sui-generis reproduction in different structures and then it appears as complex expression of order, of a more level order.

Thus, there is a deviation from symmetry as disorder and a deviation from symmetry as order, as a more complex order.

Obviously, as we have a go over from a theory of hard de-

terminism and absolute rationalism to a determinism and rationalism, in the same way the relation between symmetry and asymmetry became more complex, by discovering a more complex symmetry behind deviations from symmetry. This is, for example, the case of the conservation of combined parity.

The problem of symmetry and asymmetry can be related with the unity of space-time structures in which we can also unity between symmetry and asymmetry.

The symmetry as remarkable expression of structures constance conservation, of qualitative stability, or as a constance of repetition, the symmetry - as an introduction of qualitative differentiation through a lack of stability, and then through reordering and reconstruction.

There are many examples for it. It is crystallography, differences in the optic properties appear, the living systems having the capacity of an asymmetric diversification, that receive the most subtle forms in the case of the human brain and etc.

From a general philosophic point of view, it is possible to assert, that the asymmetry gives higher chances to qualitative diversification and to complexification of systems than the symmetry. That the asymmetry is not only a factor of diversification at random, but also a factor of order diversification, as a repetition of new structures stabilization.

Therefore we come to discuss the relation between symmetry and asymmetry, pointing out some characteristics of the unity between symmetry and asymmetry, in the case of the fundamental senses of the becoming entropic and neg-entropic.

The symmetry demonstrate the idea of equilibrating the Universe forces, the asymmetry - to the idea that every equilibrium can be disturbed. Much more, the created disturbance contains not only the older traces of equilibration but also the chance of a new equilibration. The disturbance appears in preponderant progressive and in preponderant involutive ones, that can alternate or coexist.

Represent in this case, the unity between symmetry and asymmetry offers an another face of the being complementarity submitted to the correlation between order and disorder, stability and variability, unity and differentiation.

In the present-day scientific world picture the asymmetry has a more important role than the symmetry.

The researches into thermodynamics of nonequilibrium processes instigated the progress in comprehension of a new paradigm, for they afforded an opportunity to consider dissipative structures (Prigogine I.R.), phase transitions in laser generation (H.Haken), autowaves processes in active media (Belousov B.P., Zhabotinsky A.M.), bistability structures of a trigger type and others as self-organizing systems with disorder into order conversion.

The adoption of the general principle of subordination was an important stage of the description of such patterns as self-organization which has no reference to any taken specific form of the motion of matter, but which manifests itself in every case whenever opportunity offers necessary combination of internal and external conditions. The above mentioned subordination principle being assumed as the basic, it is possible to eliminate a large

number of variables in complex systems and thereby to reduce the task to the solution of small number of variables, which represent the parameters of the order.

And last aspect of our abstracts.

The temporal symmetry refers to the big cycles in repetition, to the supposed eternal circuit of matter, to the succession of progressive and regressive phases, of evolution and involution. The temporal asymmetry refers to the variety in which the two big sense of universal becoming are achieved: the sense of the disorder increase and sense of order increase.

The symmetry leads to the idea of unity, stability and closing. The asymmetry - to the idea of difference, variability, opening.

Conclusion. Both the symmetry and the asymmetry are implied in the explanation of the being capacity of self-organization and also in the explanation of its capacity of self-disorganization that to pass from superior order to an inferior one, from order to disorder.