Summary

As you know is graph a formation of vertices and edges. Let we forget the historical side and facetted terms of graphs and argue instead that graph is *an explicate* or *discoverer* of structure, as such. This assertion belongs to the system theorists. Indeed, whatever to discuss over the classical definitions of structure, lead to fact that structure is a fixed association of elements and their relations (connections). Structure is an abstraction of the system, where the elements and relations be deprived at empirical meanings and are distinguishable from each other only by their 'positions' in structure.

How can be a graph to discover the structure? Firstly, a graph represents the structure. It means only the numbering of structural elements and its representation in the form of adjacency matrix or another form. Secondly, a class of isomorphic graphs represents the same structure. Thirdly, the orbits of graphs represent the positions of structural elements. Fourthly, a canonical form of a graph which is given with exactness up to isomorphism represents the structure completely.

When we talk about the structure, then we'll to the graph. And vice versa. Graph an structure have the same features, but structural aspect discover also some hidden features, such as semiotic invariants, isomorphism classes, orbit- and adjacent structures, bi-, mono-, poly- and partial symmetry, clique- and girth regularity, *n*-*m*-cliques and others.

If to compare graph theory and structure semiotics then their difference be expressed, as example, on the ground of isomorphism interpretation. Isomorphism is one-to-one correspondence of vertices with exactness up to their substitutions. On the other hand is isomorphism one-to-one correspondence of vertices and vertex pairs with exactness up to orbits and some other structural attributes.

Is the story on semiotic invariants after all a mystery? How for whom. As a 'Mystery' can it seem to theirs whom feel shy matter that *structure* not other as a common property or phenomenon of isomorphic objects, and only their. Also theirs who are sure that on the *symmetry* can be speak only as a phenomenon of reflection. 'Mystery' is it for whom who know very good that an *orbit* is an attribute of group theory and think that it cannot (or no may!) to recognize by *semiotic invariants.* For theirs who regard to right treating the isomorphism and other relationships only by pair-wise, never as *classes* or '*cliques'*. For theirs who find that *clique*- and *girth regularity* can not take seriously. Also to theirs who take the *Ulam´s Conjecture* for a 'sacred cow' that must be takes word for word. Etc.

'Mysticism' has the story but yet, but it is no connected with semiotic invariants. There exists an *arithmetical mystery* that is related with multiplication the adjacency matrices (see Multiplication Principle). I no know place the matrix multiplication elsewhere as into arithmetic, because this withdraw of course only to multiplication and addition operations. To say that the elements of a matrix product be characterize the longest paths between vertices. If so believe then stay incomprehensible what for in multiplication operations the lengths of paths changes, at times even to zero. So far was this mystery unravel, possibly stay be unmade.

But yet, unpractical is it only on the view point of marketing. Unravel the concepts of structure and symmetry, their canonical representing by semiotic invariants and equivalence classes open the way for constructing a really effective system. Reading the truths about orbit graphs can be uninteresting, but their recognition by sign matrices is it not. However we call the system of structural attributes, it belong inevitably to graph theory.