An Introduction to Systematics

Systematics is the study of systems by their forms of connectedness. It was developed by J.G. Bennett, a student of G.I. Gurdjieff and Ouspensky, over a period of 50+ years as an application of the qualitative aspect of number. He began his investigation through the natural sciences and aimed for a pragmatic and modern meaning of ancient ideas. His work included interpretation of symbols such as the . The main course of his investigation is mapped out in his four volume masterpiece "The Dramatic Universe", from which the following extracts are taken under three headings: Structures, Systems and Progression.

STRUCTURES

It is no accident that recognition of the importance of structure has come, not by way of speculative philosophy or logical reasoning, but by the pressure of practical needs. We apprehend structures far more by the power of understanding than by knowledge. Knowledge is confined to Fact.

The Domain of Fact does not include transformation, which belongs to the Domain of Harmony. In this sense, knowing and understanding are powers that belong to quite different regions of experience and this suggests the surprising, but correct, conclusion that structures are not objects of knowledge, and that their true place is in the Domain of Harmony. We do not know structures, but we know because of structures.

Facts, that are no more than facts, are atomic and unrelated except by general laws. That is how the world was studied until
the middle of the present century. Darwin's Origin of Species (1859) and Clark Maxwell's Treatise on Electricity and Magnetism (1873) were magnificent swan-songs of a dying age of science when it had seemed possible to explain the whole by the part and to account for the facts, without regard to the purposive action that makes them possible.

We are now in the midst of a mental revolution, and as with all revolutions, its true significance escapes those most deeply involved. We are being forced to look at every kind of problem in a new way; that is, in terms of structures rather than of general laws. Scientists and philosophers are not alone in fighting a rearguard action against the revolution. In every department of human life, the ancient strongholds are being surrendered reluctantly and usually after they have ceased to matter. Men pay lip service to doctrines of 'integration', 'unification', 'ecumenism', and to the proposition that excessive specialization has become a menace to society; but, in practice, the changes come before the people concerned consent and usually before they realize what is happening.

We are thus in a stage of confusion due to the inadequacy of our modes of thought. We continue to think in terms of atomic concepts linked by logical implications and empirical laws. This approach can never lead to the understanding of structures whose significance lies in their organized complexity, not in their susceptibility to destructive analysis into elements and laws. We have seen in the earlier chapters that understanding is the subjective aspect of will and knowledge is the subjective aspect of function. We can 'know' structures only in their functional properties; whereas we 'understand' them in their
working. This working is very much more than actualization in time, for it concerns what things are and not simply how they change.

Structures link Fact and Value, and they are consequently always interesting. The elements of structures in isolation or connected by general laws are only shadows of reality and there is always a step to be made in order to pass from knowing about them to becoming aware of the structures in themselves. The problems of knowledge — how we know, what we know, what knowing is — all arise because of the inherent incompleteness of any possible knowledge. No such problems arise in understanding structures. This is not to suggest that understanding is easier than knowing; but that the difficulties in the way of understanding are of an altogether different kind. We understand by a mental act that is synthetic and creative; whereas we know by an act that is analytic and automatic. These mental acts must be projected into the mind and the mind must be able to experience them sensitively as images and consciously as judgments. Some degree of understanding must always be present for effectual action in the world. It follows that understanding understanding is of great practical importance; but there has been little research into the nature of understanding and into the possibility of developing it, until the growth of complex organizations has in recent years forced it upon the attention of practical men. It continues to be neglected by philosophers.

The need for more understanding is not confined to organization theory and systems engineering. It lies at the root of our central problem of elucidating the nature and destiny of man. We have
not neglected the task in the earlier volumes of the present work. The first indications of a technique of understanding came with the notion of multi-term systems introduced in Vol. I and developed further in Vol. II. The theory of eternal patterns is a projection in analytical terms of a way of looking at complex structures that cannot be reduced to functional terms.

A common characteristic of these varied techniques is the recognition that structure is a primary element of experience and not something that is added by the mind. In this respect, it can be said that the techniques of understanding call for a drastic revision of the usual modes of thought that treat being and understanding as independent or at least as separable from one another.

In the study of structures, we cannot separate what we understand from what we are, nor can we separate what a thing is from the way it is known. Since no human mind has a synthetic and creative power great enough to reproduce as a mental image the total organized complexity of the world presented to us from moment to moment we need a means of simplifying the task. This is provided by Systematics. Systematics is the study of structures as simplified totalities. Analytics breaks structures down into their simplest elements and looks for the connections between these elements. Systematics takes the connections as primary and the elements as secondary. This is a very difficult mental exercise for people trained in analytical thinking; but it is beginning to make its way into several fields. We shall in the present chapter, develop the systematic approach as far as is needed for our subsequent studies.
1. **A system is a set of independent but mutually relevant terms.** The relevance of the terms requires them to be compatible. No one term of a system can be understood without reference to all the others.

2. The order of a system is given by the number of terms. A system of the first order, or one-term system, is called a monad. Second, third, fourth, etc. order systems are called dyads, triads, tetrads, etc.

3. In systems, there are no fixed meanings attributable to the terms, which depend upon the structure of the system as a whole, so the various connectivities are common to all systems of the same order.

4. Every system exemplifies modes of connectedness that are typical of the number of terms. Thus there are zero connectivities in a monad, one in a dyad, three in a triad, six in a tetrad, ten in a pentad, fifteen in a hexad and \( \frac{1}{2} n(n-1) \) in an n-term system. If the connectivities are distinguished according to direction, the number is doubled. All the connectivities are significant and must be taken into account if the structure represented by the system is to be understood.

5. Each order of system is associated with a particular mode of experiencing the world, called the Systemic Attribute.
   1. The **Monad** gives totality – without distinction of parts, hence universality as the systemic attribute.
   2. The **Dyad** gives difference without degrees, hence complementarity.
   3. The **Triad** gives relatedness without relativity and hence dynamism as distinct from force.
4. The **Tetrad** gives structured activity and combines relativity and order, and hence activity as distinct from potential.

5. The **Pentad** gives significance both inner and outer: hence also potentiality as distinct from actual occurrences. Here entities make their first appearance in the scheme of understanding.

6. The **Hexad** gives structure capable of transformation without loss of identity, hence recurrence and the character of events and so the historical character of experience. The systemic attribute is called coalescence.

7. The **Heptad** gives completeness combined with distinctions of quality: hence transformation.

8. The **Octad** gives the property whereby a structure can be understood in and for itself without reference to other structures, hence completedness.

9. The higher systems have further complexities and attributes.

6. The relevance of all the terms of a system requires that they should be of the same logical type and make contributions to the systemic attribute of one and the same kind. This we shall indicate by a common designation. Thus the terms of a dyad will be called its poles, those of a triad, its impulses, those of a tetrad its sources and so on.

7. The independence of the terms of a system requires that each should have a distinctive character. An important part of the study of systems consists in identifying the term characters of systems of a given order. The general characters common to all systems are to be further specified in respect of the particular system under review.
8. The mutual relevance of terms of a complex system can be found, to a first approximation, by taking all the terms in pairs. These are called the first-order connectivities. In a dyad there will be one, in a triad three, in a tetrad six and in an n-term system \( \frac{1}{2} n(n-1) \) first order connectivities. Connectivities of a higher order can be studied as subsystems from the tetrad onwards. This procedure is adopted whenever circumstances require it. (e.g., the dodecad can best be studied as four triads, three tetrads, or two hexads)

These brief descriptions will be amplified later. We must, however, draw attention here to a defect in the presentation of Systematics in the earlier volumes. We failed to show the connection between systems and structures as we now see to be both necessary and possible. We took the notion of systems to be primary and that of structures derivative. This was a mistaken view. The organized complexity of the world resides in the structures that we discover both in our perceptions and in our mental processes. Whereas in knowing the world, we have to introduce signs and symbols to connect the mental picture with the perception; in understanding, the connection is common to the mind and its objects. The division into elements and laws, or 'things' and their 'behaviour' destroys the structure that must be built up again by a mental process. When we look at structures with the help of systematic forms, we retain the coherence and so no 'rebuilding' is needed.

We can describe systems as the forms of structure, but no one system taken alone can exemplify the organized complexity of real structures. We usually need to take more than one system
into account in order to gain the insights needed for understanding any existing structure that we find. According to the aspect of structure that happens to be relevant to a given purpose, a system of one order may be more useful than another. It has been found that for purposes of practical utility, the systems fall naturally in groups of four. The first four from the monad to the tetrad help us to see how structures work. The systems from pentad to octad show why they work and how they enter into the pattern of Reality. The third group from the ennead to the duodecad is mainly concerned with the harmony of structures: that is, the conditions that enable them to fulfil their destined purpose.

For many purposes, we can understand what is needed by considering only the first four systems in a given structure. When we need to understand what the structure is, why it exists and what it is intended for, we must take higher systems into account.

Structures that are in process of transformation lead into societies and communities which are more concrete than structures and usually too complex to be described in terms of systems alone.

**PROGRESSION**

The series of multi-term systems is a progression such that each system implies all the earlier ones and requires those that follow. We cannot understand the triad unless we already grasp the notions of universality and complementarity and the dynamism of the triad is not realized without the activity of the tetrad.
The later systems are not only more complex and more highly organized than the earlier ones; they embody an understanding of reality that is more comprehensive and practical. The progression is from abstractness towards concreteness. The monad which defines a structure, but tells us nothing about it, is more abstract than the dyad which enables us to see how the polarity of the structure is formed. Polarity is a less concrete attribute than dynamism. Only with the pentad do we reach a degree of concreteness that allows us to define an entity. This, incidentally, illustrates the difference between knowing and understanding. For knowledge, entities appear to be simple notions. Things, beings, societies are entities that we know by their names; but this does not mean that we understand what they are, why they are or how they are. As we shall see in a later section, the five terms of the pentad are needed to give substance to the notion of an entity. Again, we have in all concrete situations uncertainties, hazards and varying degrees of success in surmounting them. Such situations cannot be adequately, that is concretely, investigated without reference to nine-term systems.

We have, then, a progress from abstract to concrete that is expressed in the systemic attributes. Not all structures exemplify all stages of the progression to the same degree. A given structure may exemplify one attribute strongly and others weakly. Thus we may have a structure that can be understood very well as an activity (tetrad), but not so well as a coalescence (hexad). We should call such a structure weak in the hexad and strong in the tetrad.
The use of the expressions 'weak' and 'strong' is intended to convey the connection between understanding and will. A structure that fails to exemplify a system can be regarded as lacking in the will to exemplify it. An act of decision is needed to bring together the terms of a tetrad so as to produce and maintain a specific activity. Again, significance is not a quality that belongs to the experience of one who studies an activity, nor is it inherent in activity as such. In order to be significant there must be a decisive concentration of purpose at a central point. By this decision, the activity acquires meaning in its own right and so becomes an 'entity'. By another act of will, the entity asserts its own independent reality and so becomes strong in the hexad.

One other general property of systems remains to be considered. This we shall refer to as term-adequacy. If the terms of a system cannot be clearly discerned in a given structure, the required characters will be lacking and the system in question is then inadequately represented. To illustrate the point, let us take the three terms: father-mother-child. It is easy to see that the father adequately represents the affirming impulse, the mother the receptive and the child the reconciling. Compare this with three terms: man-fish-tree. The terms very inadequately represent the character of the triad. Only in an insignificant group of situations, will the three elements exemplify the attribute of dynamism. If, however, we add a fourth term, man-fish-stream-tree, we can picture an activity of a man fishing in the shade of a tree that is quite an adequate tetrad. The motivational terms are represented by man and fish and the instrumental terms by stream and tree. In this case the tetrad must be strong in order to exemplify its attribute. The man must have the will to catch the
fish and the fish the will to stay in the water. We have these three conditions to fulfil in order to have a well-defined system associated with a structure:

1. The structure must exemplify the systemic attribute.
2. The term characterization must be adequate.
3. The system must be strongly willed.