A Scientific Foundation for World Culture

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Editor's Note: Dr. Dodd and I were working on a popular account of his ideas at the time of his death. I took the introduction and closing remarks for that article and created a short article about his work for publication in the journal Kybernetes in 1976.

I Culture, Model and Science

All human cultures have a model of the universe. Primitive societies embody their models in mythology and modern societies define their models with science. Such models serve important psychological and social functions.

1. They define the origin and structure of the world.
2. They provide the basic framework for social relations.
3. They explain the stages of life which most people experience.
4. They reveal the relationship between normal consciousness and altered states of consciousness.

Models can be compared for complexity, coherence, processes, structures, and the social systems which result. Such models are essential to human society regardless of their exact content.

These cultural models have several common features. The universe is thought to have different levels. There may be only a few levels or there may be many. Distinction is often drawn between the realm of the living and the nonliving. The world of everyday objects is often contrasted with another level where the ordinary distinctions of space, time, and identity dissolve. Another common feature is a set of key processes including creation, destruction and balance. Perhaps the most important: similarity is the concept of unity in diversity. All the Le e[l]ms and all the processes are seen as parts of an integrated whole.

Two examples of such models are the Tarot and the Holotheme. The Tarot is a deck of cards which represent pieces of a complex system. Its origins are lost in antiquity but it definitely existed in Europe during the 14th Century. It contains a system of 10 levels which reach from transcendental Source through various cosmic realms to the mundane Earth. It also contains four suits which represent four basic processes operating throughout the 10 levels. The Holotheme was developed by J.G. Jolly and published in 1968. It contains 8 levels which extend from abstract patterns of information through space, energy, matter, life, creatures, societies and nations to the planetary level. It emphasizes four key processes which operate within each of the levels.[3] Both of these models ultimately view the universe as an integrated whole.

My field is sociology and much of my career has been devoted to the application of multidimensional scales to modeling sociological phenomena. Early in my

investigations, I assigned different dimensions to actions, actors, times, places, and values. By placing these dimensions at right angles, I constructed a matrix. The cells of the matrix represent possible occurrences. In time, I extended this matrix to eight dimensions for comprehensive sociological analysis. I also developed other matrices for explanation, prediction and control.[4]

I have made considerable use of statistical concepts in my modeling. Statistics forms a bridge between continua and discrete entities. The Normal curve is quite well known. The norm defines a class of entities while the spread of the curve allows the inclusion of the variability between the entities. The Entropic growth curve is less well known. The curve has an s shape and represents processes which first accelerate and then decelerate. The Helix curve is a useful method for dealing with cyclic changes. The Combinatoric curve deals with combinations and permutations of entities which are the result of numbers and relationships. These four curves appear to be important tools for understanding the activities and nature of entities.

I am a scientist and I follow the four aims of science. The first aim of science is the description of our world. Science seeks a system of categories which will capture the essential aspects of the entities under study. The second aim of science is the explanation of the origin of the entities. Science seeks to know the causes of the entities under study. The third aim of science is the prediction of the future. Science searches for accurate methods of predicting future events and structures of interest. The fourth aim of science is a general understanding. Science attempts to find basic structures and processes which model the behavior of entities at all levels and times. These four aims of science have been guides for my work in cosmic modeling.

The foundation of my model is an abstract point space of randomly interacting elements which I call primons. These random bits evolve through eight levels of organization. The first level is that of pure organization in terms of binary choices and its element is the curvon. The second level is that of empty curved space and its element is the gravon. The third level is energy and its basic element is the photon. The fourth level is matter and its element is the neutron. The fifth level is life and its basic element is the cell. The sixth level contains all multicellular creatures and plants and the element is an entity. The seventh level is society and its element is the social group. The eighth level is that of culture and its element is the concept. This level contains the symbolic representation of all the other levels.

Physicists have found action to be more basic that energy, space or time. I define an actant as any entity under scientific study. As actants of any level interact, they build up the entities of the next higher level. The Gompertz growth curve represents the way that such growth proceeds in time. The actants brought into existence by this process display variability which converges on a normal distribution for large numbers of actants. As conditions of such growth recur, the growth will recur. Such cycles of recurrence can be represented by a helix. The basic behavior of such interacting actants is always covered by the ideas of combination including permutation and repetition. These can be represented by the Sterling combinatoric curve. As the actants evolve up through the levels of organization, there is a simultaneous devolving back down. These processes balance each other and the whole universe can be seen as a balanced whole.

I call this integrated sphere of activity the Cosmos or the total of all things being studied by science.[5]

This paper is divided into two sections. The first section has been devoted to some background ideas and an exploration of the basic levels and elements in my theory which I call the Pan-Acts model of the Cosmos. The second section will contain some thoughts on the significance and uses of the Pan-Acts model. The four aims of science will be linked with the four core processes that govern the interactions of actants throughout the Cosmos. These core processes will be shown to be useful in fulfilling the cultural functions of a universal model.

II Pan-Acts Culture

The first section of this paper detailed the four aims of science and the four core processes that govern the universe. The aims of science can be connected to these core processes. The present nature of the universe can be described in terms of normal distributions. The past development of the universe can be explained in terms of exponential growth and decay. The future evolution of the universe can be predicted through helical cycles of recurrence. The behavior of the universe throughout time can be understood and controlled through combinatoric patterns of interaction. Thus, the four aims of science can be connected to specific mathematical tools.

The first section of this paper discussed the four social functions of a cosmic model. With respect to the four aims of science, the model must serve these four aims in each of the four social functions. The universe must be described, explained, predicted and controlled. The social fabric must be described, explained, predicted and controlled. The development of the individual must be described, explained, predicted and controlled. Finally, the integration of waking consciousness and altered states of consciousness must be described, explained, predicted and controlled. The second section of this paper will develop this integration of the aims of science and the functions of a cosmic model.

Any functional society must have some model of the actual world in which it exists. As a society increases in complexity, size and technology, the model must develop in a similar fashion. In a huge industrialized society, the model of the universe must be very accurate in representation of reality. Science serves as the universal model for industrialized nations.

The Pan-Acts model of the Cosmos is an extension of science. It covers all phenomena studied by the sciences and employs a rigorous mathematical foundation. The Cosmos is described in terms of nine levels of activity. On each level, large numbers of actants yield a normal probability distribution with respect to a particular characteristic under study. The origin of the present systems is explained as the integration of actants into higher level actants or the disintegration of an actant into lower level actants. These processes are governed by entropic growth and decay curves. The future behavior of the Cosmos is predicted in terms of helical cycles of repetition where repeating circumstances yield repeating effects. Throughout past, present and future, the behavior of the Cosmos is controlled by the laws of combinatorics. Actants combine, permute, and repeat in the exploration of possibilities inherent in a group of actants.

Pan-Acts modeling sees the Cosmos as a continuously evolving and devolving whole which covers all possible combinations of actants. The Cosmos is self-governing, self-creating and self-fulfilling. This model is sufficiently comprehensive to permit interdisciplinary integration of the sciences and simultaneously sufficiently detailed enough to permit further development of specific technologies.

A society is partially defined in terms of the role structures and interaction patterns of its members. As societies grow in complexity, more roles are required and interactions must be developed in greater detail. The big nations of the earth employ a variety of social systems. Some are the result of historical tradition and some are the result of historical accident. All have been shaped by the efforts of those in power to

redesign the role system to permit necessary social change. There is no agreed upon framework for an optimum or even satisfactory social framework.

The Pan-Acts model contains a submodel for sociological systems as given on page two above. No particular social role system is given by the Pan-Acts model. The framework of transacts which mirrors the nine cosmic levels and the eight institutions which detail a community are parts of a methodology for exploring any societal system. Any descriptions of a social system will include normal probability distributions of characteristics across individuals and institutions which preserves the variability inherent in the Cosmos. Explanations of existing social systems will reveal entropic growth and decay processes which create and destroy social organizations. When a particular social situation is repeated in great detail, the model predicts that the results will be repeated also. All social systems and situations are influenced by combinatoric processes which explore various possibilities inherent in them.

Perhaps there exists no optimum or universally acceptable social system. The Pan-Acts model provides the basis for analysis and synthesis of any number of different social systems. It also permits cross comparison of different systems. The greatest benefit of the Pan-Acts model for sociology lies in its ability to facilitate the exploration of different social systems in an ongoing effort to discover better ways of organizing human societies.

The integration of the individual into society is another function of a societal model. In simple small societies, such integration is easy and effective. As societies increase in size and complexity, such integration becomes a growing problem. As each individual develops, a sequence of important changes marks off different stages of life which involve different roles. These changes include birth, puberty, marriage, membership and death. It is vital for the mental health of the individual that these stages are clearly understood and accepted in terms of the societal model.

The Pan-Acts model describes individuals in terms of characteristics which are found to form normal distributions across lar^{9}e numbers of individuals. This reveals individuals variability as a natural consequence of the function of the Cosmos. The origin of the individual is explained in terms of exponential growth of cells under the guidance of DNA. The death of an individual could be an entropic decay of cellular processes. The Pan-Acts model predicts that the same developmental changes will usually result in the same stage being reached. Throughout the development of an individual, combinatoric processes guide the working out of the potential of the individual. The basic principles of interaction in the model are reflected in such personal interactions as marriage and membership in families and other social groups.

The Pan-Acts model provides a rich framework for the individual's personal development and integration into society. It permits the individual to see the function of cosmic laws in personal development and social relations while preserving that individual's unique nature and fulfillment of potential.

Most societies recognize the existence of different states of consciousness. Most social interaction takes place in the ordinary waking state. Important personal and social events can take place in other states of consciousness. Dreaming, delirium, drugged and contemplative states of consciousness are linked to creative insights in the arts, sciences, philosophies, and religions. The last important function for a societal model is

the revelation of the relationship between ordinary consciousness and these altered states.

Pan-Acts modeling provides unique opportunities for consciousness exploration through a framework which includes all physical and psychological entities and events. Detailed description of states of consciousness with respect to different variables will yield a normal distribution across time and individuals. This approach will emphasize the variability of consciousness in a particular state. Explanation of personality integration and disintegration can be approached as growth and decay of particular connected sets of consciousness variables. The model predicts that recurrence of a constellation of variables will lead to a recurrence of a particular state of consciousness. Across time, the combinatoric approach suggests that consciousness is the ability to be aware of a particular pattern in a Cosmos which contains many potential patterns.

The Pan-Acts model contains nine levels of cosmic phenomena. Ordinary consciousness is that state which focuses upon the local actants of the nine levels and the socially approved manner of dealing with them. Altered states of consciousness range beyond this local orientation to explore other patterns in the Cosmos. Such exploration may be of ultimate benefit or harm to the world of ordinary consciousness but such exploration is vital for the evolution of society in a changing world. Pan-Acts modeling is well suited to directing this exploration in a comprehensive and coherent manner.

The growing movement in General Systems modeling is extremely important to humanity in this era. Only comprehensive models such as the Pan-Acts system have the necessary scope and integration to serve as the framework for a planetary social system. It is the belief of the authors of this paper that Pan-Acts modeling can make valuable contributions in all areas of social function for the development of a humane, ecological and evolving planetary society.

References

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