



Biocybernetics of the Dynamic Communication of Emotions and Qualities

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In the midst of change tending strongly to unbalance cohesive forces of our society, it is particularly urgent to clarify the basis of the values and qualities to which we wish to give free play in our emerging society. The semantic division of mind and body, which has allowed mind to proceed according to imagined laws of its own, is being replaced with a view of the organism as a whole. The qualities and values we seek to enhance are seen not as merely learned patterns and actions, but as inherently programmed in the organization of our brain and nervous system, waiting to be discovered and used by the growing individual. This point of view looks at the individual as potential to be realized.

This interdisciplinary symposium will present some remarkable results of new discoveries about the lawful, biologic basis of communication of emotions and qualities in terms of measurement of brain function and the precise measurement of expressive shapes in time, normalized through a touch output. New scientific aspects of music as a communicative language will also be presented. These results were obtained

by thinking music, without sound. The findings illustrate that the spatio-temporal expressive shapes of particular emotions are objectively measurable and may be mathematically described as originating from an underlying brain program or algorithm that is independent of the particular mode of expression chosen (tone of voice, gesture, touch, dance step, smile).

(Limited man-animal and animal-man communication also is possible through these basic spatio-temporal shapes called essentic form, for example, a dog responds to the tone of voice. The genetic evolution of these communicative shapes will be touched upon.)

Studies of cross-cultural measurements and the impossibility of retraining essentic form in a subject so that the dynamic shape of anger may become the shape of love, tend to confirm that these precise spatio-temporal shapes, like the colors of the spectrum, are general human characteristics. Their prevalence or absence in any particular culture does not negate their potentiality in that culture.

Differential mathematical equations

of the measured essentic forms will be presented. The solutions represent the dynamic forms of the expression of specific emotions. Essentic form constitutes a biologic data-processing basis for a precise identification and communication of emotion—a basis rather inaccurately reflected by natural language.

Recognition of identity shall be a key concept examined at various levels of existence: the physics of relationship (of fundamental particles), cellular recognition processes, and organic and brain functions.

The finding of the existence of these shapes has had an unexpected consequence of potential importance. It turns out that in producing essentic forms repeatedly through a series of fantasized emotions (sentic states)—according to specific biocybernetic techniques—emotional tensions are released and the individual experiences a feeling of calmness, relatedness, and a decrease in the sense of alienation. This effect may be achieved without the use of any particular dogma or drugs, merely by recourse to free human nature. This process, called sentic cycles,

may be practiced by an individual alone with a negligible amount of training, or it may be done by many simultaneously.

In the course of sentic cycles the individual appears to be moved along the axis between depression and elation in the direction of an increase in creativity, enthusiasm, and the simultaneous disappearance of psychosomatic symptoms.

Another surprising finding is that essentic forms may be produced through fantasized emotions not directed at any one person or specific social situation (that is, emotion can exist *ipso qua*). This is less surprising when one considers that this normally occurs in musical communication.

The remarkable fact that distinct dynamic shapes of emotions exist objectively, and may be measured, makes it possible to consider the relation of these mathematically precise shapes to

the order of the universe and more particularly to the molecular order of the DNA genetic codes. These shapes are highly precise, and their power of communication increases asymptotically with the degree that their expression approximates the ideal shape. Thus they act in the manner of dynamic keys in locks of our nervous system data-processing structure, allowing gates to open to communicate a deeper empathy between individuals. As the emotional expression achieves such a state of purity, it also becomes more enjoyable both to the individual expressing the emotion and to the perceiving individual. Examples from the language of music, drama, and dance illustrate this, but similar catharsis is found in social life, if conditions permit.

The "contagion" of emotional communication is a biologic phenomenon based on the communicative power of the basic dynamic shapes of emotion.

Love, hate, anger, or grief may at times be propagated like waves on the ocean. And the individual may be all too often like a ship, be tossed by the storms, for which he is a passive vehicle.

On the other hand, the function of the individual may be greatly enhanced or retarded by the emotional atmosphere of society.

In sum, in this symposium we shall discuss new evidence for the objective biologic basis of the expression, in the present moment, of human passions and emotions and show how they appear to be linked with the existence of an ordered world, of which man is a natural inhabitant. Recognizing this, there is hope that love may secure its own survival, on earth.

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Speakers and Topics

Arranged by Manfred Clynes (Chief Research Scientist and Director, Biocybernetics Laboratory, Research Center, Rockland State Hospital, Orangeburg, New York).

29 December (morning)

Internal Linguistics of the Biologic Organism as Evolving Code-Message Relationships, Otto H. Schmitt (Professor of Biophysics-Bioengineering, University of Minnesota, Minneapolis).

Biocybernetics of Space-Time Forms in the Genesis and Com-

munication of Emotion, Manfred Clynes.

Cross-Cultural Aspects of Clynes' Sentic Cycles, Alexander Alland (Professor of Anthropology, Columbia University, New York City).

Identity and Recognition in the Dynamics of Immunologic and Cellular Systems, Sam Rose (Salk Institute, La Jolla, California).

Relationship, Recognition, and Information Transfer between Elementary Particles, William C. Parke (Department of Theoretical Physics, George Washington University, Washington, D.C.).

29 December (afternoon)

Music in Relation to the Sentic Concepts of Clynes, Philipp Naegle (Professor of Music, Smith College, Northampton, Massachusetts).

Use of Sentic Cycle Tapes in Psychotherapy, Bernard Reiss (Director of Research, Postgraduate Center for Mental Health, New York City).

Evolving Neurologic Substrates of Essentic Form, Aristide H. Esser (Director of Research, Letchworth Village, Thiells, New York).

The Preliminary Program of the AAAS Annual Meeting appears in the 25 September issue of Science. Registration forms for the Meeting and housing are in the 6 November issue. Reports of symposia appear in the following issues: 28 August, "Human Behavior and Its Control"; 4 September, "Land-Use Problems in Illinois"; 11 September, "Aleutian Ecosystem"; 18 September, "Reducing the Environmental Impact of Population Growth"; 2 October, "Critical Issues in Research Related to Disadvantaged Children"; 9 October, "Women in Science"; 16 October, "Advances in Human Genetics and Their Impact on Society" and "Genetic Diseases and the Quality of Life"; 23 October, "The International Biological Program"; 30 October, "Mood, Behavior, and Drugs"; and 6 November, "Urbanization in the Arid Lands," "World Cities of the Future," and "Industrial Approaches to Urban Problems." Information on tours is in the 23 October issue.