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Notes

A FRAMEWORK FOR POSITIVIST AND PHENOMENOLOGICAL METHODOLOGIES

by

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The behavioral revolution in geography and the subsequent humanist reaction precipitated debate about observer objectivity. This paper attempts to construct a positivist model of subject-object interaction which also encompasses humanistic methodologies.

This model assumes that both an observer and the object of observation can be completely described in terms of matter and energy behaving in accordance with the laws of physics. Because the laws of physics, as well as the concepts of matter and energy, have been formulated via the application of the scientific method, this model is positivist.

In this model, the subject is viewed as an open, dynamic system of matter and energy having roughly definable boundaries in time and space. Specifically, the subject system is the physical body of the observer. It is enclosed by a boundary whose shape and position changes constantly as the observer moves around. This system continually reacts to energy which continually impinges upon it, the reaction to energy contacting the boundaries of the sense organs being of greatest importance. Only a small fraction of this reaction manifests itself in the macroscopic movement of the organism. Most of the reaction consists of the perpetual rearrangement of electrical and chemical patterns in the brain.

The object under observation is also viewed as an open, dynamic system of matter and energy roughly bounded in time and space. Part of this boundary must coincide with the boundary of the observer. Along this common boundary there is a constant exchange of energy. A room full of people is an example of an object system. A person interviewing these people is the subject system. The surface of that person's body is the boundary separating subject system from object system.

The energy entering the subject system from the object system is the observer's sensory input. The position coordinates of the common boundary vary continuously through time (because the observer's body — and sense organs — move continuously through space), as does the strength of the mechanical, electro-magnetic, and chemical energy impinging on each point of the common boundary. This energy contains *all* the information the observer can obtain about the object system; the distribution and intensity of the energy contacting the boundary of the subject system is the raw data about the object system which the observer then processes. Thus the concept of energy interaction is cardinal to this conceptual framework.

The sensory input affects electrical and chemical patterns of the organism's nervous system immediately upon contacting the sense organs. The manner in which the sensory input affects these patterns depends upon the energy contacting the sense organ in question, the energy contacting all the other sense organs at the time of contact, patterns formed in the immediate past (short term memory), patterns formed in the distant past (long term memory) (Ittelson, 1973, pp. 9-12), and the initial, genetically determined structure of the nervous system. Thus the raw data begins to be processed immediately upon contact with the sense organs.

Immediately after contact there is a direct, but not completely direct, correspondence between the type and strength of energy contacting a sense organ and the resultant electrical and chemical pattern in the nervous system. As time passes, this correspondence becomes less direct as the pattern becomes increasingly modified by the other patterns previously mentioned. Eventually what remains is a highly interpreted, symbolic representation of the original sensory input.

At the same time that energy is entering the subject-system from the object-system, the subject-system is imparting energy to the object-system, and thus affects the energy the object-system introduces back into the subject-system at a later time. An observer who is asking someone questions is imparting energy back to the object-system which, in this case, is the person being interviewed. The responses by this person, in turn, impart energy back to the subject-system. Finally, both the object-system and the subject-system exchange energy with the environment (Figure 1).

It should be noted that the absence of complete separation between subject and object which this energy interaction implies is not a corollary of the Heisenberg uncertainty principle in physics. Because of the microscopic size of the object-system and the wave properties of matter, the act of measurement itself necessarily significantly affects a sub-atomic system. Thus, for example:

$$(\Delta x)\,(\Delta P_x) \geq h/4\pi$$

where Δx is the uncertainty in position along the x-axis and ΔP_x is the uncertainty in simultaneously measured momentum along the same axis. In the social sciences, however, this effect is negligible. Here the energy transferred between subject-system and object-system is macroscopic and consists of such things as the exchange of questions and answers in an unstructured interview. Reduction of energy transfers from subject-system to object-system is thus a practical problem whose solution is not constrained by a theoretical limit.

The goal of the investigator is to understand the behavior of the object-system. To do this, he (she) classifies the myriad of immediate perceptions of the object-system into broad categories. These are the variables of the object-system and are typically

Figure 1 SUBJECT-OBJECT ENERGY (ϵ) INTERACTION

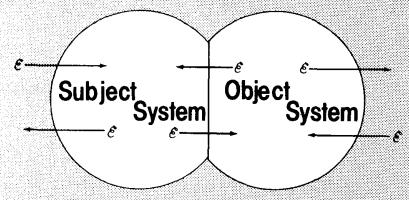

Figure 2 POSSIBLE DOT PATTERNS

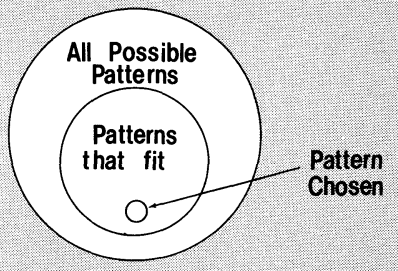

Figure 3 PATTERN DOMAINS

such things as weight, color, or pH. These variables are then organized into patterns which further generalize, symbolize, and abstract the original perceptions. The value of each variable potentially depends upon the value of every other variable:

$$v_i = f\left(\sum_{j}^{n} v_j\right)$$

where v_i is the i^{th} of a total of n variables. This is because the variables we construct are related to each other via the laws of the physical sciences.

The entire system can be represented as the sum of all the variables and all the interactions between the variables:

$$S = \sum_{j}^{n} v_j + \sum_{i,j}^{n} I_{i,j}$$

where S represents the total object-system, and $I_{i,j}$ is the interaction between the i^{th} and j^{th} variables.

Because of the absence of a direct correspondence between sensory input and the resultant electrical and chemical patterns in the subject organism, and because of the interaction between the subject and object systems, the definition of variables and their subsequent analysis is partially arbitrary and subjective. However, because the result of a successful analysis allows the observer to predict the immediate perceptions of a large number of people in a wide variety of situations, there is also an objective component.

There are a large number of patterns which may be created from the object-system variables. For example, figure 2 demonstrates two ways of patterning a series of dots. Both of these ways generalize a large amount of information into a small number of rules or regularities. Each method may be successfully applied to other similar phenomena, though one may be more efficient or useful than the other. Thus, which of these patterns is chosen depends upon the subjectivity of the investigator.

By contrast, many patterns simply cannot be made to fit. The rejection of these patterns is the objective part of the analysis. This is represented in a Venn diagram in figure 3.

All methodologies may be viewed as attempting to create a model of the object-system by arranging the object-system variables in meaningful patterns. To do this, relationships between the variables are determined. One of the prevailing methodologies is positivism. It is a philosophical stance. It is founded on empirical reality and validity, and contends that genuine knowledge must be perceptible in time and space. Statements are only considered meaningful if they are analytically true or can be tangibly verified by the senses. Positivists hold that subject and object are separated. Hypotheses are established and tested. This is done by attempting to hold all the object-variables constant except the two under consideration. One of the two is made to vary, and the behavior of the other is observed. Eventually laws are deduced.

The above procedure is much easier to perform in the natural sciences than in the social sciences. In the social sciences there are a large number of possible variables and patterns which are consistent with the data. It is difficult to keep many of the variables constant, and each variable has significant interaction with a large number of other variables. Finally, the interaction between subject-system and object-system is often quite considerable. These difficulties explain the numerous social science approaches, models, and methodologies. The underlying philosophies of many of these approaches are inconsistent with the previous discussion; however, all the various techniques and methodologies can be accomodated within this theoretical framework.

For example, the philosophy behind a phenomenological approach is radically different from that presented in this paper. Phenomenologists, in fact, deny any separation between the observer and the world of the thing studied (Seamon, p. 3) and thus the philosophy of phenomenology is irreconcilably opposed to the positivist philosophy on which our model is based. Yet phenomenological techniques can be viewed as variations of the pattern-forming process previously described.

Phenomenology is concerned with the subject's immersion in his (her) world of study. The method involves such processes as phenomenological intuiting (an attempt is made here for the subject to meet the phenomenon in an unprejudiced way as possible) and phenomenological disclosure, where the subject believes that his (her) seing of the thing is correct (Seamon, 1983). Although phenomenologists deny separation of subject and world studied, a reciprocal relationship is still implied. Phenomenologists argue that much behavior is habitual, and has a certain regularity. Habitual behavior takes place on many environmental scales. The concept of body-subject is involved which may be described as the inherent capacity of the body to direct the person intelligently (Seamon 1979).

Phenomenological methodology can be accommodated within the constraints of our framework. Phenomenologists organize sensory inputs into patterns. The process of phenomenological intuition is an attempt to recreate patterns which existed before

a large amount of interpretation had operated on the sensory data. This is done by attempting to strip away preconceived ideas and prejudices which had played a role in the interpretive process.

But this process is itself subjective and interpretive. Some preconceptions are removed while others are retained; other prejudices are buried unaware in the investigator's subconscious. Thus the patterns existing in the investigator's mind at the moment of disclosure are similar, but not identical, to patterns which existed shortly after the sensory data was encountered. One of the great advantages of the phenomenological method, in fact, is its ability to recreate patterns which resemble those which are routinely buried in the subconscious.

We conclude that our theoretical framework accommodates both positivist and phenomenological modes of inquiry. We concede there are radical differences in these methodologies, and are not advocating their union. We simply affirm that both are encompassed in our positivist model, and that one need not accept phenomenological philosophy in order to use phenomenological methodology.

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