KNOWLEDGE INTERPRETED AS LANGUAGE BEHAVIOR

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MAN has spent a great deal of time thinking about himself. Piqued by voracious curiosity, he has attempted to define his station in the cosmos. The range of his speculations and conceits extends from filial kinship with a Creator, in whose name he presides over the planetary center of the Universe, to status as one of many forms of organic life, precariously and temporarily infesting an insignificant speck of dust in a universe of suns.

Out of this prolonged speculation have grown many "problems," one of which is the problem of knowledge. There has been much speculation about Intellect and Knowledge. Volumes have been written on Epistemology, in attempt to determine what knowledge is, whether or not it is possible, and how. Nowadays, we are not so much concerned with deciding questions dialectically as empirically. The tendency is to take the human being as a datum rather than a pre-conceived hypothesis; to study him objectively rather than to pit our notions of him one against the other.

This point of view makes possible a new approach to the problem of knowledge. We may dispense with such questions as whether or not knowledge is possible or "real." We may begin with the individual, examine him in any way that we can, and report our findings. Whether or not this method will reach the "ultimate nature" of knowledge, is a question that may well await upon a thorough and exhaustive examination of our datum.

Instead of metaphysics, we may begin with common sense. We have an animal that eats, sleeps, talks, laughs, wears clothes, uses tools, etc. There has been a great deal of energy dissipated in trying to determine man's place among animals. Without going into this litigation, we may cite current reputable authority to the effect

that man differs from the other animals in his use of an articulate language and material tools. (*Mind of Primitive Man*, Boas, p. 96.) We accept this tentatively, as it is the best we have at this time, but we should not hesitate to modify or discard it should further investigation make it necessary.

In our studies of animals, we have on the one hand behavior and on the other the biological organism. We may study one independently of the other, or we may attempt to correlate a datum in one cycle with a fact in the other. Thus we may examine the structure of the organism, its composition, arrangement of parts, etc., without regard for its behavior; or we may occupy our attention with the behavior of the organism without regard to its mechanical structure; or we may correlate an act of behavior with a part or structure. We thus have three distinct modes of attack, any one, or all, of which we may use. In this paper, we shall avail ourselves almost exclusively of one method, that of the study of behavior, i. e., what a person *does* where knowledge is concerned. We shall, perforce, leave the examination of the organism to further investigation and instrumental experimentation, and, necessarily, the correlation of the two cycles must wait upon this also.

The homing pigeon performs a feat which we can not explain in organic terms. Human conduct presents facts which can not be correlated with facts of the organism. But, keeping in mind the distinction made above, we see that we are justified in pursuing the facts of one cycle to the disregard of the facts of another. Our procedure here will be to deal with the facts of human behavior which have to do with knowledge, as this term is used in common sense.

As we have seen, man differs from other animals chiefly in the use of an articulate language and material tools. These are objective facts of behavior. We do not know exactly what goes on in the organism when this behavior occurs, so we say that man *has the capacity for abstraction*. Just as the homing pigeon returns to his cote when released, not knowing *how* he does it, we say that he has a *capacity*, or *instinct*, for this kind of behavior. The term "capacity" here is just another way of saying that the organism does something.

The implication of the expression "capacity for abstraction" is that man's conduct involves an object that at once bears a relationship both to himself and to some other object. Thus a stone bears a relation to a fist and at the same time to a clam: the *stone* is used by the *fist* to crush the clam; a *spear* is used as an extension of the

arm to wound a *foe; poison* is taken from a serpent's *fangs* and put on an *arrow-tip*. Thus man's conduct involves relationships between one external object and others as well as to himself. Animals, are ego-centric; for them an external object bears only one relationship, which is to them direct—they do not use tools.

A word is similar to a tool in this sense. Language may use vocal utterances, written characters or gestures. In either instance the situation is the same in this respect: Something is done or made by the body. This act possesses a degree of objectivity which bears relationships both to its author and to some other object. Thus a word itself becomes an objective datum and bears a relationship both to him who uses it and to some other object, relationship or event. A word, then, is something like a tool, that man alone of all animals uses because of "his power of abstraction."

We have now a way of studying "knowledge" in an objective, empirical way. Whether there is any knowledge that exists apart from language is a question that may be considered after we have done all we can with this method of study. The problem as it may be stated now is this: We have an animal, man, who uses words—a language. The use of language is accomplished by bodily acts—behavior; language (or thinking) is a process of the body just as truly as are respiration and digestion. We mention this fact merely to illustrate our point of view; we are not here concerned with a correlation of physiological processes with words, but we take for granted an organism with the capacity for this kind of conduct. We wish to study and interpret this conduct which consists in the use of words.

The use of language means *labelling* the universe. A word may be looked upon as a label which is attached to something else. It must be kept constantly in mind that a word has an objective existence of its own, and that it bears a relationship both to him who uses it and to that which it labels. A word may label an object, a relationship or an event. Thus, such material objects that present themselves to our senses, as rocks, clouds, trees, etc., are labelled; these labels are nouns. Events, in the sense of occurring or happening, are labelled, and we have verbs. Relationships are labelled by words classed as prepositions conjunctions, etc. We thus have the whole universe of "being" and "doing"—objects and movements—translated into a language order, conceptual rather than perceptual. But this language order is itself of an objective nature

as well as subjective, and it is the reaction of the body (biological organism) to this language order that constitutes "knowledge."

We have already seen how the universe as it presents itself is labelled with words. What then is "thinking" in such an interpretation? "Thinking" is a word that labels a physiological, bodily process that consists in the manipulation of words. (The term "thinking" may sometimes be used to designate a bodily process that does not involve the use of words, such as reverie, dreams, etc. I prefer to call these processes dreaming, and to reserve the word thinking for language processes.) Distinction must be made between words as mere vocal utterances and words as language. A parrot may vocalize a word, but he has no language; he is ego-centric and does not possess "the power of abstraction," already explained. Hereafter in this paper it shall be understood that the term "word" shall be used in the sense of language.

Thinking, then, is a bodily process of manipulation of words *in a certain way*, for it is obvious that mere mouthing of words in a haphazard way does not constitute thinking. We must analyze and define this special *way* of manipulation of words. A baby is born with a greater or lesser number of pattern reactions, such as sneezing, but most of his behavior is learned. It requires some time for an infant to accomplish the eye-hand coordination, and it requires still further time and training for him to use an instrument or tool to do something to something else, e. g., to eat with a spoon. It is in the same way that language habits are built up, from the behavior standpoint, disregarding the physiological processes correlated with these acts of behavior. Just as the baby learns to make the eye-hand-spoon-food-mouth combination, he learns to make the various combinations in the manipulation of words. The baby makes use of certain things in his environment in eating, bringing into the process such things and in such a combination as are necessary to accomplish his purpose or end—eating. Language is a part of one's environment as truly as spoons and food are, and it is in a similar way that it is employed in effecting changes and accomplishing ends. Language, then, in its simplest forms, is simply a manipulation of words, in certain combinations, with reference to the things which the words stand for, and with reference to the purpose or end to be accomplished.

What then is "knowledge" in terms of language behavior? What do we mean when we say that one "knows something"? A micro-organism avoids contact with some chemical; is this knowledge? A

dog will not come into the house because he "knows" someone will kick him; is this knowledge? A small boy "knows" that two times two are four, and that Tokyo is the capital of Japan; is this knowledge? Regardless of terminology, there is an essential difference between the first two instances and the third. We prefer to reserve the term "knowledge" to apply to the last mentioned example. It is in this instance that we have manifested that "capacity for abstraction" which differentiates man from brute. The "knowledge" of the boy who knows that Tokyo is the capital of Japan and that there are whales in the sea, is based upon the use of words which at once bear a relationship to him and to some other facts which they represent. The first two examples cited are cases of ego-centrism solely.

The *meaning* of a word is simply the recognition of its dual relationship—to the user and to that which it represents. This recognition is accomplished by the physiological organism in a way that can not as yet be explained in physiological terms. No more can we explain the "homing instinct" of the homing pigeon in physiological terms. We have these physiological capacities given, and in studying behavior, we take them for granted The meaning of a word is the same as the meaning of a tool. A savage uses a spear or a hammer. These have meaning to him; they supplement his physiological equipment and effect changes in his environment. A tool has meaning both to the user and to the material upon which it is used. A word has meaning to that which it represents just as truly as it does to him who uses it. We do not know why an ape, who has the physiological structure to use tools and language does not do so; we only know that he does not use them, and that man does.

An idea is a word combination. It is not a haphazard collection of words, but an arrangement in such a fashion as to accomplish a purpose or to achieve an end. This is not to be thought of in any metaphysical teleological sense, but in a common sense way. Just as one would lay a log across a stream in order to cross it without wetting his feet, or use a needle to pick a thorn out of the flesh, so an idea, or word combination, is an arrangement of such words as will accomplish some purpose or end, such as description, command or inquiry. The criterion of an idea is the correlation of the words and combination used with the objects, events and relationships which they represent, and also with the purpose of the user. The same is true with tools. In the two instances given above, one could not interchange the needle and the log and accomplish the desired

ends. We may have idea combinations as well as word combinations.

Knowledge consists, then, in the acquisition of language habits—word combinations. (The use of the term "language habits" must not be confused with Watson's language habits. There may or may not be similarities, but our use of the expression in this paper is entirely independent of the definitions and theories of Watson.) It is true that one learns something by discovery, such as radium, bacteria, etc., but this does not become knowledge until it has been translated into the language order. We may now view knowledge, or bodies of knowledge, such as History, Literature, Mathematics, etc., in the light of our interpretation, as consisting of congeries of word or idea combinations, that have meaning to us and to objects, events or relationships for which they stand.

How is learning to be interpreted in terms of language behavior? It is said that one learns "by experience." We also learn by studying. We do learn by experience, as the dog learned to avoid kicks by staying out of the house. We learn in laboratories by dissecting frogs, mixing chemicals, etc. But we also learn by reading and listening to lectures. We learn of the past in History, of foreign countries, of the heavenly bodies, etc. But this, too, is a form of experience, experience in which we are subjected to a discipline of word and idea combinations instead of to those things which they represent, so that the distinction between learning by experience and by study disappears since both are experience. Furthermore, what we learn by dissecting frogs is not knowledge in the human sense any more than a dog who turns a roasting spit has knowledge, until it has been translated into the language order of behavior.

How are we to interpret "abstract thought" in light of our theory? We have seen that we may have word combinations (ideas) and also idea combinations. We also know that these word-idea combinations may be labelled. Thus, instead of having some other object, event or relationship which words represent, they may stand for other word-idea combinations. This is abstract thought. Take "justice" for example. First we have simple words which label the objects (or persons) involved, and we have words which label *what* these objects *do*, *how* and *upon what* they *act*. We make various word-idea combinations which correspond to these various data. These are ideas; (word) reflections upon the phenomena. (Reflections in the sense that they are *reflected* by the data and phenomena themselves.) Then we label these idea combinations with *a* word

which then *stands for* a word-idea combination, or a series of word-idea combinations. Thus "expansion" is a word which labels a group of word-idea combinations, which represents certain objects and events. Likewise do "justice" and "liberty" stand for word-idea combinations. The manipulation and use of these labels constitutes "abstract thought." Abstract thought differs from concrete thought in that instead of having other objects and events as a correlative it has word-idea combinations as its correlative.

Invention and Discovery. What is an "original idea"? How is "creative thought" to be interpreted? Let us begin with random movements and pointless manipulation, and with material objects instead of words. Random movements and manipulation will result in successive combinations in arrangement of environment and operator, just as successive throwing of pennies will result in different combinations of heads and tails. The manipulation may be pointless and without plan, but should a certain permutation or combination come about that strikes the operator as being of value, useful or desirable, he may seize upon it and try to repeat and preserve it. It is in some such way as this, we believe, that the wheel was discovered, and no doubt the bow and arrow. Here we have an object-combination. Now suppose we have several of these object-combinations, the inclined plane, the screw, the wheel, the lever, etc. These object-combinations are then subjected to various manipulations in the course of the activities of their users. In the course of this manipulation these object-combinations come into contiguity and a combination is made of object-combinations, e. g., the wheel, lever, screw, etc., may be combined into a machine. In this way inventions are made. The steamboat was simply a combination of the steam engine and the boat, both of which had previously existed for many years. An invention, then, is the combination of one object-combination with another object or object-combination.

The same is true of words and ideas. In the process of manipulation, one word-idea combination is brought into contact with another word-idea combination, forming a new combination. Should there prove to be any advantage to or desire of the operator to preserve this combination, he does so, just as the object-combinations were preserved in tools and machines. Thus Darwin got certain ideas from Linnaeus, some from Malthus, others elsewhere. Manipulation of these ideas led to a combination—an hypothesis. "If X be true and Y be true, then Z must also be true." This represents the process of bringing together two discrete facts or ideas, and conclu-

sion which is drawn in the combination formed. Hypotheses, theories and laws are thus results of combinations of idea-combinations.

Education and Knowledge. Education consists very largely in a discipline of and practice in the language order. Working with actual material such as in the laboratories, in clinics, and in field surveys has an important place in education. But to a greater extent, one works with the word order that *represents* these primary data. Thus one learns and "knows" about the circulation of the blood, the customs of African tribes, the orbits of the planets, the life of Bismarck, the climate of Egypt, the British Labor movement, the endocrine glands, etc., without ever coming into primary contact with the original data themselves. The subject-matter of the student is very largely a secondary order—a language order—which *takes the place of the primary order—the original data.* Thus the subject-matter of the student of economics is the *writings* (and lectures) of men on economics. The point is that education consists to a very great degree of a discipline of word-idea combinations rather than the original data themselves. Of course, this has to be so to a great extent, but it might be maintained that it is carried too far. Thus many students and scholars instead of dealing with the primary data, concern themselves almost exclusively with what Aristotle, Adam Smith, Darwin, Comte, Wundt, Spencer, Boas, James or Dewey *said* about them. This tendency to attend to the secondary word-order rather than to the primary data order has resulted in the accumulation of a great cumbrous mass of "knowledge" which consists of what one man said about what another scholar wrote about what some predecessor of his thought about something else, etc., etc., and education consists largely in preserving the past by subjecting students to its discipline rather than directing attention to primary-fact data.

Summary. We wish to interpret "knowledge" in terms of behavior which can be studied empirically, objectively. We take for granted man's "capacity for abstraction," which means the use of language and tools. Knowledge, from our viewpoint is language behavior. This consists in the use of words, which bear at once a relationship to some object, event or relationship and to him who uses the word as well. The meaning of a word is this dual relationship, just as the meaning of a tool is a dual relationship to the user and to the material upon which it is used. Ideas are word-combinations for a purpose, as object-tool combinations are in the material culture. Hypotheses, theories and laws are idea-combina-

tions. Idea combinations are labelled with words which are called abstract words, such as "liberty," "cohesion," "justice," "relativity," "expansion," etc. Original ideas and creative thought are new combinations made between one idea combination and another idea or idea-combination. This is accomplished by the historical process of manipulation in the same way that inventions (new combinations between object-combinations and other objects or object-combinations) are made, or grow, in the material culture. Knowledge consists in systems of these idea-combinations which are embodied in an objective language order, which may be analyzed into primary, or idea systems which represent objects and events, or secondary, which consists of idea-combinations which represent other idea-combinations. Education consists largely in dealing with this secondary order; attention is directed to word-orders which represent data, rather than to the data themselves.