

# *Classics in the History of Psychology*

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## BEHAVIORISM -- THE MODERN NOTE IN PSYCHOLOGY

By **John B. Watson (1929)**

*Introduction.* When I innocently committed myself to meet Professor MacDougall in debate, I understood that all that was required of me was to give a brief account of the new Behavioristic movement in psychology now rapidly forging to the front. Had I known that my presentation was expected to take the present form I fear timidity would have overcome me. Professor MacDougall's forensic ability is too well known, and my own shortcomings in that direction are too well known, for me knowingly to offer him combat. So I think the only self-protective plan is to disregard all controversial developments and attempt to give here a brief résumé of Behaviorism -- the modern note in psychology [p. 8] -- and to tell why it will work and why it will work and why the current introspective psychology of Professor MacDougall will not work.

*What is the Behavioristic note in psychology?* Psychology is as old as the human race. The tempting of Eve by the serpent is our first biblical record of the use of psychological methods. May I call attention to the fact, though, that the serpent when he tempted Eve did not ask her to introspect, to look into her mind to see what was going on. No, he handed her the apple and she bit into it. We have a similar example of the Behavioristic psychology in Grecian mythology, when the golden apple labeled "For the Fairest" was tossed into a crowd of society women, and again when Hippomenes, in order to win the race from Atalanta, threw golden apples in front of her, knowing full well that she would check her swift flight to pick them up.

One can go through history and show that early psychology was Behavioristic -- grew up around the notion that if you place a certain thing in front of an individual or a group of individuals, the individual or [p. 9] group will act, will do something. Behaviorism is a return to early common-sense. The keynote is: Given a certain object or situation, what will the individual do when confronted with it. Or the reverse of this formulation: Seeing an individual doing something, to be able to predict what object or situation is calling forth that act.

Behavioristic psychology, then, strives to learn something about the nature of human behavior. To get the individual to follow a certain line, to do certain things, what situation shall I set up? Or, seeing the crowd in action, or the individual in action, to know enough about behavior to predict what the situation is that leads to that action.

This all sounds real; one might say it seems to be just common-sense. How can any one object to this formulation? And yet, full of common-sense as it is, this Behavioristic formulation of the problem of psychology has been a veritable battleground since 1912. To understand why this is so, let us examine the more conservative type of psychology which is represented [p. 10] by Professor MacDougall. But to understand at all adequately the type of psychology which he represents we must take one little peep at the way superstitious responses have grown up and become a part of our very nature.

*Religious Background of Introspective Psychology.* No one knows just how the idea of the supernatural started. It probably had its origin in the general laziness of mankind. Certain individuals who in primitive society declined to work with their hands, to go out hunting, to make flints, to dig for roots, became Behavioristic psychologists observers of human nature.

They found that breaking boughs, thunder, and other sound-producing phenomena would throw the primitive individual from his very birth into a panicky state (meaning by that: stopping the chase, crying, hiding, and the like), and that in this state it was easy to impose upon him. These lazy but good observers began to speculate on how wonderful it would be if they could get some device by which they could at will throw in individuals into this fearsome attitude [p. 11] and in general control their behavior. The colored nurses down south have gained control over the children by telling them that there is some one ready to grab them in the dark; that when it is thundering there is a fearsome power which can be appeased by their being good boys and girls. Medicine men flourished -- a good medicine man had the best of everything and, best of all, he didn't have to work. These individuals were called medicine men, soothsayers, dream interpreters, prophets -- deities in modern times. Skill in bringing about these emotional conditionings of the people increased; organization among medicine men took place, and we began to have religions of one kind or another, and churches, temples, cathedrals, and the like, each presided over by a medicine man.

I think an examination of the psychological history of people will show that their behavior is much more easily controlled by fear stimuli than by love. If the fear element were dropped out of any religion, that religion would not survive a year.

The chief medicine man in a family [p. 12] group is, of course, always the father. In the still larger group God or Jehovah takes the place of the family father. Thus even the modern child from the beginning is confronted by the dicta of the medicine man -- be that his father, the soothsayer of the village, the God or Jehovah. Having been brought up in this attitude of authority, he never questions their written or spoken statements. He accepts them at their face value. He has never deviated from them, neither have his associates, and hence has never had an opportunity to prove or

doubt their worth. This accounts for the hold religion and superstition have upon our life. It accounts for the psychology current to-day in practically every university. It partly accounts for the convincingness of Professor MacDougall's argument for purpose.

*An Example of Such Concepts.* One example of such a concept is that every individual has a soul. This dogma has been present in human psychology from earliest antiquity. No one has ever touched the soul, or has seen one in a test tube, or has in any way come into a relationship [p. 13] with it as he has with the other objects of his daily experience. Nevertheless, to doubt it is to become a heretic and once might possibly even have led to the loss of one's head. Even to-day for a university man to question it in many institutions is to sign his own professional death warrant.

Medieval philosophy not only accepted the concept of the soul, but tried to define it, to deal with it as they dealt with objects of everyday experience. Consequently, in the philosophy of the Middle Ages we find such questions hotly debated as to the number of angels which can stand on the point of a needle.

With the development of the physical sciences which came with the renaissance, a certain release from this stifling soul-cloud was obtained. A man could think of astronomy, the celestial bodies and their motions, of gravitation and the like, without involving soul, although the early scientists were as a rule devout Christians; nevertheless, they early began to leave soul out of their test tubes. Psychology and philosophy, however, in dealing as they [p. 14] thought with non-material objects, found it difficult to sidestep, and hence the concepts of mind and soul come down to the latter part of the nineteenth century. It was the boast of Wundt's students, in 1869, when the first psychological laboratory was established, that psychology had at last become a science without a soul. For fifty years we have kept this pseudo-science exactly as Wundt laid it down. All that Wundt and his students really accomplished was to substitute for the word "soul" the word "consciousness."

*An Examination of Consciousness.* From the time of Wundt on, consciousness becomes the keynote of psychology. It is the keynote to-day. It has never been seen, touched, smelled, tasted, or moved. It is a plain assumption just as unprovable as the old concept of the soul. And to the Behaviorist the two terms are essentially identical, so far as their metaphysical implications are concerned.

To show how unscientific is the concept, look for a moment at William James' definition of psychology: "Psychology is the description and explanation of states [p. 15] of consciousness as such." Starting with a definition which assumes what he starts out to prove, he escapes his difficulty by an *argumentum ad hominum*. "Consciousness -- oh, yes, everybody must know what this 'consciousness' is." When we have a sensation of red, a perception, a thought, when we will to do something, or when we purpose to do something, or when we desire to do something, we are being conscious. In other words, they do not tell us what consciousness is, but merely begin to put things into it by assumption, and then when they come to analyze consciousness, naturally they find in it just what they put into it. Consequently, in the analysis of consciousness made by certain of the psychologists you find, as elements, sensations and their ghosts, the images. With others you find not only sensations, but so-called affective elements; in still others you will find such elements as will -- the so-called conative element in consciousness. With some psychologists you will find many hundreds of sensations of a certain type; others will maintain that only a few of that type exist. [p. 16] And so it goes. Literally, millions of printed pages have been published on the minute analysis of this intangible something called "consciousness." And how do we begin work upon it? Not by analyzing it as we would a chemical compound, or the way a plant grows. No, those things are material things. This thing we call consciousness can be analyzed only by self-introspection, turning around, and looking at what goes on inside.

In other words, instead of gazing at woods and trees and brooks and things, we must gaze at this undefined and undefinable something we call consciousness. As a result of this major assumption that there is such a thing as consciousness, and that we can analyze it by introspection, we find as many analyses as there are individual psychologists. There is no element of control. There is no way of experimentally attacking and solving psychological problems and standardizing methods.

*The Advent of the Behaviorists.* In 1912 the Behaviorists reached the conclusion that they could no longer be content [p. 17] to work with the *intangibles*. They saw their brother scientists making progress in medicine, in chemistry, in physics. Every new discovery in those fields was of prime importance, every new element isolated in one laboratory could be isolated in some other laboratory; each new element was immediately taken up in the warp and woof of science as a whole. May I call your attention to radium, to wireless, to insulin, to thyroxin, and hundreds of others? Elements so isolated and methods so formulated immediately began to function in human achievement.

Not so with psychology, as we have pointed out. One has to agree with Professor Warner Fite that there has never been a discovery in subjective psychology; there has been only medieval speculation. The Behaviorist began his own formulation of the problem of psychology by sweeping aside all medieval conceptions. He dropped from his scientific vocabulary all subjective terms such as sensation, perception, image, desire, purpose, and even thinking and emotion as they were originally defined. [p. 18]

*What has he set up in their place?* The Behaviorist asks: Why don't we make what we can observe the real field of psychology? Let us limit ourselves to things that can be observed, and formulate laws concerning only the observed things. Now what can we observe? Well, we can observe *behavior -- what the organism does or says*. And let me make this fundamental point at once: that *saying* is doing -- that is, *behaving*. Speaking overtly or silently is just as objective a type of behavior as baseball.

The Behaviorist puts the human organism in front of him and says: What can it do? When does it start to do these things? If it doesn't do these things by reason of its original nature, what can it be taught to do? What methods shall society use in teaching it to do these things? Again, having taught it to do these things, how long will that organism be able to do them without practice? With this as subject matter, psychology connects up immediately with life.

We have known for a long time that we cannot get our animal to introspect and [p. 19] tell us about its consciousness, but we can keep it without food, we can put it in a place where the temperature is low, or the temperature is high, where food is scarce, where sex stimulation is absent, and the like, and we *can* observe its behavior in those situations. We find that without asking it anything, we can, with this systematic, controlled

observation, tell volumes about what each animal does, both by reason of its unlearned activities and through activities which it has to learn. We soon get to the point where we can say it is doing so and so because of so and so.

The rule, or measuring rod, which the Behaviorist puts in front of him always is: Can I describe this bit of behavior I see in terms of "stimulus and response"? By stimulus we mean any object in the general environment or any change in the physiological condition of the animal, such as the change we get when we keep an animal from sex activity, when we keep it from feeding, when we keep it from building a nest. By response we mean that system of organized activity that we see [p. 20] emphasized anywhere in any kind of an animal, as building a skyscraper, drawing plans, having babies, writing books, and the like.

The Behaviorist's psychology is based upon reflexes such as the neuro-physiologist studies. First then we must make clear what these are. Let us assume (until observation gives us an exact formulation) that there are at birth a large number of ontogenetic, embryologic responses or "reflexes." I prefer the term "squirmings." Even if there were only a hundred to start with (and there are many thousands), the process of "conditioning," working according to the law of permutations and combinations, would establish many millions of total responses -- a far greater number than the environment ever calls on even the most versatile human being to make.

Now what do we mean by "conditioning" embryologic responses? The process of conditioning is familiar to all. It plays a much more important rôle in human behavior than is generally supposed. I need only summarize a few facts here. We start with the assumption expressed above [p. 21] that the infant exhibits certain definite *unconditioned responses* or "squirmings" at birth (U) R. Now some definite stimulus must call out each of these responses. So far as known from observation of the infant, this stimulus can call out this response in advance of any training. Let us call such stimuli *unconditioned stimuli* (U) S.

#### UNCONDITIONED EMBRYOLOGIC RESPONSES

(U) S ————— (U) R  
A I

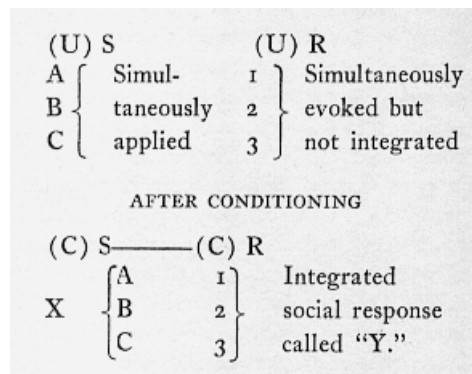
#### AFTER CONDITIONING

A }  
B }  
C }  
D } ————— I  
E }  
Etc. }

Again let us interject the possibility here that even this relationship between unconditioned stimulus and unconditioned response [p. 22] may not be a biologically given datum. Intra-uterine conditioning may have been the process which established it in embryologic life. All we mean by unconditioned stimuli and unconditioned responses is that, as observers, we find at the moment of birth that certain stimuli will call out certain responses. In the diagram above, *A* is such an unconditioned stimulus, *I* is such an unconditioned response. Now if we take *B* (which, so far as we know, may be any object in the universe), and let it stimulate the organism simultaneously with *A* for a certain number of times (sometimes even once is enough), it also there-after will arouse *I*. In the same way we can make *C*, *D*, *E* call out *I*; in other words, we can make any object at will call out *I* (stimulus substitution). This does away with the old hypothesis that there is any inherent or sacred connection with or association of one object with another.

*Order in the universe is merely a matter of conditioning.* We start to write at the left of the page and go to the right. The Japanese starts at the top of the page and [p. 23] goes down. The behavior of the European is just as orderly as the behavior of the Japanese. All such so-called connections are built in. This shows how the stimulus side of our life gets more and more complicated as life goes on; how one stimulus comes soon to be able to call out not only *I* in the scheme in the diagram above, but many other responses as well.

But how do *reactions* become more complicated? Neurologists have studied integrations but mainly their number and complexity, and how they are called out in an organization already developed, what their sequences are (for example, in the scratch reflex), what neural architecture is involved in them, and so on. But they have not been particularly interested in their origin. In the following diagram we assume that at birth *A* will call out *1*, *B* will call out *2*, *C* will call out *3*. When the three stimuli are applied in quick succession, they will still call out a pattern reaction, the components of which are *1*, *2*, *3* (if mutual inhibitions do not enter in). So far there is no integration. Suppose, however, I apply a single stimulus *X* each [p. 24] time I apply *A*, *B* and *C*. In a short time the single stimulus *X* can function alone in place of stimuli, *B* and *C*; in other words, the single stimulus *X* can call out all three responses "1, 2 and 3."



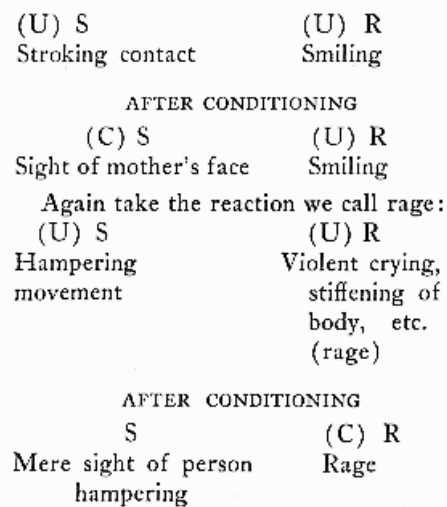
For example, the sight of your wife entering the room may call out the integrated social response which we will call *Y*, consisting of (1) rising from your chair, (2), bowing, (3) offering her a chair. I would call this an integrated response. Our problem in social conditioning therefore is to find the kinds of individual responses we want brought together to form some pattern [p. 25] of response demanded by society, then to locate the individual stimuli which will call out these responses and substitute for that whole group of stimuli a *single* stimulus -- often a verbal one. All verbal commands are of this type, for example, "Right front into line!" The verbal stimulus is *X* of our diagram, the separate movements necessary to execute this maneuver illustrate the "1, 2, 3," of our diagram.

In this way, which may seem a little complicated unless one is familiar with the establishment of conditioned responses the Behaviorist tries to take the old vague concept of habit formation and to give it a new and exact scientific formulation in terms of conditioned responses. On this basis the most complicated of our adult habits are explicable in terms of chains of simple conditioned responses.

*The Behaviorist finds no scientific evidence for the existence of any vitalistic principle*, such, for example, as Prof. MacDougall's "purpose," in his explanation of the increasing complexity of behavior as we pass from infancy to adulthood. It [p. 26] is a truism in science that we should not bring into our explanation any vitalistic factor. We need nothing to explain behavior but the ordinary laws of physics and chemistry. There are many things we cannot explain in behavior just as there are many things we cannot explain in physics and chemistry, but where objectively verifiable experimentation ends, hypothesis, and later theory, begin. But even theories and hypotheses must be couched in terms of what is already known about physical and chemical processes. He then who would introduce consciousness, either as an epiphenomenon or as an active force interjecting itself into the chemical and physical happenings of the body, does so because of spiritualistic and vitalistic leanings. The Behaviorist cannot find consciousness in the test-tube of his science. He finds no evidence anywhere for a stream of consciousness, not even for one so convincing as that described by William James. He does, however, find convincing proof of an ever-widening stream of behavior.

To understand this stream of behavior [p. 27] we must first survey the activity of the new-born infant, and enumerate the unconditioned responses and the unconditioned stimuli that call them out. Not all unconditioned responses are present at birth. Certain of them appear at fairly definite intervals afterwards. And this inquiry is not being undertaken for the purpose of classification. The information is sought because these stimuli and responses are the "raw material" out of which our child, adolescent and adult, is to be built up. Love, fear and rage behavior begin at birth, just as do sneezing, hiccoughing, feeding, movements of the leg, larynx, grasping, defecation, urination, crying, erection of penis, smiling, defense and other movements. Reaching, blinking and others begin at a later stage. Some of these embryologic responses persist throughout the life history of the individual, others disappear.

Most important of all, conditioned responses are almost immediately built on these embryologic foundations. For example, the child will smile at birth (U) R; stroking the lips and other skin [p. 28] of the body (U) S (and certain intraorganic stimuli) will evoke it. So the birth situation may be represented diagrammatically thus:



Consider fear. Our work has shown that the fundamental unconditioned stimulus (U) S calling out a fear reaction is a loud sound or loss of support. Every child I have examined, with one exception, [p. 29] in approximately a thousand, will catch his breath, pucker his lips, cry, or, if older, crawl away, when a loud sound is given behind his head, or when the blanket on which he is lying is suddenly jerked forward. Nothing else in the whole

universe will produce fear in early infancy. Now it is very easy to make the child fear every other object in the universe. All one has to do is to show the object and strike a steel bar behind his head, repeating the procedure once or twice. Thus:

(U) S		(U) R
Loud sound	}	"Start" crying,
Loss of support	}	etc. (fear).

AFTER CONDITIONING

C	—	U (R)
Rabbit, dog, furry objects		Fear

So far I have described the process of conditioning or building. Possibly the process of breaking down or unconditioning is the more important one. Work on it has hardly begun, so I can only sketch the process [p. 30] roughly in a few words. Suppose I set up a conditioned fear-reaction to gold fish in a glass bowl, in an infant eighteen months old who is just beginning to talk, by means of the process already described. The moment the child sees the fish bowl he says "Bite." No matter how rapid his walk, he checks his step the moment he comes within seven or eight feet of the fish bowl. If I lift him by force and place him in front of it, he cries and tries to break away and run. No psychoanalyst, no matter how skillful, can remove such a fear by analysis. No advocate of reasoning can remove it by talking to the child about the beautiful fishes, how they move, live and have their being. So long as the fish is not present, you can, by such verbal organization, get the child to say "Nice fish, fish won't bite;" but immediately you show him the fish, the former reaction recurs.

Try another method. Let his brother, aged four, who has no fear of fish, come up to the bowl and put his hands in the bowl and catch the fish. No amount of watching a fearless child play with these [p. 31] harmless animals will remove the fear from the toddler. Try shaming him, making a scapegoat of him. Your attempts are equally futile. Let us try, however, this simple method. Place the child at meal time at one end of a table ten or twelve feet long, and move the fish bowl to the extreme other end of the table and cover it. Just as soon as the meal is placed before him remove the cover from the bowl. If disturbance occurs, extend your table and place the bowl still farther off, so far away that no disturbance occurs. Eating takes place normally, nor is digestion interfered with. Repeat the procedure on the next day, but move the bowl a little nearer. In four or five days the bowl can be brought right up to the food tray without causing the slightest disturbance. Then take a small glass dish, fill it with water and move the dish back, and at subsequent meal times bring it nearer and nearer to him. Again in three or four days the small glass dish can be put on the tray alongside of his milk. The old fear has been driven out by training, unconditioning has taken place, and this unconditioning [p. 32] is permanent. I think this method is based on re-training the visceral component of a total bodily reaction; in other words, to remove the fear the intestine must be conditioned. Now I think one reason why so many psychoanalytic "cures" are not permanent is because the intestine is not conditioned simultaneously with the verbal and manual components. In my opinion, the analyst cannot re-train the intestine by any system of analysis or verbal instruction because in our past training words have not served as stimuli to intestinal response.

*Does Behavior Psychology leave out anything?* Professor MacDougall will doubtless tell you that the Behaviorist selects his problems. He will admit that the kind of work I have sketched is valuable to society, but he will tell you that there are many other phases in psychology which the Behaviorist studiously and possibly ignorantly dismisses. One such problem is "thinking." How can you explain "thought" in Behavioristic terms? To do so requires considerable time.

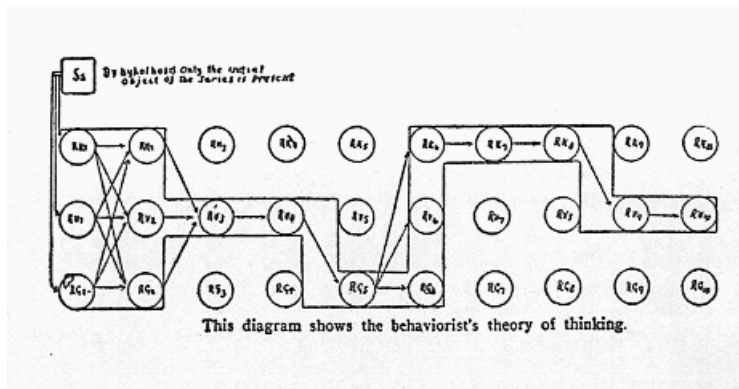
The increasing dominance of language [p. 33] habits in the behavior of the developing child leads naturally over into the behaviorist's conception of thinking. The behaviorist makes no mystery of thinking. He holds that thinking is behavior, is motor organization, just like tennis playing or golf or any other form of muscular activity. But what kind of muscular activity? The muscular activity that he uses in talking. Thinking is merely talking, but talking with concealed musculature.

I ask you to take any child (as I have been doing with two lately) when he first begins to talk. Peep through the keyhole and watch him in the early morning. He will sit up in bed with his toys, talk aloud to his toys, talk about them. When a little older, he will plan out his day aloud, say aloud that his nurse is going to take him for a walk, that his daddy is going to bring him an auto. In other words, he talks overtly when alone just as naturally as he works overtly with his hands. A social factor comes in. The father gets to the point when his own morning nap is disturbed. He yells out "keep quiet." The child begins then to mumble to himself -- a [p. 34] great many individuals never pass this stage, and they mumble to themselves all through life whenever they try to think. The father does not like the child's mumbling any better than his talking aloud, and so he may slap him on the lips. Finally, the parents get the child to the point where he talks silently to himself. When his lips are closed, it is nobody's business what is going on below. Thus we come to behave as we please if we do not give any external motor sign of it -- in other words, our thoughts are our own.

Now a further question comes up for serious consideration: Do we think only in terms of words? I take the position to-day that whenever the individual is thinking, the whole of his bodily organization is at work (implicitly) -- even though the final solution shall be a spoken, written or subvocally expressed verbal formulation. In other words, from the moment the thinking problem is set for the individual (by the situation he is in) activity is aroused that may lead finally to adjustment. Sometimes the activity goes on (1) in terms of implicit [p. 35] manual organization; (2) more frequently in terms of implicit verbal organization; (3) sometimes in terms of implicit (or even overt) visceral organization. If (1) or (3) dominates, thinking takes place without words.

A diagram will make clear my present convictions about thinking. In this diagram I take it for granted that the body has been simultaneously organized to respond to a series of objects, manually, verbally, and viscerally. I take it for granted further that only one of the objects, the initial one, S1, is at hand, and that it starts the body to work on its problem of thinking. The object actually present may be a person asking the individual a question. "Will X leave his present job to become Y's partner?" By hypothesis the world is shut off, and he has to think his problem out.

The diagram shows clearly that thinking involves all three sets of our organized reaction system. Note that *RK1* can arouse *VK2*, *RR2*, *RG2*; whereas *RV1* may call out *RK2*, *RV2*, *RG2*; and *RG1* calls out *RK2*, *RV2* or *RG2*; and that all [p. 37] of them serve, respectively, as kinesthetic, laryngeal or visceral substitutes for *S2*, the next real object in the series of objects originally producing the organization. Note that, in accordance with the diagram, thinking activity may go on for a considerable time without words. If at any step in the process the *RY* organization does not appear, thinking goes on without words.



[alone on p. 36]

It seems reasonable, does it not, to suppose that thinking activity at successive moments of time may be kinesthetic, verbal or visceral (emotional)? When kinesthetic organization becomes blocked, or is lacking, then the verbal processes function; if both are blocked, the visceral (emotional) organization becomes dominant. By hypothesis, however, the final response or adjustment, if one is reached, must be verbal (subvocal).

This line of argument shows how one's total organization is brought into the process of thinking. I think it shows clearly that manual and visceral organizations are operative in thinking even when no verbal processes are present -- it shows that we [p. 38] could still think in some sort of way even if we had no words!

We thus think and plan with the whole body. But since, as I have already pointed out, word organization is, when present, probably usually dominant over visceral and manual organization, we can say that thinking is largely subvocal talking--provided we hasten to explain that it can occur without words.

Words are thus the conditioned (C) S substitutes for our world of objects and acts. Thinking is a device for manipulating the world of objects when those objects are not present to the senses. Thinking more than doubles our efficiency. It enables us to carry our day world to bed with us and manipulate it at night or when it is a thousand miles away. Psychoanalysts when taking an individual out of a bad situation often forget that the patient carries the bad verbal situation to the new location. Most of the happy results of analysis are due to the fact that the analyst builds up a new word world correlated with a new visceral and a new manual world. There can be no virtue in analysis *per se*.

This is the end of my little story. I have had opportunity only to hurl at the reader a few Behavioristic words; it is beyond reason to expect him to react favorably to a scientific formulation which throws out of adjustment so much of his previous organization. If it serves to make you only a little more critical of our present easy-going psychological formulations, I shall rest content. To accept Behaviorism fully and freely requires a slow growth -- the putting away of old habits and the formulation of new. Behaviorism is new wine that cannot be poured into old bottles.