

WATSON AND BEHAVIORISM

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TWO of the most important developments in modern psychology are Freudianism and Behaviorism. The interest aroused by Freud and by the results of his alleged excursions into the labyrinths of the unconscious mind has recently somewhat given way to an interest in the doctrines of John B. Watson, formerly Professor of Psychology in Johns Hopkins University.

Watson is the founder of Behaviorism, and so successful has he been in disseminating his views that there are few, to-day, who are not familiar at least with the term. Scarcely more than five years ago, however, I listened to a lecture in the city of New York in which the professor referred several times to Behaviorism. Finally a gentleman in the audience—a group of men, all of whom must have had some training in psychology—arose and asked: “Who is this man, B. Haviorism, anyway?” Such a question could hardly be asked to-day. Probably no movement within psychology is attracting more attention at the present time than Behaviorism. It is heralded by some as the scientific salvation of psychology. By others, however, it is condemned as thoroughly pernicious. At any rate, it demands and deserves careful study.

Watson has many followers, and the behavioristic school, at least in the United States, is still growing. The disciples, however, do not all agree with their teacher; nor do they always agree among themselves. This makes it difficult to give a coherent account of Behaviorism. It is, perhaps, quite impossible to do so, for Behaviorism to-day is really of many sorts. In what I shall say, therefore, I shall confine myself to Watson—the high priest of the movement—and more particularly to what I consider to be the extreme and illogical position which, in the last four or five years, he has assumed.

The contention of Watson is that psychology in the past has been following an *ignis fatuus*. Since Locke and Descartes and on up through James, Wundt, Angell, Ladd, Titchener, Stout, Ward and many others, its chief interest has been in conscious processes. That is, psychology has been studying sensations, perceptions, memories, imaginations, emotions, volitions, etc. All this has been wasted time. These data, if they have any reality at all, are all subjective data—peculiar to the individual—and so are incapable

of treatment by scientific method. Psychology, Watson says, must examine not how people think and feel, as these words are ordinarily used, but how they behave, that is, what they do.

If, for example, several fierce rats were suddenly to be released in a room full of people, many of the women present would scream, jump up upon their chairs, and, though this in these days might no longer be necessary, draw their skirts tightly about them. Here, says Watson, is behavior. Here are data for scientific investigation, data which any one can observe; and the statements made concerning this behavior can be verified by all. The behavior is objective, public. But the sensations that were present in those few trying moments, and the unpleasant feelings and imaginations entertained—these, if they exist at all, are private, subjective, and so cannot be treated by psychology. They elude all scientific investigation.

Psychology, then, for Watson must become what he calls a natural science. It studies the movements, muscular and glandular, which human beings—and lower animals—make. It is closely related to physiology but differs from that science, so Watson states, in that physiology studies the functioning of parts of the body whereas psychology studies the reactions of the body as a whole. As Watson puts it, "Behaviorism . . . is intrinsically interested in what the whole animal will do from morning to night and from night to morning".¹

Behavioristic psychology, it is claimed, gathers its data by experimental methods and endeavors to control and predict man's behavior. Of course, it is interested in lower animals as well. Indeed, Watson has said, it was in 1903, while observing white rats trying to find their way out of a complex maze, that he first began to formulate his behavioristic doctrine. If it be possible, he reasoned, to write a psychology about white rats, rats that cannot speak, cannot introspect, cannot make known in any way that they have a mind and consciousness, then it surely must be possible to write a psychology about human beings in the same way. It was not until 1913, however, in an article in the *Psychological Review*, entitled "Psychology as the Behaviorist Views It" that the term Behaviorism was first introduced.

It will help toward an appreciation of Watson's work if, at the outset, we remind ourselves very briefly of one or two of his typical experiments. On one occasion a study of 19 rats was made with the purpose of discovering their progress in learning to find food placed at the centre of a complicated maze. "The first trial

¹ Watson: *Behaviorism*, p. 11.

required on the average over seventeen minutes. During this time the rat was running around the maze, into blind alleys, running back to the starting point, starting for the food again, biting at the wires around him, scratching himself, smelling this spot and that on the floor. Finally he got to the food. He was allowed only a bite. Again he was put back into the maze. The taste of the food made him almost frantic in his activity. He dashed about more rapidly".¹ The average time for the group on the second trial, Watson reports, was only a little over seven minutes. The average time on the thirtieth trial was approximately twenty seconds. The rats had learned to thread the maze, and the whole learning process, Watson holds, is one merely of motor adjustment. This sort of experiment is of course very common. The formation of motor habits in human beings, such as, for example, learning to ride a bicycle, has been studied and interpreted in the same way.

A less familiar type of experiment is illustrated by Watson's work with infants. Albert B., for example, was an infant not yet a year old. He had spent his life in a hospital, being the son of one of the wet nurses there. He was a wonderfully good baby and at the time this experiment was performed there were just two kind of stimuli which would call forth the reaction ordinarily called fear. These were a loud sound and loss of support. Watson, by the way, has shown pretty conclusively that children at birth fear only these two things. All other fears—of snakes, of mice, of the dark,—are, he holds, the result of training. They are acquired, not native. The experiment with Albert was undertaken in order to discover the circumstances under which a new fear might be conditioned; or, to use language slightly more technical but now very common in physiology and psychology, Watson was trying to establish a *conditioned reflex*.

When Albert was eleven months and three days old a white rat with which he had often played, was placed near him on the bed. He began to reach for the rat. Just as his hand touched the animal a heavy steel bar behind his head was struck with a hammer. The infant jumped violently and fell forward, burying his face in the mattress. He did not cry, however. Again on the same day the same experiment was performed. Once more Albert jumped violently, fell forward, and this time began to whimper. A week later the rat was again presented. At first the infant gazed steadily at the rat, but made no attempt to touch it. When the rat was placed nearer he started to reach for it but withdrew his hand before contact. When later the combined stimulus of rat

1 *Behaviorism*, p. 170.

and sound was given fear reactions were again evident, and finally on the eighth trial on this day when the rat was presented alone Albert immediately began to cry and began to crawl rapidly away.¹ A child had learned, perhaps for the rest of his life, to be afraid of a white rat. In this way the emotional life of all of us has been complicated.²

Careful observation of many infants for a period of over ten years has led Watson to feel reasonably sure that human beings at birth manifest but three different forms of emotional reaction. These are fear, love and rage, and the stimuli that call these forth are relatively very few. These emotional reactions, we should bear in mind, are for Watson not emotions as we ordinarily use the term; but bodily movements—visceral, in the main,—of various kinds and various degrees of complexity.

This policy of reducing all so-called mental processes to bodily processes is pursued by Watson throughout the whole gamut of experience. Nothing is excepted. For example, thinking or reasoning, even of the most abstruse sort, is nothing but bodily reaction—chiefly, in normal folk, the movement of our vocal apparatus, the larynx, tongue, lips, etc. Small children think aloud; older folk, because of the pressure of society, have learned to think to themselves. Thinking to oneself is, however, a matter of subvocal speech although other bodily movements may also be present. "Thought then is a form of general bodily activity just as simple (or just as complex) as tennis playing. The only difference is we use [chiefly] the muscles of our throat, larynx and chest instead of the muscles of our arms, legs and trunk."³

Watson holds then that all learning and all thinking—whether of a rat or a chimpanzee, of a child or a Newton—and all other so-called mental processes are bodily movements.⁴ If we can but observe these movements we can get a complete understanding of everything that has hitherto been called mental. The business of a scientific psychology is solely that of studying these bodily processes.

Watson's theory is a more satisfactory explanation of that type of learning which is called the trial and error, or fumbling and

1 Cf. *Behaviorism*, pp. 125-131.

2. It is, moreover, the claim of Behaviorism that in this way out of the relatively simple native equipment of the individual his whole personality is built up. "Give me", says Watson, "a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant, chief, and, yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors." (*Behaviorism*, p. 82.)

3 Harper's Magazine, June, 1926, p. 42.

4 It would seem indisputable that Watsonian Behaviorism in psychology leads logically Materialism in philosophy.

success, method of learning. But when one turns away from rats in mazes to scientists in their laboratories he finds on occasion, but not nearly so often as is generally supposed, a type of learning which does not fit so readily, if indeed at all, into the Procrustean bed of Watson's Behaviorism. Even certain lower animals, the chimpanzees, appear to learn, at times, by a method which is not the fumbling and success method.

Köhler, in his book, *The Mentality of Apes*, complains that the maze problem is one which cannot be solved by intelligence. Newton, himself, would have been forced to use the fumbling method of the rats. Other problems, however, of a different sort must be solved by and tend to elicit a different method. The apes, with which this German investigator worked, were placed in a cage from the top of which and just out of reach was suspended a banana. Boxes were placed in the cage. The apes proceeded, finally, to pile these boxes one on top of the other and so succeeded in getting the banana. The behavior manifested, Köhler claims, is different in kind from that shown by Watson's rats. It expresses "intelligence" or "insight". The apes appeared to work out a possible solution in advance and then to act accordingly; and it is in this way that men behave when they endeavor reflectively to solve problems.

The question which concerns us at present is whether these procedures of rats and apes and men can all be fully explained as merely bodily changes. Can it be that Watson has not sufficiently widened the scope of his inquiry? It is with this possibility in mind that Bertrand Russell, when writing on the process of learning in animals and infants, has remarked: "One may say broadly that all the animals that have been carefully observed have behaved so as to confirm philosophy in which the observer believed before his observations began. Nay, more, they have all displayed the national characteristics of the observer. Animals studied by Americans rush about frantically, with an incredible display of hustle and pep, and at last achieve the desired result by chance. Animals observed by Germans sit still and think, and at last evolve the solution out of their own inner consciousness. . . . It remains necessary to remember that no one investigator is to be trusted to give a survey of the whole field."¹

Ever since the announcement of these behavioristic doctrines there has been much controversy. To-day most psychologists acknowledge, and acknowledge gladly, the value of Watson's experimental work with animals and infants. Here he has made a

(1) Russell: *Philosophy*, pp. 29-30.

splendid contribution. Unfortunately, however, as we have seen, he has not confined himself to stating the positive results of his investigations. He delights in ridiculing the beliefs and procedures of others. Subjective observation, that is, the examination by an individual of his own mental processes has no scientific value, he holds. The work of all the psychologists up to the advent of his own theory should be thrown into the discard. For conscious processes such as perceptions, memories, imaginations, desires, he has no use. I do not find in his writings the definite statement that these processes do not exist, but certainly his language leads one to believe that he holds, that if they do exist, it would be far better if they did not. They contribute nothing to the understanding of man; they serve only to darken counsel.

In corroboration of these statements permit me to advance one of many possible illustrations taken from Watson's own writings. Ordinarily when psychologists consider memory processes and try to analyse them they refer to visual images and auditory images, etc. In chapter *IX* of his book, *Behaviorism*, Watson says that, "instead of speaking of memory, the behaviorist speaks of the retention of a given habit in terms of how much skill has been retained and how much has been lost in the period of no practice".¹ Now the term memory suggests these images to which reference has just been made and so the behaviorist will have nothing to do with it. In a still more recent article, Watson writes on this subject as follows:

Can I not close my eyes and picture to myself almost with photographic accuracy persons, places, things that I have met with in my past? And cannot I go into a quiet room and have my mind filled again with the melody that I heard at the concert last night (auditory images)? This certainly was the older view of psychologists—it is believed in by hundreds of psychological professors in our universities to-day... But the behaviorist, having made a clean sweep of all the rubbish called consciousness, comes back at you: "Prove to me", he says, "that you have auditory images, visual images or any, other kinds of disembodied processes. So far I have only your unverified and unsupported word that you have them... What then becomes of images? Why, they remain unproven—mythological, the figment of the psychologist's terminology. If our everyday vocabulary and the whole of literature had not become so enmeshed in this terminology we would hear nothing of imagery. What have we in their place? What does a person mean when he closes his eyes or ears (figuratively speaking) and says, "I see the house where I was born, the trundle bed in my mother's room where I used to sleep—I can even see my mother as she comes to tuck me in and

¹ P. 179.

I can even hear her voice as she softly says good-night"? Touching, of course, but sheer bunk. We are merely dramatizing. The behaviorist finds no proof of imagery at all in this. *We have put all these things in words long, long ago* and we constantly rehearse those scenes verbally whenever the occasion arises... We do not need any kind of images to account for any part of our so-called inward "mental" life. Verbalization which can go on aloud at a whispered level or at a still lower level (that of thought, takes the place of all so-called memory images. What we mean by being conscious of events which happened in our past is that we can carry on a conversation about them either to ourselves, (thought) or with some one else (talk).¹

This rather long excerpt from Watson's writings illustrates nicely the extreme position which he has allowed himself to assume. Memory is a word used in a very comprehensive way. When it implies the retention of a habit such as skating or swimming or the talking of a foreign language or the mechanical recall of a poem it may be possible to interpret the process as Watson does in terms only of muscular movement, verbal or otherwise: But any unbiased person will agree that when memory implies the recall of a past event such as, let us say, his wedding day or, to take something more commonplace, the last moving picture he attended, then there are, besides the movements which may be present in the memory process, images as well.

It is because of Watson's extreme view as illustrated above that one of England's foremost scholars, Dr. C. D. Broad of Cambridge University, recently declared that Behaviorism, taken quite strictly, is a "silly" theory. Not that Watson himself can be characterized by that term, for, as Broad says, only very acute and learned men could have thought of anything so odd or so preposterous. It is important, the same writer reminds us, to remember that a theory like Behaviorism, "which is in fact absurd, may be accepted by the simple-minded because it is put forward in highly technical terms by learned persons who are themselves too confused to know exactly what they mean".²

It may be that Dr. Broad is too hard on Behaviorism and its advocates. I think he is, but I also think that this relatively new theory in psychology is quite inadequate. Moreover, I believe, as I shall try to show in a moment or so, that when Watson attempts in his scientific work to ignore conscious processes he is in reality attempting the impossible. There can be no science without constant reliance upon conscious processes.

¹ Harper's Magazine, July, 1926, pp. 247-9.

² Broad: *The Mind and its Place in Nature*, p. 624.

First, however, we should recognize that Introspectionism, the tendency in psychology against which Watson trains his heavy guns, has often stood in need of adverse criticism and has always required to be supplemented by investigations such as Watson has so carefully performed. The introspectionist holds that the subject matter of psychology consists entirely of conscious processes. For him there can be no animal and very little child psychology because no satisfactory report of conscious processes can in these cases be obtained. No adequate reason, however, can be advanced why psychology should not investigate what Watson calls the behavior of living beings as well as their conscious processes. Introspectionism and Behaviorism are then really complementary and should not be divorced from one another. Each is inadequate without the other.

Not content with holding that psychology should confine itself to conscious processes, the introspectionist has far too often couched his results in language that only too plainly suggests that he is still fettered by the "faculty" psychology of an earlier day. To define reason or memory or will as certain occult powers of the mind which enable us to achieve certain results is a practice which in no way clarifies our thinking, and which tends almost certainly to prevent the analysis upon which an understanding of mental processes always waits.

Against all this behaviorism has reacted violently. But so have many of the introspectionists. We should recognize that there is no need to cast overboard conscious processes because one must discard the "faculty" theory. Watson has thrown out the child with the bath.

I have already said that there can be no science without constant reliance upon conscious processes. Watson overlooks or ignores this fact, and his error here is, in my opinion, the error which lies at the bottom of all his mistakes. Suppose we analyse a piece of scientific investigation in order to see the necessity of conscious processes. Let us take an illustration from the science of physiology, and, because this year is the tercentary of the publication by Harvey of his memorable treatise "On the Motion of the Heart and Blood in Animals", it may not be inappropriate to consider very briefly certain elements in his procedure.

He had, of course, observed certain things about living bodies—the functioning of the heart, the veins and the arteries; the blood and its quantity and movement to and from the heart. The capillaries he could not observe for as yet the microscope was not in use. Nevertheless, he inferred from what he could observe that

there must be a connection between the venous and arterial systems. Now Watson holds that such a process of reasoning is entirely explicable in terms of motion. There are, of course, the external stimuli—the physical movements of the heart and blood, the movements in the ether, light waves, which affect the body of Dr. Harvey—and then, the motor reactions of his body culminating probably in certain words; the blood circulates. These words are themselves laryngeal movements. So there you are! As Thomas Hobbes said long ago operations of the mind “are nothing really but motion.”

But the truth of the matter is that the whole process is shot through and through with conscious data. Harvey did not observe the physical object we call a heart. No man has ever observed physical objects; I mean, of course, the objects which physics tells us are constitutive of the world which it studies. Now that seems very strange but it is true nevertheless. When you look at a table what do you see? The physical table, if we accept modern physics, is a vast number of electrons and protons. What we see, however, is a patch of color. In other words, in physical science we begin with perceived data and then infer physical objects such as tables and chairs, and hearts and veins. And what is true of physics is true of all the sciences; we begin with conscious processes.

Watson assumes, quite without justification, that in the study, say, of the infant Albert all one has to do is to observe certain physical movements, and then report what he observes. A dozen people may observe the same objective behavior and so verification and science are possible. But no one can observe the objective movements of Albert. These are physical occurrences which are the result of inference. And each spectator sees Albert—has certain visual perceptions—in his own way. These visual data—the same is true of auditory or tactual or any other sort of perceptual data—are different in the case of each spectator because of differences in perspective, apparent size, light and shade, etc. No two observers of any event ever have exactly the same experience. And so it is that in all scientific procedure conscious processes, such as perceptions, are pre-requisite to any advance. On them we base our inferences. We assume, and in most cases quite properly, that the experience which others will have, if they put themselves, so far as possible, in a situation such as we have been in, will be not identical with, but sufficiently similar to our experience to make generalization possible. If what has just been said is true, then there is no difference in principle, the behaviorists notwithstanding, between observing hair standing on end, as in the

case of fear, and observing the sensations and feelings which are also present in such an emotion.

This major point of criticism has been emphasized by Bertrand Russell in his recent book on "Philosophy." In his chapter on "Physics and Perception" this keen writer, who, by the way, is more favorable to Watson than most of his critics, says: "In all our perceptions of physical processes there is an element of subjectivity. If, therefore, physics is true in its broad outlines . . . what we call 'perceiving' a physical process is something private and subjective, at least in part, and is yet the only possible starting point for our knowledge of the physical world."¹ And again in the same chapter Russell says: "The data from which we must start in order to get to know the rat's bodily movements are data of just the sort that Dr. Watson wishes to avoid, namely private data patent to self-observation, but not patent to anyone except the observer."²

Behavioristic psychology is then inadequate; it must be supplemented by the results of introspection, of self-observation, that is by what a man and that man only can perceive about himself. And, in the second place, Watson's Behaviorism because of its attitude to conscious processes is characterized by a fundamental inconsistency. He holds we can and must get along without conscious processes and yet he depends upon them at every step of his procedure.

In conclusion it may be advisable to summarize what has been said under the following headings:

1. Watson has led psychologists to recognize that they should study the behavior (the muscular and glandular movements) of living beings. In the past, conscious processes have monopolized their attention.

2. Watson has advanced very considerably our knowledge of animal and child psychology.

3. He has clarified our understanding of the nature of the learning process, at least in so far as this is of the "trial and error" type.

4. He has, however, unduly narrowed the field of psychological endeavor. His Behaviorism is inadequate.

5. By trying to ignore the importance of conscious processes Watson has rendered his view of psychology inconsistent. Apparently he does not see, as Bertrand Russell and many others do

(1) P. 130.

(2) P. 129.

see, that science must begin with the conscious processes of the individual. The observations made by Watson upon his rats are mental processes and are not identical with those made by other onlookers. They resemble those of others, or, at least we assume that they do, and so the "objectivity" of scientific observation and the theories based thereon is obtained.

6. Watson has probably discounted the complexity of the native equipment of the infant, and he has certainly discounted the complexity of such psychological processes as reasoning, memory, imagination, emotion.²

Man's life is not to be fully understood by reference to the purely physiological movements which occur within his body. Behaviorism has accomplished much good, but Watson's theory taken by itself does not point the way to a satisfactory psychology.

A SONG

EILEEN CAMERON

Night calls—
Her husky voice athrob
Throughout the wind; and roses sway
Like scarlet lips that closing kiss
The paling cheek of day.
Twilight dreams on hills afar,
And wistful sunset steals away,
While roses droop o'er garden walls;
Night calls.