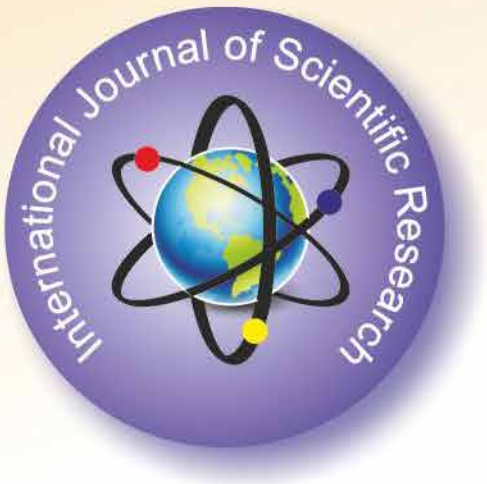
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Research Paper

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Scientific Behaviourism of Watson and Hull : A Philosophical Perspective

Philosophy

KEYWORDS : Scientific method, Consciousness, Conditioning

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ABSTRACT

The paper seeks to bring out basic assumptions and conceptual doctriens that form the back drop of empirical researches of behaviourists. Classical behaviourism calls for ignoring the issues of consciousness. J.B. Watson holds that a child at birth reacts in certain ways to certain changes in the environment as human body has a particular chemical composition. He seeks to explain the entire behaviour of a person thorugh the principle of classical conditioning. Developing the behaviourist theory further, Clark Hull tried to establish the laws of human behaviour in testable mathemetical equations.

Modern scientific behaviourism originated primarily as a methodological movement. It represents an attempt to apply the method of natural sciences, as concieved by observationalists (also known as empiricists), to the study of human behaviour. The observationalists view the aim of science as the quest for explanation of events and processes, through the methods of observation and experimentation, primarily to predict and control them. According to these exponents of scientific method, an event or process is considered to be explained if and only if it has been subsumed under some causal law, i.e. if it has been established as an instance of some empirical generalisation. They hold that scientists start with collecting of the data (observations) by noting variations in different units of reality. The units which produce variations in other units, when varied, are termed as independent variables and the units which get varied as a consequence of these variations in the domain of independent variables are called dependent variables. After amassing a large number of observations, functional relations are established between the vast range of variables, hypotheses are verified and causal laws are discovered for the phenomenon to be regarded as explained. The knowledge of these general laws helps in the prediction and control of various events or processes pertaining to that phenomenon. Only such explanations are considered valid which lead to success in prediction and control.

The behaviourists insist that this aim can be achieved by the use of objective methods only. The prerequisite for any method to be regarded as objective is the repeatability of observations and experiments regarding the phenomena under investigation by different people. They reject traditional problems and concepts of psychology as they were considered to be referring to something which was not accessible to direct public scrutiny.

The mainstream psychology before Watson, dominated by introspectionist school, was dealing with mental realm and was considered to be the science of consciousness. Watson was opposed to any psychology which considers consciousness to be its subject-matter. He insisted that no discipline which deals with the mental realm could be a science as the mentalistic terms which introspectionists borrowed from every-day commonsensical language were very vague. Since, according to the introspectionists mentalistic terms refer to something inner -which is private to the individual and not directly verifiable by the experimentor- Watson contended that they give rise to merely speculative questions for which no scientific answers can be provided.

He observed that psychology in order to be scientific must not waste its energies on these speculative questions and should choose its subject-matter in such a way that different people should have access to the same object, event or process about which data is being gathered. He considered behaviour to be such a domain about which psychologists can gather data that is publicly verifiable and which fulfills all the conditions of objectivity. He observes that we need to start work upon psychology, making behaviour, not consciousness the objective point of the attack (1948, 470).

The purpose of this science, according to Watson, is the prediction and control of human behaviour as every science aims at the prediction and control of the phenomena of which it is a science. Watson insisted that all the regularities in human behaviour are law-governed regularities and it is also possible to discover these laws. He holds that human behaviour is caused by the changes in environment. Though Watson insisted that he was not interested in metaphysics, yet underlying these assumptions is the tacit metaphysical doctrine about the nature of entities : only physical entities are real, hence they all obey the physical laws.

Watson considered the terminology of animal psychology, where terms being used were defined with reasonable precision in the laboratory situations, to be appropriate for the science of behaviour. He picked from laboratory uses the term 'response', which has certain resemblances with everyday-life-situations, to designate anything the animal does. He used the term 'stimulus' to designate anything that controls the response or that which causes the eliciting of the reaponse (1959, 6).

All that an organism does, according to Watson, is either an unlearned response or an effect of previous history of learning. At birth, an infant is forced to respond in a particular manner to certain stimuli because humans are built of certain materials put together in certain complex ways (1959, 112). These responses do not require any learning and were given the name 'unlearned responses'. The behaviour of an adult human being, according to him, is a vast superstructure built on these unlearned responses through conditioning and habit formation. The influence of the studies conducted by Pavlov is clearly reflected in the writings of Watson. According to Pavlov, certain responses get associated with certain stimuli, which originally do not call out the eliciting of that response, through its association with the stimulus which originally called that response.

Watson was an associationist in his theory of learning. He held that many simple reflexes (responses) get tied together in behaviour by the principle of association to give rise to 'habit'. According to him, each individual through conditioning acquires many habit systems. Religious habit system, patriotic habit system, parental, shoemaking, recreation and arithmetic habit system are some of the examples mentioned by him (1959, 275). Underlying the above doctrine is the assumption that human behaviour is determined -all that a human being does is determined either by the fact that one is born with a definite type of structure, or it is determined by the previous history of learning. This finds most forcefull expression in the following passage :

"Give me a dozen healthy infants well formed and my own specific 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" (1959, 104).

Watson gave a deterministic and causal analysis of language-learning as well. The above stated doctrines of conditioning and habit formation form the basis of his views about language learning also. He used the terms 'language habits' and 'verbal habits' for it. According to him, like other habits these habits are

also based on certain unlearned responses. Through habit formation and conditioning, the child acquires the words. They are associated with objects and general situations; they are substitutes for objects and situations (1959, 230).

We can see a tacit acceptance of the referential theory of meaning which Watson shares with others, including the introspectionists. But in contrast to the introspectionist view that referents of words are inner states, objects and processes, he contended that the referents are to be located in the observable (external) behaviour. By doing so, he tried to avoid the difficulties being faced by the introspectionists. He insisted that it is possible to define mentalistic categories in terms of mutually aggreeable phenomena. For example, he defined emotions as particular types of behavioural responses ; they are words to describe general types of behaviour (1959, 148). For example love, according to him, refers to smiling, changes in respiration, cessation of crying, cooing, gurgling, erection and other visceral changes (1959, 164). Three emotions, i.e., fear, rage and love, according to Watson, are unlearned responses caused by the stimuli of loud sound and removal of support; holding or restraint; and stroking of the skin, especially the sex sensitive areas, respectively. Jealousy according to him, is one of the learned emotions which refers to the behaviour of stiffening of whole body, clenching of hands, reddening and then blackening of face -pronounced breathing, fighting, verbal recrimination etc., and is caused by the sight (or sound) of love object being tampered or interfered with (1959, 194).

From the above mentioned examples, it becomes evident that Watson was trying to do what Bridgman later on called operationism. He defined his categories in terms of events and processes observed and controlled by the experirnentor, i.e. in terms of observed bodily reactions produced and caused by certain stimuli observable to the experimentor. The reactions in terms of which the categories are defined can be controlled by controlling the stimuli which produce them. By restricting the aims of science of behaviour to the description and explanation of observable physical (behavioural) phenomena and physical events which cause them, Watson represents an attempt to develop psychology on the model of established natural sciences.

Though Watson tried to establish psychology as a natural science, most of the historians of psychology consider him to be providing a set of orientational attitudes only. They point out that though he tried to apply the method of natural science, he did not provide the laws of human behaviour in testable quantitative mathematical equations showing the relationship between the variables and defining the unobservables (the term intervening variables was used in scientific literature for them) in terms of measurable quantitative operations. The system of Clark Hull is considered to be an attempt in this direction.

Hull had an explicit theory of the intervening variables (unobservables) which were also used by Watson but were not given a name. Hull defined them as symbols representing entities or processes which, if existent, would account for certain events in observable world (1943, 21). He observes that they should be defined operationally by linking them to observable and measurable conditions on both the antecedent as well as the consequent sides. Drive is one such variable discussed by him. He considered bodily need arising out of reduction in optimum probability of survival to be a factor which motivates the activity. Instead of bringing in the concept of need he introduced the measurable intervening variable drive. Referring to hunger drive as an instance of specific drive, he claimed that the amount of hunger drive (D) is a function of observable antecedent conditions, i.e., of the need which is measured by the number of hours of food privation. On the other hand, the amount of energy which will be expended by the organism in the securing of food varies largely with the intensity of hunger drive existent at the time; in this way the amount of hunger is also a function of observable events which are its consequences (1943, 57).

Hull was of the view that qualitative stage is the first stage of the science which must give way to the quantitative stage. As one of the examples, he discussed the law of spontaneous recovery discovered in qualitative form by Pavlov. Pavlov claimed that with the passage of time, following experimental extinction, an extinguished habit recovers its original strength. He also claimed that recovery is rapid earlier and slow later. This was quantitatively represented by Hull in the equation :

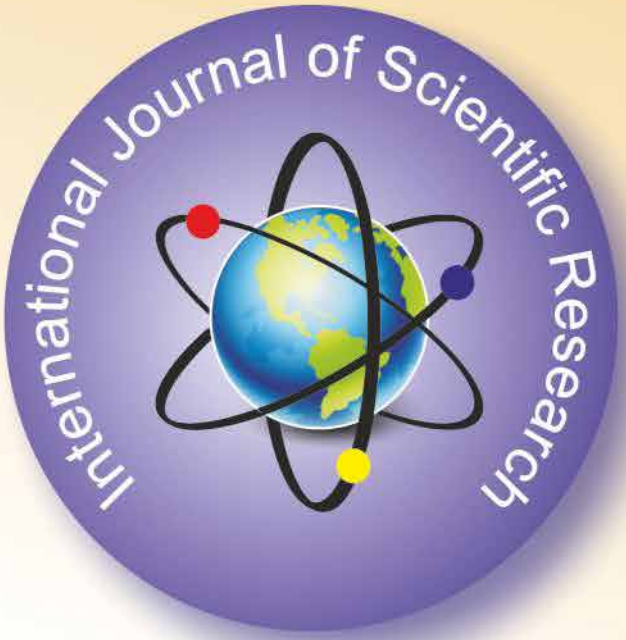
$In(t) = In\ e\ -dt$

where In is the Inhibitory potential after number of extinction responses, e is the mathematical constant 2.718 used as the basis of the Napierian logrithms; t is the time in hours since the termination of extinction ; and d is constant. But, he conceeds that the value of d has not yet been determined empirically (1959, 257). In this manner, by attemting to establish the laws of human behaviour in quantitative, testable mathematical equations, and by providing the operational definitions of concepts, Hull tried to develop explanatory theory of behaviour further.

It can be seen that Watson and Hull tried to explain all that human beings do in terms of effects of controlled or natural changes taking place in the environment. Such analysis of various human activities in causal terms tends to ignore the significance of deliberation, reflection and appraisal in human choices and decisions. This approach views human beings as passive creatures of environment and not as reflective agents who are capable of transforming their environment in pursuit of goals which they set for themselves. There are large segments of human behaviour which, instead of being effects produced by the changes in environment are directed towards bringing about changes in the environment itself. In such cases there need not be any causal connection between the preceding situations and subsequent behaviour. Purposive behaviour of this sort is characterised as voluntary behaviour in our every-day life discourse. Attempts based on the principle of classical conditioning fail to explain such behaviour.

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