KNOWLEDGE AND SPEECH REACTION

A NEW conception that is thorough-going always simplifies. In fact it usually originates when a prevailing point of view has got overloaded, cumbrous and involved. The notion of behavior is already having a simplifying and reducing effect upon epistemology and in my opinion is only beginning its career. But a new point of view also tends to oversimplify, to neglect, ignore and thereby in effect to deny. It is one thing, for example, to deny qualities, meanings, feelings, consciousness, etc., as they have been defined by prior theories, especially by modern psychology with its helplessly subjective and private metaphysics. It is another thing to deny the facts which common sense and common speech independently of any theory call by these names. Personally, I believe that the identification of knowing and thinking with speech is wholly in the right direction. But, with one marked exception, I have not seen any analysis of speech which appears adequate or which does not lay itself open to the charge of omitting and virtually denying obvious facts.¹

1. When it is asserted that speech as thought is a reaction, the question at once arises: What is its stimulus? The easy and simple reply is wrong. We are likely to say that speech is a reaction to a thing sensibly present, that, for example, I say "this is a knife" because a knife is sensibly present as a stimulus to speech. The behaviorist, of all persons, can not afford to give this account of the stimulus to speech. For if he does, he subjects himself to a final retort. The sensible presence of the knife is, then, already a case of knowledge, and speech instead of constituting knowledge merely voices, utters or reduplicates a knowledge already there in full existence. If the stimulus is not a thing sensibly present, neither is it merely some prior complete act or piece of behavior which causes contractions in the vocal organs. The utterances of a talking-machine

¹ The exception is the remarkably clear and comprehensive paper by Mead, in this JOURNAL, Vol. XIX, No. 6, on "A Behavioristic Account of the Significant Symbol."
are induced by an internal mechanism but they are not speech or knowledge; neither is a hiccup or groan or sigh, although it is caused in the vocal musculature by prior organic conditions.

There is a difference between the concept of stimulus-reaction and that of cause-effect. The former includes, of course, the latter, but it adds something. It has, in addition, the property of an adaptation, or maladaptation, which is effected. But adaptation alone is not enough to differentiate stimulus and response in the case of speech. A sigh may relieve suffering and in so far be adaptive. Seeing as an act may be part of the stimulus to saying "that is a knife," but it can not be the entire stimulus. For seeing as a complete stimulus gives rise to the response of reaching and taking or withdrawing, not of speech. What has to be accounted for is the postponement of the complete overt reaction, and its conversion into an intermediate vocal reaction. There must be some break in the seeing-reaching sequence, some obstacle to its occurrence, to induce a diversion from the hand to the voice. There must be a defective or hesitant connection between seeing and handling which is somehow made good and whole by speech. Hence the stimulus to speech can not be identified, *per simpliciter*, with its object. The latter is its consequence, not its antecedent.

2. Before fully developing the implications of this point we must turn to another phase of speech reaction. Not every speech reaction, even when genuine and not a mere vocalization, is a cognitive statement even by implication. Story-telling need not purport to state "facts" or "truths"; its interest may be increased by *vraisemblance*, but this trait serves a dramatic or imaginative end, not an intellectual one. A reader of Shakespeare may become a student of the sources upon which Shakespeare drew, and make speech reactions to this study. Then the reaction is cognitive. But he need not do so; he may be content to confine his speech reaction to a dramatic production. Again the reader may become interested in whether Shakespeare meant to represent Hamlet as mad; then his reaction is a judgment. But he may be satisfied merely to use speech as a means of re-creating a Hamlet either sane or mad; as a mode of story-telling or drama it makes no difference. There is no outside criterion till we go outside of mere story-telling. The play's the thing and it has no object of knowledge.

These remarks are intended to call attention to the need of discovering some differential trait of those speech reactions which do constitute knowledge. A story or play is there, and the re-enacting of it in a speech mode is purely additive. It makes another piece of behavior, but this new mode of behavior does not react back into
the play or story or its conditions. It is complete on its own account. A play of Shakespeare may mean a hundred different things to a hundred different audiences or a hundred different persons in the same audience, and the diversity of the hundred speech reactions evoked is no matter. The speech reactions need have no connection with what Shakespeare himself meant in his reaction, beyond being caused by the latter. But a judgment or thought about what Shakespeare himself meant does not have any such self-sufficing independence. It has to link up with something outside itself. It has to be a reaction not merely to the play as a provocative cause, but has to be a response which somehow fits into or answers to the play as stimulus. Our problem is to name that distinctive feature of a speech reaction which confers upon it the quality of response, reply, answer; of supplying something lacking without it.

We thus return to our prior analysis. The statement "this is a knife" is cognitive because it is more than a mere evocation of a prior piece of behavior. It serves to supplement or complete a behavior which is incomplete or broken without it. As response it is reaction in another sense than when we say in physics: action and reaction are equal and in opposite direction. Some physical reactions are quite independent of that action to which they are reactions except in a casual sense. But a response in statement is intimately connected with that to which it answers. It is not merely to it or away from it, but is back into it: that is, it continues, develops, directs something defective without it. Without speech reaction the action which causes it is blind trial or error; with it, or rather through it, the evoking action becomes purposive, that is, continuous, cumulative. To be more specific the response "this is a knife" is produced by reactions of seeing and incipient reactions of reaching, touching, handling, which are up to the point of speech reaction fumbling, choked and conflicting. Speech reaction unifies them into the attitude of unhesitant readiness to seize and cut. It integrates or coordinates behavior tendencies which without it are uncertain and more or less antagonistic. This trait is the differentia of judgment from speech reaction in the form of story telling and vicarious dramatic reproduction. Unless we acknowledge and emphasize this trait, the behavioristic theory falls an easy victim to the contention that language merely echoes or puts into verbal form an apprehension that is complete without it. The dilemma is unescapable. Either the speech reaction does something to what calls it out, modifying it and giving it a behavior characteristic which it otherwise does not have, or it is mere utterance of what already exists apart from it.

This fact throws light upon the oversimplification referred to at the outset. It is easy to overlook the modifying, re-directive and
integrative function of speech as a response. Then only one side of it is recognized, that of its being *caused* by a prior action. The result is an identification of stimulus and object of knowledge which not merely goes contrary to facts but which undermines the behavioristic statement. For since the stimulus as cause is there when the reaction takes place, the object must also be there, if stimulus and object are simply identified. Then, cognitively speaking, speech is a futile echoing, however useful it may be as a practical device for fixing attention or supplying a convenient memorandum for recollection.

Mr. Mursell, in his recent interesting article, seems to me to illustrate the oversimplification in question and also its consequences. Speaking of perceptual judgments—speech reactions which state perceptions—he says they are "those judgments where the stimulus of the speech reaction is that to which the judgment has reference. I see a colored patch and respond by saying 'that is red.' I see my desk light burning and the muscles of my vocal organs are innervated to make the assertion 'the light is burning.' " So far the account is inconclusive with respect to our problem. No one would deny that speech reaction has reference to its stimulus or that an act of seeing is at least part of its stimulus. But the passage continues as follows: "In such cases the relation between the judgment and its object seems sufficiently clear. The object is the cause of the judgment, the causal nexus taking an intricate path through the nervous ganglia." (Italics mine.) Here the nature of the reference is unambiguously stated. Stimulus is cause, and as cause it is also the object of judgment.

If the stimulus is not simply a tendency to see, that is, an innervation of the optical apparatus, but is a seeing of "desk-light-burning," the non-behaviorist can adequately retort that seeing the light and the desk and their respective positions is already a case of knowing or judgment, so that speech is merely an addition, supernumerary for judgment though doubtless of practical and social utility. The case stands otherwise if the stimulus is an obstructed or incomplete act of vision, and speech serves to release, to direct and clinch it. In the latter case, the patch would not be known as red, say, or the light as the light of a lamp on the desk until the speech reaction definitely determined a stimulus. There is nothing paradoxical in this conception. We constantly react to light by using it, without knowing or naming it—without an explicit distinction and identification, and we very well know in dealing with novelties how names clear up and fix otherwise confusing and confused situations. Be-

---

2 This JOURNAL, Vol. XIX, p. 187, "Truth as Correspondence."
behavioristically, above all, we must conceive that speech response is not something final and isolated, but that it operates in turn as condition of some more effective and adequate adjustment. While practically this function may be often performed in a direction away from its cause, as when we call out to a person in danger to look out, without stopping to tell him why he should look out, intellectually its office is turned toward the cause to modify it. And the object of judgment is thus not the cause simply; it is the consequence, the modification effectuated in its cause by the speech reaction. The speech response is retroactive as it were; not that it can modify anything which has passed out of existence, but it influences a contemporary act of vision and a tendency to reach or handle so as to give them a directed unity which they would not otherwise achieve save at the termination of a period of trial and error.

3. The analysis is still oversimplified. Speaking is connected with an ear and auditory apparatus, and their neuro-muscular and intra-organic connections. It is contrary to fact to identify a speech reaction with simply the innervation of the vocal organs. This gives no differentia of speech from a sigh, or grunt, or ejaculation due to respiratory reactions to pain. A speech reaction is the innervation-of-vocal-apparatus-as-stimulus-to-the-responses-of-other-organs-through-the-auditory-apparatus. It involves the auditor and his characteristic reaction to speech heard. Often and primarily the auditor is another organism whose behavior is required to complete the speech reaction, this behavior being the objective aimed at in the speech reaction.³

When the speech reaction consists in a "silent" innervation the principle is the same. It is then addressed to our own ear and the total connections thereof. Instead of making a command, or giving warning or advice to another agent for him to react to, we address it to ourself as a further re-agent. The agent issuing the stimulus and the one receiving it form two agents or persons or behavior systems. Failure expressly to note the implication of the auditor and his further behavior in a speech reaction is, I think, chiefly responsible for the common belief that there is something arbitrary, conceived in the interest of upholding a behavioristic theory at all cost, in identifying thought with speech. For when speech is confined to mere vocal innervations, the heart of knowledge is clearly not there. But neither is the heart of speech. Introduce connection with the responsive adjustments of the audience, and the forced paradox disappears. We have, as Mr. Mead has shown, the conditions for meaning.

³ This is the point which is brought out so effectively in the article by Mead already referred to.
A speech reaction is a direction to subsequent behavior: Look and see; listen and hear; jump, turn to the left—remarks addressed to another who is in connection with ourselves, a partaker in the same behavior system, and then to ourselves, as a further re-agent, when there is no other person present.

Commands, optatives and subjunctives are the primary modes of speech reaction; the indicative or expositive mood is an amplification. For example, even a treatise by a mathematician or chemist is a guide to the undertaking of certain behavior reactions—a series of acts which when executed will result in seeing the things which the author has responded to with certain statements. It follows that the object of a speech reaction is the concordant responses which it sets up. Antecedent stimuli are a part of this object but are not the complete object of knowledge; the latter involves the further determinations which antecedent stimuli undergo by means of behavior evoked by speech. The object of knowledge or speech is the ultimate consent of the coordinated responses of speaker and hearer; the object of affirmation is the confirmation of co-adapted behavior. Its object is that future complex coordination of serial acts into a single behavior-system which would not exist without it. One's responses are co-adapted to the auditor's and the auditor's to one's own. Certain consequences follow.

1. The first is the refutation of solipsism. Not only can two persons know the same object, but a single personal reaction can not know an identical object. As a single and singular being I may make a primary non-cognitive reaction to a stimulus. I may shiver when the ear is stimulated in a certain way. But when I say, "that is the noise of a saw" the statement is addressed to the responses of an auditor in such a way as to demand a concordant reaction. He listens and looks, and says, "no, that is the sound of an axle of a wheel." Then I have to look, to respond with further behavior. The speech reaction is not complete till a concordant response is established. In other words, speech is conversation; it involves a duality of experiences or views. A single presence or view does not constitute judgment or statement. This particular manner of putting the fact may be unusual but there is nothing strikingly novel in the conception. Cognition involves recognition, acknowledgment, a contrast and connection of two different times or places of experience by means of which a distinctive identification is set up. A single act can not, as singular, establish the identification required to characterize an event as an object. There must be recurrence in a slightly different context. This is a thing that requires a response like that made before, or which will exact a
like response in the future, or of some other re-agent in the present. And without the sameness or correspondence of the responses of the two times or places, there is literally, contra-diction. An object of knowledge must consistently cover or comprehend responses to at least two distinct stimuli.

2. This conclusion has a direct bearing upon the nature of the correspondence which defines truth. The correspondence is found in the inclusion in a single contemporary behavior system of diverse behavior reactions. No correspondence can be conclusively established between a present response and a past one in their separation, or between a present one and a future one in their separateness. There must be one harmonious behavior function which includes the elements of both. Mr. Mursell in the article referred to makes correspondence retroactive. He says: \(^4\) "When I assert that Caesar crossed the Rubicon, I am reproducing the original reaction made by observers two thousand years ago, who saw him splash through the stream and found in the sight a stimulus to the response 'He has crossed the Rubicon.'" This account involves the mistake pointed out in the case of the statement "this is red color." It assumes that the object is known and also truly known prior to the speech reaction. How do I know that some former observer made the speech reaction ascribed to him? This ascription is the point at issue, and the account quoted merely begs the question. A correct statement of the data that Mr. Mursell recognizes would be: "I say that an observer two thousand years ago said that Caesar has crossed the Rubicon; then I reproduce that saying on my own account. Then I say that the two sayings agree or correspond." Undoubtedly they do. But at no point have I got beyond my own sayings. The correspondence is merely between a saying of my own about what some one else said with another saying of my own. There is only a new kind of solipsism, that of private speech. In this historical case, I clearly can not direct my remark to a man long since dead and secure concordant behavior response from him. But I do address myself to others and say that if they will look at historic records, including those of a subsequent course of events, their responses will correspond to mine—or that the different reactions will all enter into a single complex behavior system.

Another illustration of Mr. Mursell's brings out the same points. He says: "Suppose I say Napoleon's tomb is in Paris. Let us assume that I read the words somewhere. Pushing back along the chain of recorded responses of which the printed symbols that I

\(^4\) p. 187.
saw are the last, I come finally to the place where the original observer, who started the whole series, stood. I am directed to a particular locus, and there I receive a stimulus that issues in the response, 'Yes, Napoleon's tomb is in Paris.' And this it is which constitutes the truth of the judgment. . . . The chain of recorded responses always directs us to some specific locus.'\(^5\) The last statement must be unqualifiedly admitted. But what and where is the locus? If it is merely past—and not a stimulus-response continuing into the present—then I can only state that "I say that an original observer said that the tomb is in Paris." In short, as I push back along the chain, I finally come after all only to my own saying about what another said. If I go to Paris then indeed I come upon quite another saying which is congruous with my prior saying that the tomb is in Paris, but in this case the object is not one of a retroactive response. Or, I may respond without going to Paris in such a way as to call out reactions from other persons who make the same deliverance—that the tomb is in Paris. Here also the object is the attained co-adaptations in behavior.

Supposing we take a judgment about an event in the geological ages preceding the existence of human beings or any organisms possessed of speech reactions. In such instances, it is clear that there can be no question of correspondence with the speech reaction of a contemporary observer. By description the retroactive correspondence of sayings is ruled out. Yet no one doubts that there are some judgments about this ancient state of affairs which are truer than others. How can this be possible, since there can be no question of reproducing the judgment of an observer? If we say that what we now judge is what a contemporary observer would have said if he had been present, we are clearly begging the question. Nor could a contemporary observer have made as accurate and comprehensive a judgment in some respects as we can make, since we can also judge what occurred at a given period in the light of what happened afterwards. Clearly our speech reaction is to observations of present perceptions of data, rocks, fossils, \textit{etc.} The other auditor and speaker to whom the statements are addressed are other possible observers of these and similar data. The ulterior "object" is the concordant, mutually reinforcing behavior system, including, of course, the speech responses. Sciousness in this, as in other cases, is con-sciousness. And this equating is not a mere figure of speech; it gives the original meaning of the word.

Summing up, we may say that there are three types of response which it is necessary to distinguish. First, there is direct organic response-of-the-autonomic-and-sensori-central-motor-systems-to

\(^5\)\textit{Op. cit.}, p. 188.
stimuli. These stimuli are not, for and in the reaction, objects. Their connection with response is causal rather than cognitional. The reaction is physico-chemical, though it may terminate in a spatial or molar change. Neither the stimulus nor the response is an object of knowledge, though it may become part of an object-to-be-known. If the stimulus were adequate or complete, complete adaptative response or use would take place. Being incomplete, it is a challenge to a further response which will give it determinate character. Thereby the to-be-known becomes an object of knowledge; it becomes an answer instead of a query.

Secondly, the speech response occupies an intermediate position. By clinching, fixing its stimulus, it releases further modes of response. Saying that the colored patch is red enables us to take it as the thing we have been hunting for, or to react to it as a definite warning of danger. The prior activities form part of the subject-matter of the thing thus known. But they are not the object known. The object known is the coordination of the prior behavior with the consequent behavior which is effected by the medium of speech. Till the assumption is banished that stimulus to knowing and object of knowledge are the same thing, the analysis of knowledge and truth will be confused. Thirdly, the eventual coordination of behavior involves the response of a further re-agent, namely, the auditor, whether another organism or one's own. This coordination of the activity of speaker and hearer forms the ulterior object of knowledge. As a co-ordination or co-adaptation of at least two respondents, it constitutes that correspondence which we call knowledge or truth. Correspondence of past and present responses can be determined only by means of a further response which includes both of them within itself in a unified way. The theory explains the relation of truth to consistency as well as to correspondence. The different responses must consist, cohere, together. Consistency gets an objective, non-mentalistic meaning when it is understood to mean capacity for integration of different responses in a single more comprehensive behavior.

We may conclude by suggesting a possible explanation of the oversimplification of the behavioristic account of speech which has been pointed out. Introspective psychology of necessity broke up the subject-matter of psychology into a number of disjecta membra, of disjoined fragments treated as independent self-sufficing wholes. I say "of necessity" because the connecting links of these fragments are found in a context of environmental conditions and organic behavior of which the introspectionist can not be aware. Now behaviorism has too often confined itself to finding behavior-
istic counterparts of the same material and topics with which introspective psychology has dealt. Consequently actual and concrete behavior has been broken up into a number of disjoined pieces instead of being analyzed freely on its own account. Thus certain errors of introspective psychology have been reduplicated in the very behavioristic psychology which is a protest against introspectionism.

JOHN DEWEY.

COLUMBIA UNIVERSITY.

PROFESSOR PERRY'S EMPIRICISM

THE present age may not unfairly be characterized as one intent upon immediate results. The remarkable achievements of the sciences, pure and applied, seemingly put the philosopher, the plodding student of ultimate principles, to shame, unless he, too, can produce for the edification of an insatiable public some new and novel contributions pointing directly to the advancement of the individual and social good. While psychologists are busy devising intelligence tests, or performing hypothetical experiments upon the human being, under the inspiration of "behaviorism," quite as if man were a lower species of animal, the philosopher must evidently do something to "save caste," at least by way of showing his interest in such scientific advances.

To the attempt to keep in touch with these latest developments and to express his views on the various ethical and sociological problems associated with them, Professor Ralph Barton Perry is devoting his best attention; it is, therefore, by the study of his writings that one may hope most conveniently to gain an understanding of the philosophical implications involved in these movements. It is possible, however, that in his preoccupation with the treatment of specific details, the reader may sometimes lose sight of the fundamental principles upon which Professor Perry's particular solution of these problems depends. Such being the case, it seems essential to pass in review Professor Perry's various utterances with the special purpose of bringing these principles and presuppositions to light; to see in general how he conceives of the relation

6 The case is quite analogous with the situation described by Mr. Kantor with reference to the nervous system. See his article in this JOURNAL, Vol. XIX, p. 38, on "The Nervous System, Psychological Fact or Fiction?" As Mr. Kantor states, too often "the nervous system is taken to be the tangible counterpart of the intangible psychic." Similarly, certain modes of behaviors have been treated as objective substitutes for prior subjective entities and processes.