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L. S. Vygotsky

CONSCIOUSNESS AS A PROBLEM IN THE PSYCHOLOGY OF BEHAVIOR

The article that follows is both a historical landmark and a theoretical discussion of unusual contemporary value to psychology. It is the written version of a speech delivered by L. S. Vygotsky at the Second All-Union Congress of Psychoneurologists, held in Leningrad in 1924. This was Vygotsky's first major contribution to Soviet psychology, and it came at a critical time in the history of Soviet science.

In 1924 psychologists in the Soviet Union, like those in the United States, were busy forming an objective, more or less behavioristic approach to their science. They were rejecting some forty years of psychological research and theory dating from the initiation of the "new" psychology instituted by Wundt in Germany in 1879 (and by scholars in other parts of the world almost simultaneously). In particular, they were rejecting the use of introspective reports about internal experience as the primary data of psychology, seeking in its place an approach to psychology based on data that were intersub-

K. N. Kornilov (Ed.) Psikhologiya i marksizm [Psychology and Marxism]. Moscow-Leningrad: Gosizdat, 1925. Pp. 175-98.

jectively verifiable. In this discussion not only was it common practice to adopt a model of psychological processes that placed the concept of conditional reflexes at its core but it also seemed imperative to many that the concept of consciousness be driven from the psychologist's vocabulary.

Vygotsky, while maintaining the view that psychology must deal with objective data, rejected both key assertions of the behaviorism of the 1920s. Although he accorded reflexes a central role in the makeup of the mind, he likened the grand system-building based on reflex principles to building a house with a roof and a foundation, but no superstructure. He agreed that consciousness could not be viewed as the special property of the soul, but he insisted that it was an essential property of human beings, which mediated their experience with the external world and rendered them specifically human.

For those interested in the history of psychology as a science, this article will be recognized as a major source from which a great deal of the distinctive nature of Soviet psychology has been derived. But the reader interested in contemporary issues will find the material no less interesting. For example, central to current discussions about the role of experimentation in psychology is the extent to which the experimenter, in arranging an environment that permits principled statements about organism-environment interactions, produces and constrains the phenomenon he sets out to discover. Vygotsky's discussion of the dangers of this approach as they distort reality and constrain theory construction is among the most trenchant in the recent literature of cognitive psychology. His views on the interacting roles of historical, social, and personal experience in shaping mediated, higher-psychological functions (consciousness) are crucial to modern theories of cognitive socialization.

Michael Cole
Editor

I

The psychological characteristics of consciousness have been persistently and studiously avoided in our scientific literature. Attempts are made to avoid even mentioning consciousness, as if it did not exist for the new psychology. The result has been that the systems of scientific psychology that have developed under our eyes have from the very beginning suffered from a number of organic defects. We shall mention a few, in our opinion the most fundamental and important, of these.

1. By ignoring the problem of consciousness psychology has deprived itself of access to the study of some rather important and complex problems of human behavior. It is forced to restrict itself to explaining no more than the most elementary connections between a living being and the world. That this is actually the case can easily be seen by a cursory glance at Academician V. M. Bekhterev's book General foundations of human reflexology. Consider the following ideas:

The principle of conservation of energy. The principle of continuous change. The principle of rhythm. The principle of adaptation. The principle of a counterforce equal to a force. The principle of relativity. In a word, universal, all-encompassing principles, embracing not only animal and human behavior but the world in its entirety. Yet among all this we find not even one psychological law of human behavior that would express the relationship or interdependence of phenomena that would characterize the uniqueness of human behavior.

At the other extreme in Bekhterev's book is a classic experiment in developing a conditional reflex (CR)—one small experiment, which in principle is extremely important, but leaves a world to be filled between a first-order conditional reflex and the principle of relativity. The gap between the roof and the foundations, the absence, as it were, of an edifice between them, patently demonstrates that it is still too early to formulate universal principles on reflexological material, and the ease with which one can borrow laws from other areas of knowledge and apply them to psychology. Indeed, we find that the broader and

more comprehensive a principle is, the easier it is for us to extend it to cover any fact we require. We must just not forget that the volume and content of a concept are always in an inversely proportional relationship to one another. Moreover, since the scope of universal principles tends toward infinity, their psychological content, at the same time, tends toward zero.

But this flaw is not peculiar to the Bekhterev school. The same flaw appears in one form or another elsewhere and leaves its imprint on every attempt to produce a systematic theory of human behavior as mere reflexology.

2. The denial of consciousness and the attempt to construct a psychological system without this concept — psychology without consciousness, to use the expression of P. P. Blonsky (1) — have resulted in a situation in which method has been deprived of the most vital means and instruments for studying latent responses not observable with the naked eye, such as internal movements, internal speech, somatic responses, etc. In studying only those reactions that are visible to the naked eye, one is totally powerless to explain even the simplest problems of human behavior.

But human behavior is organized in such a way that in fact it is these internal movements, difficult to perceive, that actually direct human behavior. When we develop a conditional salivary reflex in a dog we are in a certain sense organizing the dog's behavior beforehand by external means; otherwise the experiment will not succeed. We place the dog in a stand, wrap straps around it, etc. In the same way, we organize the behavior of a human subject beforehand, with certain internal movements, through instructions, explanations, etc. Moreover, if these internal movements suddenly become altered during the course of the experiment, the entire pattern of behavior changes sharply. Thus we always make use of inhibited reactions; we know that they are constantly operating in the body; and we know that they play a very influential and regulatory role in behavior — because they are conscious. Nonetheless, we have no means of studying these internal reactions.

To put it simply, a human being is always thinking about himself; this process is never without some influence on his behavior; a sudden shift in thought during an experiment always has some impact on the subject's overall behavior (for example, he suddenly gets a thought: "I'm not going to look at the apparatus"). Yet we have no idea at all of how to assess or evaluate this influence.

3. Any distinction of principle between animal behavior and human behavior is obliterated. Sociology is "biologized" and psychology is "physiologized." Human behavior is studied as the behavior of a mammal. What is fundamentally new, what instills consciousness and mind in human behavior, is disregarded.

Let me mention just two laws as an example: the law of extinction or internal inhibition of conditional reflexes, discovered by Pavlov (2), and the law of dominants, formulated by Ukhtomskii. (3)

The law of extinction (or internal inhibition) of conditional reflexes expresses the fact that with continued excitation elicited by one conditional stimulus (CS), not reinforced by an unconditional stimulus (US), a CR gradually diminishes in strength until it finally disappears altogether. Now let us turn to human behavior. Let us develop a CR to some stimulus in a human subject: for example, we give the instructions "When you hear the bell, press the button." Now let us repeat this experiment 40, 50, or even 100 times. Does extinction take place? On the contrary, the connection is reinforced with each instance, with each passing day. Fatigue sets in, but this is not what the law of extinction is referring to. It is obvious here that it is not possible simply to extrapolate a law from animal psychology to human psychology without some fundamental qualification. But just what this qualification is we do not know, nor do we even know where to look for it.

The law of dominants propounds the existence in the animal nervous system of foci of excitation that attract to themselves other subdominant excitations impinging on the nervous system at the same time. As experiments have shown, sexual excita-

tion in a cat, the acts of swallowing and defecation, the olfactory reflex in a frog — all these phenomena are strengthened at the expense of any other secondary stimulation. From this a direct step is made to the act of attention in humans, and it is asserted that a dominant is the physiological foundation of this act. Yet it turns out that attention is actually devoid of the characteristic feature of a dominant, namely, the capacity to be strengthened at the expense of any other secondary stimulation. In fact, the contrary is the case: any secondary stimulus distracts and weakens attention. Again, in making the step from laws concerning dominants in the cat or the frog to the laws of human behavior, some fundamental modification is obviously in order.

4. But what is most important is that the exclusion of consciousness from the domain of scientific psychology to a considerable extent preserves all the dualism and spiritualism of earlier subjective psychology. Bekhterev asserted that his system of reflexology did not contradict the hypothesis of the soul. (4) He depicts subjective or conscious phenomena as second-order phenomena, as specific internal phenomena accompanying combinatory reflexes. (5) Here, dualism is reinforced by the fact that a special science, subjective reflexology (6), is admitted as a future possibility, even as an inevitability.

The main premise of reflexology, namely, the purported possibility in principle of explaining all human behavior without any recourse to subjective phenomena and of constructing a psychology without mind, is the hand-me-down dualism of subjective psychology, its attempt to study pure, abstract mind. This is the other half of the old dualism: then there was mind without behavior, now we have behavior without mind; in both cases mind and behavior are not one, but two.

No psychologist, even if he is an extreme spiritualist and idealist, has, precisely by virtue of this dualism, ever denied the physiological materialism of reflexologists; yet on the contrary, it is idealism through and through, and indeed necessarily presupposes it.

5. Once consciousness has been banished from psychology, we are trapped in our biological absurdity forevermore. Even Bekhterev warned against making the major mistake of regarding "subjective processes" as completely superfluous or unessential secondary phenomena in nature (epiphenomena), inasmuch as we know that everything superfluous in nature atrophies and is destroyed, whereas our own experience tells us that subjective phenomena achieve their highest level of development in the most complex processes of interrelated activity. (7)

Thus we are left with two choices: either this is actually the case, and it would be impossible to study human behavior and the complex forms of human interrelated activity without reference to the human mind; or it is not the case, and mind would be an epiphenomenon, a secondary phenomenon, and everything could be explained without mind, which would reduce us to the biologically absurd. No third possibility is given.

6. When the question is posed this way, we are forever barred access to the study of the most crucial problems: the structure of our behavior and an analysis of its composition and forms. We are forever doomed to retain the false notion that behavior is the sum of reflexes. But "man is by no means a leather sack filled with reflexes, and the brain is not a hostel for conditional reflexes that just happen to arrive there together."

A reflex is an abstract concept; methodologically it is extremely valuable, but it cannot become the fundamental concept of psychology as a concrete science of human behavior. In fact, we are a leather sack filled with reflexes, but the brain is still not a hostel of complex groups, associations, and systems constructed according to a variety of types.

The study of dominant reactions in animals and of reflex integration has shown persuasively that the performance of each organ, its reflex, is not something static, but only a function deriving from the overall state of the organism. (8) "The nervous system performs as a unified whole" (9); this definition

*Translations from English sources are retranslations from the Russian.

of Sherrington's should serve as the foundation for a theory of the structure of behavior.

Indeed, in the sense in which we use the term reflex, it resembles very closely the story of Kannitfershtan, whose name a poor foreigner heard in response to any question no matter what he asked: Whom are they burying? Whose house is this? Who just passed by?, etc. He naïvely thought that everything in this country was done by Kannitfershtan, whereas actually the word simply meant that the Dutchman he met did not understand his questions.

Patent evidence of our lack of understanding of these phenomena may be seen in a "reflex of purpose" or "a freedom reflex." That these are not reflexes in the usual sense, i.e., in the sense that a salivary reflex is a reflex, but rather are some sort of structurally distinct mechanism of behavior is clear to everyone. Only if we reduce everything to one common denominator can we explain everything in the same way: then a reflex is like this Kannitfershtan. But then the very term reflex is deprived of any meaning.

What is perception? It is a reflex. What is speech? What are gestures, facial expressions? They are also reflexes. And instincts, drives, emotions? They, too, are reflexes. All the phenomena the Wurzburg School perceived in higher intellectual processes, or Freud's analysis of dreams (10), all these are also reflexes. But all this, of course, may be quite all right, except that the scientific barrenness of such empty assertions is quite obvious. If it takes such an approach, science not only does not shed any light on or bring any clarity to the problems it studies, dissecting and delimiting the objects, forms, and phenomena under its scrutiny, but, on the contrary, places everything in a dim penumbra, where everything is blurred and blended together, and there are no distinct dividing lines between objects. This is a reflex, and that is also a reflex: but then what distinguishes this one from that one?

Rather than study reflexes, we must study behavior, its mechanisms, its component parts, and its structure. In exper-

ments on animals or humans the illusion is invariably fostered that we are studying reactions or reflexes. Actually, what we are studying in every case is behavior, since we invariably organize beforehand, in some way or other, the behavior of the subject in order to ensure that this or that reaction or reflex will predominate; otherwise, we would achieve nothing.

In Pavlov's experiments, is it true that the dog responded with a salivary reflex, not with a multitude of the most varied motor reactions, both internal and external? Is it true that these reactions had no influence on the salivary reflex Pavlov observed? And is it true that a conditional stimulus introduced into these experiments did not also itself elicit the same sort of reactions (orienting reactions of the ear, the eyes, etc.)? Why was a temporary connection formed between the salivary reflex and the bell, not vice versa, i.e., why didn't the meat begin to elicit an orienting movement of the ears? And is it true that a subject who presses on a button when a signal is presented is thereby expressing his reaction? The general relaxation of the body, falling back in the chair, the tilting of the head, the sigh, etc. — aren't these essential components of the reaction?

All this shows how complex every response is, how this complexity depends on the structure of the behavioral mechanism of which the response is a part, and that it is impossible to study a response in abstract form. Moreover, before we draw any major and crucial conclusions from classic conditioning experiments, we must not forget that this research has only just begun, and so far has covered only a very narrow territory, that only one or two types of reflexes, a salivary and a defensive motor reflex, have been studied, and then only conditional reflexes of a first or second order and always of a type that is biologically disadvantageous for the animal (Why should an animal salivate in response to very remote signals, to conditional stimuli of a high order?). We should therefore guard against making any direct translations of reflexological laws into psychology. As Professor Wagner justly commented, a reflex may be a foundation, but the foundation tells us nothing about what is going to be constructed on top of it. (11)

All these considerations constitute a plausible argument for altering the view that human behavior is a mechanism for which the conditional reflex is the complete key. Without first having a working hypothesis concerning the psychological nature of consciousness, it is impossible to undertake a critical revision of the accumulated scientific knowledge in this area, selecting and screening it, translating it into a new language, developing new concepts, and outlining new problems.

Scientific psychology cannot ignore the facts of consciousness: it must make them materially accessible, translate them into an objective language of the objectively existing, and once and for all dispel and bury the fictions, phantasmagoria, etc. Otherwise, no sort of work is possible, neither teaching nor criticism nor research.

It is not difficult to see that consciousness cannot be regarded as a second-order phenomenon in either biological, physiological, or psychological terms. A place must be found for it, and it must be interpreted in line with all other responses of the organism. This is the first requirement of our working hypothesis. Consciousness is a problem of the structure of behavior.

Other requirements are: a hypothesis must, without strain, explain the major questions pertaining to consciousness — the problems of conservation of energy, self-awareness, the psychological possibility of knowing other minds, the cognitive aspects of the three major fields of empirical psychology (i.e., thinking, feeling, and volition), the concept of the unconscious, the evolution of consciousness, and its identity and unity.

Here we have only briefly and cursorily outlined the most tentative, most general, and most basic thoughts that, when blended together, should, we think, provide the basic material for a future working hypothesis of consciousness in the psychology of behavior.

II

Now let us take a look at the question from outside, i.e., not from the standpoint of psychology.

In its most essential forms all animal behavior consists of two groups of responses: innate or unconditional reflexes and acquired or conditional reactions. Innate responses constitute a biological extract, as it were, of the inherited collective experience of the entire species, whereas acquired responses are formed on the basis of this inherited experience through the formation of new connections provided by the personal experience of the individual. Thus, all animal behavior may provisionally be designated as inherited experience plus inherited experience multiplied by personal experience. Darwin discovered, for the most part, the origins of inherited experience; Pavlov discovered the mechanism by which this experience is multiplied by personal experience, namely, the conditional reflex. Generally speaking, this description covers all animal behavior.

The situation is different with human beings. For humans new terms must be introduced into the above description if we are to cover human behavior at all completely. First, the inherited experience of human beings is incomparably broader than that of animals. Man makes use not just of physically inherited experience: throughout his life, his labor and his behavior draw broadly on the experience of former generations, which is not transmitted at birth from father to son. We may call this historical experience.

Ranked alongside this historical experience is social experience, the experience of other people, which constitutes a very important component in human behavior. I do not possess only those connections that have been formed in my personal experience between unconditional reflexes and particular elements of the environment: I also have at my disposal a multitude of associations and connections formed in the experience of other people. If I know Berlin and Mars although I have never traveled outside my country and have never looked into a telescope, obviously the origin of this experience is linked to the experience of other people who have traveled to Berlin and have looked into a telescope. It is just as obvious that animals usually do not have such experience. Let us call this the social component of our behavior.

Handwritten notes in Portuguese:

A experiência tem outras pessoas envolvidas em campo muito importante e o comportamento humano. O sujeito não é constituído somente por meio de suas experiências com elementos particulares do ambiente. ele também possui a sua disposição uma pluralidade de associações e conexões com o...

Finally, another fundamentally new component in human behavior is the fact that man's adaptation and the behavior associated with it assume new forms compared with those of animals. Whereas animals passively adapt to the environment, man actively adapts the environment to himself. To be sure, in animals we encounter the rudimentary forms of active adaptation in their instinctual activity (making a nest, building a house, etc.); but in the animal kingdom these forms, first, do not have a dominant, fundamental importance and, second, are still passive in terms of their essential characteristics and the mechanisms by which they are carried out.

The spider who weaves his web and the bee who builds his hive out of wax do this out of instinct, mechanically, always in the same way, and in doing so never display any more active involvement than they do in any other adaptative reactions. But the situation is different with a weaver or an architect. As Marx said, they first built their works in their heads; the result of their labors existed only in ideal form (12) before this labor commenced. Marx's explanation, which is beyond dispute, refers to nothing more than a phenomenon that is unique to human labor, namely, the repetition of experience. In the movements of the hands and the changes produced in the material being worked on, labor repeats what had already been done beforehand in the worker's imagination, with models, as it were, of these movements and this material. It is this repeated experience that enables man to develop forms of active adaptation that do not exist in animals. Let us call this new kind of behavior repeated experience.

Now, the new additions to our description of human behavior are: historical experience, social experience, and repeated experience. This leaves us with the question: What are the signs and symbols that connect these new terms in our description with one another and with our original description? Clearly, when we say that inherited experience is multiplied by personal experience we are referring to the mechanism of the conditional reflex. In the following sections we shall try to find the other connecting links.

III

In the preceding section we outlined the biological and social aspects of the problem. Now let us take a brief look at its physiological side.

Even the most elementary experiments with isolated reflexes encounter the problem of how reflexes are coordinated and how they are translated into behavior. Above we mentioned in passing the fact that all of Pavlov's experiments had already presumed that the dog's behavior was organized beforehand in such a way that a single necessary connection was formed when two reflexes collided. But Pavlov was forced to deal as well with some other, more complicated reflexes in the dog.

Pavlov more than once referred to the collision of two different reflexes occurring in the course of his experiments. The results of such a collision are not always the same (compare essays XXI and XXV; in one case he discusses the intensification of a food reflex by a simultaneous alerting reflex, and in the other case he talks about the dominance of a food reflex over an alerting reflex). (13) "Two reflexes may be seen literally as two pans on a balance beam," observed Pavlov on this point. He did not close his eyes to the unusual complexity of the accomplishment of a reflex: "If we take into account that any response to an external stimulus is limited and regulated not only by another external simultaneous reflex act but also by a multitude of internal reflexes and by the effects of every conceivable sort of internal stimulus — chemical, thermal, etc. — impinging not only on different segments of the central nervous system but also directly on active tissue elements themselves, then, and only then, will we begin to have any full and realistic picture of the vast complexity of the phenomena of reflex responses." (14)

As Sherrington (15) elucidated in his research, the basic principle of reflex coordination entails the struggle of different groups of receptors over a common motor field. Specifically, there are many more afferent neurons in the nervous system than efferent ones; hence, each motor neuron is part of a reflex

connection not only with one receptor but with many, and probably with all. Thus, a struggle is always going on in the body between different receptors for a common motor field for the possession of one working organ. The source of this struggle depends on many extremely complicated and varied factors. As Sherrington explains it, any consummated reaction, any victorious reflex, has won out only after a struggle, only after a conflict at a point of collision. (16) Behavior, then, is a system of "victorious" reactions.

"Under normal conditions," says Sherrington, "leaving questions of consciousness aside, all animal behavior is made up of successive switchovers of an end field, now to one group of reflexes, now to another." (17) In other words, all behavior is an unabating struggle, which does not subside even for a minute. There is every reason to presume that one of the most important functions of the brain is, in effect, to maintain coordination among reflexes coming from outlying points, "as a result of which the nervous system is integrated into an individual whole."

The coordinating mechanism of the common motor field is, according to Sherrington, "the basis for the fundamental mental process of attention." "Thanks to this principle, at each moment a unity of action is created; and this, in turn, serves as the basis for our notion of personality; thus the task of the nervous system is to create a unity of personality." "A reflex is an integral reaction of the organism"; and each muscle, each working organ, should be regarded "as a check payable to the bearer, which may be any group of receptors." The following general comparison gives an apt general notion of the nervous system:

The system of receptors is to the system of efferent pathways as the wide top of a funnel is to its narrow bottom opening. But each receptor is connected not with one, but with many and perhaps with all efferent fibers; of course, these connections vary in strength and stability. Hence, extending our comparison with the funnel, we must say that the entire nervous system is a funnel one

opening of which is five times wider than the other; within this funnel are receptors that are also funnels, whose wide openings are turned toward the outlet of the larger funnel and completely cover it. (18)

Pavlov compared the hemispheres of the brain with a telephone switchboard at which new temporary connections are established between elements of the environment and specific responses. (19) But much more than a telephone switchboard our nervous system resembles the narrow doors in some large building through which a crowd of many thousands is rushing in panic; only a few people can get through the door; some get through intact, but many thousand others die or are pushed back. This more closely conveys the catastrophic nature of the struggle, the dynamic and dialectic process, between the environment and the person and within the person that we call behavior. From all this follow two corollaries that are necessary for properly posing the problem of consciousness as a mechanism of behavior.

1. We could say that the outside world flows into the wide opening of the funnel via thousands of stimuli, attractions, and appeals; within the funnel a constant struggle and competition take place; all excitations flow out of the narrow opening as responses of the organism in a greatly reduced quantity. What actually takes place in behavior is only a negligible fraction of what is possible. At every moment the individual is full of unrealized possibilities. These unrealized possibilities of our behavior, this difference between the wide and the narrow openings of the funnel, is consummate reality; it is the reality of victorious reactions, since all three aspects of a response are present in it.

This unrealized behavior can have an extremely wide variety of forms, given even a slightly complicated structure of the final common field and taking into account complex reflexes. "In complex reflexes, reflex arcs sometimes ally themselves with one portion of the common field and compete with one another for another part of the field." (20) Thus, a response

may remain half realized or unrealized in some, always indefinite, portion of it.

2. Because of the extremely complicated equilibrium established in the nervous system by this intricate struggle and competition among reflexes, the outcome of the struggle is often decided by the quite insignificant strength of a new stimulus. Thus, in the complex system of competing forces, even a negligible new force can decide the outcome and direction of the resultant force; in a great war, even a tiny kingdom, allying itself with one side, can mean the difference between victory and defeat. It is therefore easy to see how reactions, insignificant in themselves, even negligible, can assume a dominant role depending on the constellation of forces at the point of collision where they came together.

IV

The most elementary, fundamental, and universal law of reflex relationships may be formulated as follows. Reflexes are joined according to conditional reflex laws by which the response component of one reflex (motor, secretory) may, under appropriate conditions, become a conditional stimulus (or inhibitory stimulus) of another reflex, forming a reflex arc with a new reflex via the sensory pathway of peripheral stimuli associated with it. A whole series of such connections may be a genetic predisposition and belong to the class of unconditional reflexes. The rest of these connections are formed in the process of experience — a process that goes on in the organism without cease.

Pavlov called this mechanism a chain or sequential reflex and used it to explain instinct. (21) In his experiments, Dr. Zeleni discovered the same mechanism in studying rhythmic muscular movements that also proved to constitute a chain reaction. (22) Thus, this mechanism provides the best explanation for unconscious, automatic combinations of reflexes.

But if we take into account not merely the same system of reflexes but different ones and the possibility of transmission

from one system to another, this mechanism is also essentially the mechanism of consciousness in its objective sense. The capacity of our body to serve as a stimulus (through its actions) for itself (for new actions) — therein lies the basis of consciousness.

Now we can speak about the interaction among different systems of reflexes, which unquestionably takes place, and of the reflection of one system by others. A dog reacts to hydrochloric acid (by a salivating reflex), but the saliva itself is a new stimulus for the reflex of swallowing or expectoration of the acid. In free association I pronounce the cue word pink narcissus. This is a reflex, but it is also a stimulus for the next word — tulip. This all takes place within a system or neighboring cooperating systems. The howl of a wolf, as a stimulus, evokes in one somatic and mimetic reflexes of fear: altered respiration, palpitation, fumbling, dryness in the throat (reflexes) — all these induce me to say or think: I am afraid. At this point a transfer takes place from one system to another.

Our awareness or ability to be conscious of our deeds and states must be seen primarily as a reflection of a system of transfer mechanisms from one set of reflexes to another, a system that is correctly functioning at every conscious moment. The more correctly every internal reflex, as a stimulus, elicits a sequence of other reflexes from other systems or is transmitted to other systems, the more we are capable of giving account to ourselves and others of what we are experiencing and the more consciously that experience is lived (sensed, formulated in words, etc.).

Giving account also means translating one set of reflexes into another. The unconscious mind also refers to reflexes that have not been translated into other systems. There may be an infinite variety of stages of consciousness, i.e., the interaction of systems participating in the mechanism of an active reflex. To be conscious of one's own experiences means nothing less than to possess them in object form (stimulus) for other experiences. Consciousness is the experiencing of experiences, just as experience is simply the experience of ob-

jects. But this capacity of a reflex (the experience of an object) to be a stimulus (the object of an experience) for a new reflex, this mechanism of consciousness is also a mechanism for translating reflexes from one system into another. This is more or less what Bekhterev called evaluated and nonevaluated reflexes.

Psychology should define and deal with consciousness as an interaction, reflection, and mutual excitation of different systems of reflexes. What is conscious is what is transmitted as a stimulus to other systems in which it has a repercussion. Consciousness is always an echo, a response apparatus. Let me cite three references from the literature.

1. At this point it is appropriate to point out that there have been numerous references in the psychological literature to a circular reaction, namely, a mechanism that returns to the body its own reflex, with the aid of the centripetal currents thus arising; this mechanism lies at the basis of consciousness. (23) Often the biological significance of such a circular reaction is stressed: a new stimulus set into motion by a reflex elicits a new secondary reaction, which either intensifies and repeats or weakens and suppresses the first reaction, depending on the general condition of the organism and on the value ascribed by the body to its own reflex. Thus, a circular reaction is not simply a combination of two reflexes, but a combination in which one reaction is controlled and regulated by another. This describes a new factor in the mechanism of consciousness: its regulatory role for behavior.

2. Sherrington distinguishes exteroceptive and interoceptive fields, the first the field on the outer surface of the body, and the second the internal surface of certain organs into which some portion of the external environment enters. Elsewhere he speaks of a proprioceptive field, which is excited by the organism itself, by changes taking place in muscles, tendons, joints, blood vessels, etc.

In contrast to the receptors of the exteroceptive and interoceptive fields, the receptors of the proprioceptive

field are excited only secondarily by influences coming from the external environment. The stimulus of these receptors is the active state of some organ or organs, for example, contraction of a muscle, which in turn serves as a primary reaction to the stimulation of the surface of the receptor by factors coming from the external environment. Usually reflexes elicited by stimulation of proprioceptive organs join with reflexes elicited by stimulation of exteroceptive organs. (24)

The conjunction of these secondary reflexes with primary reactions, this "secondary connection," can, as research has shown, combine reflexes of both allied and antagonistic types. In other words, a secondary reaction can intensify or shorten a primary one. This constitutes the mechanism of consciousness.

3. Finally, Pavlov somewhere said: "This reproduction of neural phenomena in the subjective world is a very unique phenomenon, refracted many times over, so to speak, so that, on the whole, a psychological understanding of nervous activity is to a considerable extent only tentative and approximate." (25)

Although here Pavlov was not making anything much more than a simple comparison, we are inclined to understand his words in the literal and precise meaning and assert that consciousness is the multiple refraction of reflexes.

V

This resolves the problem of mind without waste of energy. Consciousness can be wholly reduced to the transmitting mechanisms of reflexes operating according to general laws, i.e., no processes other than reactions can be admitted into the organism.

The way is also paved for dealing with the problem of self-awareness and self-observation. Internal perception and introspection are possible only thanks to the existence of a proprioceptive field and its associated secondary reflexes. These are

always the echoes of a reaction, so to speak.

Self-awareness as "the perception of what takes place in a person's own soul," to use Locke's expression, is wholly explained by this. It now becomes clear why this experience is accessible to only one person, namely, the person experiencing his own experience. Only I and I alone can observe and perceive my secondary responses, because my reflexes serve as new stimuli of the proprioceptive field only for myself and myself alone.

It is also now easy to explain the fundamental, fragmentary nature of experience: my mind is not like any other mind because it is affected by stimuli sui generis that occur nowhere else but in my own body. The movement of my arm, which is perceived by the eye, may also be a stimulus for both my eye and the eye of another; but the awareness of this movement, those proprioceptive excitations that occur in the process and elicit secondary reactions, exist for me alone. They have nothing in common with the first stimulation of the eye: completely different neural pathways, different mechanisms, and different stimuli are at work in them.

This brings up another very closely connected and complicated question of psychological procedure: the value of self-observation. In its early days psychology considered self-observation to be fundamental and the chief source of psychological knowledge. Reflexology rejected self-observation completely or placed it under the control of objective data, as a source of additional information. (26) Our approach to the problem enables us, in a very rough and general outline, to understand the significance (objective) a subject's verbal account can have for scientific research. Undetected reflexes (dumb speech), internal reflexes inaccessible to the direct perception of the observer, can be detected often indirectly, by mediation, through observable reflexes for which they serve as stimuli. The presence of a complete reflex (a word) serves us as an indicator of the presence of a correlated stimulus that, in the present case, plays a dual role: it is a stimulus for the complete reflex and is itself a reflex with respect to the preceding stimulus.

In view of the tremendously important role the mind, i.e., this undetected group of reflexes, plays in the system of behavior, it would be suicide for science to reject its discovery by an indirect method, through its reflection on other systems of reflexes. After all, we do take account of reflexes to internal stimuli hidden from our view. The logic here is the same, the train of thought is the same, and the proof is the same.

In this view a subject's account is in no sense an act of self-observation that interferes with our getting our spoon into the barrel of honey of objective scientific investigation. There is no such thing as self-observation. The subject is not at all in the situation of an observer; he does not help an experimenter observe reflexes hidden from his view. To the very end, and during the actual giving of an account, a subject remains the object of an experiment; but through subsequent questioning, certain changes or transformations are introduced into the experiment itself; a new stimulus is introduced (a new questioning), and a new reflex enabling one to assess the undetected portions of the preceding reflex. The entire experiment passes through a double lens, so to speak.

In the method of a psychological investigation it is necessary to pass an experiment through the secondary reactions of consciousness. A person's behavior and the establishment of new conditional reactions are governed not only by disclosed, complete, and fully detected reactions but also by undisclosed reactions invisible to the naked eye. Hence we can study complete speech reflexes, but we cannot take into account reflex thoughts, two-thirds fragmented (27), although these, too, are really existing, unquestionable reactions.

If I pronounce the word "evening," which comes to me by free association, so that it is audible to the experimenter, he records it as a verbal response, a conditional reflex. But if I pronounce it inaudibly, to myself, then I must think: Does it then cease to be a reflex and alter its nature? What is the dividing line between an uttered and an unuttered word? If my lips moved, if I uttered a whisper, yet everything was still inaudible to the experimenter — what then? May he ask me to

repeat this word aloud, or will this be a subjective method admissible only to me? If he may (and almost everyone will probably agree that he may), then why can't he ask me to utter aloud a word that I have uttered in my thoughts, i.e., without moving my lips and whispering? Indeed, words have always been, and still are, a speech motor reaction, a conditional reflex without which thoughts are impossible. And this is already an interrogation, the utterance of the subject, his verbal account of relatively undetected reactions unperceived by the experimenter's hearing (and herein lies the entire difference between thoughts and speech), but reactions that were still objective nevertheless. We can use many methods to demonstrate that these reactions did take place, that they really did exist, and had all the attributes of material existence. The development of these methods is one of the most important problems of psychological methodology. Psychoanalysis is one of these methods.

But most important of all is the fact that these reactions themselves take care to see that we are convinced of their existence. They are expressed with such strength and forcefulness in the further course of a reaction that they force the experimenter to pay attention to them or to refuse altogether to study the course of reactions into which they intrude. Indeed, are there many such behavioral processes into which inhibited reflexes would not intrude? Thus, either we refuse to study human behavior in its most essential forms, or we are forced to take into account these internal movements in our experiments.

Two examples will show the need for this more clearly. If I recall something, I establish a new speech reflex; and it does not matter what I am thinking during this time — whether I am simply repeating a given word to myself or establishing a logical connection between this word and another. It is not clear that the results in both cases will differ appreciably.

In a free association I say the word snake in response to the cue word thunder, although first the thought of lightning flashed in my mind. Is it not clear that if I do not take this thought into account I will get a deliberately false notion, that is, that

my reaction to the word thunder was snake, not lightning?

Of course, we are not here talking about a simple translation of experimental self-observation from traditional psychology into the new psychology. Rather, the point being stressed is the urgent necessity to develop a new method for studying inhibited reflexes. We have merely argued for the fundamental necessity and possibility of this.

Before leaving the question of methods let us draw briefly on the curious metamorphosis recently undergone by the method of reflexological investigation when applied to humans, as discussed by Professor Protopopov in one of his essays. (28)

Initially reflexologists applied an electrodermal stimulus to the sole of the foot; then it proved to be more convenient to choose a more refined apparatus, more adapted to orienting reactions as the criterion of a response; the hand was used instead of the foot. But once "a" was said, it was necessary to say "b." The human being has an immeasurably more refined apparatus, with which he has established extensive connections with the world outside, namely, his speech apparatus. The next step was to use verbal reactions.

But the most curious of all was the "new facts" investigators perforce encountered in their work. They found that the differentiation of a reflex was extremely slow and sluggish in human beings, and it turned out (my emphasis — L. V.) that conditional responses might be inhibited or excited depending on the speech stimulus presented to the object.

In other words, the entire discovery boiled down to the finding that with a human being it may be stipulated with words that he withdraw his hand in response to a certain signal, and then, when the signal is given, that he not withdraw his hand! The author then goes on to present two postulates that are important for our purposes here.

1. "Reflexological studies on human beings will in the future

doubtless have to be carried out mainly with the aid of secondary conditional reflexes." This means nothing less than that consciousness has intruded into the experiments of reflexologists and has substantially altered the picture of behavior. Chase consciousness out the door, and it comes in through the window.

2. Once these research techniques are included in the reflexological method, that method is no longer distinguishable from the method long established in experimental psychology for studying reactions. Professor Protopopov observes this, but regards this coincidence as incidental and only superficial. To us, however, it is clear that what it amounts to is a thorough capitulation of pure reflexological method, which is used so successfully on dogs, before the problems of human behavior.

It is extremely important to show, even if only in a few words, that all three spheres into which empirical psychology has divided the mind — cognition, emotions, and will — if one looks at them from the point of view of the hypothesis we have presented here, also readily reveal the same characteristics of consciousness, and can be easily reconciled with this hypothesis and with the method it entails.

1. James's theory of emotions paves the way for such an interpretation of consciousness of feelings. James took the three usual components — A - the cause of an emotion, B - the emotion itself, and C - its corporeal manifestations — and rearranged them in the sequence A-C-B. (29) I shall not reproduce his argument here; it is quite familiar to all. I should only like to point out that his formulation laid bare: (1) the reflex nature of an emotion, an emotion as a system of reflexes — A and B, and (2) the secondary, derivative nature of consciousness of an emotion when one's own response serves as a stimulus for a new internal reaction — B and C. The biological significance of an emotion as a rapid sizing-up reaction of the entire organism to its own behavior, as an act of engagement of the entire organism in the reaction, and as the internal organizer of all behavior manifest at a particular moment is also rendered intelligible by this formulation. I might also

note that Wundt's three-dimensional model of an emotion essentially describes this sizing-up nature of the emotions as the organism's echo, as it were, in response to its own reaction. This accounts for the nonreproducibility and singularity of emotions in every particular case.

2. The acts of cognition of empirical psychology also reveal their dual nature, since they take place consciously. Psychology clearly distinguishes two stages in them: acts of consciousness, and the cognition of these acts.

The results of the extremely refined self-observation of the Wurzburg school, that pure psychology of psychologists, are especially curious in this respect. One of the conclusions from these studies establishes that an intellectual act itself is unobservable, that it eludes perception. Self-observation is complete unto itself. With it one is at the rock bottom of consciousness. The paradoxical conclusion that suggests itself here is that acts of thought are unconscious. The elements of thought that we note in the process, which we find in our consciousness, are rather surrogates of thought than its actual essence: they are fragments, detritus, and skimmings of thought.

As O. Külpe noted, "It has been possible to demonstrate empirically that our ego cannot be separated from ourselves. It is impossible to think, i.e., to give ourselves up completely to our thoughts and immerse ourselves in them, at the same time as we observe our thoughts. The mind cannot carry this separation to the very end." (30) This also means that consciousness cannot focus on itself, that it is a secondary and derivative activity. One cannot think one's thoughts, i.e., grasp the very mechanism of consciousness, because this mechanism is not a reflex, i.e., it cannot be the object of experience, the stimulus of a new reflex, and is only a switchover mechanism between systems of reflexes. But as soon as a thought is finished, i.e., as soon as a reflex is formed, it may be consciously observed: "First one, and then the other," as Külpe says.

In one of his articles Professor Krol' states, on this point, that the new phenomena discovered by the Wurzburg studies of the higher processes of consciousness surprisingly resemble

Pavlov's conditional reflexes. (31) The spontaneity of thought, its existence in completed form, the complex feelings of activity, of inquiry and search, and so forth, of course bear this out. The fact that thought cannot be observed also speaks in favor of the mechanisms we have outlined here.

3. Finally, will most fully and patently of all reveals those essential characteristics of consciousness we have described here. The fact that motor ideas (i.e., secondary reactions from the movements of organs) are present beforehand in consciousness will clarify what we mean. Any movement must first be accomplished unconsciously. Then its kinesthesia (i.e., secondary reaction) becomes the foundation for its entry into awareness. (32) Bair's experiments with ear movements illustrate this point. Our consciousness of our will also creates the illusion that it consists of two aspects: I think, and then I do. Indeed, there are two reactions here, but they are in the opposite sequence: first comes the secondary reaction, and then the basic or primary reaction. Sometimes the process is made more complicated; and the theory of a complex volitional act and its mechanism, complicated by motives, i.e., the collision of several secondary reactions, also agrees completely with the thoughts propounded above.

But what is most important is to clarify, in the light of these ideas, the development of consciousness from the moment of its birth, its origin in experience, its secondary derivative nature, and, consequently, its psychological determinateness by the environment. Being determines consciousness — for the first time, given the proper development, this law can be given a precise psychological meaning and reveal the actual mechanism of this determinateness.

VI

There is one group of easily distinguishable reflexes in humans that one could correctly call reversible reflexes. These reflexes are elicited by stimuli that are, in turn, humanly produced. A heard word is the stimulus, and a word pronounced

is a reflex producing the same stimulus. Accordingly, the reflex is reversible, since a stimulus can become a response, and vice versa. These reversible reflexes, which constitute the foundation for social behavior, serve to coordinate behavior on a collective basis. There is one group of stimuli that for me stands out from among all others: namely, social stimuli, i.e., stimuli that originate in other human beings. What distinguishes them is that I myself can reproduce them and that they become reversible for me very early, and hence determine my behavior in a fundamentally different way from all others. They liken me to others and make my actions identical with one another. Indeed, in the broad sense, we can say that speech is the source of social behavior and consciousness.

It is extremely important here to establish, if only in passing, that if what we have said is correct, it means that the mechanism of social behavior and the mechanism of consciousness are the same. Speech, then, is a system of "reflexes for social contact" (33), on the one hand, and, on the other, a system, most eminently, of reflexes of consciousness, a system for reflecting other systems.

Here, too, is the crux of the question of another person's "I" or "ego," i.e., of how I can know another's mind. The mechanism for knowing oneself (self-awareness) and the mechanism for knowing others are one and the same. Usual theories purporting to explain our knowledge of another's mind either proclaim forthwith its unknowability (34) or, by means of a variety of hypotheses, endeavor to construct a plausible mechanism that essentially is the same whether part of a theory of sensations or a theory of analogy: we know others because we know ourselves; in the act of my cognitive perception of another's anger, I am reproducing my own anger. (35)

Actually, the reverse would be a more accurate description of the case. We are aware of ourselves in that we are aware of others; and in an analogous manner, we are aware of others because in our relationship to ourselves we are the same as others in their relationship to us. I am aware of myself only to the extent that I am as another for myself, i.e., only to the

O discurso é um sistema que reflete a consciência, o sujeito que é, por sua vez, o reflexo de um contato social, um sistema que reflete outros sistemas.

extent that I can perceive anew my own responses as new stimuli. Between the fact that I can repeat aloud a word uttered to myself and the fact that I can repeat a word uttered by another there is no essential difference, nor is there any fundamental distinction in their mechanisms: both are reversible reflexes or, conversely, stimuli.

Accordingly, a direct consequence of this hypothesis will be the "sociologization" of all consciousness, the recognition that the social dimension of consciousness is primary in time and in fact. The individual dimension of consciousness is derivative and secondary, based on the social and construed exactly in its likeness. (36)

Consciousness thus has a dual nature: the idea of a "double" is perhaps as near as any notion of consciousness can get to reality. This is similar to the division of the individual person into an Ego and an Id, according to Freud's analytic description.

In relation to the Id, I am like a horseman who must keep rein on the outstanding strength of a horse, with the difference that the horseman tries to do this with his own forces, while I employ borrowed forces. The analogy may be extended. Just as a horseman who does not want to dismount from his horse must often perforce allow himself to be taken where the horse desires, so, too, the Ego ordinarily transforms the will of the Id into an action that appears to be its own will. (37)

This idea of the identity between the mechanism of consciousness and the mechanism of social contact and the idea that consciousness is, as it were, social contact with oneself, is splendidly confirmed by the development of an awareness of speech in the deaf and dumb and, in some instances, by the development of tactile responses in the blind. The speech of the deaf and dumb usually does not develop but remains frozen at the stage of a reflex outcry — not because the speech centers are damaged in these people, but because, owing to the loss of hearing, the possibility of reversible speech reflexes is paralyzed.

thwarted. Speech cannot return as a stimulus for the speaker himself. It therefore remains unconscious and asocial. The deaf and dumb are usually limited to a conventional language of gestures that links them to the narrow domain of social experience of other deaf and dumb people and develops consciousness in them by virtue of the fact that these reflexes revert back to the deaf and dumb person himself through his eyes.

Thus, in psychological terms the education of the deaf and dumb entails restoring, or compensating for, the destroyed mechanism of reflex reversibility. The deaf and dumb learn to "hear" by reading pronouncing movements of a speaker's lips and learn to speak by making use of the secondary kinesthetic stimuli occurring during speech motor responses. (38)

What is most remarkable in all this is that consciousness of speech and social experience occur simultaneously and completely in parallel with one another. It is a specially outfitted, natural experiment, as it were, that confirms the main thesis of this essay. In a separate study I hope to demonstrate this more clearly and fully. The deaf and dumb learn to be conscious of themselves and their movements to the extent that they learn to be conscious of others. The identity of the two mechanisms is here strikingly clear and almost self-evident.

A consciência do discurso e da experiência social ocorre simultaneamente e completamente na medida em que se aprendem a ser conscientes de si mesmos e de seus movimentos à medida que se aprendem a ser conscientes dos outros.

(9)

Now we can bring together the two terms in our description of human behavior that we presented in one of the earlier sections. Historical and social experience are not in themselves different entities, psychologically speaking, since they cannot be separated in experience and are always given together. We can link them with a plus sign. As I have tried to show, their mechanisms are exactly the same as the mechanism of consciousness, since consciousness must be regarded as a particular case of social experience. Hence, both these components may be readily referred to by the same label of repeated experience.

VII

In concluding this essay I think it is crucial to point out the agreement between the conclusions I have drawn here and those of the brilliant analysis of consciousness made by William James. Ideas pursued in completely different fields and along completely different paths have led to the same view as that presented by James in his speculative analysis. I should like to regard this as a partial confirmation of my ideas. In his Psychology he declared that "the existence of states of consciousness as such is not a fully demonstrated fact" but rather a deeply entrenched prejudice. (39) It was the findings of his brilliant self-observation that persuaded him of this.

"Any time I attempt to impute to my thinking an active force as such, I invariably come up against a purely physical fact, some impression coming from the head, the brow, the throat and the nose." In his essay "Does consciousness exist?" (40), he argues that the whole difference between consciousness and the world outside (between a reflex to a reflex and a reflex to a stimulus) lies only in the context of phenomena. In the context of stimuli, it is the outside world. In the context of my reflexes, it is consciousness. Consciousness is only a reflex of reflexes.

Thus, consciousness does not occur as a specific category, as a specific mode of being. It proves to be a very complex structure of behavior, in particular, the repetition of behavior, as James also observes in an epigram on the subject of work. "As for myself, I am convinced that the flow of thoughts in myself is only a facile term for what on closer analysis turns out essentially to be a respiratory flow. The 'I think' that, according to Kant, accompanies all my objects is nothing other than an 'I breathe' that actually accompanies them. Thoughts are made of the same material as things." (41)

In the present essay I have been able only briefly and cursorily to outline a few thoughts of the roughest sort. I think, however, that it is with them that the study of consciousness should begin. Our science is still a long way from the defini-

tive form of a geometric theorem, culminating in Q.E.D. We must still define what is to be proved, and only then set about proving it. One must first define the problem before one can solve it (42), and that is what I hope the present essay has helped to do.

Notes

- 1) P. P. Blonsky, [Essays in scientific psychology]. Chapter 1. GIZ, 1921.
- 2) I. P. Pavlov, [Twenty years of experience in the objective study of higher nervous activity in animals]. Chapter 9 and elsewhere.
- 3) A. A. Ukhtomskii, [The dominant as a working principle of nervous centers]. Russk. Fiziol. Zh., 1923, 6.
- 4) V. M. Bekhterev, [General foundations of human reflexology]. Chapter 3.
- 5) Ibid., Chapter 7 and elsewhere. See also [Mind and life], idem.
- 6) Ibid., Chapter 46.
- 7) Ibid., Chapter 4.
- 8) See A. A. Ukhtomskii, M. I. Vinogradov, & I. I. Kaplan. Russk. Fiziol. Zh., 1923, 6.
- 9) See Ch. Sherrington, [The integrative action of the nervous system]. New York, 1906.
- 10) V. M. Bekhterev, [General foundations of human reflexology]. Chapters 50 and 51.
- 11) V. A. Vagner, [Biopsychology and allied sciences]. Chapter 4. Petrograd, 1923.
- 12) Karl Marx, [Capital]. Vol. 1, Section 3, Chapter 5.
- 13) I. P. Pavlov, [Twenty years of experience...].
- 14) Ibid., Chapter 25.
- 15) C. S. Sherrington, [Association of cerebrospinal reflexes and the principle of a common field]. Russian translation in Usp. Biol. Odessa, 1912.
- 16) Hering's expression.
- 17) C. S. Sherrington, [Association of cerebrospinal reflexes...].

- 18) Ibid.
- 19) I. P. Pavlov, [Twenty years of experience...].
- 20) C. S. Sherrington, [Association of cerebrospinal reflexes...].
- 21) I. P. Pavlov, [Twenty years of experience...]. Chapter 25.
- 22) D. T. Zelenyi, [On rhythmic muscular movements]. Russk. Fiziol. Zh., 1923, 6. The Pavlov school uses the same term to designate several other mechanisms of combination of reflexes into a chain. See D. S. Fursikov, [On chain conditioned reflexes]. Russk. Fiziol. Zh., 1922, 4.
- 23) See, for example, N. N. Lange, [Psychology. The balance sheet of a science]. Vol. 8. "Mir" Publishers.
- 24) C. S. Sherrington, [Association of cerebrospinal reflexes...].
- 25) I. P. Pavlov, [Twenty years of experience...]. Chapter 23.
- 26) V. M. Bekhterev, [General foundations of human reflexology]. Chapter 2.
- 27) Sechenov's definition.
- 28) Professor V. Protopopov, [Methods in human reflexological studies]. Zh. Psikhol. Nevrol. Psikhiat., 1923, 3.
- 29) James, [Psychology]. Lapshin's translation. Chapter 24.
- 30) O. Külpe, [Contemporary psychology of thinking]. Russian translation in [New ideas in philosophy]. Vol. 16
- 31) M. B. Krol, [Thinking and speech]. Tr. Belorussk. Gosud. Univ., 1922, No. 1.
- 32) See the analysis of a volitional act in Munsterberg [Psychology of a teacher]. Chapter 20; and in Ebbinghaus ([Foundations of psychology]). Vol. 1, No. 2, Chapter 4).
- 33) A. Zalkind, [Essays on the culture of the revolutionary epoch].
- 34) A. Vvedenskii, [Psychology without metaphysics]. 1917 [On the limits and attributes of the soul]. 1892.
- 35) I. Lipps, Das Wissen von fremden Ichen Psych. Unters. See also I. Lapshin, [Problem of other minds in modern philosophy]. 1910.

36) See Natorp (Sotsial. Ped.): "If there is no understanding of oneself, there is no basis for understanding others." He goes on to say: "Even in isolation from others, even when thinking in silence, we continually use words and hence maintain at least the fiction of communication." Consciousness, in our view, is just this fiction of communication.

37) Freud, The Ego and the Id. Chapter 2.

38) W. Jerusalem (Laura Bridgman. Vol. 5, pp. 54-55) analyzed the processes of thinking in consciousness in the deaf, dumb, and blind Laura Bridgman and noted: "Thus, for her, thinking was one of the sensory organs, at first, of course, because it provided information, but then also because she perceived the process of thinking sensuously." Laura herself thought she had four sense organs (thinking and nose and mouth and fingers) (Lamson 56). Here thinking is clearly ranked with the work of the analyzers.

39) Epilogue.

40) Ibid.

41) [Does consciousness exist?]. Russian translation in [New ideas in philosophy]. Vol. 4.

42) This essay was already in press when I learned of several studies on this question by the behaviorist psychologists. The problem of consciousness is formulated and dealt with by these authors roughly in the same way as we have dealt with it here, as a problem of the relationship between actions. See Watson, The un verbalized in human behavior. Psychol. Rev., July 1924, and also Lashley, The behavioristic interpretations of consciousness. Psychol. Rev., 1923.