Soviet Psychology Since 1950

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To judge by Russian bibliographical sources—*Novyye Knigi, Letopis' Zhurnal'nykh Statey, Referativny Zhurnal, Sovetskoye Meditsinskoye Referativnoye Obozreniye,* and the annual bibliographies in *Voprosy Psikhologii*—57 books and 513 articles of a technical psychological nature have been published in the Soviet Union in the present decade. About 91 percent of the publications appeared in Russian and the remainder in Ukrainian, Georgian, and Belorussian. In the latter three languages only a small sample of original material was available for examination, and the coverage of Georgian was rendered further inadequate by the fact that, not reading the language, I had to content myself with appended Russian abstracts. However, the psychological publications in Russian itself were both absolutely and relatively plentiful: 45 books and 414 articles, 89 percent of what is known to have been published. Since the Geneva Conference and the Eisenhower-Nixon declaration on cultural exchange, the proportion of current Soviet scientific literature in our libraries—notably the Library of Congress, the National Library of Medicine, the Library of the Department of Agriculture, and the larger university libraries—has signally increased, even as private procurement of such literature has become much easier, with little interference from our customs officials and readier response from Soviet publishing houses. (The paucity of Soviet scientific literature in languages other than Russian is no doubt merely a matter of temporary delay in supply and demand that will presumably, other things being equal, become normalized in the near future.)

Pre-1950 Background

Appraisal of Russian psychology of any period must first clear up some formal problems of scope. Traditionally, as a separate and specifically delimited discipline, psychology never has been—and is not—independently significant in Russia's matrix of learning. Yet, as a general area of research and thought, it has always been—and is—in the forefront of Russian intellection. Psychologizing and psychophysiologizing—that is, attempting to explain psychological phenomena in physiological terms—have indeed long been favorite preoccupations of a number of influential Russian intellectuals, quite irrespective of formal affiliation with psychology or even with science in general. Consider the extrapolative "psychological" views of the anatomist Lesgaft, the bacteriologist Mechnikov, the botanist Timiryazev, the geochemist Vernadsky; the pungent psychophysiologizing in the sociological, political, and literary essays of Radishchev, Hertzen (Gertzen), Dobrolyuobov, Belinsky, Chernishevsky, and Pisarev; and the extrapsychologizing of so many prominent Russian novelists. The first Russian laboratory in experimental psychology was set up by Korsakov, the well-known psychiatrist; the first serious utilization of mental testing was made by Rossolimo, another psychiatrist (Rossolimo's "psychological profile"); and the chief Russian delegate and honorary member of the presidium of the First International Congress of Psychology, held in Paris in 1889, was the physiologist Sechenov, about whom more is said in the next paragraph. Incidentally, there were at this first congress 19 Russian delegates—and three Americans: William James, Joseph Jastrow, and someone by the name of Riley. For the life of me I do not know who Riley was!

Now, if you look into almost any English medical dictionary under *Sechenov* (or *Sechenov's inhibition, Sechenov's inhibitory center*) you will find: "Ivan Mikhailovich, 1829–1905, father of Russian physiology and neurology"—which is correct. But what is even more correct is that Sechenov is the father of Russian psychology. Note the titles of his larger publications: *Elements of Thought, Impressions and Reality, How and By Whom Should Psychology Be Studied, Object-Thought from a Physiological Standpoint, The Doctrine of the "Un-Freedom" of the Will,* and the classic monograph *Reflexes of the Brain.* Published in 1863, the monograph—127 pages—contains almost all the basic ingredients of future reflexology and behaviorism, including a very modern, almost Skinnerian, conception of the reflex and including a view that perceptions and thoughts are centrally inhibited reflexes developed by the individual in the course of early postnatal ontogenesis which has—or could have—Freudian implications (*1*). There is no doubt that Sechenov is Russia's all-time most psychologically involved physiologist and the true founder of its special school of psychology. Pavlov and Bekhterev, particularly the former, later provided, to be sure, the experimental foundation of the school. But Sechenov continues to be its chief theoretician. Unlike Pavlov, who presumably felt that he could in the main ignore the analysis of basic psychological categories (or felt that he was insufficiently familiar with them), and unlike Bekhterev, whose analysis of these categories is rampantly naive and speculative, Sechenov tackled directly and fully almost all of psychology's perennial problems and tackled them with a sophistication—psychological and philosophical—that is, to the present day, striking and provoking—and highly systematic.

But here a qualifying statement is called for. What has been said so far is by no means intended to imply that all Russian psychological research and thought have come from its psychologizing physiologists and psychiatrists. Russia had had a very respectable group of pure psychologists, who compare favorably with those of other countries: Troitsky, Lopatin, Chizh, Lange, Nechayev, Lossky, Lazursky—and I could name another dozen, I suppose. It had psychointrospectionists, psychorationalists, psychointuitionists, and psychologies of *becoming,* of *self-actualization,* and of *anticipation.* But, unfortunately, these psychologists and psychologies never "became," are no longer "actual," and "anticipated" poorly. Their line of development has been forcibly cut off during the Soviet era, so that a discussion of them here could be of only very limited and extraneous relevance. Moreover, it is also true that, good as those Russian psychologists were, they never attained the eminence of the psychologizing physiologists. No Russian psychologist proper has, for instance, ever been a member of the Russian Academy of Sciences, either before or since the Revolution, whereas the psychologizing physiologists and psychiatrists have almost always dominated the biological and the medical sections of the Academy: Sechenov and Korsakov earlier, then Pavlov and Bekhterev, and now Bykov and Ivanov-Smolensky.

Continuing our discussion of back-

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ground, we obviously must take some note of what happened to psychology in the Soviet Union before 1950—a complex and tortuous zigzagging that space forces me to compress into five short paragraphs.

1) At the beginning of the Soviet era, Pavlov's physiology, Bekhterev's reflexology, and imported Watsonian behaviorism quickly became the dominant school or schools of psychology (the three are quite similar but not identical), routing in their wake all other trends as subjectivistic and idealistic. The schools' theoretical resultants at times led, under Marxian ministry, to such absurd formulations as "consciousness is a product of the inhibitions of the capitalistic system and will wither away under socialism." Yet those schools surely managed to stimulate a large amount of significant research and thought in the early '20's, and psychology at that time bade fair to become a basic science in the Soviet State.

2) By the middle '20's, however, the entire Pavlov-Bekhterev-Watson combination, as a system of psychology, fell under the sharp attack of top Soviet theorists. Nicolai Bukharin, at that time at the height of his power and the acknowledged theoretician of dialectical materialism, began the attack in 1924 (*2*), and others followed him (*3*) in plainly declaring that Pavlov and Bekhterev study correctly only the physiological basis of the mind, but not the mind itself, that conditioned or associated reflexes are physiology and not psychology, and that Soviet psychologists must develop a *sui generis* dialectical Marxian and materialistic psychology and not just coalesce with physiology, reflex study, and muscle action. The attacks produced their effects. By 1930 we find, in the periodical *Psikhologiya,* an article entitled *The Beginning of the End of Reflexology* and, by 1932, another article declaring that reducing psychology to physiology, reflexology, or behaviorism is a Menshevistic and Trotskyistic deviation.

3) For a while, in the late '20's and early '30's, there was a mild flirtation between Soviet psychology and Gestalt psychology and also, to some extent, psychoanalysis. But this was very short-lived, and by the middle '30's and the period of the purges, it became quite evident that the key official desideratum for a Marxist-Leninist-Stalinist psychology was that it should be as different as possible from any existent "bourgeois" psychology, and Soviet psychologists began vying with each other to see how different they could get.

4) The attempt to create a Soviet psychology without Pavlov and without "bourgeois" psychology proved a total fiasco. The mountains labored and produced puppies. And as a separate discipline, Soviet psychology was in continuous decline after 1936; it had no periodical of its own and produced little new research and thought and only one significant book—that of Rubinstein (*4*)—which, too, was condemned only a few years after its publication.

5) While psychology was languishing, research in conditioning and related phenomena continued unabated. Pavlov's death in 1936 halted largely, it is true, new theoretical excursions, but, if anything, it increased the pace of actual experimentation. In 1949, the country celebrated with considerable pomp the 100th anniversary of Pavlov's birth; and, as is well known, in the late '40's, Stalin decreed a sickly xenophobia and a Russification and "partyization" of science and culture. Hence the events of 1950, which begin the main theme of the present article.

1950 and Pavlovianization

What were the 1950 events? For 7 days, 28 June through 4 July, the Soviet Academy of Sciences met jointly with the Soviet Academy of Medical Sciences to "discuss the problem of the physiological teachings of the all-time 'coryphaeus' of all the natural sciences, Academician Ivan Petrovich Pavlov"; specifically, to "reconstruct on the basis of Pavlov's teachings: physiology, psychology, pathology, psychiatry, clinical medicine, pharmacology, immunology, animal ecology, animal husbandry, pedagogy, physical education and the science of health resorts." (The last is named *Kurortologiya,* the Russians using the word *Kurort,* of German origin, for health resort; it is hard to see why the subject of health resorts suddenly acquired the status of a full-fledged basic science except for the fact that Stalin was at that time much interested in it—and much in need of it!) One hundred and forty-two papers were read at the meetings by the Soviets' top scientists, almost all in the same vein: criticisms and self-criticisms for not having seen the light of Pavlov's teachings and for not having used it in one's scientific and professional endeavors, avowals to mend one's ways and adhere to the light thereafter and therefrom, and resolutions to set up Pavlovian Committees to guard the light and see that others see it (*5*). Twelve meetings of the Academies' Pavlovian Committee have been held since, besides a number of special Pavlovian Conferences convoked by individual scientific societies.

Let us see, then, what these meetings, committees, and resolutions did to Soviet psychology—and we might begin with an examination of general textbooks, which, as one would suspect, are, in the Soviet Union, more than any other publications, matters of particular circumspection and of official sanction and approval. I thus have by me eight textbooks of general psychology, six published after 1950, one in 1948, and one in 1940 (*4, 6*). Multiple textbooks on the same subject are uncommon, and there is a special reason for the six current ones. Each of the six is designed for a somewhat different audience: one for military schools, another for students of physical education, a third for pedagogical institutes, a fourth for kindergarten teachers, a fifth for secondary schools, and the sixth unspecified. Incidentally, the textbook designed for secondary schools, *Psikhologiya* by B. M. Teplov, was printed in 1,100,000 copies, and this printing was only of the eighth (1954) edition. (Previous editions were issued yearly, beginning with 1947, and the circulation of some of these was not, as far as I could ascertain, much smaller.)

Now, even a mere cursory comparison of the textbooks published before and since 1950 reveals that the latter are thoroughly steeped in Pavlovian doctrines while the former are hardly touched by them at all. More specifically, a detailed analysis of direct quotations in six of the eight books (the more elementary secondary-school- and kindergarten-teachers' texts had too few quotations to be included) shows that direct quotations from Pavlov range from 22.9 to 41.7 percent of the total (absolute numbers, 19 to 30) in the since-1950 books but that they are wholly negligible in the pre-1950 ones: 1 to 4, 0.7 to 3.9 percent. Again, while the 1940 textbook contains 41 quotations (28.9 percent) from non-Russian scientists (almost all psychologists) and 36 quotations (25.4 percent) from Russian scientists (almost all physiologists, psychologists, and psychiatrists) other than Pavlov, there are in the books published since 1950 absolutely no quotations from any non-Russian (except Marx and Engels) and there is a mean of only 7.5 percent of quotations from Russian scientists other than Pavlov.

Clearly, Soviet textbooks of general psychology have become radically and drastically Pavlovianized since 1950. Yet it would be misleading to say that Pavlov's teachings are their sole pabulum. There are also, of course, Marx, Engels, Lenin, and Stalin, whose relevance to, and omniscience about, the science of psychology no writer of a Soviet textbook could, presumably, afford to doubt and ignore, as indeed none did. The mean percentage of direct quotations from these authors in the four current textbooks is 45.9(!), surely justifying the recapitulation that, at least as far as source material and documentation are concerned, these current texts are based

on Pavlov, on the one hand, on so-called Communist classics, on the other, and on practically nothing else.

Drastic Pavlovianization since 1950 is also unmistakably evident in areas of more basic research and thought, as represented in scientific and professional periodical articles and theses for the doctorate. My list of titles and abstracts of Soviet doctoral theses in psychology is, unfortunately, fragmentary: 15 between 1928 and 1950 and 22 after that date. Yet the differences between the two periods are so wide that a null hypothesis would not, by any sign test, be at all tenable. Before 1950, only one of the 15 theses was related to Pavlov's teachings, and it, too, was admittedly critical of them, at that, whereas since 1950 no less than 17 of the 22 have been seemingly wholly based upon these teachings—have had the name of Pavlov or of his doctrines in the titles—with obviously no recognizable modicum of animadversion. My source material for comparing articles in psychological periodicals is, on the other hand, almost complete, even though, because of the nonexistence of such periodicals in the Soviet Union between 1936 and 1955, the comparison must of necessity be confined to articles published in the late '20's and early '30's (in the periodicals *Psikhologiya, Sovetskaya Psikhotechnika,* and *Sovetskaya Psikhonevrologiya*) versus those that appeared in 1955 and 1956 (in the periodical *Voprosy Psikhologii*). Result: I found that less than 6 percent of the articles involved Pavlovian research and views in the earlier period but that less than 4 percent of the articles did *not* involve such research or views, or both, in the latter, present period.

A word might also be said about the exclusion, often more correctly nonidentification, of non-Russian contributors and contributions. This Russification, begun some time in the middle '40's and revealed, in the case of periodicals, not only by the absence of non-Russian references in bibliographies of articles but also by the omission of customary non-Russian (usually English) summaries of the articles, has, it should be noted, been tempered considerably in the last year or so. Both non-Russian summaries and non-Russian references are beginning to reappear in a good number of Soviet scientific periodicals, and recently *Voprosy Psikhologii* has even instituted in each of its issues (bimonthly) a special section on "Psychology Abroad."

The fact that Soviet textbooks of general psychology contain now no more than a very few quotations from Soviet physiologists and psychologists other than Pavlov is of special significance and calls for further discussion. It signifies a very particular aspect of Pavlovianization—namely, its extreme orthodoxy. Indeed, castigating and bringing into the fold of Pavlovian research and thinking Soviet scientists who, prior to 1950, had been outside the fold was only one of the two tasks of the afore-mentioned meetings of the Soviet Academies and their Pavlovian Committees. The other objective was to see that Pavlov's research and thinking are correctly interpreted and to castigate Soviet scientists who, within the fold of Pavlovian experimentation, had propounded interpretations and theories that, according to the leaders of the meetings of the Academies and Committees, are incorrect and deviant. Or, to put it somewhat more strongly, current Soviet thinking is Pavlovian, not in the sense of being based upon what Pavlov did and stimulated others to do—that is, upon a free and broad critical analysis of experimental evidence of classical conditioning and related phenomena—but in the sense of conforming with what Pavlov said and what present "official" exegetes of his system say he said. I should delete the word *say*—Pavlov was not rewritten, he might have been, but he was not—and substitute the word *interpret*: ". . . what present 'official' exegetes of his system interpret him [Pavlov] to have said."

Deviant Interpretations

More specifically, the Academies' and Committees' castigations were directed, in the main, against four outstanding Soviet psychophysiologists and lifetime students of Pavlovianism: I. S. Beritov (Beritashvili), by all tokens Russia's most important neurophysiologist, next to Pavlov; L. A. Orbeli, Pavlov's chief pupil and, until 1950, his acknowledged successor; P. K. Anokhin, a favorite pupil of both Pavlov and Beritov; and P. S. Kupalov, with whom the American physiologists W. H. Gantt and H. S. Liddell had worked.

Beritov was an early heretic. While accepting and largely verifying Pavlov's main behavioral findings, he early set himself against the assumption of internal inhibition (rechristened in this country, by Hull and others, "reactive inhibition") and Pavlov's special views of cortical irradiation and induction. And later on Beritov went much further. Discarding the Pavlovian harness and experimenting instead with free-moving animals in a Graham-Gagné runway [the Russians would resent my describing the set-up as a Graham-Gagné one, claiming that they used something like it before (as indeed they did, in 1913) (*7*)], he arrived at what might be regarded as a two-factor view of learning: Pavlov's laws of conditioning hold when animals are in harness and the *environment does something to them,* but new laws are needed for free-moving animals who *do something to the environment.* It is a view—a distinction between reflexes and what Beritov calls psychoneural behavior—that is not unrelated to the views of the American psychologists Woodworth, Tolman, and Skinner, and certainly it would be reputable here. But it got Beritov into all sorts of troubles; whole sessions were devoted to taking him apart, he was summoned to attend the sessions, committees were sent to his laboratory, his own students denounced him—until after a few years he succumbed and recanted: "I was wrong."

Orbeli's sins were, in a large way, less in the realm of basic theory. He was primarily accused of not advancing sufficiently the study of conditioning, of overemphasizing the unconditioned as against the conditioned action of the sympathetic nervous system (which is his specialty), and of kow-towing to foreign scientists. In one of his lectures, Orbeli said that, "while watching a house at a distance and observing those who enter and leave it offers a good picture of what goes on in the house, one should really also live in the house to complete the picture"; this was denounced as a subjectivistic simile and haunted him for some time. And, again, he was severely criticized for attempts to replace Pavlov's concepts of conditioning as a signal system by a deviant and separatist concept of his own. Like Beritov, Orbeli refused at first to recant but finally did.

Anokhin's deviation was the most interesting one. What he did was to modify the Pavlovian harness so as to feed his dogs not from one side but sometimes from the left and sometimes from the right (*8*)—and that was bad: differences between left and right in a classless society! Seriously, it was of course the fact that Anokhin concluded that Pavlov's system could not account fully for the behavior of his dogs in what he called the "active choice" situation and suggested some supplementary concepts. Anokhin recanted quickly and published a *mea culpa* (*9*), as did also Kupalov, who for a while advanced a theory of truncated conditioning—that is, conditioning that does not result in effector changes (something like sensory conditioning or like Lashley's view of thinking as contrasted with Watson's) and conditioning that is centrally initiated in a manner not unrelated to the mechanism of ongoing neural patterns, as expounded by Hebb (*10*) and others. Kupalov is now presumably fully rehabilitated: since 1954 he has been chief editor of the main psychophysiological periodical on conditioning, *The Journal of Higher Nervous Activity.*

A Fixed System

Pavlovian psychophysiology has thus acquired in the Soviet Union, it may well be said, a status that, at least with respect to basic theory and principles, is more like that of an established and not-to-be-challenged ideology or philosophy than that of a system of an experimental natural science. Not only are methodologies and interpretations that deviate in any way from this psychophysiology discarded or rather suppressed but the system itself lost much of the plasticity and organic growth that it had when Pavlov was alive. Dedicated and biased toward his own ideas as Pavlov was—and he was really not more so than our own system-makers—he was nonetheless, in his own words, at all times an experimentalist from head to foot, basing each of his generalizations upon specific and well-controlled experiments of his numerous students and unhesitatingly introducing, whenever warranted, new generalizations to modify and even supplant old ones. Moreover, there is good evidence to believe that a true democratic give-and-take prevailed in Pavlov's laboratory and that at least some of the pillars of his system had their origin in his students' minds, so that, while in its entirety the system is surely the edifice of Pavlov's own genius, it is, nonetheless, also a cumulative collective enterprise.

Compare all this with the present—in which modification and revision are heresies to be shunned; when not a single new principle of basic theory has been added in more than 20 years, despite a doubling in volume of experimentation and the emergence of whole areas of novel empirical findings; and when conformity with some quotation from Pavlov is, as a rule, more of a recommendation of the validity of an experiment than is its own intrinsic worth—and you can hardly fail to note the encompassing aura of the cult of Pavlov's personality and the consequent conversion of a set of open and free hypotheses into a code of closed and forced dogmas. Like Marx, Engels, Lenin, and (until recently) Stalin, Pavlov is now a Soviet classic, endowed with almost theologistic prescience of certainties and surely above criticism and impugnations—a doctrine which Pavlov himself, the thoroughgoing empiricist and antidogmatist, fought all his life and, indeed, considered ridiculous.

Content Analyses and Problems of Synthesis

Having now delineated the formal properties of current Soviet psychology, I feel that an analysis of its contents is in order. And here, again, the textbooks of general psychology might serve as a start, particularly when a mere glance at their contents discloses a peculiarity that poses questions of basic and comprehensive significance. Despite the drastic Pavlovianization, the psychological categories which the current textbooks treat, roughly indexed by titles of chapters, hardly differ from those in B.C. ("before conversion") texts—and indeed have remained almost unchanged since the decline of pure reflexology in the mid-'20's. Moreover, these textbook categories or chapters are much more like what one finds in Woodworth of 1921, Pillsbury of 1918, and even Angell of 1906 and Höffding (Danish psychologist) of 1891 than in any contemporary American equivalents. The traditional categories of sensation, perception, attention, imagination, memory, feelings (occasionally emotions), will, language, thought, habit, and action are accorded separate and dominant chapters, in post- as well as in pre-1950 texts, whereas the more recent and not-so-recent categories of motivation, adjustment, and intelligence—our own *pièces de résistance*—are seldom mentioned even as mere concepts and problems. (Other chapters in Soviet textbooks are on physiological foundations, development (usually entitled "Development of Psyche"), and personality—and, since 1950, small sections on physiological foundations, that is, Pavlovian physiology, have been interspersed in almost all chapters.)

Surely all this must be very surprising: (i) Why retain in full bloom the traditional categories in a Pavlovian psychology when Pavlov himself was so manifestly concerned with scrapping not only the categories but the whole of psychology as well? (ii) Just how do Pavlovian principles synthesize with traditional categories, and how have the Russians done it? And to complete the roster: (iii) Where does the other half of Soviet psychology, Marxism-Leninism, enter into the synthesis? And, finally, (iv) what exactly is the nature of the actual and specific work of Soviet psychologists and psychophysiologists and how is this work specifically affected by Pavlov, traditional psychology, and Marxism-Leninism? I shall attempt to answer the questions in sequence.

The answer to the first question is simple to state, though no doubt difficult for a non-Russian-, or rather non-Marxian-, reader to assimilate. It is the fact that the *objective of Soviet theorists and the Soviet State was to add Pavlov to Marx, Engels, and Lenin but not to supplant them.* And Marx, Engels, and particularly Lenin, explicitly emphasized the active role of consciousness in transforming nature, society, and man and in changing, in Lenin's words, the "thing-in-itself" into the "thing-for-us"—whatever the phrase means. In more formal terms, the credo usually reads (to epitomize phrasal variations of a recurrent theme): "While the psyche is but an attribute of highly organized matter—the brain—and is secondary and derived in a cosmologic and genetic sense, it is, nonetheless, a true ontologic reality the 'within' categories of which must not be liquidated [that is the term] by 'without' categories of brain action." More simply, I would say that 19th century and early 20th-century concepts of purpose, will, and imagination and of consciousness itself are too inveterate in Communist philosophy, ideology, and propaganda for any mere psychologist to dare derange them. The Politbureau, the Central Committee of the Communist Party, or some future Communist Congress might conceivably some day initiate such an act, but not just psychologists. And another factor: Soviet psychologists, unlike Americans, may not indulge in any kind of operational definition or conversion of consciousness and its categories. For operationalism, they say, is positivism, and positivism is Machism, and Lenin condemned Mach as an idealist long ago (in *Materialism and Empiriocriticism,* 1909). So, Soviet psychologists are really legislated into consciousness, stuck with it "as is" so far.

But, then, what about Pavlov? Was he also a dialectical materialist and an adherent of the view of specific efficacy of consciousness and psyche as such? The answer is, of course, "No." Pavlov repeatedly contended that his study of higher nervous activity, which he equated with the study of behavior—the first of his three books on conditioning is entitled *Twenty Years of Objective Study of the Higher Nervous Activity (Behavior)*—was intended (really destined) to wholly supersede older and subjective methods, and when he used the term *psychic* he typically designated it as *so-called psychic*; the title of his famous 1906 Thomas Huxley lecture is, for instance, "A Scientific Study of the So-called Psychic Processes." And in one of his last articles (1935) he explicitly stated: "The adjective *higher nervous activity* corresponds to the adjective *psychic,*" and, "What basis is there then to separate one from the other, to draw distinctions between what the physiologist calls a temporary connection and the psychologist—an association? There is here a total blending, a total engulfing of one by the other, an identity" (*11*) (obviously an engulfing of psychology by physiology). Then, in discussing Kohler's experiments and views, Pavlov further said: "You see, it seems as if he [Kohler] is now coming around to our point of

view. Consciousness [he says] 'enthalt in sich keine besondere Kraft' [possesses no special force]" (*12*, p. 20).

There is no doubt that with respect to psychology Pavlov could be classed as nothing but a behaviorist—indeed, in a way, the true progenitor of behaviorism and, in a way, more so of the current-day than of the Watsonian variety—and with respect to philosophy as an epiphenomenalist, which is exactly how Soviet theorists considered him 30 years ago. But now they have decided to change and say that he is different, "the greatest and truest champion of dialectical materialism in the natural sciences." These theorists are experts in explicative reversals of their own former positions, under exigencies, and in "reconciliation of opposites" by fiat, and their reasonings are really not matters of evidence and logic. George Orwell's *1984* might well be of more value here.

The answer to the first question, together with some of my earlier remarks, silhouettes also, it is thought, the answers to the second and third questions, which, it may be said, should be regarded as largely negative. The Russians have in no significant way succeeded in synthesizing Pavlov with the traditional psychology of conscious categories, for the mere reason that synthesis demands modification of what is synthesized and no such modification is possible under their present system. Pavlovian orthodoxy permits no change in Pavlovian principles—a change, let us say, that would recognize several levels of learning of which classical conditioning is one, or that would view conditioning as primarily a perceptual process, or that would admit a concept such as semantic conditioning. And dialectical materialism or Marxism-Leninism forbids abridgment of the active role of consciousness or reconceptualization of its categories, or both—forcing modern research and thought in the area into predesigned and for-decades-unrevised molds—and forbids, of course, modifications in its own socioeconomic premises. Or, in other words, what the Russians have produced is, on the one hand, (i) a mere unsynthesized juxtaposition of Pavlovian and traditional psychological principles and findings and, on the other hand, (ii) a lot of selected quotations purporting to prove that Pavlovianism and Marxism-Leninism imply each other; that is, that Pavlov meant what Marx, Engels, Lenin, and Stalin said and that Marx, Engels, Lenin, and Stalin meant what Pavlov said—a casuistic conflation of texts if there ever was one. Moreover, inasmuch as adherence to the Soviet psychological system is not a matter of free choice, specific interpretations of Soviet psychologists often manifest more lip service than true evidence of an organic integration with their general system. Indeed, not infrequently these interpretations, whether from ignorance or willfully and *sub rosa,* transgress the system altogether by incongruous or even contradictory theses and professions. Prohibition has been known to lead to bootlegging.

Theoretical Framework

Yet it would be a great mistake to underestimate the achievements of recent Soviet psychology, and it would be correct to say that, while languishing before 1950 and at first quite shaken up by the traumatic about-face conversion to Pavlovianism, it has, in the last 2 or 3 years, straightened out and is resurging rapidly in practice and even in theory (that is, Pavlovian theory proper, its synthesis with conscious categories and dialectical materialism being, as has just been stated, of little systematic significance and, in the main, merely proclamatory). Let me begin with theory, dividing the entire framework into eight brief parts or principles:

1) "Classical conditioning is the functionally exclusive principle of animal and human modifiability, modifying effectively and radically all reactions from the simplest viscerovisceral reflexes to the most complex human values and judgments which, too, must be conceived reflexively." This is of course the principle of the universality of associationism, differing in its very essence but little from the theoretical positions of a very respectable number of American psychologists.

2) "Classical conditioning is in itself a psychic act. Lenin said that the essence of the psyche is its ability to reflect reality, and conditioning enables a fuller reflection of it, and, moreover, at higher levels correlates with and gives rise to conscious perceptions and images." Lenin's reality-reflecting is, of course, here nonessential, and the statement could readily be changed to read, "Conditioning is a mental or minded act in producing better adjustment," with its familiar American ring, while there obviously could be no objection to endowing association (or conditioning) under certain conditions with some power of "creative synthesis" (Wundt).

3) "A large portion of conditioning, especially that of interoceptive conditioning, is, though psychic, unconscious in essence, and this unconscious conditioning is all there is to the bourgeois concept of unconscious motivation and psychosomatic effects and actions." Little need be added here except to say that "unconscious" is not Watson's "unverbalized" but our more recent "subceptive" (that is to say, consciousness is not wholly identified with verbalization in current Soviet psychology).

4) "Conditioning of the second signal system and its interaction with that of the first is the basis of human thinking and other higher mental processes." Here special explanation is needed. In his later years, Pavlov stated that language is a second signal system, adding that "words are by their very nature abstractions" and "signals of signals." Pavlov did not base this statement, as was usually his custom, upon any specific experiments (although experiments in the area were by that time available) but uttered it in a general extrapolative fashion. Still, the statement turned quickly into a fountainhead of psychological theory and has since given rise to scores of exegetic treatises. Language, the second signal system, is not, it is contended, just second-order conditioning or conditioning to another kind of stimulus but is a new, special, higher, and abstracting kind of conditioning. And, mind you, it is new and special and higher and abstracting not because of its semantic aspects (semantics is a taboo term, related to positivism and Mach) but is so in its entirety. Moreover, since the Russians profess also a traditional view of a lower and simpler consciousness of sensation and perception and a higher and more complex consciousness of thinking and imagination and, in addition, favor the socioecological distinction between adjusting to an environment and changing it, they thus unfolded another set of parallel formulations. Simple or first-signal system conditioning is the material basis of sensations and perceptions and is the animal means of adjusting to the environment, whereas second-signal system conditioning is the material basis of thinking and imagination and is the human tool for changing the environment. Material basis, it must further be remembered, does not mean equality or sameness. Soviet theorists exult in the view that the unity of the brain and the mind does not mean identity, and they would likewise insist on saying that the unity of language and thought does not mean identity.

5) "In the interaction between the first and second signal systems, the second system typically directs and dominates, but it is the first which is basic and real; the second system alone lacks reality and reference, even as the first alone is devoid of human content and direction." This is an important principle, with both theoretical-ontological and practical-psychiatric implications, but one that is still largely in an early programmatic stage.

6) "The manner of the interaction between the first and second signal systems and relative role of each, combined with the genetic strength, mobility, and

balanceability of an individual's cortical processes, determines both the general type and the unique characteristics of his personality." The specific corollary of this principle, the Pavlovian typology of personality, is, to my mind, the weakest link in Pavlovianism—and one with which, I discern between the lines, even some Soviet conditioners are discontented (it figured but little in the recent All-Union Soviet Conference on Personality)—so that I am a bit surprised that a number of British and American psychologists have recently embarked upon its validation.

7) "Except in lower animals, all conditioning involves cortical action and the operation of specific cortical mechanisms of excitation, inhibition, irradiation, and induction; but the absolute, and relative, roles of each specific mechanism vary considerably among various types of conditioning, various individuals of the same species, and various species." This is, of course, Pavlovian cortical neurology, to which the Russians accord empirical scientific reality but which might better be classed, so far, as largely C.N.S. (Conceptual Nervous System), to borrow a term from Hebb. Pavlovian inhibition and irradiation (generalization) have been subjected to a good deal of experimentation in this country, with—to be generous—varying results, but, interestingly, induction, despite its history in sensory psychology, has, for some reason, never been exploited here.

8) "Classical conditioning is not just a mechanical system of concatenated connections, their waxing and waning, but under certain circumstances, especially in higher animals and man, gives rise to a characteristic dynamism named the 'dynamic stereotype.' " This concept was developed by Pavlov in his later years on the basis of a large number of experiments in which groups of ordered stimuli came to affect, significantly and radically, the course of later conditioning. The concept is really quite similar to Harlow's *learning sets* and to my *attitudes* (in conditioning), though Pavlov himself seems to have preferred to think of it as a counterpart of *Gestalten.* In his own words, " 'dynamic stereotypes' prove that associations generate and govern *Gestalten* and not *Gestalten* . . . association" (*12,* p. 46).

As may be seen, the framework of the eight principles is almost wholly a Pavlovian systematization with but a small sprinkling of nonspecific Marxist-Leninist expressions (nonspecific in the sense that they may be found also in the writings of non-Marxians). The occasional mention of consciousness and conscious categories is purely descriptive and in no way constitutive of any essence of the systematization itself. Indeed, there is nothing in the presented systematization to which an American behaviorist *qua* behaviorist could object, reaffirming fully, as it does, the earlier expressed view that what the Russians have is a Pavlovian psychology which in itself is complete and autarchic, and that whatever else they introduced into the system is insignificant and extraneous and stems, not from empirical and logical analyses, but from dicta of a handed-down and unwilling-to-be-modified philosophy which, by its very nature, contravenes scientific psychology—and Pavlov.

Soviet Psychologists' Actual Work

Conditioning being the very core of current Soviet psychological theory, one would expect that it would also account for the lion's share of the actual work in the field (our fourth and final question). It does. The scope of experimental work in this specific area is indeed singularly impressive. Last year I counted a total of 1507 separate reports of experiments in classical conditioning that have come out of Russian laboratories. My present count includes a few hundred more, and I should add that, by all tokens, the technical quality of the experiments is of very high caliber.

The Russians attached radio transmitters to their dogs to signalize electronically conditioned salivation as early as 1931 (*13*), and in recent years a good number of conditioning studies have been accompanied by electroencephalographic records. Pavlov, as is well known, was a very skillful surgeon, and surgical skill seems to have been fully kept up and cultivated by his pupils, almost as a sort of distinguishing—and distinguished—laboratory coat-of-arms. Just as Pavlov brought through the body's surface, or surgically exteriorized, the ducts of the salivary glands for the purpose of objective experimentation, so do his pupils exteriorize for the same purpose the ducts of other glands and the internal organs themselves; they have, indeed, succeeded in a two-way conditioning of almost all the viscera. You may condition a dog to contract his spleen when a bell rings just as you may condition him to lift his paw when the spleen contracts (the latter variety is the one called "interoceptive conditioning"). This is no mean achievement, and it would be folly to minimize its tremendous applied and academic significance for physiology, psychology, and medicine—in general, and in their development in this country in particular. The techniques should be learned, the information mastered, and the experiments repeated.

To be sure, all this is the work of the physiologists. The psychologists proper have not done so well. For one thing, as many readers may know, research and even free discussion of a significant section of modern psychology have been *verboten* for some time. Mental testing and indeed any interindividual psychometrics and evaluation went out of existence in 1936 (through the official Communist Party decree on "pedological inversions") and with them went, as one might expect, most phases of what we commonly class as social and industrial psychology. For another thing, prophylactic aspects of mental health, which beget and nourish so many American psychologists (clinical psychologists), and related interests in motivation are in general underdeveloped in the Soviet Union, partly because of its specific socioeconomic conditions and philosophy but partly also, no doubt, because of the long-standing ban (unofficial but real) on the teachings of Freud and his followers. Then, there is the obvious consideration that conditioning was begun primarily as a physiological rather than a psychological enterprise and that in Russia, contrary to the situation in this country, it continues to be so, particularly when animal subjects or surgery, or both, are involved. The curtailment of Soviet psychology's field of operation, as compared with our own, can thus hardly be a matter of dispute. Imagine an American psychology in which division 5 (Measurement and Evaluation) and most of divisions 8 (Social Psychology) and 12 (Industrial Psychology) were interdicted, a large part of division 3 (Experimental Psychology) was appropriated by some other science, division 12 (Clinical Psychology) was, in general, underdeveloped, and the rest had to conform to a particular school of psychology—let us say, that of Skinner or Hull (together with Marx, Engels, and Lenin, to be sure)—or else!

Yet, within permitted and nonpreempted regions, the actual work of Soviet psychologists is considerable and basic, often reaching beyond the doings and thinkings of the physiologists and not infrequently, I might add, beyond the lines laid down by strict Pavlovian theory. There is, for instance, the very significant experimental area of verbal conditioning, in which psychologists not only participate fully but, by all tokens, seem to be both methodologically and conceptually ahead of physiologists such as Ivanov-Smolnesky, who originally dominated it. Central-psychological methods, such as recognition scores of conditioned stimuli and even imagery reports, are commonly supplementing, under psychologists' tutelage, pure peripheral-physiological techniques of muscle-twitchings, gland-oozings, and electroencephalograms. And results of verbal conditioning experiments are, in their turn, more meaningfully interrelated with ge-

netic studies of development and deterioration of speech and thought. A. R. Luria, who, as you may judge from the 1932 English translation of his book, is quite a sophisticated—and versatile and adjustable—psychologist, is particularly active in the last phase of the area.

Again, there is the area of experimental and theoretical work in perception, which, even without the benefit of Gestalt views—branded as idealistic and reactionary—is being pursued with a good deal of vigor. Perception is related, on the one hand, to orientation (Pavlov's investigatory reflexes) and, on the other hand, to the *Einstellungen* (mental sets) of Ach, Messer, and Külpe. *Einstellungen* (in Russian, *Ustanovski*) have for a long time been regarded with suspicion and even held up to censure, but in the last 2 years they have become respectable through the efforts of the Georgian psychologists, inspired by the late Usnadze (*14*); (Georgia, Stalin's birthplace, seems to have had, in his days, as some readers may know, greater leeway in thought). Then, attention should be called to current Soviet psychologists' experimentation in thinking. At the 1953 All-Union Conference, 12 of the 31 summary reports were in this area, and, interestingly, the experiments reported were quite similar in design and specific interpretations—and in gropings and flounderings—to what goes on in most of our own laboratories, except perhaps for the fact that the Russians use children as standard laboratory subjects. The advantage of having children, rather than rats and dogs and even apes, as subjects in our laboratory experiments has been pointed out before, and the animadversion that our own child psychology studies are too often far removed from hard-core experimentation is not new, and may I add a weak voice of concurrence.

Finally, special mention needs to be made of Soviet applied psychology, which by now is largely applied education psychology dealing with problems of concrete complex learning and training. Since any view that real life in some way transcends laboratory potential would be decried as a heretical remnant of idealism and religion, particularly now when everything transformable in men and animals—in areas that range from apiculture to philosophy and from immunity and ovulation to sports and psychiatry—has been officially declared within the reach of Pavlovian treatments, and since there is only one employer or clientele—the watchful eye of the Soviet State—Soviet applied psychologists differ really but little from their laboratory experimentalists in background, training, and outlook and, unlike our own group, are by no means weak on theory. Pick up a book such as Menchinskayy's *Psychology of Teaching Arithmetic* and you are confronted with an abundance of pedagogical material on the mastery of the subject by school children, but also with a highly sophisticated and detailed discussion of basic learning theory and brain action, the comprehension of which would surely prove difficult to our educational psychologists.

Likewise, examine a symposium on *Problems of the Psychology of Sports* and you discover seven seemingly well-controlled experiments with both large groups of subjects and record-holders in skiing, tennis, track-and-field running, and general gymnastics, together with very well integrated theoretical arguments on the nature of habit formation, perception, and voluntary action. Let me state the main theoretical argument, as presented by the editor of the symposium. Analyzing the data of the seven experiments and quoting Sechenov, who, unlike William James, said that "the more practiced a movement the more it becomes subject to the will," the editor carefully develops the thesis that habits are the most voluntary, and thus the most cognitive, components of man's activities; that habit facility must not be confused with reflex (unconditioned) facility and automation of details with automation of total acts; that assertions about practice telescoping down neural loci are unfounded; and that, in general, the normal dynamics of psychological acquisitions proceed from lower to higher categories and not vice versa. The thesis is obviously not unrelated to the views of the Würzburg school and to Titchener's "meaning core," except that, among other things, the Russian editor rests his arguments largely (but by no means wholly) upon behavioral-objective criteria: the plasticity and controllability of habits, their sensitivity to error, correspondence to objective reality, and so forth.

In short, curtailed as the field of current Soviet psychology is and Procrustean as the beds of its theories are, it seems to manage to forge ahead. Presumably, a psychology with Pavlov in it, even if it has to have also Marx, Engels, and Lenin, is better off, and much better off, than one with Marx, Engels, and Lenin alone. And presumably, while Soviet psychology is experimental only insofar as results do not conflict with basic principles of Soviet philosophy, it is, within that framework, experimental nonetheless and, as such, cannot but correspond in many ways to a respectable portion of our own psychology. And above all there is the happy fact that, in the course of over 50 years, Russia has reared and fostered a special corps of experimentalists—Pavlovian experimentalists—whose special training, skill, and mastery at times display the uniqueness of a Dyaghilev ballet or a Stanislavsky direction and whose methods and findings cannot thus but be of compelling significance to any system of human behavior and any philosophy of human relations. Like a restricted species in a restricted environment, they often burrow in depth, which—to say the least—helps fertilize the common scientific grounds.

Sociopolitical Implications

I have now, in my capacity as a natural scientist, completed what I wanted to say about recent Soviet psychology and psychophysiology, attempting to be as objective and as specific as possible. I would like now to say something that is sociopolitical or sociophilosophical in nature. In popular writing, it is often stated that there is some sort of pact between Pavlovianism and Stalinism—that Stalin and the Stalinists have sought out, selected, and adopted Pavlovian psychology to ruthlessly degrade, enslave, and rape the human mind, for there is some organic relationship between the two. Obviously nothing can be further from the truth. Stalin and Stalinism were not born in 1950, and before 1950—between 1930 and 1950—Pavlovianism as a system of psychology was, as we noted, much less popular in the Soviet Union than in the United States. Stalin did not need Pavlov, nor does Stalinism need him or need any scientific psychology for that matter—and the only reason for choosing Pavlov was his being an eminent Russian in a period when Stalin was morbidly engaged in a glorifying Russification of science and truth. Had Freud and Kohler been Russians, they no doubt would have been the choice.

Indeed, one could say that, from their own standpoint, Stalinists and Marxist-Leninists in general might on the whole have been better off embracing psychoanalysis or even Gestalt psychology. And certainly, and with greater confidence, I am ready to say that Stalin and Stalinists committed the most serious error in their ideological career in proclaiming Pavlovianism as their official psychology and Pavlov as one of their classics. They may have gained experiments on a few hundred dogs but they unwittingly introduced a Trojan horse into their system. For Orwellian-type distortions to the contrary notwithstanding, it is monstrous to deny that the work and views of Pavlov are anything but within the spirit and framework of the best traditions of Western science and democracy. There is not in them, in the work or the views, even an iota of anything specifically Russian or anything that is in the remotest degree related to the credos of Marx or Engels or Lenin, whose names, despite Pavlov's having coexisted for 19 years with the Communist system, do not

even once occur in any of his voluminous published writings, while in a popular unpublished lecture Pavlov sharply criticized Marxism as being dogmatic and unscientific (*15*). The very warp and woof of Pavlovianism stem from a methodology and a philosophy that, in their very essence, are at cross purposes not only with Stalinism but also with aprioristic and absolutistic historical materialism and Marxism in general. And, needless to say, the methodology and philosophy are in line with, and an organic continuation of, the methodologies and philosophies of British empiricists and associationists—Francis Bacon, John Locke, David Hume, John Stuart Mill, and others—whose writings Pavlov studied, and, later, of American animal experimentalists such as Jacques Loeb, Herbert S. Jennings, and Edward L. Thorndike, whom, as many readers may know, Pavlov specifically singled out as being likeminded colleagues in research and thought.

And surely Pavlov was unqualifiedly and unalterably opposed to any curtailment of free inquiry and interpretation. In a letter written in 1914 to the psychologist Chelpanov—a letter the publication of which was until very recently withheld—Pavlov plainly stated that "success in deciphering nature's crowning achievement, the action of the brain, demands absolute freedom, total disavowal of stereotypy, and all possible diversities of points of view and methods" (*16*). And in the afore-mentioned unpublished lecture, delivered in the early '20's, he was even more explicit: "Science and dogmatism are wholly incompatible with each other. Science and free criticism—yes, are synonyms; but dogmatism makes no sense here. Fixed truths? Think of the indivisibility of atoms. In the course of years nothing has remained of it. And science is full of such examples. . . . The dogmatism of Marxism . . . is sheer dogmatism. Because they [the Communists] decided that it is the truth, they don't want to know anything else. . . . If you assume a proper attitude towards science . . . you will realize that Communism and Marxism are by no means absolute truths . . . and then you will look upon life from a free standpoint and not from one of enslavement [in Russian, *zakabalyonny*]" (*17*). Need more be said? And just how does this fit into Stalinism?

Let me conclude with one more idea. The meaning and interpretation of Pavlov and Pavlovianism given here are not unknown and unappreciated in the Soviet Union. As millions of Soviet intellectuals read the writings of Pavlov they cannot but become imbued with a spirit of empiricism and free inquiry and interpretation that is bound to slowly corrode—undermine—the dialectical materialism and thought control of Marx-Engels-Lenin-and-Stalin. One can clearly discern the conflict between the two philosophies in high-level discussions in physiological, psychological, and other technical writings (writings which, I assume, our foreign correspondents and Russian experts are not very likely to be familiar with). And there is in this conflict a strong element of irreversibility: Pavlov and empiricism ascending and dialectical materialism and apriorism descending. The behind-the-curtain political fermentation in the last 3 years is not unrelated to a philosophical-ideological fermentation produced in part, I think, by the penetration of Pavlovian empirical psychology. So that while scientific psychology—and Pavlovian psychology is this, even if we disagree with some of its premises—has not yet, perhaps, cleared the way to a desirable social system, it may well be on the road to changing an undesirable one.

References and Notes

1. Sechenov's original title for the monograph (translated) was *A Physiological Interpretation of Psychological Phenomena,* and he sent it to the literary and sociophilosophical periodical *Sovremennik.* The censor, however, refused permission for publication, whereupon Sechenov submitted the monograph to the *Medical Courier* and changed the title to what it is now, *Reflexes of the Brain.*
2. N. I. Bukharin, *Ataka* (GIZ, Moscow, 1924), p. 127; p 171. Bukharin's two articles are entitled, respectively, "Yenchmeniada [after Yenchmen, a radical Soviet behaviorist], the Problem of an Ideological Degeneration" and "World Revolution, Our Country, Culture, etc. (a Reply to Professor Pavlov)." The "reply" in the second article is made to an unpublished lecture delivered by Pavlov. A few salient sentences of the lecture, as quoted by Bukharin, are given at the end of this article.
3. L. S. Vygotsky, in *Psikhologiya Marksizma* (GIZ, Moscow, 1925); Y. V. Frankfurt, *Reflexology and Marxism* (GIZ, Moscow, 1926); Z. I. Chuchmarev, *Subcortical Psychophysiology* (GIZ, Kharkov, 1928); K. N. Kornilov and Y. V. Frankfurt, *Vestnik Kommun. Akad.* 181, 35 (1929).
4. S. L. Rubinstein, *Principles of General Psychology* (UCHPEDGIZ, Moscow, 1940).
5. *Scientific Sessions on the Problems of the Physiological Teachings of Academician I. P. Pavlov. June 28–July 4, 1950* (Akad. Nauk S.S.S.R., Moscow, 1950).
6. P. A. Rudik, *Psikhologiya* (UCHPEDGIZ, Moscow, 1955); A. V. Zaporozhets, *Psikhologiya* (UCHPEDGIZ, Moscow, 1955); V. A. Artyomov, *Ocherk* [Outline] *Psikhologii* (UCHPEDGIZ, Moscow, 1954); P. I. Ivanov, *Psikhologiya* (UCHPEDGIZ, Moscow, 1954); B. M. Teplov, *Psikhologiya* (UCHPEDGIZ, Moscow, 1954); T. G. Yegorov, *Psikhologiya* (Ministry of Defence, Moscow, 1954); K. N. Kornilov, A. A. Smirnov, B. M. Teplov, Eds., *Psikhologiya* (UCHPEDGIZ, Moscow, 1948).
7. G. P. Zelyoniy, *Compt. rend. soc. biol.* 75, 659 (1913).
8. P. K. Anokhin, *Problems of Higher Nervous Activity* (Akad. Nauk, S.S.S.R., Moscow, 1949).
9. ———, *Fiziol. Zhur. S.S.S.R.* 38, 758 (1952).
10. D. O. Hebb, *The Organization of Behavior* (Wiley, New York, 1949).
11. I. P. Pavlov, *Collected Works* (Akad. Nauk, S.S.S.R., Moscow, 1951), vol. 3, pt. 2, p. 325.
12. ———, *Pavlov's Wednesday Seminars* (Akad. Nauk, S.S.S.R., Moscow, 1949), vol. 3.
13. V. I. Kryazhev, *Sovet Nevropatol. Psikhiat. i Psikhogig.* 1, 778 (1932).
14. *Voprosy Psikhol.* 1, 72 (1955).
15. Quoted by Bukharin (2).
16. *Voprosy Psikhol.* 1, 99 (1955).
17. As quoted by Bukharin, (2). Bukharin identifies the quotations as coming from the stenographic report of a public lecture. And it should be noted that whereas all Pavlov's known manuscripts and letters and even students' notes of his seminars were published posthumously (five volumes of seminar notes have appeared so far), not only has this lecture been left unpublished, but its very existence is nowhere mentioned in any of the several Pavlov biographies, bibliographies, and published chronological lists of his public and professional activities.