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Reinforcement is a law which itself is lawfully related to a number of setting factors which multiply the number of experimental treatments affecting a particular experimental outcome. Not the least of these setting factors is deprivation or, if you will, time between access to scheduled reinforcement. Kantor (1963) has called attention to just these kinds of issues in his arguments that interbehaviorism is the only means whereby one can effectively deal with the scientific investigation of setting and field variables, as opposed to keeping them constant and thus unclarified. Much of the effects of setting conditions may be consumed under past history, thus bringing to the forefront such issues as multiple paradigm effects on behavior. Evidence of the import of this for conditioning comes from data generated concepts such as "conditioned helplessness" (Maier, Seligman, & Solomon, 1969), "internal-external locus of control" personality-learning labels (Rotter, 1966), and certain forms of Pavlovian conditioned inhibition and facilitation (Ray, 1973). Compared to conditioning, what we know about setting factors is almost nothing.

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 Setting conditions, situational factors, species differences, and specificity of response measures will all most likely be found to have much more profound influences on conditioning than current research would lead one to suspect. Thus a translation from current research models to more ecological models not only seems feasible, but necessary.

Roger D. Ray: "Conditions Conditioning Conditioning",  
 Paper Presented at the Southeastern  
 Psychological Association Meeting, New  
 Orleans, Louisiana, April 6-8, 1973

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THE AGORA

Regarding the quotation from Ray, we also published statements from Skinner and from Kuo on setting factors in the Number 2 issue of 1975. Observations and studies by others are quoted in Smith, Psychological Record, 1973, pages 164 and 165. Direct research on this topic is beginning to develop as in the work of Kathleen Bloom in the Journal of Experimental Child Psychology, 1974, 17, 250-263 and W. H. Redd, same journal, 1974, 17, 61-78. J. L. Gewirtz has several studies in which he initially equates drive and setting but gradually abandons drive in his later work as it becomes obvious to him that it implies a special internal force which setting does not while the latter accounts for variation in response to a given stimulus. His papers appear in MINNESOTA SYMPOSIUM ON CHILD PSYCHOLOGY, Vol. 1, 1967; HANDBOOK OF SOCIALIZATION THEORY AND RESEARCH, 1969; Developmental Psychology, 1969, 1, 2-13; RECENT TRENDS IN SOCIAL LEARNING, 1972. Barker's ecological psychology is also largely a study of setting factors. Gibson's interest in the ambient array in perception is still another indication of a growing recognition, at least in some quarters of psychology, of the multiplicity of factors that constitute a psychological event. Perhaps the mechanistic S→R will one day give way to a field approach. However, there is the disquieting fact that as the mechanistic approach is seen wanting--that the organism is not passively shaped by environmental forces--other quarters of psychology rush in with consciousness, will power, genetic determiners, and other intangibles conjured up from the metaphysical past. Those who recognize alternatives to mechanism or mentalism are all too few, but there does seem to be enough growth in that direction that such an alternative might eventually become visible enough to gain some larger consideration by entering into the mainstream of debate. Then psychologists can at least make an informed choice.

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We regret the duplication of the Goodson article in Number 4 of 1975. It was inadvertently interchanged with another article that we intended to run. Some of the articles in Number 3 must have been of special interest. We have received so many requests for extra copies that additional copies will have to be printed. The editor of Human Development requested a revision of the Sanders and Cone article in Number 2 for publication in that journal.

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On April 9, 1976 Dr. Kantor was the guest of honor at a dinner party given by the Department of Psychology at Western Michigan University. Other guests included the following graduates of Indiana University: Frederick P. Gault, David O. Lyon, Louise R. Kent, Richard W. Malott, Marjorie P. Mountjoy, and Paul T. Mountjoy. A central topic of conversation was the golden days at Indiana University. After the dinner Dr. Kantor presided at a conversation hour. Over 75 students and faculty made up the standing room only audience. Because of Dr. Kantor's hearing loss he requested that questions be submitted in writing. He responded to them with his customary analytic acumen and lively wit. Those who were fortunate enough to attend this conversation hour were in agreement that his visit was an intellectual high point in the academic year.

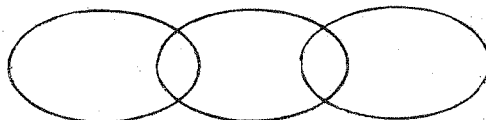
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About two and one-half years ago we began a project (reported in 1974, Nr. 4 and 1975, Nr. 4) of putting together a book made up of original papers to be tentatively entitled INTERBEHAVIORAL APPROACHES TO RECURRING PROBLEMS IN PSYCHOLOGY: ATTEMPTED SOLUTIONS. The Prospectus read: the book "will undertake the comparison of traditional approaches to a variety of topics with the interbehavioral approach and attempt to show how the latter can more effectively treat the problems that have been recurring for decades or even centuries--perhaps even resolve them so that they need not be recurring. These recurring problems often grow out of theories and research that (1) offer interpretation of data in terms of constructs inherited from the past (e.g., drives, mental states, instincts), (2) are directed toward solving issues of which the basic assumptions have not been clarified or even carefully examined (e.g., heredity versus learning), and (3) are misdirected (e.g., the search for engrams) because of those same unsatisfactory and unexamined assumptions. The papers will indicate the advantages of an approach which insists that psychology must start with events, not traditional constructs, and must interpret its observations in terms of those same events--events **consisting** of interactions of factors in a field involving organisms and objects developing historically in a setting or context. Research and theory can then proceed to expand knowledge rather than repeatedly tripping over ensconced tradition." We now have eight completed manuscripts and hope to receive two or three more. Here are the papers we now have:

- Marion McPherson & John Popplestone: Is "Intelligence" Intelligent?
- Donna Cone: An Objective Analysis of Species-Typical and Other Behaviors
- Donna Cone: The Historical Development of Scientific Psychology
- Rollo Handy: Methods of Inquiry
- Ronald Kidd & Luiz Natalicio: An Interbehavioral Approach to Operant Analysis
- Paul Mountjoy: A History of Psychological Technology
- Henry Pronko: The Current Status of Physiological Psychology
- Noel Smith: Perception: Inner Representation of the Outer World or Organism-Object Interaction?

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In this issue we are beginning a two-part series involving a translation of a treatment of interbehaviorism by André Tilquin. It is as literal a translation as is consistent with accuracy and good English. The next issue will begin with section III on "'Interbehaviorism'" and conclude the account. It will also contain the references. Also in this issue we have Donna Cone's editorial notes.



Le Behaviorisme Origine et Développement de la  
Psychologie de Réaction en Amérique

(The Origin of Behaviorism and Development of Psychology of Reaction in America)

André Tilquin

Paris: Librairie Philosophique, 1942

Translated by Nanette Weissinger and Lucien Leduc  
In Consultation with Noel W. Smith

Book II, Part II

Chapter I.

Behaviorism and Biology: The Organic Psychology of Kantor

I. The Organic Point of View

The "organic psychology of Kantor stands in opposition to physiological behaviorism quite as much as to traditional psychology, and for the same reasons. Each, instead of taking acts themselves as objects for study--all acts, just as they occur, and at their face value--draws an inadmissible distinction between them and substitutes artificial, occult, inobservable entities for them. The mental states of traditional psychology have none of the properties of the observable phenomena studied by natural sciences. Assuming that mental states exist, they could be known only by their manifestations. From this one has sometimes been led to think of them as internal hidden forces which motivate organisms to do what they do (4, v.I, p. xiii-xiv). As for the object [of study] of physiological behaviorism, it is equally artificial and inobservable. Although it is concerned with paired stimulus-response, the stimulus is defined physically, the response is considered as a system of muscular contractions, and the link between these two components of behavior is ensured by a neural process. Thus the real content of animal and human behavior is neglected for the study of abstractions, occult entities and hypothetical phenomena. The stimuli to which we respond are not physical or chemical agents, stripped of every quality, but "objects"-- things, animals, people, institutions-- possessing concrete properties which are the origin of and the reason for our responses (p. xv). Similarly, our responses are not, by any means, simple muscular contractions. They are acts, each having a special character expressed by the terms used to refer to it, such as walking, swimming, riding, reading, getting married, etc.... As for the nervous system, the mission of which would be to ensure the appropriate relationship between stimulus and response, to it are attributed powers just as occult and inobservable as psychic powers. All that traditional psychology attributed to psychic states interpolated between stimulus and response, physiological behaviorism attributes to the nervous system. The processes which occur in the nervous system are without any doubt, factors in behavior--but not the only factors. To consider them to the exclusion of all others is to take the part for the whole (p. xv, 30).

The Watsonian attribution of psychological functions to the whole organism, rather than to the nervous system, leaves the position basically unchanged, for the organism is no more than an abstraction. It cannot, either from the biological or from the psychological point of view, be separated from its surroundings. To tie behavior either to one part of the body, or to the body as a whole is still, then, to consider only a part of a reality which must be considered in its entirety.

Behaviorism has been the victim of the prestige of the earliest established sciences. The general view of chemistry and physics as the model of science has resulted in the assumption that only those phenomena which have been reduced to their ultimate units--different from observed and observable acts, but susceptible to mathematical measurement--can be objects of scientific study. This analysis and quantification are acceptable in physics because details of phenomena are considered unimportant. In psychology it is altogether otherwise. How is it possible to understand a case of loss of memory without attempting to know what the person had previously learned, the conditions of [learning] acquisition, and the circumstances of forgetting? It can even be said that if the physicist is concerned only with motion and energy, then he is abandoning to the psychologist the qualitative content of his experience. If psychology refuses this gift, then science is deprived of all that human experience contributes (4, p. 2-3).

We must neither exaggerate the role of mathematics in science, nor take mathematics for "a machine for making facts" (p. 2). Mathematics serves only as an auxiliary to express relationships between facts in a very precise manner. However, mathematics is not applicable in all domains. When the object of study is complex, mathematics can participate only in the form of statistical organization of the results of observation. To put it to any other use would involve the substitution of artificial, empty schemas for observable acts. If the goal is to obtain uniformities, then the formation of schemas and concepts, together with the reduction to units, is obviously indispensable; neither abstraction nor analysis is condemnable in itself (p. 2). But, indeed, to substitute schemas for acts from which they neither arise nor follow, to reduce acts to units from which they cannot be composed, would be to mistake the nature of scientific thought (3, p. 67). Now this is just what one does when one claims to describe human behavior by utilizing concepts of physical stimulus, of muscular and glandular reaction, of physiological processes in the nervous system, or of the organism as a whole. Such a description and such a reduction have nothing to do with the concrete events which they are supposed to represent. The concepts utilized do not spring from the acts such as they are given in the experience of the observer. And if one attempts to capitalize on them, it is impossible to find again the acts which they assertedly symbolize. Similarly, physiological elements used to explain behavior do not provide an analysis of behaviors themselves, just as they are given in experience; and it is impossible to reconstruct the behaviors by composing them. Therefore, of what interest can they possibly be as a scientific instrument? (4, p. 2-3; 3, p. 5).

Will it be said that these ways of proceeding permit prediction, the goal of all science: Certainly if the word "prediction" is given the meaning it has in physics, of certain prediction of an event which is in some way required to occur, then such a prediction is possible in psychology only on condition that the behavior be reduced to empty abstractions. But of what value can such a prediction be? All that the psychologist can make are uncertain anticipations, analogous to those of the meteorologist, which require a detailed knowledge of the reactional history of an individual and of the precise circumstances with which the individual is confronted (3, p. 9). That is to say that one must consider the behavior itself, describe it as it occurs with the greatest possible number of details, and refrain from seeking elsewhere than in the behavior itself for the categories and units to use to describe and explain it (4, p. 2-3).

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<sup>1</sup>Quote from original English. Whenever a quotation from Kantor occurs that was originally in English, the original statement is used rather than a retranslation from the French. Quotations that were originally in French are translated.--con.

Kantor, one sees, maintains science in general and psychology in particular on a purely descriptive level. Acts, nothing but acts and not artificialities, but all acts without discrimination, seem to be his motto and the conception he develops of science. If he admits an explanation, it is on condition that the explanation operate, not as a function of general laws, but as a function of the particular behaviors. Explanation is then only the history of the behavior being considered, which is the procedure of description.

Physiological behaviorism was justified in breaking with traditional psychology and in rejecting mental states; but in conceptualizing behavior physiologically, it was led to deny observable characteristics of it. If consciousness does not exist, conscious behaviors do. Consciousness is not a substantial reality tied in any manner whatever to the nervous system or to the whole organism; it is an aspect of certain behaviors, an aspect which is neglected in a purely physiological conception of human activities (6, p. 75). Under the pretext that introspection is not the only method permitting direct observation of psychological acts, behaviorism has been excessive in deciding to renounce all factors of behavior which relate to this method. The only legitimate conclusion to draw from the inadequacies of introspection is the necessity of improving and perfecting it. Renouncing it and holding that conscious behavior--memory, thought, emotion, language, for example--can be studied only by an objective method, leads to supposing that this behavior is purely physiological (3, p. 7). And again, acts are given only a biased and incomplete description, and human experience is emptied of its human content. The consideration of psychology as a natural science can not have this paradoxical consequence of the rejection from the field of observation of events which really take place there, however subtle or hidden they be. "The point of view that consists of considering psychological phenomena as phenomena of nature does not exclude the most refined desires, anymore than strong emotion, profound pain, the most complicated activities of discovery, or the profound speculations to which certain individuals are so attached" (6, p. 81).

This desire to not neglect any act in no way implies a return to the doctrine of states of consciousness. Kantor does not accept the dilemma with which psychologists think they are faced: to accept an objective point of view, and consequently reduct human behavior to simple muscle twitching; or to consider human behavior in its concrete and original aspect, but then to have recourse to states of consciousness. This dilemma implies dualism, which he rejects for the same reasons which led him to condemn traditional psychology and physiological behaviorism. Dualism does not express a fact (6, p. 85). Observation of animal and human activities reveals behaviors which certainly have more or less different characteristics, but it does not reveal mental states as opposed to activities in the nervous system or muscles contractions. Observation, however, does reveal organisms that are real and concrete, rather than double artificial beings made up of mind and body expressed as body. "Mind" and "body" are metaphysical entities which represent nothing that is real (4, p. xiv, 30). "Although men ostensibly sought to justify the entire dualistic problem by physiological or neurological facts, it was never founded on real observations. It represents purely and simply only a traditional interpretation supported by cultural attitudes" (6, p. 80). It is a historical accident originating from this, that psychology "instead of developing in the direction initiated by Greek rationalism, has undergone the influence of mystic imagination from the Orient. The only positive basis that it could ever have had is reduced to the fact that every act of psychological being is at the same time the behavior of a biological organism, that is to say the function of certain structures" (6, p. 80).

It seems probable that, with James, Kantor admits only one sort of stuff, the world qualified by pure or immediate experience; and that this experience, for him as for the phenomenologists, contains "things" as well as "thoughts". Kantor's concept of experience is confused both with introspection as redefined by the gestaltists and with naive observation, the point of departure of all science. However, there are abstract sciences, such as physics, physiology, and traditional psychology, which transcend the given with their explanatory schemas, their "constructions", electrons, neural processes, and psychic states; and there are concrete sciences which limit themselves to describing the given. It is in the second group of sciences that Kantor places psychology. It is the study of observable interactions between the organism and its milieu.<sup>2</sup> The milieu,<sup>3</sup> in a neo-realistic manner, is made up of concrete objects possessing qualities, just as naive observation reveals them, and not artificial entities invented by the physicist and the chemist. The organism, which can not be separated from its environment, is not only the organism such as the biologist, the physiologist and the mentalist create, but is a concrete, real, living, acting organism which stands in opposition to the twin dichotomy mind-body and organism-milieu. It is in order to make this new unity salient, this uniquely truly given unity, that Kantor calls psychology as he understands it organic psychology or, better, organismic psychology, and that he gives it interactions, interbehavior between the organism and its milieu, as the object [of study].

## II: Characteristics of Psychological Activities

The expression "organismic psychology" is perhaps an unsatisfactory choice because it seems to join with biology a psychology which wishes to be antonomous. However Kantor admits that a sane biological conception of behavior would lead to organic psychology (4, v. 1, p. 78). And he is certain that he conceptualizes the psychological problem in the spirit of, if not in the same manner of, biology. This science does not reduce itself to anatomy, but it studies also the functions of the organism. But how can one treat of these functions if one does not take account of the milieu in which the organism lives and without which the organism cannot live? Life implies without doubt an internal harmony, but it requires also an adaptation to external conditions. The respiratory apparatus, for example, and the function of respiration have neither the same structure nor the same workings depending upon whether the milieu in which the organism is plunged is gaseous or liquid. The organ and the function are adapted to normal conditions of the milieu and they tend to adapt themselves to variations of these conditions. Now the psychological activ-

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<sup>2</sup> Kantor speaks of interactions between an organism and a stimulus object that occur in a setting. Tilquin sometimes uses milieu to apparently include both stimulus and setting although in a context in which Kantor would refer specifically to a stimulus object. To render milieu as stimulus or stimulating surrounding here would more accurately reflect Kantor's position but somewhat misconstrue Tilquin's interpretation. At other times milieu seems to refer to stimulus objects or to surroundings and at still others to what Kantor calls the field. Field comprises the interrelated and interdependent activities of an organism, stimulus object, setting, and media of contact. To be accurate to Tilquin, milieu, a word also used in English, is retained in all these instances but with notes to a term more appropriate to Kantor. In this instance "stimulating surroundings" might be more appropriate.--con.

<sup>3</sup> stimulus



ities of organisms for Kantor have precisely this for their function: to adjust the individual to external conditions which naturally are quite different from biological conditions. In the degree to which he accents the adaptive character of psychological activities, Kantor is influenced by a biological approach as are Watson and Weiss. But he goes much farther than they in his faithfulness to the spirit of this science. He holds that the organism, either from its biological or psychological viewpoint is inseparable from its milieu. To distinguish the organism on one hand, and the milieu on the other, can be a useful distinction. Indeed it is an abstraction, the consequence of which is the substitution of a new dualism for the old: a completed organism and a so-to-speak inalterable milieu are set up in opposition to each other like two unrelated realities. One neglects thus the fundamental fact, as much of biology as of psychology, which is the inseparability of the organism from its milieu,<sup>4</sup> and the continual interactions with which each fashions the other. It is to put in relief this dynamic organism-milieu unity that Kantor has chosen to designate his psychology by the expression organic psychology.

In treating adaptive interactions between the organism and its milieu<sup>5</sup> psychology tends to be confounded with biology (6, p. 79). How is it distinguished from biology? To say that organic psychology is the study of activities or "psychological organisms" (6, p. 75) can only be a tautology as long as what it is that differentiates a psychological from a biological organism is not precisely defined. Sometimes Kantor seems to see in this distinction only the distinction of functions and structures. The biological organism would in some way be the organism at rest, considered in its potentially active state; the psychological organism would be the organism in action. Psychology would occupy itself "primarily with reactions or behavior, and the independence[vis-a-vis biology] of psychology as a science depends in part upon keeping the reactions distinct from the biological organism that performs them. Briefly, psychological organisms, as differentiated from biological organism, may be considered as a sum of reactions plus their various integrations" (4, p. 3).

There evidently is a distinctive characteristic there which implies an admissible reduction of biology to anatomy. If one were to admit it, psychology would be confused if not with physiology in the strict sense, at least with a physiology carried to the point of understanding the extra-organic causes and effects of functions. Now Kantor is vigorously opposed to physiological behaviorism, and thus to this confusion. On the other hand psychology is not the only science which treats of activity. All the sciences, Kantor recognizes (4, p. 3-5), treat behavior, that is to say actions executed by an inert or living body following actions undergone by it; and one may speak of physical behavior, biological behavior, and psychological behavior.

Thence the problem comes back to knowing what differences there are between these three types of behavior and particularly between the last two. It is inertia which characterizes the first, irritability the property of the second, and spontaneity that defines the third. In the domain of raw matter, reaction-- which is not a response in the proper sense of the word because it is not adaptive-- depends entirely for its existence and its quantity on the action undergone. There

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<sup>4</sup>stimulating surroundings

<sup>5</sup>stimulus object



is an equality between action and reaction, and the laws of physical behavior on which certain prediction is founded are expressible mathematically. Even though the state of an inanimate body is practically invariable such that its movements depend entirely on exterior conditions, living beings in contrast are entirely different. They are constantly changing. The substances of which they are made are continuously being renewed. There is at every instant a reconstruction of unstable substances which are at every instant destroyed. In addition, the organism is a reservoir of energy accumulated by metabolism. From these continual variations in the state of the organism and from this accumulation of energy there results a certain independence of reaction with regard to the action undergone and a disproportion in energy between the stimulus and response. However every organism executes, in answer to external conditions more or less complex responses which are tied in a constant manner, if not to these conditions, at least to anatomical physiological organizations. The role of the stimulus is solely to set in motion the anatomical physiological mechanisms. Such are the tropisms. Depending exclusively on the structure of the organism, they are constant modes of adaptation to determined stimuli and are the object of precise prediction. As a result of the disproportion between the action and the reaction, these behaviors cannot be expressed in a mathematical equation. With higher organisms and with man the reactions are more highly adaptive and more independent still of external conditions. They appear to be unpredictable. More accurately, they depend less on actions presently being undergone than on past interactions, historical and biographical relations between the individual and the milieu.<sup>6</sup> In brief, in the domain of physics reactions depend on actions presently being undergone, in the domain of biology on the structure of the organism, in the domain of psychology on the experience of the individual—that is to say, on his personal and historical contacts with the milieu.<sup>7</sup> (4, v. I, p. 3-5; 6, p. 76-77).

This general characteristic of psychological activities can be described more precisely by underlining a certain number of traits that they possess through which are manifested their spontaneity, their relative independence with regard to immediate exterior stimuli, and their adaptive nature. Psychological reactions are variable, varied, differential, modifiable, organized, and susceptible of being postponed or inhibited.

Psychological reactions are highly adaptive. First of all, they relate to the situation which provokes them. They are directed, aimed, dependent on it. Above all, reactional activity which manifests itself on the occasion of and with regard to a situation, continues and persists up to a well defined conclusion, that is to say, up to the point where one of the following four events occurs. Either the organism modifies its relation with respect to the situation, or it modifies the situation, or the situation disappears by itself, or the exhausted organism ceases to react. Most of the time persistence in reacting does not express itself by repetition of the same response: the organism on the contrary, varies its reactions by executing successive different reactions. This diversification of reactions, which depends on the details of the situation, contributes to a growing efficiency on the part of the organism in its adjustment to this situation. In more complex cases the behavior ought to be described as pursuit of a goal by a deliberate var-

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<sup>6</sup> stimulating surroundings

<sup>7</sup> stimulus object

iation of means. Under the name of diversification of reactions we see Kantor describe in fact two characteristics: the first, which does not seem to him the most important, will be for Tolman the essential descriptive trait: it is the intentional characteristic of behavior which is, in higher activities, pursuit of a goal and ordering of means to that goal; and in lower activities, persistence of reactional activity up to the suppression of stimulation. The second characteristic which Kantor holds to be fundamental, since it is with it that he resumes his description, seems to be a consequence of the first: if an outcome is to be obtained, and if a first reaction does not obtain it, the organism is lead to change and to vary his response.

Psychological behavior is then adaptive in a first sense because responses are directed toward the situation and because they have the function of making the action of the organism cease. But they are adaptive in a second sense. They are always differential, that is, different for different objects, or for different properties and positions of the some objects (4, v. I; 6, p. 77). If the necessity of diversification of responses is explained by the intentional characteristic of behavior, the possibility of this diversification, Kantor notes, depends on the capacity for discrimination. It is in directing its responses toward different properties or phases of a situation that the organism is lead to vary its responses; and this diversification depends on the discriminations of which it is capable and on the discriminatory behaviors which it possesses.

If it possesses them it has acquired them. Without a doubt there are innate discriminatory behaviors: different properties set in motion different behaviors without apprenticeship, but most behaviors are the result of experience of previous contacts of the organism with the milieu.

Psychological behavior manifests again its adaptive characteristic by its plasticity. It is modified as a function of the earlier experience of the individual. It depends both from the point of view of the stimulus and from the point of view of the response on the earlier contact of the organism with the objects which have composed its milieu. The same response is attached to different objects, or else the first response is transformed and is modified. These are the phenomena of conditioning and of habituation: they presuppose a unification of behaviors that are at first isolated; contraction or fusion of stimuli, which from that moment on will act as a totality; and an integration of reactions which coordinate themselves to form a single act.

Another characteristic made conspicuous by Kantor comes from the capacity which psychological organisms possess of discriminating or postponing their responses and even of inhibiting them completely. In the first case the objects which stimulate the organism don't produce their effects immediately; certain of them only produce their effects long after the cessation of the stimulation, either because their response is blocked by a detail of the situation as in the experience of deferred reactions, or because the situation is not complete and does not offer a point of application to the reaction. Whatever the cause of the delay, the delay between the stimulation and the response is filled in by secondary reactions excited by the stimulus, such as the orientation of the body, attitudes, etc. which constitute the reaction itself, but only the incipient phases. The principle reaction is then provisionally inhibited. It can be definitively inhibited. In the case of total inhibition we are dealing with a preferred reaction and not a real lack of reaction. Two reactional systems are simultaneously excited by different aspects

of the same complex situation. Whether one of the two aspects is prepotent, or the organism is momentarily more sensitive to it its associated reactional system is actualized and this actualization makes the realization of the other system impossible.

Such are the general characteristics of psychological activities according to Kantor. They permit one to distinguish between psychological behavior and biological behavior, but at the price of such a narrow definition of biological behavior that no reality corresponds any longer to this notion. Biological behavior would be the function of anatomico-physiological organization and would depend exclusively on present stimuli. By contrast, psychological behavior would be less the function of structure and of immediate stimuli than of earlier behavior and previous personal contacts of the organism with its milieu<sup>8</sup>--in a word, of the experience of this organism.

To accept this point of view is to take sides in favor of Loeb against Jennings. It assumes belief in the existence of tropisms, forced inevitable reactions, entirely conditioned by the structure of the organism, by the physico-chemical composition of its tissues, and by the lines of the field of force on which the living organism would be held. To speak truly, Loeb himself has shown that the sign, the threshold of the beginning or of the reversal of a tropism, are affected by the variations of external or internal conditions: growth, modification of tissues by the influence of nourishment, of dehydration, of hydration, of the presence of certain chemical substances in the changing milieu, of the temperature, etc. But in opposing tropisms to acts due to "associative memory" Loeb has denied the dependence of tropisms with regard to earlier experience. Now it is a fact that a tropism is modifiable to a certain extent, that even the lowest animal is capable of overcoming its tropisms, of forming habits (conditionings), of learning. And without admitting with Buytendijk that tropism is abnormal, one must recognize that reflexes and pure stereotyped tropisms play only a very limited role in the behavior of a living being. "It is evident", wrote Jennings (2, p. 178), "that the anatomical structure of the organism and the different physical or chemical action of the stimulating agents are not sufficient to account for the reactions. The varying physiological states of the animal are equally important factors.... The present physiological state of an organism depends on its past history..."<sup>9</sup>

Between biological and psychological behavior there is no clear line of demarcation. The same characteristics, in different degrees, are found in the two sorts of behavior. It is consequently impossible to place clear limits on a psychology of behavior without forming narrow and poor ideas of the biological. Kantor has succeeded in distinguishing his psychology from physiological behaviorism, but he fails to separate it from biology. And it is not surprising since his conception of psychology is inspired by biology.

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<sup>8</sup> stimulating surroundings

<sup>9</sup>Quotation taken from original English.

Notes From a Comparative Animal Behaviorist in Exile  
OR  
What Observations of Retarded Human Adult Behaviors Can Teach the  
Student of General Animal Behavior

In recent years comparative psychologists have been careful to specify that man's behavior is part of their subject matter. Yet few studies have appeared in which human behavior is viewed comparatively.

Since December of 1974 I have served as the chief administrative officer of a 350-resident living unit within the largest institution for the mentally retarded in North America. As I left behind nine years of college teaching and fifteen years of research with non-human animals to interact solely with humans, a friend and fellow interbehaviorist advised me to make the most of this opportunity to study the human animal. In reflecting on seventeen months of informal day-to-day observations, I find that my thinking about at least four topics within the general area of animal behavior has been clarified.

The subjects of my observations are multihandicapped adults of both sexes, most of whom are classified as either severely or profoundly retarded. Since they have been institutionalized for most of their lives (i. e., for periods of from 10 to 65 years), I have been interacting with them in their "natural" environment.

The first and most general lesson I have learned relates to the interrelationships between biological and psychological interbehaviors. The contribution of biological interbehaviors to adult human activities has been generally played down in favor of an emphasis on psychological interbehaviors, especially learning. In retarded, multihandicapped adults, however, the importance of properly functioning biological systems is clearly apparent. For example, swallowing is ordinarily viewed as a chain of biological events, which, by definition, is unlearned. When swallowing is inefficient constant drooling of saliva occurs and the person is unlikely to ingest food effectively or to make those vocalizations which are the primitive forms of human speech. Through a laborious series of steps involving a number of stimulating conditions (e. g., ice is applied to the area just outside the lips; a cold metal object is pressed on the back of the tongue), efficient swallowing can be conditioned in the profoundly retarded, multihandicapped adult. Luckily for the behavior modifying agent, the ice and fluids used to stimulate swallowing are sufficiently reinforcing, together with praise and hugs, to maintain the new interbehaviors. The individual can then proceed through a series of training steps to sucking, blowing, whistling, and sometimes, forming recognizable vocalizations.

Secondly, the vital role of precursory psychological interbehaviors has been brought into focus. Another psychologist and I found that the Foxx-Azrin toilet training program which works so well with normal toddlers and with preadolescent retarded children was not immediately effective with retarded males over 18 years of age. They had simply acquired too many competing

responses in the presence of a full bladder or colon. To solve this problem, a preliminary program was written specifying procedures for conditioning the resident to go to the bathroom, lower his pants and sit on the commode. Here the reinforcing liquids aid the conditioning process by filling the bladder.

Another example of the importance of "normal" precursory psychological interbehaviors was experienced by my husband, Dr. Al Cone, when he worked with severely retarded preadolescent males at Lynchburg Training School & Hospital (LTS&H) in 1970. One youngster had quickly acquired a series of self-help skills--he used the bathroom properly; he fed himself adequately; he dressed himself neatly. The flaw in the conditioning program became apparent as Dr. Cone proudly escorted his immaculate subject across the institution grounds to meet his parents in the visitor's waiting room. As they approached a curb, the resident suddenly stopped. He stared at the 4-inch rise. He stepped back and then lunged forward, raising his foot 12 inches into the air. While this overreaction served to propel the subject safely over the obstacle, it also led to a new program in which residents received M & M's for subtly negotiating a staircase!

The third area for which I have acquired more appreciation is the importance of the setting in which learning occurs. The normalization of institutionalized retarded individuals is often seen in terms of promoting proper discriminations (e. g., teaching them not to attempt to hug strangers). The converse, promoting proper generalizations, is equally important. The best example of this ubiquitous lesson comes from my husband's experience with the young boys. One such boy with a typical history of helplessness became ill and was taken from the living unit where he had recently learned to feed himself to the hospital. At suppertime of the first day, the nurse called the aide on duty at the living unit to say: "You told me Timmy could feed himself but he just sits there staring at his tray." By the time the aide could walk across the parking lot to the hospital, Timmy had solved the problem himself. When the aide and the nurse entered Timmy's hospital room, he was carefully ingesting small mouthfuls of his supper and periodically wiping his lips with a hand towel which he had taken from a rod near the sink and draped across his lap. The hospital had thoughtlessly failed to provide a dinner napkin and Timmy would not eat until he had located an adequate substitute.

The fourth lesson the residents of LTS&H have taught me is that certain behaviors regarded as relatively easy to learn because they develop in all normal children are very difficult to condition in adults. Toileting and rudimentary interactions with others, such as tossing a ball, are prime examples. Conversely, certain behaviors regarded as indicative of high levels of phylogenetic development are apparently very easy to acquire. Imitation of seemingly complex social interbehaviors is a clear example. It is a rare newcomer to the professional staff of an institution for the mentally retarded who does not quickly sense that these "pathetic" residents are conditioning him!

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