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INTERCOMPORTEMENT

(Amér. interbehavior)

Action réciproque et simultanée de l'organisme sur le milieu et du milieu sur l'organisme. Cette double corrélation est toujours fonction des montages antérieurs du comportement de la biographie réactionnelle (Kantor).

VOCABULAIRE DE LA PSYCHOLOGIE, 6<sup>ème</sup> éd.  
Henri Piéron, editor. Paris: Presses  
Universitaires de France, 1973

THE AGORA

In Volume 2, Number 1 of 1972 we reported a study by Sarbin & Mancuso on the professional myth of "mental illness" and the more appropriate public attitude, but the latter being adversely swayed by the "mental illness" construct. A new experimental study by Yaffe & Mancuso finds a similar result as reflected in the title "The Effects of Therapist Behavior on People's Mental Illness Judgments". For a preprint write James C. Mancuso, Dept. of Psychology, SUNY, Albany, New York 12222.

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Mexico seems to have a continuing interest in interbehaviorism. Dr. Kantor delivered two public lectures to large audiences at the University of Mexico and several additional lectures to other centers of the University around Mexico City.

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This will be the last issue of the Quarterly for 1976. As previously reported, the volume will be extended over a two-year period. The editor will be in England from Sept. 7 until mid or late summer 1977. The last two issues of the volume will be published in

the latter part of 1977. Those who might wish to correspond are invited to do so at Kingston-Upon-Hull College of Education, Cottingham Road, Hull HU6 7RT, United Kingdom.

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James Herrick, a portion of whose M. A. thesis was published in these pages in Volume 2, Number 3 of 1972, a Ph.D. candidate in anthropology from SUNY at Albany, author of "Kantor's Anticipation of Current Approaches in Anthropology" (reported 1974, Nr. 3), has had a fiction paper accepted for publication in an anthology of futuristic cultural fictions edited by Magoroh Maruyama and Arthur Harkins. The story is entitled "How John Nennol Saved the World". It was also selected for presentation at the 1975 American Anthropological Association's annual meeting's Symposium on Future Cultures: Imaginable Alternatives for Terrestrial and Extraterrestrial Communities. It is a refreshing departure from the usual mentalistic and mystical science fiction. The abstract prepared for the meeting is presented here. Another story he wrote, "Penum-

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bra" was one of the winners of the AAA competition again this year and is projected for publication in a paperback anthology. The second and final installment of the translation from Tilquin is printed in this issue. Tilquin presents a number of problems or questions concerning interbehaviorism. The editors would like to urge readers to offer responses to them that would be printed in forthcoming issues. The quotations on page 14 are relevant to Tilquin's critique.

### How John Nennol Saved the World

(Abstract)

This fictitious story attempts to show how one individual comes to realize that Western people are being victimized by their "thing-based" language. It is discovered that this "thingness" quality of Western thought has prevented a recognition of and an appreciation for the interactional, processional nature of nature with the result being a static, hierarchically arranged, tripartite (natural, man-made, and supernatural), cause-effect conception of the universe. This biased perception of events in the universe is thought to be responsible for the failure of the modern-day "scientific-medical" establishment to find a "cause" and a cure for that disease labeled "cancer". The notion that cancer may not be a disease (in the traditional sense) at all, but rather, may be the result of the human organism rapidly and uncontrollable adjusting biologically to new materials in its environment is explored.

Also treated is the idea that medical practices in all cultures serve the sick individual on more or less of a "placebo" basis owing to the fact that biologically Homo Sapiens has evolved as an efficient, disease-resistant organism. It is further suggested that the belief that someone or something will enhance recovery is more important than the actual treatment--with the removal of treatment leading to an auto-suggestively worsened condition for the patient. This erroneous belief in having control over "disease" (a thing) has resulted in Western medical researchers searching in vain for a causative agent for a disease (cancer), which, in actuality, is merely evolution (an event).

Once Nennol understands what is being said, he is strongly moved and attempts to make Westerners realize through his music the trappings of their conception of the universe. He extends what he has gained regarding Westerners' biologically self-destructive, static conception of the universe to all constructions which are really events, but which have come to be treated as things in themselves (e.g., love, honor, integrity, justice, aggression, etc.). He succeeds.

The following anthropological themes are presented in this story: (1) the superorganic nature of culture; (2) the role of the individual in cultural change; (3) the role of accident in culture change; (4) operant learning principles in the development of cultural behaviors--especially as they relate to medical behaviors; (5) language as a guide to social and cultural reality; and (6) the contemporary and future biological evolution of man.

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

André Tilquin

(Conclusion of Translation)

III: "Interbehavior"

Kantor is opposed like the Gestalt psychologists to a conception of behavior which would make it depend strictly on anatomical physiological organization, of a fixed connection between a receptor and an effector so that the nature of the response would be the function not of the nature, of the meaning, of the importance, of the interest, of the value, of the stimulus, but of the nervous mechanism that was aroused. An electric bulb lights up because the installation of wiring is made in such a way that every press of the button permits current to pass through the wire hooked up to the lamp. The lamp is illuminated each time that one turns the button, and it is illuminated only when one turns the button. The movement can be executed by the tenant of an apartment or by a burglar thanks to an intentional pressure of a finger or to a mistake of an accidental bump. The lamp lights in every case without being concerned about the concrete living being which carries the stimulus or about the context in which the stimulus is initiated. Similarly, the same stimulus, turning the button, according to the effector which is found at the other end of the wire, will put in action a motor, an electric iron, a tea kettle, or an oven, radio, etc. In other words if such a response is set in motion by the stimulus, this correspondence arises from an extrinsic relation between a stimulus and a response represented by the sensory-neural-muscular structure concerned.

That, for Kantor, is the model of biological behavior. Psychological behavior is quite otherwise. Whereas gestalt theory explains the union of stimulus and response by a reciprocal conformity, a mysterious affinity, an unintelligible "direct dynamic determinism," Kantor seeks the cause of this correlation in the earlier experience of the organism, in its reactional history which has conferred on the objects of the milieu the power to excite the reactions which they presently start up. Current responses depend on functions of stimulations taken on by objects of the milieu in the course of interactions which have been earlier exercised between the organism and the milieu.

Psychology is, in fact, for Kantor the study of adaptive interactions of the organism and its milieu,<sup>10</sup> the study of interbehavior. The milieu<sup>11</sup> acts on the organism--stimulates it. The organism acts on the milieu<sup>12</sup>--responds to it. Actions and reactions are woven together and condition each other. The word "interaction" or "interbehavior" expresses precisely this reciprocal and simultaneous action of the organism on the milieu<sup>13</sup> and the milieu<sup>14</sup> on the organism. If the milieu<sup>15</sup> excites our responses, our responses in their turn not only are directed to the milieu<sup>16</sup> but even modify it. When he is contemplating this action of responses on the milieu,<sup>17</sup> Kantor is not thinking strictly of human endeavor which creates objects and consequently new stimuli. He takes this recurrent action in its most general significance: by the simple act of responding to an object we modify it, not strictly in itself, but always in its psychological function which is to put a behavior into gear.

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10-17 stimulus object

The stimulant value of an object depends, in fact, on the series of antecedent responses made with respect to it. The execution of a response at a given moment evidently implies that a well defined object, capable of stimulating it, exists in the environment, but it still implies that this response has behind it all the experience which the individual has formerly had with regard to the present stimulus object (6, p. 81). When a cat learns to get out of a cage, the correct response which he finally makes, depends on earlier reactions without which the correct reaction would not be attached to the situation. The phenomenon of conditioning shows us how objects, neutral with regard to a certain reaction, can acquire the power of putting it in gear. In any case, it is thanks to "contacts" that the organism has had previously with the situation that this situation has acquired its present motivating power. But these contacts do not limit themselves to shifting reactions, to making them pass from one object to another from a total situation to one of its elements or vice versa. They have a formative function; they give rise to responses, they modify them, they transform them, mold them, dissociate them, organize them. Would our habits exist, would they be what they are if the objects to which they relate had not existed in our surroundings, if we had not had all the contacts which we have had with them? The development and the assembling of responses, i. e. the formation of the response as well as its attachment to a certain stimulus, depends then on the reactional history of a given individual, of his reactional biography. The difference in environments in which they have lived and consequently the differences in their reactional biographies explain the differences in behavior between different individuals better than an originality of genetic constitution. If the form of the response depends on the sort of object with which the organism is in contact, that is to say, on the nature of the present and past contacts, that perfection of the response, the ease with which it is accomplished is a function of the number of these contacts. The accent is then put by Kantor on the environment, on the objects, or rather on the functions of stimulation which they assume according to the reactional history of the subject. It is the reactional history of his interactions with his milieu which explain the capacity of stimulation of a particular object, the form of the response put in gear, its immediacy, its perfection and the differences of behavior between different individuals. This conception had some affinity with that of Lewin, who also located the source of actions not in the organism under the form of impulses, but placed them outside in the surrounding environment in the form of vectors which correspond to the stimulating functions which Kantor assumes for the objects. And these vectors of Lewin, like the stimulating functions of Kantor result from an interaction which is exercised between the organism and its surrounding.

Since the present existence of a behavior has as a condition the earlier interactions between certain objects and the reacting organism, psychological phenomena are not in any way predestined (6, p. 82). They depend in their existence on a multitude of real circumstances which have led to their formation of which the oldest go back to the very beginning of the life of the organism. Then the development of behavior continues according to the particular circumstances of the time and place in which they are produced. One can consequently consider the reactional biography taken in its totality as a series of levels, one above the other.

"Let us take the example of an architect who is making plans for a building. His present abilities and the work which he is doing now are dependent on situations that are somewhat similar to the ones that have preceded them and in

which he had to design similar plans for buildings comparable to those which occupy him today. Here is a level which itself depends on a lower level which has immediately preceded it, that is the period of apprenticeship during which the architect was working only on partial plans. This level in its turn depends on the period during which he was studying his trade at the school of architecture and this period itself had for a base the stage where the architect as a child was learning to make elementary drawings and to appreciate diverse objects" (6, p. 82-83).

The development of a behavior depends then on the series of interactions which have preceded it, on "contacts" which the organism has had with his milieu,<sup>18</sup> of his reactional biography. The formative action is incumbent on the conditions of stimulation. Kantor insists on the causality of objects or situations. "Because in recent times the causes or conditions of psychological action have been transferred from the mind, which produced an effect on the body, to some phase of the body, it seems difficult for the idea to gain currency that such causes or conditions lie only in the stimulation circumstances. Decidedly it is the latter that bring about the development of reaction systems and their later operation" (4, v. I; p. 73). "...the development of the individual and his activities depends upon the coordinate development of his contacts with objects and situations. The cause or influence of development is then the series of stimulating situations with which the person is in contact..." (Ibid., p. 77).

To attribute then all formative action to situations, is to reduce the role of the organism to the extreme. In actual fact, biological factors have little importance for Kantor. Organic characteristics exercise above all, a negative influence: they are incapable of producing by themselves well defined behaviors, but they can render some behaviors impossible. On them are uniquely based the possibility or the impossibility of the behavior. Thus, an athletic musculature does not at all force him who possesses it to become an athlete. On the other hand, it is impossible for a lame man to run a race or for a one armed man to do gymnastics on apparatus or to engage in boxing. It is true that such physical deficiencies can become stimuli and push the individual to construct systems of behavior which mask them by compensating for them. Again, it is necessary to know this, that the form of the compensation is determined not by the nature of the handicap, but by the conditions of the milieu in which the individual lives (Ibid., p. 81).

A more positive influence is exercised on behavior by certain physiological phenomena, particularly by internal secretions, but these phenomena most of the time have no formative value at all. They do not determine any special behavior. They determine only the speed and the vigor of all behaviors. However, the action of these physiological phenomena goes farther. Concurrently with external stimuli they have an influence on the development of an operation of systems of reaction under the name of needs, desires, and so on. But this positive action is reduced by Kantor as by Lewin to a simple modification of the stimulation value, of the "valence", of external objects. As for heredity, whatever be the manner in which one conceptualizes it, it is clear by the above that its part is altogether restricted. Outside of the minimal contributions indicated above, which concern the possibility, the impossibility, the speed and the vigor of behaviors, heredity manifests itself by several reflexes and above all by random movements which are put in gear by all sorts of very light stimuli, in which are

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<sup>18</sup>stimulating surroundings

the gross, primitive material with which complex behaviors of the adult are constructed under the incitement and the control of objects in the environment.

This conception which has some close connections with that of Lewin is not in opposition to the behaviorism of Watson or even to that of Kuo. They have the same recognition of the enormous role of habit, the same affirmation of the weak role of heredity, the same underestimation of the importance of organic maturation and of these psychological states which constitute the needs and the tendencies which Tolman will consider as motivating forces, the instigators of behavior. Consequently they have the same accent placed on the action of external conditions. Only what has been called the simplistic approach of the Watsonian explanation is here masked by vague words about interaction and above all about contact. Contact does not necessarily imply an activity of the organism; it can be passive. In these cases the objects would be the causes of development of behavior, if such a development was possible. In fact, an object would not be able to produce anything more or different on the second contact than what it produced on the occasion of the first. One does not see how existing reactions would be able to be modified, how new reactions would be able to become established. At the very most a transfer of reactions would be produced, put in motion by an object, to another object which was not putting them in motion before. Watson stays consistent with himself in making conditioning play a capital role in his psychology. But Kantor has seen and affirms that not every acquisition leads to a conditioning. Consequently passive contact between organism and object would not be able to suffice. The organism responds, which is a long way from passivity, and by its response it tends to adapt itself. If the behavior is adaptive, the initiative for adaptation can belong only to the organism. It is not the object which from outside adjusts the organism to that object, it is the organism which adapts itself to the object. Kantor has pointed out justly that it is not the possession of an athletic musculature which leads its beneficiary to become an athlete, but similarly, it is not the presence of an object in the environment which by itself produces the assembling of a behavior which relates to it. There is, it seems, a contradiction in considering objects as the causes of behavior while affirming the adaptive character of responses. It is true that Kantor speaks of interactions between organism and milieu,<sup>19</sup> attributing thus the initiative of adaptation not to the object alone nor to the organism alone, but to the dynamic relation which ties them together. But then how does one reconcile this conception with numerous assertions which present without ambiguity, objects as the causes not only of the operational responses, but even of the assembling of responses? The fact is that Kantor locates in and projects into the present object the result of earlier interactions which are exercised between this object and the organism and which it would be more natural to localize in the organism under the form of a modification of physiological states of behavior, in the sense of Jennings (see Section II, p. 11). But would this not be then to abandon the concrete point of view, to come back to the point of view of physiological behaviorism? To avoid this renunciation, Kantor is obliged to realize in the object, where it certainly is not, the earlier experience of the organism.

Kantor continually insists upon the idea that the stimulus is not a thing, a state. It is a "function" assumed by a thing. And he sees in this transformation of an object into a stimulus the definition itself of physiological process

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<sup>19</sup>stimulus object

(4, v. I, p. 48). An object does not inevitably have stimulation capacities from the first contact of the organism with it which it will have later: it acquires some and it loses some also. Thus a little cube of wood loses for the child the property which it was having for the baby, i.e. of being suckable. Classical psychology certainly does not misconstrue the fact that the universe of an adult is not that of a child, that the repertoire of acts of the former is infinitely richer than that of the latter. But classical psychology tends to reduce the phenomenon of development, the becoming aware of qualities, to an actualization of behavior that potentially exists from the beginning whereas development is the phenomenon of acquisition and enrichment. The universe of the child would contain that of the adult both in its sensory aspect and in its motor aspect, as the engraved plate contains the photographic image. Experience would be a simple progressive revealer. This thesis, especially as with regard to the world as it is perceived and which is only an interpretation, would not be able to satisfy a psychologist who is above all concerned about facts. The fact is that every object acquires new properties progressively as we respond to it. It is the motivating experience which we have of it; it is our reactions with regard to it which enrich it with new properties or which impoverish it, sometimes in taking away properties which it had formerly possessed. The cube becomes something to push, to take, something to throw, and ceases to be something to suck. Whereas classical psychology holds that experience reveals to us pre-existing properties of objects, Kantor affirms or holds that experience confers on objects new properties.

This thesis is very behavioristic and Kantor only insists on a conviction which is, if not expressed, at least shared by all the behaviorists. In posing the fundamental stimulus-response formula, the behaviorist appears to do to the stimulus the same thing as to the response. Much more, the stimulus and response, being reciprocal terms, appear co-extensive. The response supposes a stimulus which puts it in motion and to which it responds and the stimulus can only be such when it causes a response. In fact, all or nearly all in a behavioristic universe is constituted by responses, for as soon as one seeks to qualify the stimulus, to describe it, to say of what it consists, what is its nature, one responds to it. It is then definable only as a bundle of capacities for stimulation; it can have only a functional significance.

However, isn't it necessary to give support to these capacities and functions? If the stimulus is "this", which puts a response in gear, isn't it necessary to pose something which assumes this function of stimulation? This philosophical problem has not escaped the philosophical mind of Weiss, who in being well acquainted with the subject, has constructed this something with the responses of the physicists. He has made of it a configuration of electrons and protons denuded of every quality which our responses confer to it. This turning towards physics, is no more permitted to a behaviorism which wishes to be concrete and autonomous than the previous turning toward physiology. Kantor is thus obliged to accept the conception of common sense. What assumes the functions of stimulation, he says, are objects such as they present themselves to the common sense: trees, rivers, people, laws, rules, morals, institutions; not only objects taken in their totality, but also the natural qualities of which they are made: colors, odors, forms, sizes (4, v. I, p. 48; v. II, p. 29). The realism of Kantor is not the learned pseudorealism of Weiss, but a true realism, the naive realism of the man in the street and it is not surprising on the part of the psychologist who claims to take facts at their face value. This

silence on the difficulties of such a position has without doubt the same origin. Kantor, preoccupied above all with observing and with describing, is not concerned at all about metaphysical implications of his descriptions.

Does not the distinction, the neat dichotomy made by Kantor between the object and its functions of stimulation, lead to attributing to the object the properties which form the nature of it and which have no behavioristic status, being independent of the functions of stimulation? To conceive these properties as primitive functions of stimulation that the objects would possess before having any contact of the organism with them would not resolve the difficulty. They place themselves only with the responses which they put in gear and they can be nothing more or different from this inciting action. How would one know them independently of the provoked responses, since to know in a coherent behaviorism can only be to respond? These difficulties are not unique to the system of Kantor. They are met with in all behaviorism which wishes to be concrete and autonomous, without external support. Psychologically the object can only be a system of reactions, a bundle of stimulating capacities, a possibility of reactions; and Kantor says very justly, the psychological phenomena consists largely in the transformation of objects into stimuli (4, p. 48). But for this very reason it is impossible for psychology to define the object as it is. Psychology can only borrow from another science, physics for example, for its definition of the object.

It is impossible for Kantor to tell us what the "natural" objects are in themselves, independently of the stimulus functions they possess or take on. He cannot identify the "natural" qualities that would characterize them without considering our reactions to those objects. "Organic psychology does not accept the idea according to which a stimulus provokes in the 'mind' a sensation of quality. For organic psychology such a mind and such qualities do not exist. Sensations of quality are really properties of things...." But this realism contradicts itself immediately, for Kantor continues: "...there are properties of things which incite a person to distinguish between them, to act differently towards them, to like them, to say that they are different, etc..." (4, v. I, p. 93; 6, p. 78).<sup>20</sup> Thus these qualities which are proposed at first, as forming the nature of the object are in fact only functions of stimulation possessed by objects of which one can say absolutely nothing.

The danger of adopting vis-a-vis the exterior world, the attitude of common sense, is that one resolves without posing them, and perhaps without knowing it a certain number of problems which are possibly only pseudo-problems. But it is necessary to examine them if only to dissipate them. Some phenomena that classical psychology holds for constructions or interpretations are here posed as immediate givens and as raw facts. Thus the qualities that are said to be sensible are, for Kantor, in the object, not in the subject. It is probably that with neo-realism Kantor recognizes also in things the spatial-temporal relations and logical relations. He postulates that the objects exist in their unity and distinction. The object which is a construction for classical psychology, and which is the result of an organization of sensory field into figure and ground for the gestaltists, for

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<sup>20</sup>The first quotation does not occur in the place cited. Therefore the presentation here is a translation rather than a substitution of the original English. The second quotation is written in French and is consequently also a translation.



Kantor is posed as the immediate given. The problems of unity, exteriority of the nature of the object, are resolved thanks to the decision to ignore them. It is the same with the problem of localization. Kantor distinguishes the stimulus object from what he calls "the medium of stimulation". When we respond to a visual stimulus, what stimulates us is not the succession of light waves which emanate from the object but the object itself. The train of waves are only an intermediary, a medium, thanks to which a functional contact is established between the object and the reacting organism. In a general way every object, whatever be the receptor concerned, and whatever be its distance or nearness with regard to this receptor, has its medium of stimulation. Thus a thorn could stimulate a reaction of pain only by the intermediary of being in touch with our tissues; a savory object can stimulate us only by the intermediary of a chemical process, etc. (5, p. 54-55). The reason for this distinction is evidently that our responses are always addressed to the object, never in normal conditions to the medium which is otherwise ignored by most people.<sup>21</sup> But if the reaction belongs to (or refers to) the object, is it immediately directed to it? Does it reach it immediately and right there where it is? Maybe all these problems have been poorly posed by classical psychology. To adopt the common sense solution is more to ignore them than to solve them.

The behaviorism of Kantor insofar as it is an autonomous psychology is necessarily led to this realism of the concrete object. Since it has been decided to ignore the other sciences, since one is concerned about "acts" rather than "abstractions", one cannot conceive the object as a substrate made of vibrations to which the functions of stimulation would be latched on as so many properties of the object. One is forced to recognize, if not all the qualities, at least certain numbers of them. There are qualities which define the object, and which are the object; and there are qualities which are functions exercised by the preceding qualities and which correspond to the capacities of stimulation of the object and which are the properties of the object.<sup>22</sup>

One of the most grave limitations of behaviorism is the impossibility attributed to it of taking account of the quality as it is. Doesn't it seem tied to a consciousness, to a mind? If one eliminates this consciousness or this mind in order to consider only a reacting organism by its contractions or secretions to these physical stimuli, doesn't it show at the same time every quality? One sees how Kantor triumphs over this difficulty. Leaning on common sense, in the name of direct concrete observation he places, if not all the qualities, at least certain of them in the things; he makes of them the stuff of things. One can reproach him since it is a matter of psychological science, and not of metaphysics. One can reproach him with preferring intuitions to the information of physics and of physiology, of preferring ingenious intuitions of common sense and of experience

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<sup>21</sup> [Author's footnote:] This Kantorian distinction between the object and the medium corresponds to the distinction of Holt, between the object and the stimulus.

<sup>22</sup> [Author's footnote:] Is this distinction made by Kantor? One can doubt before the assertions that follow which are in bad accord with the notion of stimulating functions acquired in consequence of earlier experience: perception is an "interaction between the total organism or person and objects existing with all of their qualities, whether or not these qualities can all be reacted to or not" (4, v. 1, p. 293. "None of these qualities of the object or the object as a whole depends upon our reaction to them" (Ibid.). The Kantorian idea that stimulus and response are developed in a concomitant manner (already exposed by Bode) (1, p. 59) hardly agrees with the preceding assertions.

called immediate, direct, or pure. Above all, can one not accuse him of getting along without consciousness all the more easily because he at first reified a part of the content of consciousness?

#### IV: The "Segment of Behavior"

Kantor does not content himself with reifying in stimuli the content of conscious experience that relates to objects; he also reifies in the responses the other portion of this content which relates to the subject. If one runs through his psychology, it is impossible to avoid the impression that his behaviorism merits the reproach addressed to behaviorism in general, of being a simple word game--that is to say, of running the good old traditional psychology in the stimulus-response mold. One finds again in the two volumes of his Principles all the chapters of classical psychology: sensation, perception, attention, association, affection, emotion, desire, imagination, memory, intelligence, knowledge, reasoning, volition, and so on. However, Kantor puts himself or believes he puts himself in order with the behavioristic credo by following these designations with the words: behavior, conduct, activities, responses. Attention becomes attention behavior, volition becomes voluntary conduct, emotion becomes emotional activities, and he treats not of pleasure and pain nor desires but feeling reactions and desiring responses: this is exactly as functionalism believed that it broke with structural psychology, by limiting itself to adding the magic word process to the heads of chapters. Psychology of consciousness distinguishes three aspects in psychological life; cognitive, affective, and conative aspects. Kantor retains this distinction but the aspects of psychological life become "phases" of the response. Would organic psychology, then, not be a mere translation of the whole content of classical psychology into behavioristic language?

The task of psychology is not to explain behavior, more or less systematized, but to give a faithful description of concrete behaviors. The general notions of stimulus and response are evidently insufficient to express all the nuances and all the details of real behaviors. It is necessary to specify them, but the specifications ought to arise from specific observation of acts. It is from there that Kantor makes numerous distinctions among stimuli and responses according to their functions: distinction of stimulus object and its stimulating functions, of the stimulus and of the medium of stimulation, of the stimulus and of its situation or context, of primary stimuli (unconditioned) and secondary (conditioned), direct and substituted, adequate (total) and partial, dominant and auxiliary, exogenous and endogenous, apparent and inapparent. Similarly, he makes the distinction between primary and derived reactions, informational, performative and affective, explicit and implicit, apparent and inapparent.

But to take behavior apart into stimuli and responses would be to misunderstand the intimacy which unites the organism and its milieu. The fundamental descriptive element cannot be the duality stimulus-response; it can be only their union, their unity, what Kantor calls the segment of behavior. Therefore, the psychological life, which for Kantor as for Watson, is a stream of action, is decomposable not into stimuli and response but into elementary acts, into segments of behavior in which each constitute a definite adaptation. Examples would be the act of pulling back the hand from a burning fire or the act of throwing one's self outside the trajectory of a missile. Every action is without doubt "bi-polar": it presents two phases of which one is the stimulus and the other is a response, but

these phases are inseparable and the segment of behavior constitutes ultimate descriptive element of organic psychology (4, p. 36-37).

Actually, in the study in which Kantor formulates the segment of behavior he is mostly concerned with the response. And we should not be surprised about that, since the stimulus, as it is, being a function, can be defined only by the reactions produced. A segment of behavior contains at least an elementary reaction or reaction system as in the examples above, but it can contain several of them, as in behaviors manifested during experiments on reaction time. In this case, the response contains the following elementary reactions: (1) waiting for the expected stimulus, (2) perception by sight or hearing stimulus, and (3) activating the "registering apparatus"; and these three reactions which constitute as many adaptations are temporally organized. One sees in fact a subordination of the first reaction systems to the last. There are at first "precurrent" reactions, reactions of attention and waiting, and perceptive reaction, then a final reaction or "consummatory" reaction; this subordination is the one that we notice touching off the registering apparatus. The expressions "precurrent" reactions and final or "consummatory" reactions do not need, according to Kantor, to be explained. "In every behavior segment," he says, "we can fairly well determine what reaction system finishes and rounds up the act or characterizes it as an adaptation... ..it is the final reaction system which gives the name to the entire behavior segment" (4, v. 1, p. 38). The term final reaction can be used for every action which ends a segment. When the final action is an explicit reaction executed with the muscles, Kantor reserves for it the name of consummatory action. As to the precurrent reaction, be there one or many, it can be limited to preceding the final reaction but generally it acts to determine it. Moreover, this determination presents degrees and varied forms.

Certain precurrent reactions relate to past contacts that the person has had with stimulating aspects of the situation or refer to a phase of this situation which is not presently playing the role of stimulus. Their function is "to appreciate the nature" of the stimulus, to function in identifying it and recognizing it ("meaning reaction"). Sometimes this appreciation is without effect on the final response as the consciousness which we have of a blow in the crural reflex. Sometimes in fact, it can be absent without this absence jeopardizing the response, such as in acts that are called subconscious. Sometimes, finally, this appreciation is a determining factor of the final response which would not be produced without it. In this case the precurrent response is not limited to preceding the final reaction but it conditions it by preparing it, by putting the person in the state of executing it, and even sometimes by beginning it. In the example of reaction time these include the reactions of perception, of recognition, of attention. Other examples are attitudes or movements which are merely sketched or outlined, reactions which are little bits or pieces of the final reaction, touching it off at the occurrence of the signal. Still others are auxiliary reactions which deal with the means where execution is required for the execution of the final reaction (going to the study and opening the bookcase to take out a book) or which apply to instruments of which the manipulation is necessary for the operation of the final action (putting the gun to the shoulder and holding it to draw a bead). In these cases the function of the precurrent reaction is to render possible, to prepare the final reaction of which the form is determined above all by the stimulus. But sometimes it is the precurrent reaction and not the situation which directly conditions the form of the final reaction: the person can accomplish in a muscular way the final reaction only after having anticipated it and only after having executed it implicitly in advance, and having foreseen the

the results. Such is the case with intelligent and voluntary acts and with activities in which the person can be said to pursue a goal. The precurrent response is not here simply preparatory; it is anticipatory (4, v. 1, p. 39-47).

#### V: Critical Examination

Thus after having reified along with neo-realism in the world of stimuli, all that part of the subjective experience which relates to objects, Kantor provides in the responses the remaining portion of this experience, that which concerns the subject. The division of the segment of behavior into precurrent or preparatory reactions and into final or consummatory reactions may well come from Sherrington; it has no objective foundation. Objectivity there is only one succession, a purely temporal order of reactional systems. To establish between them relations of subordination, to call the first systems precurrent or preparatory or auxiliary, and the last final or consummatory is to mask under the words which one believes neutral the subjective relation of means to an end. To speak of appreciation, of choice, of preference, of intention, etc. is manifestly to use categories which concern states of soul, to characterize the responses, that is to say movements. One understands then how Kantor "while denying interior life does not deprive psychology of human experience" (6, p. 75). Rather he exteriorizes interior life by projecting it into stimuli and responses, and he makes stimuli and responses that are objective phenomena undergo a "subjectivation".

This manner of proceeding can have a metaphysical interest but it implies a complete reversal of the movement of scientific thought. If science has progressed toward its state of true science only by "desubjectivizing" its objects, to load the stimulus-response pair with the remains of interior life is then to make of psychology a metaphysics of behavior, and not a science.

It has been said that science eliminates all that the universe contains of quality, of signification, of value and retains of it only a skeleton of spatial-temporal relations leaving thus to psychology the care of assuming what it had despised (4, vo. 1, p. 2). But this confounds psychology with metaphysics, with metascience. Psychology aspires only to be a science like the others. So it is not concerned with leftovers of science, if in reality there are leftovers. In admitting that sciences of nature despise certain aspects of the universe, it is certainly not the job of another science to occupy itself with it. A concrete behaviorism, that is to say a science of behavior that interests itself in qualities, meanings, values of stimuli and responses is a contradiction in terms.

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