DISCUSSION

Some background and further theoretical consequences of the organism-environment approach

A reply to the commentary by Panksepp*

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Panksepp (2001) has kindly provided an unexpected and critical commentary on my article "Feeling as knowing" (published in two parts in Consciousness & Emotion; Jarvilehto, 2000b, and 2001), in which I try to clarify some conceptual problems in emotion research on the basis of the theory of the organism-environment system (Järvilehto, 1998a, b, 1999, 2000a). While I am always grateful for any criticism of my ideas, because it is the only way to develop them further, the commentary does not contain much substantial criticism of my theoretical considerations, but it is rather related to science politics ("Jarvilehto's holistic approach would ... discourage investigators..."; Panksepp, 2001, p. 157), and to the problem what kind of theory could be useful in guiding neuroscientific experimental work. The commentary seems to contain also some misunderstanding of my basic ideas, indicating that I didn't formulate them well enough in the two articles. Therefore, I try to elucidate in this reply somewhat more the background of my approach, and to move the discussion to a more substantial theoretical level.

Part of the misunderstanding may be due to the difference in the starting points our theorizing: I start with the one system view, and Panksepp with the distinction of organism and environment. From this follows that we are viewing the subject-matter from very different perspectives, and divide it up into very different kinds of entities. However, we use language in overlapping ways when talking from within the two perspectives. I, personally, have the special problem that our language is based on disctinction of the subject and object, agent and the object of agency. Thus, when I speak about the needs of the organism, for example, I must use the traditional vocabulary; i.e. speak about the organism as

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an entity which "needs" something, although I implicitly think of the "organism" as a larger system, to which I ascribe needs, goals, purposes, or emotional processes. When I use the terminology of goal-directed activity, for example, to refer to the organism, and at the same time maintain that the organism and the environment are not distinct systems, that might suggest that the environment shares in the goals of the organism. However, from my one-system point of view, the goals are neither *in* the environment nor *in* the organism, but precisely in the whole organism-environment system. Furthermore, when I use the terminology of "environment", I have in mind not just the "physical" environment, but the organism's surroundings in the context of their importance to the organism and as necessary parts of behavioral results. Thus, in the first article I write:"...saying that a dog is "hungry" means that there is a structure of the organism-environment system with some necessary parts missing (food). The system actively strives to include these parts, and if they are supplied, a result is achieved and the dog is satisfied. If no food is available, the system disintegrates, and finally will be destroyed if no positive result is achieved." (Jarvilehto, 2000b). Thus, when I speak about the needs of "the dog" I refer to the whole organism-environment system and to its organization.

I am, of course, aware of the problem that whenever a new theory about familiar subject matter is proposed, there will be this kind of conceptual/semantic problems, and perhaps it would, therefore, be useful to repeat here some of the new definitions of the psychological concepts in the framework of the organism-environment theory:

1. "Perception" is the process of reorganization and inclusion of significant environmental parts into the systemic organization in the achievement of results of behavior. A percept of an event or thing is a result of preceding organization, not a response to a stimulus.
2. "Memory" is the structure of the whole system; memory is the basic requisite for any action and result. Without memory no action is possible, because the structure and action go always together.
3. "Learning" is the process of widening and differentiation of the system.
4. "Emotions" denote specical organizational aspects related to achievement of results: negative emotions refer to disorganization related to failure in this achievement of the result, and positive emotions to the integration of action after succesful achievement of the result. As the reorganization of the system is a continuous process[,] emotions are always present and there is no action without emotions. (Järvilehto, 2000a, p. 43).

But perhaps it would be also useful to elucidate the background of the organism-environment approach by a short description of my relation to other psychological theories and the development of my own ideas. The theory of the organism-environment has its background in my empirical work with EEG and unit recordings over 30 decades. When I started my scientific work at the end of the sixties my central concern was the mind-brain problem. It seemed that the new EEG recording methods and the new phenomena found at that time, evoked potentials and slow potentials of the brain, provided a key to many problems which earlier were accessible only to the philosophers. It was then quite natural for the young researcher to think that by recording brain activity we are directly dealing with mental phenomena, and thus the identity hypothesis seemed to be the best solution to the mind-brain problem. However, I had always the feeling that something was missing, and it was very difficult to understand my results in any broader context. How to see the relation of the recording from the brain and culture; for what purpose do we need psychology if mental is identical with neural; etc?

The next step in the development of my thinking was the acquaintance with dialectical materialism that was close enough to identity hypothesis, but introduced the concept of function, i.e. mental is not identical with the processes of the brain, but a function of them. But what then is a "function"? If the mental is a function of the brain do we really need any more psychology than with the identity hypothesis? Isn't it also then enough to analyze only brain processes in order to understand the human mind?

Then there was the painful confrontation with the functional systems theory of Anokhin (1978). This confrontation was painful because it completely changed my stimulus-response approach, as I started to realize that a "stimulus" is something defined rather by the systemic organization of the brain than by the experimenter. Furthermore, the functional systems approach claimed that the brain is not organized in relation to separate mental functions or stimuli, but it rather subserves as a whole the achievement of useful results of behavior. But still, even with this new understanding of the role of the environment and the organization of the brain, the basic problem remained: the mental is somehow in the brain, but how? Does the functional systems theory only transfer the mind from special centers to special functional systems in the brain? Going through the Gestalt psychology of Koffka and Köhler, the ecological psychology of Gibson, the activity theory of Leontjev and Rubinstein, and many others, I was always left with the same problem. Of course, I could see in

the works of these scientists some new aspects to the problem, but no solution seemed to be satisfactory.

Finally, I started to study physics in order to understand what the environment is that we so self-evidently speak about. It was typical of many writings that the mind was defined as an interaction between the organism and environment. I could somehow understand what an organism is, but what about the environment? I thought I will find the answer in physics. Thus, I went for a few years through mechanics of Newton, other parts of classical physics, relativity theory, quantum physics, etc., until I suddenly realized that I will never find in physics an answer to my question, because physics is not at all interested in the environment in the same sense as I was. For a physicist environment exists only as dimensions which may be quantified, but not as things which are important for the organism. However, this physical adventure gave me one very important lesson: I understood that in physics the basic assumptions are questioned if they do not lead to a coherent theory, or if consequences follow which require too many additional assumptions (ad hoc) in the explanation. I also realized that in psychology new concepts are freely added if theoretical difficulties are encountered. This has led in psychology to a tremendous number of concepts defying any clear definition. Consequently, I started to examine the basic assumptions in psychology.

This effort led to the conclusion that the most basic assumption in psychological explanations is the most obvious one: that there are two systems, the organism and the environment, which are treated as separate (although interacting) units of analysis. These units or systems are, however, conceptually very different and strange: the organism is a physico-chemico-biological, mental, and social system, but the environment is simply a physical one. Could one solve this problem somehow?

Finally, I realized that we could try to develop psychology in which we start with an assumption which is not obvious (in analogy with the concept of time in relativity theory), viz. that of the unity of the organism and environment. When I started to ask the old questions on this new basis it seemed that I could find solution to many persisting dilemmas. For example, my old question, the mind-brain problem, was unveiled as a wrong dichotomy: there is no mind-brain controversy, because the mind is related to the organization of the organism-environment system as a whole, and the brain is only one part of this same system.

However, I also realized that the new starting point requires that we must develop a completely new psychology and, furthermore, that this task cannot be

accomplished in isolation from other sciences. We should consider how such systems have evolved in biological development, and we should also examine how to approach the social character of the human behavior. This sounded really like a "Mission impossible". Fortunately, I then realized that I was not alone, but several philosophers, biologists, and psychologists had already developed on a similar basis ideas in different fields into the same direction: Spinoza, Feuerbach, Brentano, Dewey, v.Uexkuell, G. H.Mead, Koffka, Gibson, Bateson, and many others.

Thus, with this background I try to understand the development and organization of mental activity and consciousness. The most recent state of my thinking process is documented in the two articles published in Consciousness & Emotion. I am very much aware of the limitations and problems in its present state. However, I have not yet encountered any criticism that would convince me that the path I have chosen, is completely wrong (though I have seen it is not a popular one!), and it seems to me that many points presented by Panksepp are rather based on misunderstanding of my approach than to the real differences in our views. Thus, as indicated in the beginning, I do not locate "mental" in the environment as claimed by Panksepp (2001) and, furthermore, I do not maintain that the brain plays an insignificant role in the explanation of behavior, or that the support and funding of the study of the processes of the brain in relation to emotions or other forms of mental activity, would be wrong or wasted money. I try only to emphasize that the brain researchers should be aware of the limited explanatory character of their results, because our experiments do not reveal the whole story, but — even in the best case — only a part of it.

To repeat still once more: mental activity is possible only in an organism-environment system as a whole, and when the parts of the system are studied we are using such disciplines as neurophysiology, biochemistry, or physics. As only some parts of the whole are studied in these specific disciplines, mental activity cannot be reduced to activity of neurons or biochemical processes. However, from this it does not follow that the research in these specific disciplines would be somehow irrelevant for psychology or psychophysiology. On the contrary, I regard such research more or less explicitly as the task of psychologists. I write in the second article: "A result of action is possible only if all necessary physiological, chemical, and physical factors are present. In psychology, the study of these factors is also important, because they are not investigated in the respective sciences from the point of view of specific results." (Järvilehto, 2001, p. 97).

Thus, my purpose is not to belittle the importance of neurophysiological or biochemical research, but rather to emphasize the problems in the interpretation of the findings of this kind of research. At the present, there are much too many press releases announcing the finding of the site of specific mental processes and abilities in the brain. It is this kind of interpretation which I oppose, because in the frame of my approach such conclusions are simply based on faulty theoretical considerations and obsolete brain theory. And in many cases, such reports seem mostly to serve only the purpose of getting the attention of the public, and of securing the funding of the own research.

But perhaps there are also more substantial disagreements between Panksepp and me. In the background of my organism-environment approach to emotion research is a dissatisfaction with the conceptual obscurities of the traditional psychology or psychophysiology. Perhaps it would be helpful to list some of these problems in order to make our possible differences explicit. Some of the propositions spelled out more or less explicitly by Panksepp in his commentary include the following:

1. Identification of neural activity with mental functions.
2. Representation of the world in the brain in the form of images (or in any other form).
3. Assumption of prestructured environment from which information is transmitted into the brain, in which percepts reveal the structure of the world to the subject.
4. Social determination of psyche/personality from "outside", i.e. social factors as "modulators" of mental activity.
5. Scientific objectivity as contrasted with subjectivity.

I will briefly indicate below why I cannot accept the above propositions in the frame of my approach (the numbers refer to the propositions above):

1. If mental activity is conceived as activity of the organism-environment system, then mental activity is not identical with the activity of the brain, although the activity of the brain may be an indispensable part of the system (Jarvilehto, 1998a).

2. If the organism and the environment are only aspects of one and the same system then it is not possible to speak of representation, at least in the sense that environment, or some of its features, would be somehow reproduced in the organism. A percept or emotion is not a representation located in the brain, but a result of organization of the whole organism-environment system. This idea

was recently well formulated by O'Regan and Noë (2001): "... visual experience does not arise because an internal representation of the world is activated in some brain area. On the contrary, visual experience is a mode of activity involving practical knowledge about currently possible behaviors and associated sensory consequences. Visual experience rests on know-how, the possession of skills." The traditional concept of representation is based on the subject-object dichotomy created by the use of language, which gives the illusion that the subject and the object are similar entities, the features of the latter being represented *in* the former. However, a "subject" does not exist in the similar sense as an object, because an acting subject becomes an object if it is separated for description (Jarvilehto, 2001). This point was also succinctly stated by Wittgenstein (1922): the subject is the border of the world.

There is, however, one way to use the concept of representation also in the organism-environment approach: in this interpretation the "representation" would simply be the structure of the whole system which determines its ways of functioning and the results achieved. Thus, a representation "represents" the result of the action of the system. This may seem somewhat strange, as this sort of representation would refer to something in the future: it would be a "representation" of something that has not yet been presented. However, as the result of action of the system is determined by its history, such a representation would also relate to the past; a "representation" would be an intersection of the past and the future, and its description would be a description of the momentary state of the organism-environment system. When I see a tree, for example, a copy of the tree is not located in my head, but I am rather aware of certain action possibilities in my momentary situation. Thus, when I say "I see a tree", the word "tree" is not a description of a picture in my head, but rather an indication to the other people of the action possibilities, which the environment offers from my point of view.

3. A prestructured, or absolutely "objective" environment is not possible, because any part of the environment may have a property only as a part of the organism-environment system. Neither is it possible to transmit anything (information etc.) from the environment, because there are no two systems between which this transmission could occur. Increase of knowledge is based on reorganization of the system, not on information transmission (Jarvilehto 1999).

4. If "social" means co-operation of organism-environment systems for a common result, then there is no "sociality" which could exert a causal influence from "outside" on psyche or personality. Thus, human action is not "socially"

determined in the sense of causal influence. Sociality is rather one of its basic characteristics (Jarvilehto, 2000a).

5. It is not possible to speak about objectivity in any absolute sense; scientific objectivity is subjectivity of the human species. Therefore, it is not possible to describe the world in absolute objective terms. This would presuppose jumping out of the world.

Finally, I think one cannot separate aesthetics and science in the way Panksepp does. All good theories are beautiful, because beauty means consistency. Or following Einstein, there are two factors which are important in developing scientific theory: 1) beauty, and 2) relation to empirically testable hypotheses. Thus, beauty is already part of a good theory. I have tried to indicate in the second article (in the section "Emotions and the brain"; Järvilehto, 2001), how empirical neuroscience might proceed on the basis of the organism-environment approach, but I admit there are certainly many problems in developing a consistent methodology on this basis. However, if the theory already answers to our aesthetic needs, then I think a fruitful methodology will be also possible to develop.

Note

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