

Ethology □ a transdisciplinary discipline.
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Ethology : a transdisciplinary discipline

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If we are to establish a relationship between ethology and psychology, a number of questions and problems emerge, the answers and solutions to which are far from being self evident. Nevertheless, we must seek further clarification if fruitless conflicts and complacent self-satisfaction are to be avoided.

1. QUESTION: WHAT KIND OF ETHOLOGY?

It can presently be stated that scientists around the world unanimously agree that ethology is the biological study of behavior or that ethology is a scientific approach to behavior in a biological perspective. This definition, however, lacks sufficient accuracy and calls to mind two other questions: what kind of biology and what kind of behavior?

1.1 What Kind of Biology?

For most scientists ethology is based on general biology extending from genetics and ecology to metabolic, endocrinologic and nervous autoregulations going through phylogenetic and ontogenetic evolution.

Several general principles, serving as implicit background to the ethological approach, arise when the subject is viewed in this way; the living organism is the expression of the biological program of the species, and its behavior is as phenotypical as its anatomical and physiological characteristics. The biological program is not just the concern of an

isolated individual, but that of the species. The individual can only be understood in the light of his relationship to the biotic and abiotic environment. Thus ethology is often very close to ecology.

However, to some scientists, ethology seems preferentially tied to neurobiology and in their view constitutes a chapter of neurosciences. A rather modest chapter but nevertheless very useful in the preparation of experimental plans and physiological investigations which are thought to belong to a higher scientific level.

It is to the first acception described above (ethology belonging to general biology) that we adhere; to adopt the second point of view would inevitably lead us to reexamine the state question of brain-behavior relationship which is certainly interesting but not specific to ethology despite the new data this might bring forth for discussion.

1.2 What Kind of Behavior?

This is a fundamental question if one wants to discuss the relationship between ethology and psychology. The latter having been defined more than sixty years ago as the scientific study of behavior is an outcome of Watson's behaviorist manifesto in 1913 followed by the considerable development of S-R psychology and the numerous studies thereof. Is there a convergence or moreover a similarity between the behavior as it was conceived and studied by the behaviorists and the one conceived and studied by the ethologists? If this were the case would ethology not already be a well known aspect of psychology or are there really two different concepts of behavior? In fact, as a result of the numerous studies presently being carried out, a clear cut answer cannot be obtained. We can however schematically separate two concepts: one extensible and the other restrictive. The extensible concept would encompass any approach of behavior including that of behaviorism and experimental psychology. The restrictive concept would be more specific and seems more interesting for our purpose. Let us try to describe it.

On an empirical level the ethological study of behavior

distinguishes itself from a more classical psycho-behavioral approach by three characteristics:

1.2.1 The Origin

It is without a doubt zoological. The term ethology was first coined in 1856 by the naturalist Geoffroy Saint-Hilaire to designate the behavior of animal species and it is customary in the history of ethology to mention Darwin, Heinroth, Fabre, Whitman, Uexkull, then later Lorenz, Tinbergen, Von Frisch... as so many great names of biologists and zoologists.

This distinguishes ethology from animal psychology which in a more general manner emanates from psychology and is sometimes taken for experimental psychology.

In the case of behaviorist psychology, animals are used to test experimentally the hypotheses concerning human behavior or to study the more general psychological problems such as emotion, memory, attention, motivation, learning, intelligence... In the case of ethology however, it is the particular behavior of the species which is of primary importance and thus the differential characteristics. The interspecific differences have as much, if not more, value as the resemblances. Behavior is part of the biological set and we know that we can use fixed action patterns to complete taxonomic studies and explain certain ecological speciation and pressure phenomena. This attitude should guard us against audacious but sometimes unjustified trials of inference we should call "ethologism".

1.2.2 The Object

It is "animal behavior" but tied to its zoological background. Behavior as conceived by ethologists is quite different from behavior as defined by behaviorists. The former is the behavior as expressed by the animal in his natural surrounding. It is the spontaneous behavior studied in the fields as opposed to reactional behavior studied in the laboratory by S-R psychologists. It has been said that ethologists are the specialists

of instinct, and that behaviorists are the specialists of learning. Though these oppositions might today appear to be too schematic, one can nevertheless say that the main object of the study of ethology is the animal in its totality, behaving freely in its natural or semi natural surrounding.

1.2.3 The Method

As a result of the above, the method will be both naturalistic and experimental, but one must emphasize the importance of the initial observation which is the fundamental step. It is the animal who sets forth the questions to the scientist and not the contrary as is often the case in S-R psychology. The ethologist will begin his study by a "sit and watch" trying to collect the greatest amount of data with a minimum of pre-conceived ideas. The new recording methods have in this respect greatly facilitated his work: photography, cinematography, tape and video recording have become routine techniques.

Using the data the ethologist establishes ethograms carefully and objectively describing the repertory of behavioral units and their sequential combination. These data are placed and most often interpreted along two axes: one synchronic and the other diachronic.

The initial fundamental stage of observation-description can lead to mathematical processing such as probabilistic graphs and factorial analysis and can be followed by an experimental stage. One will then analyse the pertinent characteristics of the exchanged signals and determine their function and their causality. In order to achieve the latter, one can manipulate the signals and the ecological and social environment (breeding in an enriched environment, in a "Kaspar Hauser" environment; modifying the territory, the hierarchy, etc...).

From the above it is not surprising to see that ethological studies are particularly numerous in certain fields such as ontogenesis ("ethogenesis"), intercommunication ("communicology"), and social behavior ("ethosociology"); the more classical problems of "competence" psychology, such as memory and learning, motivation, intelligence, etc... do not especially constitute ethological topics, whereas the usual objectives of

neurophysiology and S-R psychology are centered on the internal structures and functions of an organism seen as a functional monad. To use a metaphor, they are concerned with "hardware", whereas ethology is more concerned with performances and "software", that is to say the manner in which an organism utilizes its competence concretely during its history and in its environment is essential in the functional programming of competence. Furthermore, ethophysiology is more often a "social physiology" facilitated through the development of telebiometric techniques.

There is interference between the two above mentioned fields; it would however be an epistemological error to fail to discern the differences between them. Neither of the two could encompass or replace the other.

In summary, to the question: "what kind of biology?", we answer: behavior in naturally occurring situations. Ethology is characterized by a naturalistic approach and the ethologist is preferably a field scientist.

2 A SECOND IMPORTANT QUESTION ARISES: CAN WE CONCEIVE OF A HUMAN ETHOLOGY?

A few arguments classically oppose this pretension; these are: man has no "natural surrounding" since he belongs to a cultural species; man cannot be studied as an ordinary animal; furthermore the observer and the observed belong to the same species and thus an "objective" observation cannot be neutral.

These arguments are certainly not negligible, but without pretending to refute them, we can remark the following:

- a. Ethology has shown that each animal species is different from the other and that the specific differences of the human species constitute in themselves a pertinent objective of study (one can easily suppose that there are more differences between a fly and a chimpanzee than between a chimpanzee and man).
- b. A naturally occurring situation means, in fact, one that is usually occurring in everyday life. Furthermore, human ecology is not thought of as being impossible.

c. One cannot, a priori, be doubtful of the fruitfulness of both the validity and the legitimacy of the ethologist-observer's position; only experience will allow us to evaluate them. Until now practice has not given rise to major problems, at least not anymore than are found in most human sciences such as psychosociology and ethnology.

If one agrees to the principle that human ethology is possible, then two ways of research are conceivable:

2.1 The transposition of models which is, a priori, a very delicate matter and somewhat contrary to ethology, to be performed with the greatest circumspection if "ethologism" is to be avoided. A few general concepts arise: those of territory, hierarchy, social organization, intraspecific communication, etc... which show that these phenomena obviously exist in man just as they exist in animals by the simple realization of the biological order and in the absence of cultural causes. This allows us to better situate man within the animal kingdom and especially to pose the problem of his specificity.

2.2 The transposition of ethological methods, for the direct study of human behavior, just at its beginning and its evaluation is not always easy because the field is at present, as it has been in the past, filled by a large number of scientists: anthropologists, sociologists, psychologists... and it is not simple to define what belongs to ethology. Often a study is considered to belong to the field of ethology either because the author is, or claims to be, an ethologist, or because the work conforms as a whole or in part to the three criteria of ethology mentioned above and in particular makes use of the naturalistic method of observation.

Thus we can expect that ethology is particularly developed in two sectors where the use of this type of approach is self-evident: a. the sector of child and family interactions; b. the sector of nonverbal communication.

a. In the field of early interactions, such as child-child or child-adult, one can presently say that the naturalistic approach, sometimes called direct observation, is in full

expansion and the idea one has of the neonate and of his precocious competence, of the development of his behavioral phenotype by the process of "interactional epigenesis", of the genesis of his communication system, all have cast a new light on previous thinking. The past and current studies are far too numerous to be enumerated here; the fact that so many communications given in this congress deal with this subject, is very significant.

- b. The study of nonverbal communication has also known a prodigious development within the last few years and many of the studies can be found under various "Kinesics" and "Proxemics" headings. These studies have brought to light the complexity of nonverbal communication which far from being just an accessory constitutes a fundamental condition in human interaction.

3 WHAT ABOUT LANGUAGE? THIS IS THE THIRD QUESTION THAT ARISES

To state that the human animal is endowed with language is mere banality. Can language, which is thought to be the foundation of the human condition and culture, be the objective of the ethological approach? If not, would ethology not be a way of treating man as if he did not possess language? This would explain the development of ethology particularly in the field of child interaction and nonverbal communication. Yet, sooner or later the ethologist is faced with the speech phenomena. Language ethology is therefore necessary and is only at its beginning. It seems to open new and promising ways of research for two, fortunately converging, reasons:

3.1 The ethologist undertaking the study of human communication meets with traditional and tenacious prejudices, such as: a) human communication is language, b) language is an arbitrary system with an acoustic realization, and finally, c) the purpose of language is to speak and to speak is to say something about something else. However, the ethologist's familiarity with animal communication makes it possible to avoid these

traps. On the contrary, through his comparatist experience he expects to find even human communication to be a multichannel and plurifunctional one. Furthermore, he would readily agree, through a naturalistic study of human interactions, that language appears to be thus and observations will easily confirm the latter. If, in fact, man uses speech in this symbolic function, then it appears that in most daily situations he communicates for many other reasons: to express his feelings, to act upon another human being, to threaten, to provoke, to appease, to order, to ensure contact, to seduce, to attract attention, to synchronize an action, etc... These actions unfold through a series of sequential and programmed events according to defined sites. These "setting behaviors" give rise to ritualized behaviors which can be described as authentic ethograms. In other words, speaking is another way of doing, and speech acts observed in this way can easily be treated in an ethological fashion.

3.2 Within the field of linguistics, one can presently observe a considerable evolution with the development of pragmatics. A wide movement started in the last few years deviates from the more traditional studies of competence to embrace the communication phenomena of particular situations.

In this manner are defined new fields of research which are partially common to linguistics, to anthropology and to sociology: ethnography of communication, ethnomethodology, conversational analysis and microsociology of daily life. Moreover, the existence of gestual languages such as the language of the deaf, and the close association between gestures and verbal discourse show that it is neither the arbitrariness nor the acoustic realization that differentiates language from other systems of communication, but rather its conventional nature and the possibility to develop the symbolic function. In summary, human communication, including its specific verbal aspect, appears to be multichannel, plurifunctional, heterogenous in its form and conventional in its nature.

Therefore, not only is an ethology of language possible, but it has in fact been greatly developed by a large number of scientists who have adopted a naturalistic attitude which can

be called "ethoanthropological". Some of them refer to this almost exclusively, such as Goffman, the creator of micro-sociology.

4 LASTLY, WE ASK: WHAT ABOUT PSYCHOLOGY?

At the end of this stroll through the field of ethology, it would seem most appropriate to come to psychology. However, if we were able to define ethology in a rather precise fashion, the task is far more complex in the case of psychology. Is it the science of the psyche? the science of behavior? or the science of inter and intra communications? Surely psychology is all that and one knows today that its more productive branches are cognitive psychology, neuropsychology, clinical and inter-actionist psychology.

Ethology cannot pretend to cover all these fields. According to the definition which we have given, ethology will be present in those fields in which the naturalistic method and direct observation play a role. Thus ethology will essentially be a part of clinical psychology and social psychology. The latter two fields of research are well represented in the program of this congress.

Ethology and psychology are therefore not mutually exclusive or antagonistic: ethology is to be identified as a notable part of psychology, but is more restrictive "vertically" and more extensive "horizontally" since it extends beyond the boundaries of psychology. Ethology is presently being used in the fields of linguistics, sociology and of course biology; therefore it does not belong to psychology anymore than it does to the other disciplines. In this respect, the program of the congress is again significant. This fact reinforces the notion of "ethoanthropology", a transdisciplinary field characterized by a modest and limited point of view whose usefulness transcgresses the usual territorial boundaries. This causes the work of the ethologist to be risky, often uncomfortable, but always exciting.

BIBLIOGRAPHY (reduced to general writings)

- Bachmann, C., Lindenfeld, J., Simonin J., 1981. Langage et communication sociales, Hatier-Crédif, Paris.
- Bowlby, J., 1969-1973. Attachment and Loss, Hogarth Press, London, 2 vol.
- Cosnier, J., 1978. Spécificité de l'attitude éthologique dans l'étude du comportement humain, *Psychologie Française*, 1: 19-26.
- Cosnier, J., 1984. Observation directe des interactions précoces ou les bases de l'épigénèse interactionnelle, *Psychiatrie de l'Enfant*, 1: 107-126.
- Cosnier, J., 1984. Les prérequis d'une approche éthologique du langage, *Psychologie Médicale*, 2: 287-295.
- Cosnier, J., Brossard A. (eds), 1984. La Communication non verbale, Delachaux et Niestlé, Neuchâtel.
- Cranach, v M., Foppa, K., Lepenies, W., Ploog, D. (eds), 1979. Human Ethology, Cambridge University Press.
- Darwin, C., 1872. The Expression of Emotions in Animals and Man, Murray, London.
- Eibl-Eibesfeldt, I., 1970. Ethology: the Biology of Behavior, Holt, Rinehart and Wilson, New York.
- Garfinkel, H. (ed), 1972. Studies in Ethnomethodology, Prentice-Hall, Englewood Cliffs.
- Goffman, E., 1959. The Presentation of Self in Every Day Life, Doubleday, New York.
- Goffman, E., 1973. Relations in Public, Harper and Row, New York.
- Hall, E., 1966. The Hidden Dimension, Doubleday, New York.
- Hinde, R.A., 1974. The Biological Basis of Human Social Behavior, Mc Graw Hill, New York.
- Hymes, D. 1976. Towards ethnographies of communication, in Gumperz and Hymes (eds), Directions in Sociolinguistics, Holt, Rinehart and Wilson, New York.
- Lehrer, P.N., 1979. Handbook of Ethological Methods, Garland Press, New York.
- Lorenz, K., 1966. On Aggression, Harcourt, Brace and World.
- Tinbergen, N., 1963. On the aim and methods of ethology, *Z. Tierpsychol.*, 20: 410-433.

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