

The Ethological Approach to the Study of Human Behavior

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Abstract: Human ethology, which was established on the basis of classical zooethology, can be an inspirational contribution to the study of human behavior. The study of behavior in natural conditions is stimulating as well as the primary interest of ethologists in such behavioral patterns showing evolutionary success and benefits and which are called inborn or innate. The extensive area of human behavior, nonverbal communication, can be investigated also with the application of some ethological knowledge. Human ethology can bring significant insight to the evaluation of the pathology of human behavior in various medical disciplines. An important task of medical prediction (prognosis) can be made more reliable by considering the ethology. A specific attribute of the species *Homo sapiens*, his culture, is acknowledged and discussed through human ethology.

The Heritage of Classical Ethology

All sciences and their subdisciplines which study human behavior from the physiology of the central nervous system, behaviorism, psychology, psychoanalysis, sociology, sociobiology to cultural and social anthropology, including sexuology, partly pediatrics, psychiatry etc. can be subsumed under the term “behavioral sciences” (Porket 1966).

Especially the approach resulting from natural sciences is very inspirational. One of these disciplines is human ethology which can be defined as the biology of human behavior and which follows classical zooethology. Zooethology arose from comparative zoology in the nineteen thirties and nineteen forties. Konrad Lorenz published his most essential studies in 1935 and 1943 (Lorenz 1935, 1943).

Ethology is closely connected with the names of Konrad Lorenz, Nikolaas Tinbergen and Karl von Frisch. All three scientists were awarded the Nobel Prize for medicine and physiology in 1973 (Tinbergen 1974). The founder of human ethology is Professor Irenaeus Eibl-Eibesfeldt of Germany who collaborated with Konrad Lorenz. He is also the author of studies and books on human behavior including important transcultural comparisons (Eibl-Eibesfeldt 1970, 1971, 1989).

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The fixed-action pattern (inherited movement coordination) is a fundamental ethological concept (Eibl-Eibesfeldt 1989). An important aspect for the survival of organisms is behavior actualized on the basis-innate releasing mechanisms (Tinbergen 1951), some of them having the nature of a so-called “key stimuli”, eg. baby-scheme, etc. (Lorenz 1943). In the majority of cases, topical behavior of the organism results from certain kinds of motivational states and its intensity and a specific external stimulus. The searching of organisms with a high inner motivational state for such an adequate stimulus situation is called appetitive behavior. Other important concepts of zooethology, e.g., territoriality, hierarchy, sensitive periods in ontogenesis, etc., are also useful when discussing human behavior. For detailed information about ethology, please refer to the original works of Lorenz, Tinbergen, Eibl-Eibesfeldt, etc. Special monography devoted to man is the book “Human Ethology” (Eibl-Eibesfeldt 1989).

Innate Versus Learned Behavior

Innate versus learned behavior is a very old problem and both terms have many synonyms. Innate behavior: inborn, genetic, instinctive, biologically based, inherited, natural, etc. Learned behavior: acquired, social background, nurture, etc.

A strict dichotomy between innate and learned behavior is not useful for the research of human behavior. The probability of sudden neurophysiological change which would cause innateness of certain behavioral patterns is extremely low, (in other words, the innateness of certain behavioral programs). The optimal morphological structures were developed over many generations in the long-term, phylogenesis; and those living organisms which were not capable of adaptation and specific learning, did not survive. The long-term evolutionary succession of these programs caused their specific fixation and also their heritage as well as in the case of morphological structures, which are called innate or inborn. This term is descriptive provided that such behavior is actualized without preliminary experiences and that its external expression cannot be influenced in a conspicuous way. The evolution of behavioral programs is a long-term matter because their usefulness and advantage for the survival of the individual (and for the whole species) to be verified, their specificity to external conditions and also their other important attributes had to “be learned” by organisms. In my opinion, we can speak about a specific kind of learning, the so-called “phylogenetical learning”.

Another objection to such a strict dichotomy, innate versus learned, is that the creation and manifestation of those behavioral patterns which we designate as learned is a very complicated process, not only from the point of view of biochemistry and neuro-physiology, but mainly because of the biological and psychosocial consequences. The term “learned” behavior, should be used in a descriptive sense for those behavior patterns or programs which were created on the basis of ontogenetic experience and formed on the field prepared during long-term phylogenesis. This question is complicated and we are not sure whether this is relevant to further research on human behavior. However, it is not possible to neglect programs which arose from phylogenetical learning, e.g. the motivational structure of sexual behavior, or mother-child interaction in early childhood and which are actualized during ontogenesis including its disturbances, e.g. homosexuality. Behavioral pat-

terns which were created by phylogenetic learning and formed and actualized by ontogenetical learning cannot be omitted and not at all “improved” or “treated” in the framework of preventive or therapeutic procedures. Because their origin is in long-term phylogenesis which happened in a natural environment, the ethological approach to human behavior based on the description of behavior in natural conditions is adequate and inspirational.

Human Nonverbal Communication (HNC)

Active interaction with other members of the species is a basic attribute of all living organisms. The aim of such interaction is the exchange of information between members of their own species (communication intraspecific) and also between members of different species (communication interspecific). Articulated speech is the main channel for such communication exchanges in species *Homo sapiens*. A specific biological psycho-social phenomenon called human nonverbal communication (HNC) is of great importance. The importance of human non-verbal communication increases rapidly in cases of disturbances of verbal communication. We not only observe disturbances because of pathological conditions (e.g. neurosis, psychosis, etc.), but also in so-called normal interaction (e.g. when disregarding transcultural differences, in unfamiliarity with a foreign language, etc.). A special situation arises in early human postnatal life when communication between mother and child (approximately until the 30th week of baby-life) is by means of non-verbal communication only.

The pioneer work in this area was Darwin’s book, “The Expression of Emotions in Man and Animals” (Darwin 1872 [Czech version 1964]). It is remarkable that the majority of the main components of HNC can be studied by applying ethological knowledge and a conceptual apparatus. For example, the concept of territoriality (i.e. territorium and territorial behavior) or so-called space behavior; the concept of hierarchy (i.e. domination and submission), in gazing behavior; but also in touching behavior. Generally speaking, HNC is a complicated and relevant system with a biological background. The following classification of the main components is useful in our work and in thinking about this phenomenon. The HNC components are divided into four categories in spite of the fact that in reality their presentation and perception by the partner in the interaction are mainly one entirety.

I. Category (condition *sine qua non* for realization of more sensitive functions of HNC)

1. Space behavior
2. Posturology
3. Angle of frontal planes of the partners

II. Category

1. Facial expression (mimic changes inclusive of grimace)
2. Gaze behavior (the direction and length of the look)
3. Paralanguage (nonverbal parts of speech)
4. Gesticulation (illustrative, semantic, acoustic gestures)
5. Touching behavior (autocontact and touch of others)
6. Olfactory communication

7. Taste communication

III. Category

Long or short term (reversible or irreversible) changes in color, shape or size of parts of human body resulting from mutilate behavior. This is a very interesting area of cultural and social anthropology with meaningful consequences for HNC. This theme warrants a separate article and here we note only some examples occurring in early childhood. For example mutilations which are performed on small children and are irreversible, as artificial deformations of the skull by certain Indian tribes, the reduction of the size of the female's feet in China, perforations of auricle of ears, male and female circumcision, etc.

IV. Category

The broad area of clothing and decorating the human body with jewellery, including various kinds of distinctions for sex, job, status, etc. This also includes various types of garb, uniforms, etc. We can observe many interesting transcultural differences in this area. In the socio-cultural region of middle Europe the color blue is typical for little boys and the color pink for little girls, the color black is the symbol of mourning, white is the symbol of innocence, etc.

Pathology of Behavior

We must mark very carefully pathology (abnormality) of certain kinds of behavior. We present here the following scheme for evaluation:

a) *Behavior species-specific*

Example: suicidal behavior in the majority of cultures is evaluated as abnormal; inadequate reaction to Lorenz's "baby scheme" (Lorenz 1943) whose presentation in normal persons not only inhibits aggression but also releases protective behavior; etc.

Disturbances of behavior on this level are, in the majority of cases, an indication of serious psychosocial problems and medical intervention is necessary.

b) *Behavior cultural-specific*

Transcultural differences in human behavior are very diversified. We can observe differences in the interpretation of some semantic gestures even in such similar cultures as Czech and Slovak (Klein 1995), so-called qualitative differences and also quantitative differences in the total expressiveness of nonverbal display between inhabitants of Southern Europe (Italians) and Northern Europe (Englishmen). We talk about the various cultural areas such as middle Europe, South America, equatorial Africa.

c) *Behavior individual-specific*

Every individual has a specific ontogenetic development, which includes specific family education and individual life experiences and we should respect all of these factors. Our evaluation is made with regard to:

1. Age of person (infantile behavior, adolescent behavior, senile behavior)
2. Sex of person (masculine, feminine, androgynous behavior). In this case we sometimes use the term tertiary signs of sexual dimorphism (Klein 1984) for differences in emotions, thinking as well as for various expressions of non-verbal behavior.

The ethological approach to the study of human behavior is now accepted in many medical disciplines. It is useful in pediatrics (e.g. Papoušek and Papoušek 1984), psychiatry (e.g. McGuire and Fairbanks 1977; White 1974), pharmacology (Kršiak 1991) and sexuology (Freund, Scher, and Hucker 1983).

The Prediction of Behavior

One of the most important tasks in medicine is prediction (prognosis) and the prediction of behavior in the future is also interesting for ethologists. The broad medical area of prevention is a primary behavioral matter. Such prediction supposes a detailed knowledge of the mechanisms of human behavior and supposes our correct answers to many questions. It is evident that our forecast or prediction will never be quite reliable, we can only reach various degrees of probability. An interesting article about prediction in relation to psychiatry and psychopharmacology was published by Höschl (1993). The author presented four kinds of predictions: logical, heuristic, tautological and irrelevant. In this important discussion, ethology can be useful. I would like to mention here four basic questions presented by Tinbergen (1963) in his article which he dedicated to K. Lorenz. Tinbergen defined ethology as, "the biological study of behavior" and quoted some ideas of Julian Huxley. He stated, "Huxley likes to speak of the three major problems of biology, that of causation, that of survival value and that of evolution" and Professor Tinbergen added, "... to which I should add a fourth, that of ontogeny".

We have reformulated these four basic questions in such a way which will facilitate our prediction of certain behavior in the future (see Table 1).

Table 1. Nine questions of the human ethology.

Questions	What? How?	Why?	When? Why?
Analysis	descriptive	causal	functional
Present-time	1	2	3
Ontogenesis	4	5	6
Phylogenesis	7	8	9

Our first task in the process is a descriptive analysis by means of a detailed observation and reliable description, then searching for causality and for the function of certain kinds of behavior. Not only in the present time (topical), but also in its ontogenetic expression and if it is possible, also in the phylogenesis of our closest animal relatives. I think that correct answers to these nine questions can increase the success of our prediction of behavior in the future in a relevant and essential way.

Behavior and Culture

Man is undoubtedly a cultural being. His distinction from other animals is not only anatomical and morphological, but primarily determined by his behavioral ability of making tools (the first was *Homo habilis*).

K. Lorenz wrote (Lorenz et al. 1969) "... the human ontogenesis cannot have a normal development without cultural tradition". I think that it is useful to remember the concept of human culture as a phenomenon which expresses and results from the behavior of species *Homo sapiens* with its long-term phylogenetic history. It is conceivable that "culture" is primarily derived from human "behavior" which is, in turn, influenced by the "culture."

I think that the most important emphasis should be on our species-specific ability, abstract thinking, to make use of it for a better understanding of all mechanisms of human behavior (innate as well as learned). We are not sovereigns of nature, we are only its component part. This approach is a genuine expression of our culture.

While searching for causality of catastrophes which man has caused throughout history such as wars, epidemics and horrific events such as the holocaust, the pandemic disease of AIDS, Chernobyl, etc., we can determine that in the majority of these events, the basic cause was the failure of *Homo sapiens* in his behavior.

I end this paper with a quotation from the preface of I. Eibl-Eibesfeldt's excellent book, the validity of which is as true today as it was twenty-five years ago, "Ethology. The Biology of Behavior": "... this ethological knowledge, based on animal studies, can contribute to a better understanding of human behavior, and K. Lorenz recognizes this as 'essentially the most important task' of the branch of science which he founded" (Eibl-Eibesfeldt 1970, p. VIII).

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