

Notion and Contemporary Status of Human Ecology

Napoleon Wolanski

*Department of Human Ecology, Polish Academy of Sciences,
00-330 Warsaw, Nowy Swiat 72, Poland*

KEY WORDS Human Ecology. Notion. Contents. Institutions.

ABSTRACT Contemporary human ecology is understood as transdisciplinary synthetic knowledge about man and his culture as a dynamic part of ecosystems. The main problems are following: philosophical problems of human environment, biological and social problems of man's life environment, ecological problems of human biology, and problems of the cultural adaptational behaviour of man and education for environment. The main organizations (IOHE, SHE, CISEH, CHE-IUAES) in the field of Human Ecology have been characterized. The Commission of Human Ecology of the IUAES is a non-governmental umbrella organization in the world scale which have been organizing world academic conferences on human ecology since 1986.

Having familiarized ourselves with the conceptions and methodology of human ecology (Wolanski, 1990), we shall now attempt to achieve a synthesis by defining this branch of knowledge and its basic sub-branches. Objects of interest of human ecology are various groups of organisms, habitat-environment, and systems of interrelations (Fig. 1).

THE NOTION OF HUMAN ECOLOGY

At present, such a profession as human ecologist does not exist. Lectures in this field differ in character and are destined for specialists in other domains, from geographers, through biologists, to sociologists and engineers. The best preliminary preparation for studies in human ecology is provided by anthropology section of the faculties of biology or natural sciences. This is not to imply, however, that human ecology is a sub-branch of anthropology. These are only two overlapping fields of specialization (Fig. 2). It appears that postgraduate courses in human ecology should be conducted by university faculties of sciences and provide synthetic knowledge rather than environmental elements of various classical disciplines (for proposal of curriculum

see: Wolanski et al., 1989). This results from the methodology and the scope of competence of human ecology.

Human ecology is a scientific discipline which covers transdisciplinary problems (geology, geography, biology, anthropology, psychology, sociology, ethnology-comp. Fig. 2 -including most of the related sub-disciplines like demography) connected with space and time interrelations between man, culture, and nature. Human ecology is not a linear relation between nature, man, and culture $N \rightarrow M \rightarrow C$ or $M \rightarrow C \rightarrow N$, etc., but it is a systemic interrelation (result of interaction) between the above main components (compare Table IC from Wolanski, 1990).

Human ecology examines, on the one hand, all elements of the natural, social, and cultural environment as an integrated system, of which man is an immanent part and dynamic factor. Man's dynamic and creative activity is called culture. On the other hand, human ecology studies the human organism and human populations as levels of autonomy. It attempts to understand the mechanism of self-regulation of interrelations with the environment (homeostatic systems) which are subject to transformation in time (homeorrhesis) and which are dissimilar in dif-

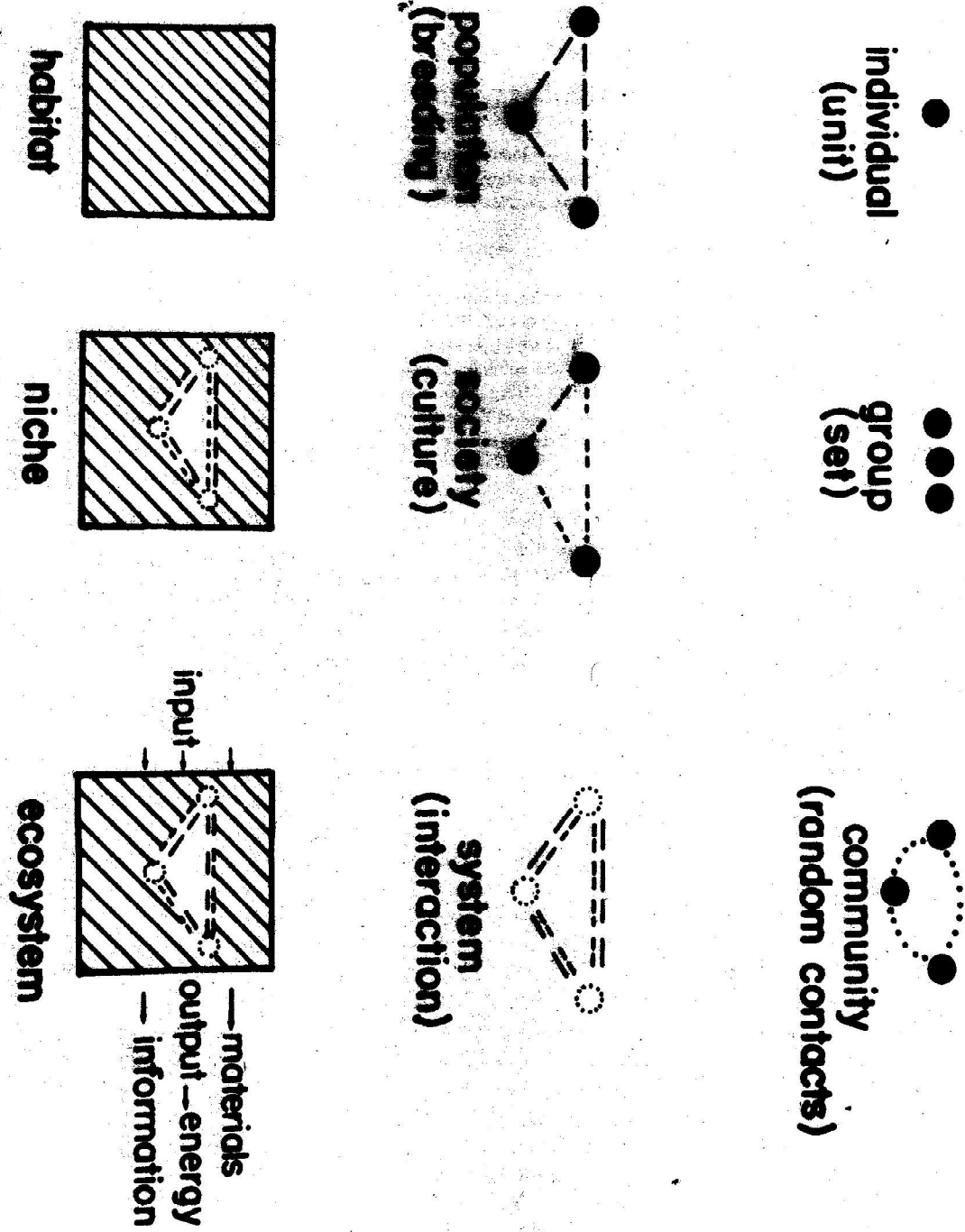


Fig. 1. Objects of biological, sociological and ecological studies

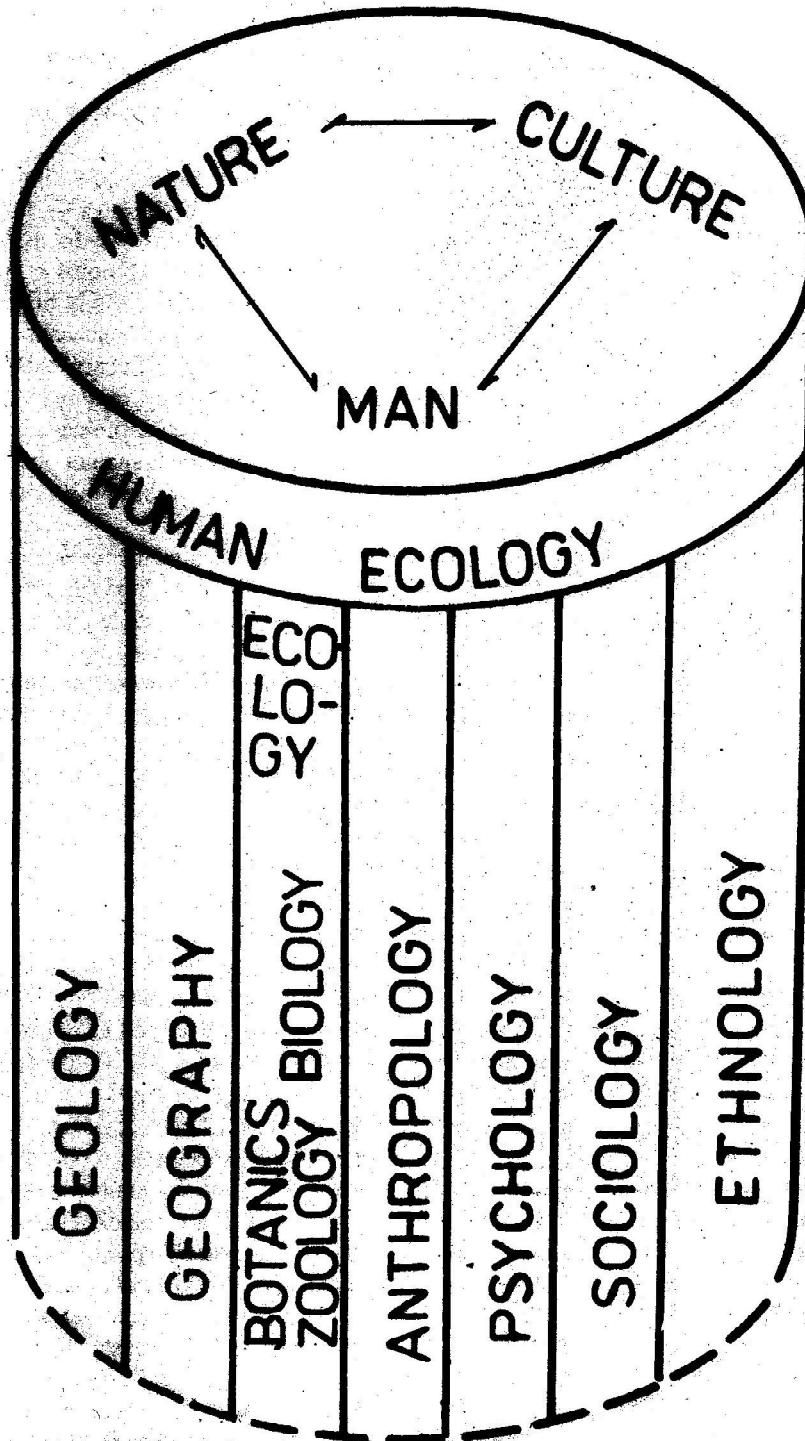


Fig. 2. Human ecology's main subject and relation to classical disciplines

Great parts of the globe (time and space world-wide variation). Human populations and communities represents a specific level of man's integration with the environment on the scale of the gene pool and cultural behaviour. In this connection, we must conceive of human ecology as a transdisciplinary science, which investigates the dynamics of biological and cultural interaction between people (as individuals, populations, and communities) and the total environment (natural, social, man-made, and cultural) in which man is living. So, the shortest definition of the competence of human ecology is: man and his culture as a dynamic part of ecosystems.

CONTENTS OF HUMAN ECOLOGY

There are several basic fields of activity of human ecology - fields of activity, and not only fields of study. Human ecology is also characterized by its practical orientation and application of its generalization. These main areas or problems include (Fig. 3):

1. Philosophical problems of human fascination, beliefs and studies concerning the environment: in other words, theoretical problems of perception of the environment.
2. Biological and social problems of man's life environment as a system of interrelations of the conditions in which mankind originated, developed, and is acting today.
3. Consequently, also ecological problems of human biology. This is in fact the core part of human ecology as a scientific research problem.
4. Finally, the problems of cultural adaptational behaviour of man, and consequently a need for education for the environment as a strategy of survival of the human species and a possibility of future development of society.

Thus human ecology is a certain generalization and a stage in the development of the science of man and his environment. Therefore, it cannot

correspond to any of the existing branches of knowledge. Nor would it make any sense to change names that have been used for years or even centuries.

When we try to find how climate (T) influences the human organism (M), this is bioclimatology ($T \rightarrow M$). When we discuss the influence of food consumption (N) on the human organism (M), this is bromatology or the science of nutrition ($N \rightarrow M$). When want to know how tobacco smoking (S) influences the human organism (M), is toxicology, or at least epidemiology ($S \rightarrow M$). When we examine the influence of radiation (R) on the human or any living organism (M, L), this is radio-biology ($R \rightarrow M$), and so forth.

Even if we studied the reverse effects, that is, how man influences food (its production, utilization, distribution, etc.), this would be agronomy, economy, trade, etc. ($M \leftrightarrow N$). If we studied man's influence on tobacco smoking (customs, cultivation, etc.), this would be ethnology, agriculture, industry etc. ($M \leftrightarrow S$), and so forth. Also if we analyzed linear interrelations of the influence of foods (nutrients), on man, and man's influence on foods ($M \leftrightarrow N$), and took into account the various relations, this would only be a mosaic of information, but not new knowledge. Also examined are such more complex relation as the links of nutrition with infectious diseases and environmental conditions; this is the question of the so called ecology of nutrition and diseases, a field of study which appeared about thirty years ago within the nutritional sciences, and so there is no need to call these ties in human ecology, even though they come close to the problems dealt with by human ecology. We have presented such a complex system of ties in an international research project concerning human ecology (Wolanski et al., 1988).

I therefore believe that hygiene, epidemiology, sociology, zoology, etc. should be called by their names. Only when we want to emphasize this specific problem of relationship with the environment, we can call certain phenomena urban ecology (which has a broader scope than the

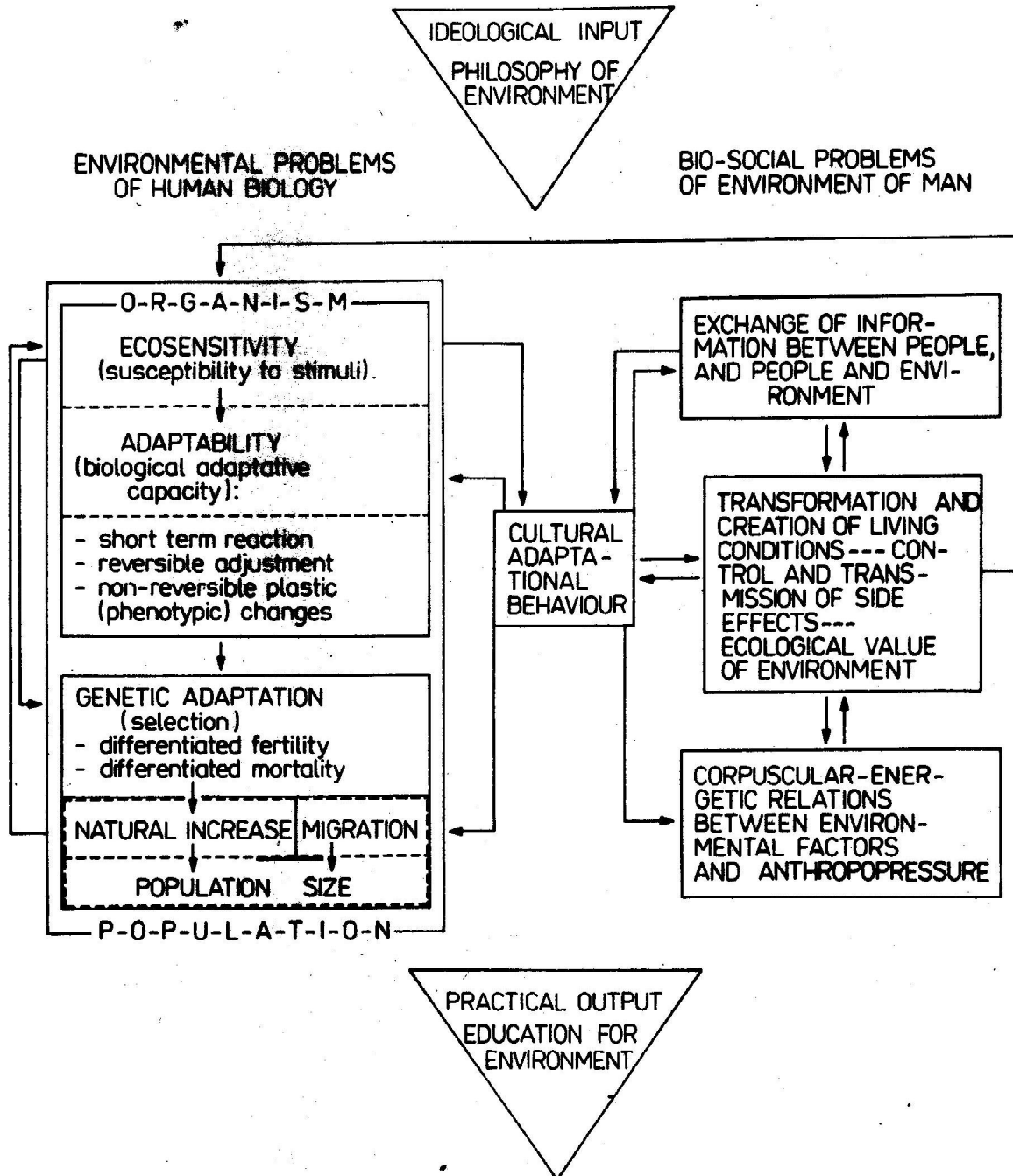


Fig. 3. Main problems of human ecology: philosophy of environment, bio-social problems of man's environment, environmental problems of human biology, and education for environment (including application to demographic policy, town planning, environmental engineering, etc.)

scope of human ecology - Bartkowski, 1987; Wolanski, 1987), ecology of nutrition, ecology of diseases (ecology of health, I believe, is something more similar to hygiene and epidemiology, or perhaps something intermediate between them), social ecology, and so forth. Creating in this way a new fund of knowledge, resulting from a systemic approach to the given elements, we coin a new term, in this case: human ecology. So when we conceive of *man and his culture as a dynamic part of ecosystems*, this be a systemic outlook upon man from a specific point of view. Let us repeat once again: When we speak of concrete linear interrelationships, then, depending on the feature of the organism and the environmental factor, we shall be concerned with morphology or physiology, auxology or evolutionism, sociology or geography, and so on. If we regarded all environmental aspects of the existing domains of knowledge as constituting human ecology, the latter would account for over 50% of all human knowledge. Such an approach would be nonsensical in view of the tendencies toward a precise definition of the various branches of science. Such a classification simply would be useless. The task of science is to comprehend the world in order to coexist with it harmoniously, to develop it without destroying nature, to ensure the development of mankind in harmony with nature. In the post-industrial era, for which we must be preparing, acquisition of knowledge, education are likely to be recognized as the best way for man to spend his leisure time, and not only as a profession. Therefore, the division of the vast knowledge available today into individual fields has an additional meaning.

THE STATE OF HUMAN ECOLOGY AND THE ROLE OF EXISTING BODIES

There are many learned societies, scientific institutions, and social and political organizations in the world, concerned with the questions of human ecology. There are societies for human ecology in countries in which scientific research has attained a significant level: in most European

countries, in Egypt, India, Japan, Korea, the United States, and others.

Several organizations or societies have international ambitions, though to a varying extent. What role do these organizations play in the light of the aims and scope of competence of human ecology as outlined in this paper?

The *International Organization for Human Ecology* (IOHE), established as a result of a number of conferences held in Vienna from 1975, attempted to embrace all the existing areas of human ecology. Its activity was dominated by engineering rather than scientific aspects. However, the excessively broad subject matter resulted in distorting the picture of the whole. Human ecology was conceived of as "man and environment", with emphasis on "and" which in fact means nothing concrete. In addition, the specific policy pursued by the IOHE secretary general practically brought about the fall of the organization. The IOHE published the *Colloquium Internationale*.

The *Commonwealth Human Ecology Council* (CHEC) is a non-governmental organization founded in 1979, whose activity is based on the authority of several eminent political personages and which attempts to coordinate, at least in the Commonwealth countries, actions in the field of control of population growth, public health, nutrition, and protection of Man's life environment. The council has no distinct ideological platform or theoretical scientific programme. It defines its competence and tasks in the following way: "It is concerned with philosophy and quality of life in relation to the development of biological and geological resources, of urban settlements, of industry and technology, of economics and of education and culture". Vice-Chairman Zena Daysh plays the main inspiring role in the Council. The CHEC publishes the *Newsletter of the Council*.

The *Society for Human Ecology* (SHE), set up in the USA in 1979 is a local (continental: North America) organization which, however, has international ambitions. The difficulties in its development result from the lack of a clearly

defined field of activity and scientific objectives (Like the IOHE, from which it originates). The SHE regards refraining from delimiting the scope of human ecology or its uniform conception as its credo (at the second conference in Bar Harbor in 1987, the need of defining human ecology was expressly denied). The Society is a movement of people with a certain world view rather than a scholarly society. Even though it has two or three outstanding theorists, it seems unlikely that it will follow the proper path of development. Its leading theorist Young (1974, newly he published very important conceptual framework, 1989) describes the state of human ecology in the USA as "a fragmented field, far from interdisciplinary". The attempts that are being made are clearly multidisciplinary in character (a mosaic of all possible fragments of knowledge and orientations). The principal official of the Society is Executive Director Jeremy Pratt. The SHE publishes *Human Ecology Bulletin*.

The agreement between several West European universities, known as the *Certificate International de Specialization en Ecologie Humain* (CISEH-its first centre was established in Geneva in 1972), is in practice limited to French-speaking countries, although recently one university from Italy, Spain, and Britain each has acceded to it. The conception of human ecology is here greatly differentiated and ranges from monodisciplinary (Geneva-the work environment), through multidisciplinary (Brussels-nutrition, smoking, and radiation), to interdisciplinary (Universidad Autonoma de Madrid-on the basis of biodemography, Universite Aix-Marseille III-anthropomedical problems). Indeed, it is difficult to discern any essential conception cementing the agreement aside from mutual recognition of certificates of specialization in human ecology. What is lacking is a coordinating centre and a joint publication.

Finally, there is the *Commission of Human Ecology* of the International Union of Anthropological and Ethnological Sciences (CHE-IUAES). The Commission was set up in April 1985 and its predecessor, "Man and Environ-

ment", in 1976. The organization's conception of human ecology is such as has been outlined in the present paper as the target conception. The aim of the CHE-IUAES is to coordinate on a global scale all scientific activity in the field of human ecology (as defined in this paper) on behalf of the International Union of Anthropological and Ethnological Sciences, which itself joins several dozens various societies and which through the International Social Science Council represents the ideas and the directions of UNESCO. The aim of the CHE is to initiate, organize, and authorize contacts between existing associations, institutions (including publishers), and organizations of all kind in the field of human ecology as a scientific movement and to initiate new, or develop old, forms of activity in the domain of human ecology. The aim of authorization by the CHE of scientific research conducted in various centres is to improve their quality and ensure the proper use of the term "human ecology", to present new ideas and conceptions of studies in human ecology, in particular, the methodology of monitoring (Fig. 4) the state of human populations against the background of environmental conditions and the modeling of man's ties (Fig. 4) with his culture within ecosystems as a method of predicting further changes and formulating self-annihilating hypotheses (by predicting negative effects-preventing their occurrence).

According to the CHE, studies in human ecology in the next decade should centre on the cultural, social, and biological adjustment of man to contemporary changes of environment and on control of transformations of living conditions.

As the process of biological adjustment to the individual ecosystems takes thousands of generations (the generation is a unit of evolutionary changes -Fig. 5) and the genetically controlled traits obtained are of the character of the organism's requirements with respect to environment, studies inspired by the CHE are of paramount importance for the evaluation of both environmental conditions and the biological state of human populations. Especially important are

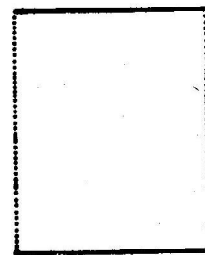
SUBJECT TO MONITORING



population

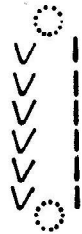


society

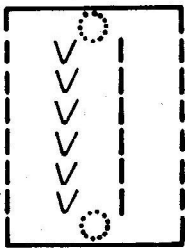


environment

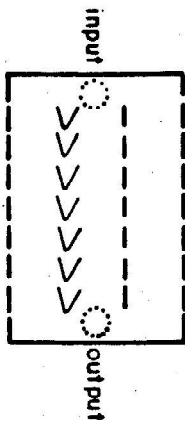
SUBJECT TO MODELING



interactional
field



niche



ecosystem

Fig. 4. Subjects to monitoring and modeling in human ecology

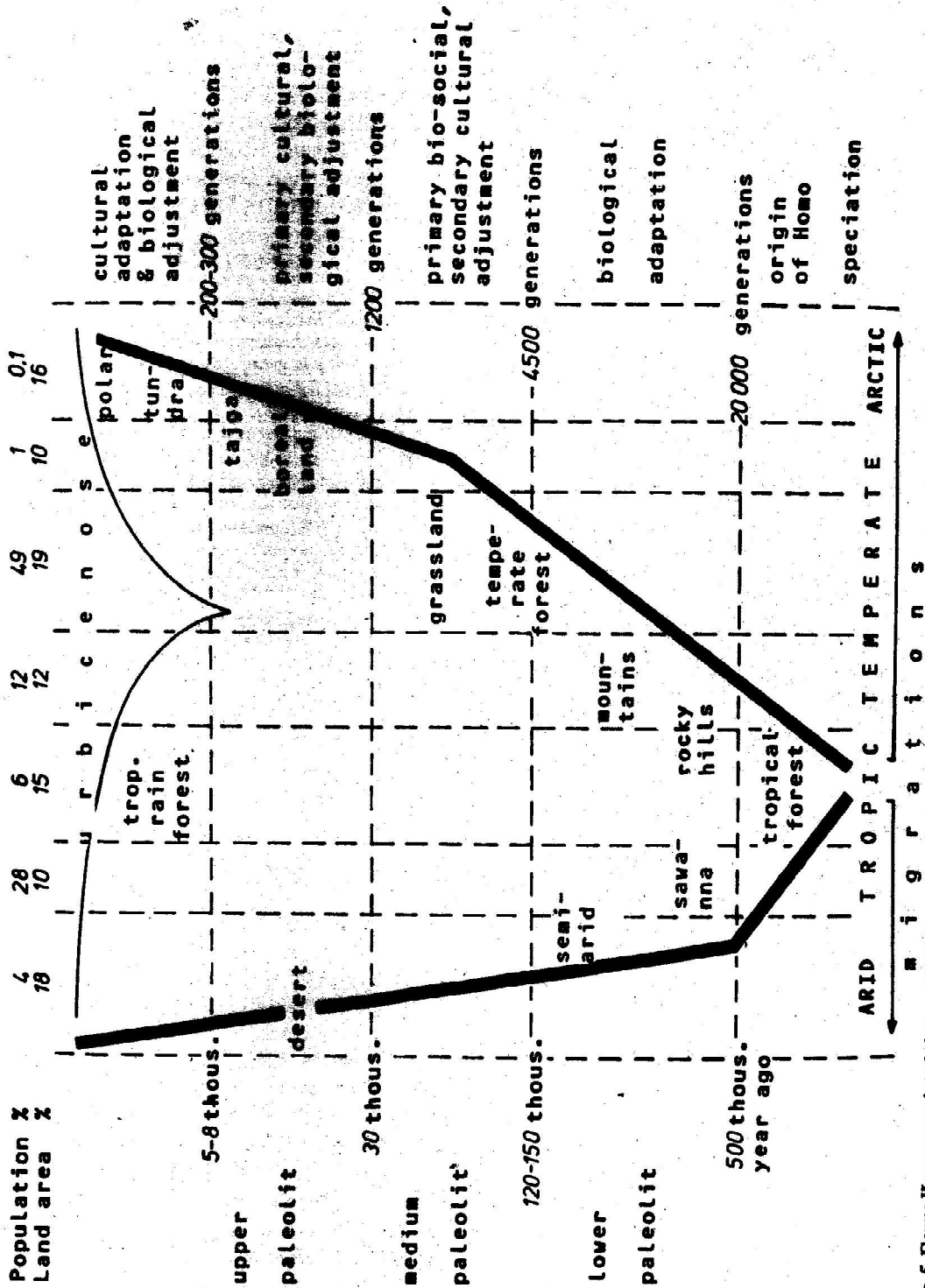


Fig. 5. Genus Homo came into being ca. 500,000 years ago in the savanna, close to tropical forest, where its animal ancestors had once lived. This happened some 20-25 thousand generations ago. Genus Homo adapted itself to the initially settled areas biologically (genetically), the adaptation to high mountains and arctic regions was primarily cultural, accompanied by some biological adjustments. Human shelters grouped in settlements have only existed for 200-300 generations. This adjustment to new urban ecosystems is a cultural process, and the town itself is a man-made environment. Biological adjustments are of a secondary character and occur in every ontogenesis, but are not consolidated in phylogenesis. The repeatability of the specific traits of inhabitants of towns is connected with the repeatability of human ontogenesis.

interrelations between man and the urbicenes created by him. The latter have existed for only about 200 generations (Fig. 5), and this very fact indicates that there was no chance for genetic adaptation. This form of cultural adaptation causes secondary biological adjustments. These biological adjustments are in principle durable ("irreversible" in ontogenesis), but they are reversible in phylogenesis providing the living conditions are changed. Man has lived in urban ecosystems for over 5,000 years, but these conditions were different in the pre-industrial era, different in the period of the industrial-scientific revolution, and still different for the contemporary "technical man". In view of the rapid transformations in urban ecosystems themselves, the question arises of whether plastic adaptive changes (developmental adjustment) in the period of the organism's youth—are of any adaptive value in the period of the adulthood of the same man - after all, he living under changed conditions.

The two research projects so far presented by the CHE have been published in the CHE Newsletter (1987, nos. 2 and 3). They are available from Dr C. Crognier, Department of Human Ecology, Universite Aix-Marseille III, 3 Avenue Robert Schumann, 13628 Aix-en-Provence, France.

Napoleon Wolanski (Poland) is CHE chairman, Emile Crognier (France) is scientific secretary, and Cristina Bernis (Spain) is adjunct scientific secretary. In addition to the above mentioned CHE Newsletter, the CHE authorizes Studies in Human Ecology (Poland), Acta Oecologiae Hominiis (Sweden), and one issue of International Journal of Anthropology each year.

REFERENCES

- Barkowski, T.: What is urban ecology? In: "IALE Working Group Urban Ecology Conference", Poznan (1987)
- Wolanski, N.: What is human ecology and what is urban ecology? In: IALE Working Group Urban Ecology Conference", Poznan (1987)
- Wolanski, N.: Origin and methodology of human ecology. *J. Hum. Ecol.*, 1: 109-119 (1990)
- Wolanski, N., Crognier, E. and Bernis, C.: Biosocial status of human populations as an indicator of environmental changes. *CHE Newsletter*, 2, (1987)
- Wolanski, N., Dickinson, F. and Murguia, R.: Basic curriculum for postgraduate studies in human ecology. *Human Ecology Bulletin, SHE*, 6:23-29 (1989).
- Young, G.L.: Human ecology as an interdisciplinary concept: A critical inquiry. In: *Advances in Ecological Research*, A. MacFadyen (Ed.), 8:1-105. Academic Press, London and New York (1974).
- Young, G.L.: A conceptual framework for an interdisciplinary human ecology. *Acta Oecologiae Hominiis, International Monographs in Human Ecology*, 1 (1989).