

## BIO-ENVIRONMENT EVALUATION

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### INTRODUCTION

"Building of order and harmony of environmental expanses with assumption of humanistic principles in town and country planning tend to guarantee the best spacial and bioclimatical living conditions of a human" - M. Twarowski.

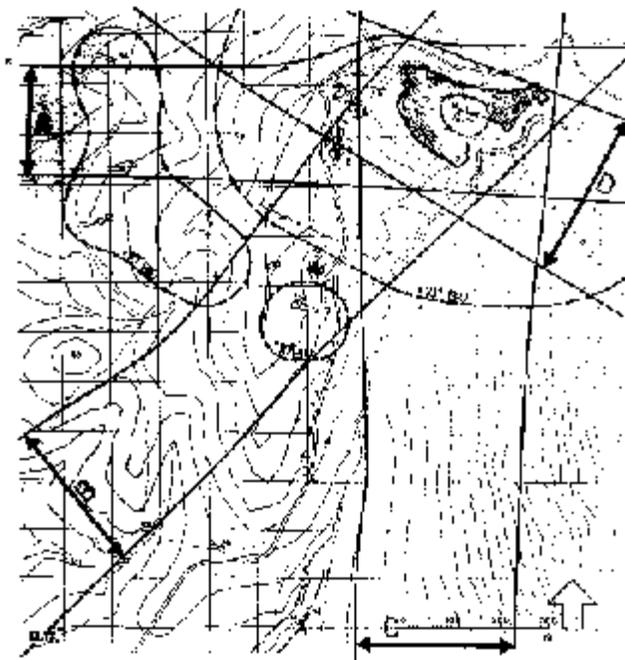
Necessary conditions for full human development: physical development; intellectual development; cultural development; and moral values.

The above assumptions were accomplished to a considerable degree in the period of the full bloom of antique Hellenic culture. They were partly adopted later by Rome - Vitruvius.

The bioenergetic local influence of the environment is one of the significant bioclimatic factors having influence on the comfort of existence and the physical development of inhabitants.

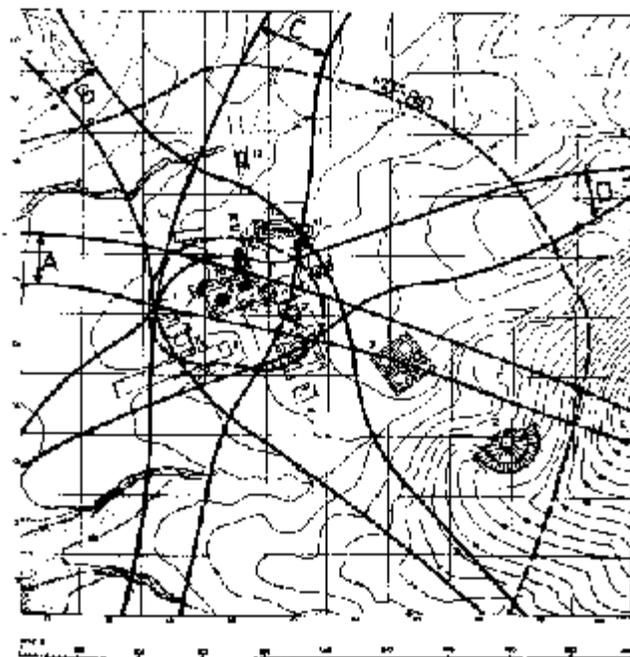
There exist some historic premises of the conscious choice of the proper building areas made by the ancient specialists from the point of view of health protection of inhabitants with special regard to the bioenergetic factor.

Attention should be paid to the fact that many towns, temples and public buildings in antique Hellada were situated on the areas of very favourable bioenergetic conditions, i.e., there were the so-called positive telluric radiations appear. Olympia, Dephi, Corinth, the Acropolis in Athens, Mycenes (figure 1), Epidaurus/Asklepion (figure 2) are situated on the so-called positive energetic centres but also in the old Greek colonies, for example, Sicily, the amphitheatre in Taormina and acropolis in Agrigento.



**Figure 1:** LPBC - Local Positive Bioenergetic Centre in Mycenes together with the Location of Positive Bioenergetic Belts A,B,C and D.

Continuing the antique Hellenic and Roman traditions, the author deals with the system of recognition and evaluation of the quality of natural environment influence on the needs of town planning and design on the basis of mutual correlation of biophysical and geophysical methods of measurements.



**Figure 2:** LPBC Local Positive Bioenergetic Centre in Asklepieion of Epidaurus together with the Location of Positive Bioenergetic Belts A, B, C and D.

#### *Influence of Anomalous Environment Radiation on Inhabitants Life*

There are several investigations showing that local environment factors may have a crucial influence on inhabitants health -- Truhout, Peeters, Hartmann, Aleksandrowicz, Dobrowolski. One of these factors, not very often taken into consideration, is environmental radiation. Many observations and papers prove that the local anomaly of environment radiation (electromagnetic and ionizing) cause negative changes in human and animal organisms, e.g. higher rate of general morbidity and neoplasia rise and positive changes, such as recuperation and recovery of an organism, as well as recession of illness symptoms. The factors causing anomalous radiation spheres can be divided into two main groups on the basis of environmental origin: natural (geospherical); and technical (technospherical).

The first group includes factors of biological origin (flora, micro-organisms) and of geophysical origin, such as: geobiological earth map (Hartmann, Curry, Witmann and Peyre) resulting from a flow of surface tellurian currents produced by cosmic rays (Hubner) and magnetotellurian fields connected with ionospheric induction of earth currents (Dzwiniel J.) and subsoil water reservoirs and those caused by geological earth structures: subsoil geological voids; geological interbeddings; geological upcasts and downcasts; special forms of geological formations; mineral deposits; minerals - metal ore, coal, gas, oil and certain kinds of soil, such as clays.

The technical factors include: building material; kind of construction; a form (configuration of interior space and building - its geometry), so-called geometric factor (Kochel); colour and technical equipment - electric equipment, mains and conduits, installation lines.

All these geospherical and technospherical effects can be resolved to strong and weak energetic factor disturbances, such as: radioactive; electromagnetic; gravitational; chemical; thermic; acoustic and mechanical (Sedlack).

Many countries apply norms of admissible radiation level of technical origin arising from the above-mentioned factors. These norms very often differ and usually refer to place of employment in industry. Still, there are no generally accepted international norms stating the maximum admissible level of environmental radiation. The difficulty of appointing such norms results from the difficulty in fixing a point of biological sensitiveness and a level of organism pathology on influence of very weak natural energetic factor disturbances.

#### *General Assumptions of the OBS System - How to Protect People's Health*

The basis of protecting and creating a healthy environment in the home, and place of employment should be a universal and homogeneous system of biological quality valuation of environment influence (noxiousness) on living organism (OBS) (figure 3). Four parameters should be taken into account: space (P); time (T); energy (radiation) (E) and organism reactions (R) (biological effects - changes in its functioning; either biophysical or bio-chemical, e.g. metabolic processes and pathology of organs and organism cells). Where the information (I) about reaction degree (IR) is a function of the three remaining parameters:

$$JR = f(P+T+E)$$

Biological environmental evaluation system (OBS) is information about the degree of intensity of factor influence (e.g. radiation) which is

specified as limited time (TP). There might be a recognisable pathogeny process in the human organism or, on the contrary, the process of regeneration (so-called quality reaction of organism) after going beyond the risk time (toleration period).

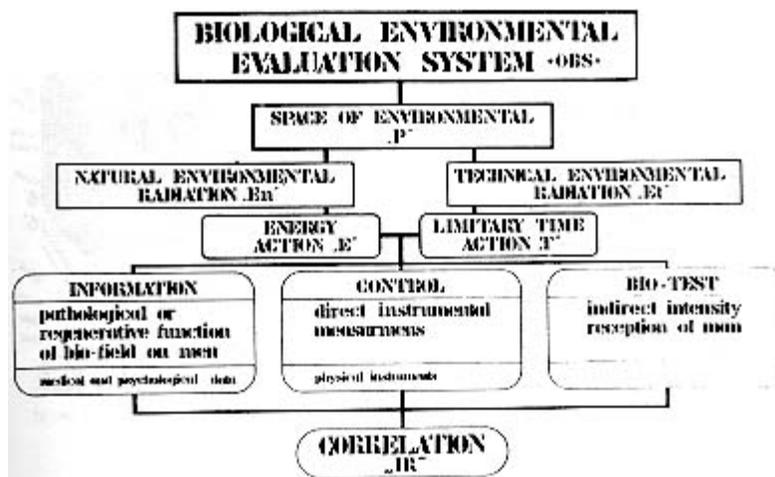


Figure 3: Biological Environmental Evaluation System: OBS.

#### Application of the OBS System in Town and Country Planning and Architectural Design

The author applied a Biological Environmental Evaluation System in Poland. It was used for the needs of town and country planning and architectural design according to 100 BIO scale.

The investigation took into consideration a bioelectromagnetic human model, a model of biological life and geophysical environment in which we can find a dependence (Aleksandrowicz and Sedlak). Biophysical reactions of human organism on natural potential of earth's electrical field was correlated with 100 relative BIO scale in OBS system (figure 4) (Dzwiniel, Kamiński), where:

0 to (-)  $10^0$  - bioenergetic pathogenic field

0 to (+)  $10^{0s}$  - bioenergetic healthy field.

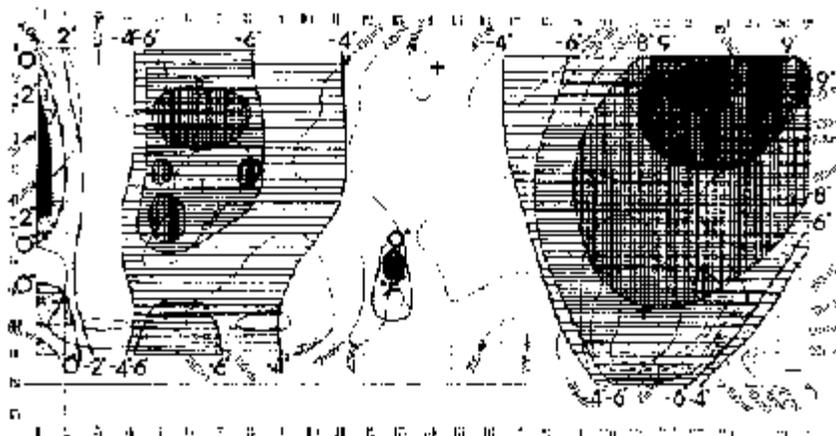


Figure 4: Correlation Between Natural Electric Field Potential of Earth and Biophysical Reception of Man in BIO Scale.

There are especially worked out geobiophysical maps in the OBS system with isobions marked in 100 degree BIO scale in Poland (made by the author). They serve to help in:

1. location of particular kinds of buildings in order to avoid pathogenic areas and to exploit positive environment areas;
2. classification of building areas according to the degree of noxiousness of anomalous areas influence;
3. marking out healthy building areas that may be used in town and housing estate building;
4. marking out positive building areas for health resorts and sanatoria, recreation areas with advisable radiation - helpful for regeneration and strengthening of organism;
5. marking out protected areas;

6. marking out areas with highest quality water resources (drinking, regenerating and medicinal water), which are situated in positive earth radiation regions.



CPBC - Hypothetical area of the Continental Positive Bioenergetic Centre

PRA - Areas on the territory of Greece where intensive local earth radiation of positive influence on the human body can appear (positive radiation areas).

LPBC - Local Positive Bioenergetic Centres

**Figure 5:** The Location of the Areas of the Most Favourable Bioenergetic Conditions in Greece.

## PROSPECTS

1. The OBS system in units of the BIO scale can be used in working out geo-bioenergetical maps for regions, countries and continents in order to pinpoint the most valuable areas with good natural bioenergetical influences. While the areas with unfavourable bioenergetical influence need neutralisation of the negative bioenergetical factor. The author worked out the introductory regionalization of such positive areas for Poland and Greece (figure 5). The elaborated geobiophysical maps can serve as an example. These maps can be the basis for working out a regional/land/domestic plan after their completing and marking all details of them. These maps can also take into consideration a chemical factor correlated with the BIO scale.
2. It seems that a new field should be created within ecotoxicology and geocancerology. Besides the chemical factor the new field would take into account pathogenic pollution for people energy of both natural (geophysical) and technical origin.
3. An international research co-operation on correlation of both physical-energetical and chemical factors with the relative BIO scale may result in preparing homogeneous evaluating norms and realisation of similar qualifying maps.

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**Edward Kamienski**, an engineer architect, received his M.Sc. from the Technical University of Cracow, Poland. In 1988 he founded the Center for Building Biology and Environmental Energy Action (BIOSKALA), Cracow, where he is now Director. He has won prizes in numerous architectural competitions organised by the Polish Architecture Association, and has experience in designing abroad. He has participated in international conferences in Poland and abroad. Among his more important designs are districts for 7,000 inhabitants in the city of Cracow, a sanatorium, schools and geo-biophysical research for houses and districts.