ASPECTS AND PRINCIPLES OF IMPROVEMENT OF A URBAN ECOSYSTEM

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Abstract

In urban settlements, man has adjusted himself on the primary nature, with which human specie is related entering in an harmoniously balanced ecosystem, which does not bother one another, existing mutual relations between man and nature. But the evolution towards human settlements has made so that man to break off his relation with nature, so in the city of the XXth century, human specie exclusivist believes that, in the biotope created by him, he shall be the only creature, that the biotope shall have to shelter, he believes that the full satisfaction will be ensured to him by the concrete, glass, and metal giants, and the most modest means of transportation, etc. The architects have discovered that in such „dead" settlements man cannot live outside the green decor of vegetation, building himself a fundal of vegetation of the landscape, this way knitting together a primary biocoenosis (with plants and animals), which ensures him the biological, physical and mental health. The man from the city, for his entertainment, also keeps in his house pets, so in the human biotope has set up a biocoenosis in which man is of a majority, but not unique. The technocrat man cannot completely avoid the action of the natural ambient environment, his life is compulsory enrolled in a biological, geographic and social context, which can alter, modify, but which cannot be canceled.

Key words: urbanism, urban ecosystem, biotic and abiotic factors, human biotope, urban attributes, biocoenosis, human ecology, urban ecology.

INTRODUCTION

The populations formed from a sum of individuals, could not be conceived outside the social structures organized as human settlements which more hardly or more easily overpass the relations with the other creatures, creating relations that are specific to the human being, social relations on which human settlements have been built, first rural, then urban, that are populated by human beings, biologically the human settlement being an anthropogenesis[1] (Fabian and Onaca, 1999).

The city represents a territorial administrative unity of urban type through the fact that the productive activities are preponderant non-agricultural. Through the nature of its political-administrative and social cultural complex functions, determined by the role that it has in the administrative territory to which it belongs, the city offers a superior level of leaving, of social-cultural endowment and of public utilities in comparison

[1] Anthropogenesis= from anthropos = man and Koinosis = which associate themselves

with the village (Surs at all, 2005). The formation of the cities has been influenced, in time, by the economic and social conditions of the historical time, by the favorable geographical position, by the discovery and capitalization of some natural resources (Haggett, 2001; Cocean, 2002).

The appearance of the industrial production and the establishment of the economic-social relations of a capitalist type in the modern era, have made so that the existent loyalties to develop and to appear new cities. The urbanization, in this period, meant a massive growing of the population through the drawing from the rural areas and the appearance of new cities in the areas that are favorable to the activities of extraction of raw materials, of the manufacturing, industrial and commercial activities (Cucu, 1981). This has lead to the building of co-urban[2] and of some systems of localities in dense populated regions. In the contemporary era, the development of the cities still is very large and the urbanization of the rural localities has an accelerated rhythm, a phenomenon that leads to the transformation of the urban structures, to the restructuration of the urban network, to the increasing of the number of floors of the buildings and the comfort of the homes, the increasing of the level of the social-cultural endowment and of the technical-municipal equipment (Benedeck, 2004).

The excessive improvement and especially the urban concentration have led, in some cases, to the negative affecting of the urban comfort and even to the transformation in its opposite, the best example being the agglomeration until bottleneck of the circulation and the pollution presented more and more frequently (Bold, and Crăciun, 1999). The urbanism activity is a multidisciplinary activity to which participate specialists from different fields with an implication in the improvement: architects, engineers, economists, sociologists, geographers, historians and others (Agud, 2011).

The urban concept provides that: the organization of the territory of the localities, the functional division into zones, the establishment of the high regime, of the density of constructions and of the population, the ensurence of the planted spaces and of recreation, the equipping with social-cultural equipment, with technical-municipal networks, communication and transport channels, the maintenance and the enhancement of the environment conditions, the valuing of the art and historical monuments, the increase of the economic-social efficiency of the investments, the improvement of the working, leaving, rest and recreation conditions (Berca, 1998; Ianoş, 2000).

MATERIALS AND METHODS

[2] Co-urban = Urban settlement formed by a city with a central role towards which all other smaller localities gravitate.

The problem of the urbanism plans is also the one of individualizing the solutions, the realization of some specific compositions through the capitalization of the specific elements of the natural existing or built framework, the differentiated and expressive improvement of the free or planted spaces, the creation of a concordance between the content and the form which is specific to the aggregate. A peculiar purpose of the urbanism plan was represented by the framing of man as the most ubiscuist[3] biological specie in an urban ecosystem taking into consideration all its biological and social features. The way of organization of the urban space depends on: the geographical position of the city, the space configuration, the period in which it was born and the changes occurred in time, on its dominant function, on its magnitude and importance within the territory and on the localities network (Surd, 2001).

Human ecology[4] follows up the forms of adapting of man to the climate and geographical conditions in which he lives, specifying the modifications (physiological, pathological) on which the environment transmits itself (Stugren, 1994). In the context of the study also intervenes human ecology[5], which aim at the human urban settlements and their interaction with the systems of the ambient environment (Dordea, and Coman, 2005). Within an urban settlement take place an influence and a perfect blend of some biological and social factors which put their mark on the life of man. The general or special environment factors which influence an urban ecosystem are presented in Table 1.

Following Table 1we can see the implications of the physical-geographical factors (abiotic), through the special factors the composition of the atmospheric air and wheather factors - climate (light, temperature, atmospheric pressure, condensation products, rainfall, etc.). Then there are presented the biotic factors (the group of living organisms with the fundamental forms of growing)), which within the biotope make possible the establishment of all the interrelations which can be created between man and the other creatures which populate the biotope within the settlements of the ecosystem.

[3] Ubique = everywhere, anywhere

[4] Human ecology = the science that studies the influence of the physical – geographical ambient factors over the human specie

[5] Urban ecology = the science that deals with the ecosystems of the urban human settlements

Table 1

Environment factors which influence the urban ecosystem

No. Crt.	**General factors**	**Special factors**	**Way of action**
1.	Abiotic[6] (physical-geographic)	**a**. Light	It acts through intensity, spectral quality, through the ultraviolet, infrared and caloric radiation quantity.
		b. temperature	Within the space or the geographic environment.
		c. air composition and atmospheric pressure	Through the purification state of the air and through the values of the atmospheric pressure which influences the ecosystem.
		d. the quantity and the quality of the rainfall	In a specific geographical region manifested through the number of the cloudy or foggy days within a year, the lasting of the snow etc.
2.	biotic[7] factors	Biotope	The totality of the interrelations which create between man and the others creatures from the biotope

Urban settlements, cities have had a four types development (concentric, radial, tentacular and nuclear), without them being exclusive, existing numerous examples of cities which present variants and combinations of those types (table 2), with a certain form of their development and positioning.

Table **2**

Types of development of the cities and combinations

No. Crt.	DEVELOPMENT	POSITIONING
1.	Concentric	- around the old center;
2.	Radial	- which spreads from a point in different directions, as some rays; disposed under the form of rays;
3.	Tentacular	- around the arteries of penetration;
4.	Nuclear	- when the limit of the city reaches the limit of a rural settlement.

[6] Abiotic factors or the abiotic environment = is the environment that comprises the amount of inorganic factors that are necessary to life, chemical and physical factors.

[7] Biotic factors or the biotic environment = comprises a group of living organisms expressed by configuration features and with a great adapting capacity, as the fundamental forms of growing at plants, or another example, the denominations of ecological groups of marine, terrestrial, forest animals, etc.

RESULTS AND DISCUSSION

In the ecosystem[8] of the human settlements, in general, and of the urban ones, in particular, there is a particular factor functioning, the inter-human psycho-social relations. The way these factor action in an urban environment depends on the society' stage of culture, on its social organization, on the type of the society, all these sending to the vigorous, the balance and the appetite for work, determined by the geographical environmental factors and by the social ambiance ones, the ecology of the human settlements initiating interesting studies in this sense (Laslo, 2006). In the study of the urban ecosystem the discussions that existed, interested on one hand the abiotic influences, manifested upon man; then the biotic influences analyzed by us were represented by „man – other" interrelations within the conditions of the urban settlements, followed by the social influences. We have only analyzed the industrial type of the urbanization aspects of the cities, according to which the town becomes a tired agglomeration, neurasthenic due to the noise and city agitation (Tufescu and Tufescu, 1981), we have also followed the effects on the human health due to the pollutants from the atmosphere, especially the atmospheric smog[9] (Ungureanu, 2003). On the social influences we did not insist, this subject being the object of study for the psychologists, sociologists, etc.

The problem of the urban ecology we have analyzed from the point of view of the species which populate the urban perimeter and of the way in which the urban biotype' s conditions[10] reflect on the man's health and so, on the quality of his life (Zotic, 2005). The city has become more and more clearly a conglomerate of habitats[11], more of less artificial (park, lake of recreation, the disposing of a river, the aggregate of gardens, orchards, squares, boulevards with green areas, sport fields, yards with cultivated vegetation, etc). These are the so called biocoenosis[12], more or less particular, but which have a common character, are created by man and even by his hand. In this habitat, man has „slipped" in a limited manner, installing within the elements of spontaneous nature from the free investments, cultivated elements, and which are mostly in competition

[8] Ecosystem = environmental minimal unity, fundamental minimal unity of the biosphere, characterized by a certain biotype, and a certain biocoenosis.
[9] Smog = air which is hard to breathe in the great overcrowded cities, which represents a visible effect of the atmospheric pollution.
[10] Biotope = a part from the environment in which the environmental factors create a coherent aggregate (a lake, a forest)
[11] Habitat = territory inhabited by people, animals, plants along with the surrounding living environment; The conglomerate of the living, of inhabiting conditions for people.
[12] Biocoenosis = a community of living organisms which coexist within a biotype.

(Naşcu, 1997). Spontaneous nature has recovered within the city, becoming an exclusive master, as for example on vacant lands, embankments of railway, the border of the highways, ruderal places[13] etc. Formerly, the relations of man with nature were of practical nature, which ensured the life condition for man (vegetable gardens, orchards, vineyards etc), with a pronounced effect in the rural environment and less pronounced in the urban one.

Green spaces are very important for the modern urbanism, being along a decorative element also a hygienic-sanitary element, by the nature of the light it spreads in the environment, but also by the source of oxygen and anti-pollutant filter and anti-sound. This statement is supported by the data from Table 3 concerning the surface of green space which occurs per capita in some of the biggest cities.

Table 3

The surface of green space in some of the greatest cities (m^2/inhabitant)

No. Crt.	City	m^2/ inhabitant	Observations
1.	Washington	50	It is only a city-residence, without being an industrial – commercial centre
2.	Vienna	25	Only the city-residence
3.	Berlin	13	Only the city-residence
4.	London	9	It is, at the same time, a city-residence, but also a powerful industrialized centre (according to the conception inherited from the XIXth century)
5.	Paris	1	It is a suffocating city of old and also newer modern buildings and of asphalt

As a conclusion we wish to point out the necessity that urban architects have an ecological culture, knowledge of landscape architecture and geography, which are absolutely necessary in the nowadays technocrat society which brings many prejudices to the health of its inhabitants from the urban environment which is so industrialized. In the arrangement of an old city or even of a new house, urban specialists must pay attention to the emissions from the urban environment, must create rich green spaces, curtains of coppices and under-coppices, real filters against the dusts, against the wind and even of the great snow falls which can have nefarious effects over human settlements. Plants absorb a great quantity of the atmospheric and sole emissions, which harm the vegetation; the bush and

[13] Ruderal = rudus = demolish, ruin.

semi-bush vegetation is a sound filter, a screen of protection against the intense acoustic pollution from the cities.

CONCLUSIONS

1. In urban biotope human life is compulsory enrolled in a certain biological, geographical and social context which can modify becoming precarious, but which cannot be canceled.
2. Urban ecology establishes the ecological, geographical, social and of interaction processes, on the urban areas' perimeters, and also the interaction of these areas with the natural surrounding systems, on whose bases the city has developed.
3. Industrial urbanization within the ecosystem has created the city in the form of the „modern desert", more and more lack of life forms with sordid suburbs which generate o psychotic agglomeration.
4. The city is rendered dry in spontaneous elements, with restraint cultivated nature, from where we concluded that the townsman is more profoundly touched by „maladies of the civilization", spiritually human, ethical-moral, of dignity, of civic responsibility etc.
5. Within the urban environment, the relations of man with nature have penetrated the affective life of man as a factor of recreation, of aesthetics delight, the discontinuous fragment of living nature in the urban ecosystem is esthetic motivated, by the need of the contemporaneous townsman and less of the hygienic-sanitary one.

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