RESEARCHES ON THE REDEVELOPMENT AND EXPANSION OF ZOO BEJAN DEVA

CERCETĂRI PRIVIND REAMENAJAREA ȘI EXTINDEREA GRĂDINII ZOOLOGICE BEJAN DIN MUNICIPIUL DEVA

BERAR C.[1], GHIURCA Andrada[1], SILIVĂȘAN M[1]., BĂLA Maria[1], TOȚA Cristina[1]
e-mail: cristianberar@yahoo.com

***Abstract**: Through this research is aimed at creating spaces solved optimally functional and aesthetically, with positive impact on the natural and social environment. By arranging complex design will be improving the quality of green spaces, increase the endowment of the area, increasing comfort and improving urban environmental quality. We propose the creation of facilities for the residents from Micro 15 neighborhood of Deva and others, which will increase the comfort and quality of life. This project aims to comply as much as the man and his problems, to respect nature and to help improve the environment. It also aims to have a positive impact on quality of life for residents and to increase biodiversity in the area.*
***Key words**: zoo, landscape planning, Bejan, Deva, animals*

***Rezumat**: Prin aceste cercetări se urmăreşte crearea unor spaţii optim rezolvate funcţional şi estetic, cu impact pozitiv deosebit asupra mediului natural şi social. Prin amenajarea complexă proiectată se va realiza ridicarea calităţii spaţiilor verzi, creşterea gradului de dotare a zonei, mărirea confortului urban şi îmbunătăţirea calităţii mediului. Propunem crearea de facilităţi locuitorilor din cartierul Micro 15 din municipiul Deva şi nu numai, ceea ce va conduce la creşterea confortului şi calităţii vieţii populaţiei. Acest proiect îşi propune să respecte cât mai mult omul şi problemele sale, să respecte natura şi să contribuie la îmbunătăţirea calităţii mediului. De asemenea, îşi propune să aibă un impact pozitiv asupra calităţii vieţii pentru locuitori şi să contribuie la creşterea biodiversităţii din zonă.*
***Cuvinte cheie**: grădină zoologică, amenajare peisageră, Bejan, Deva, animale*

INTRODUCTION

The Bejan Park covers a surface of approximately 2.4 hectares, most of it being occupied by the green area, flower patches, ornamental shrubs, trees, hedges, playing grounds for children. In the park one can find benches, drinking fountains, ecologic toilets, a water pool and a spring fountain as well as a gazebo, where during holidays the town brass band sings. During night time the park's lighting is insured by 30 small ornamental lamps and over 20 high ornamental lamps.

The Bejan Park is the largest in the town of Deva, and it includes a Zoo. Among the animals that can be seen there are wild boars, deer, ponies, ostriches and peacocks. The redevelopment of the park will attract the development of the

[1] Banat University of Agricultural Sciences and Veterinary Medicine of Timişoara, Romania

Micro 15 district as well, district placed in its immediate neighbourhood.

MATERIAL AND METHOD

The paper proposes to create facilities for the inhabitants of the Micro 15 district and more, something that will lead to the increase in the population's comfort and life quality. Its purpose is to respect the human being and his problems, to respect nature, to contribute to the improvement in environment quality, and to respect the general objectives of the National Programme for Environment quality Improvement. This project aims to have a positive impact on the inhabitants' life quality and to contribute to the biodiversity growth in the area.

And the Bejan Zoo, alongside with other zoos, offers its visitors the unique experience of living with animals, through adoption programmes or other special activities. The Zoo administrators wish for the public to appreciate nature and the animals and to get actively involved in their protection.

In time, things have evolved with regards to zoos as well, the bars have been replaced by glass fences, and the animal environment looks more and more like their natural habitat. Instead of concrete, they use natural stone and grass. Once these changes have occurred, the animals have started to change, and the aggressive behaviour has turned into a natural one. Gradually, people's attitude towards wild animals in zoos has also changed.

RESULTS AND DISCUSSIONS

The new norms in raising and taking care of wild animals in zoos forbids their keeping in improper conditions such as small and narrow spaces, and impose the creation of large spaces, of the „microbiotop or minihabitat" type, which should imitate as closely as possible the natural habitat of the respective species (caves, pools, rivulets, rocks, specific vegetation) and where the separation from the visitors to be achieved by level differences or water moats (Iliescu, 2003).

In the case of flying birds, we have built large bird houses, which should allow for a minimum of flying movement.

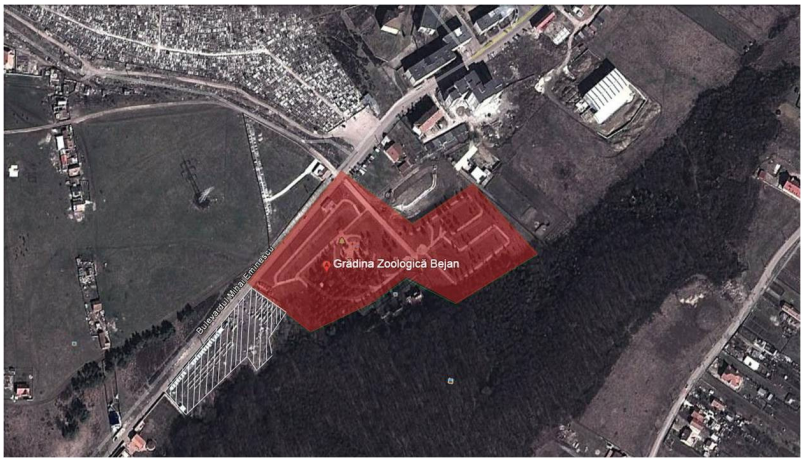

Fig. 1 – The Bejan Zoo – the situation plan of the area

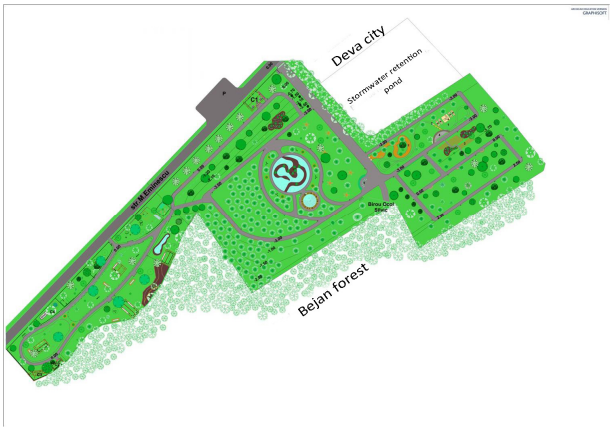

Fig. 2 – The Bejan Zoo –general development plan

The woody and grassy vegetation proposed to cover important surfaces in order to complement the ambient, to mask unaesthetic walls, constructions or administrative areas serving for animal caretaking and maintenance of the respective installations.

Spaces destined for animals are set out with various tree, shrub or liana plantations in order to create an environment as close as possible to the natural environment of the respective species, to insure shadow in summertime, to increase the aesthetic value of the spaces and to mask shelters of some animal species.

The delimitations and the separation between different sectors were achieved by massive tree and shrub plantations, liana curtains or liana masked fences (Iliescu, 2002).

The placement of animal collections was made outside the building perimeter in a forest massive and close to a river, which is used as a water source, as well as for specific developments for the aquatic fauna. Inside the zoo there is also a drinking water source.

There are no industrial areas in the neighbourhood, nor garbage dust holes or installations with harmful influences on the sheltered fauna. There is a safe distance to the locality, so that bad smells or the noise produced by the animals do not disturb the population from the suburbs of the populated centre. Also, the distance does not present an impediment in visiting the facility for those visitors who choose to come on foot.

Access is also possible with public transport means, which insures the access of an important visitor segment. The number and types of zoo sectors varies according to the vastness of the territory, the number of species and the respective developments. Each sector will include spaces which shelter related animals (large herbivores, small herbivores, small carnivores, birds etc.) or animals living in the same habitat type (everglades, alpine and subalpine). The surface of a sector is correlated with the dimension and maximum number of animals which are to be sheltered.

Spaces reserved for animals are covered with vegetation, especially forests, as close as possible to the regions from where the animals originate.

The alleys are dimensioned according to the maximum visitor flow, in order to avoid crowding in the intensely solicited areas, and the indicated routes allow the public to see the exponents in a logical succession, without many overlappings or crossings.

In the main entrance area, there are large spaces, with landscape plannings proper for creating a pleasant atmosphere for the visitors.

Facilities necessary for resting (benches) can be found in every sector. In every area of the park, green spaces predominate, thus largely contributing to the zoo's beauty, regardless of the developments or the species that can be seen here.

The perimeter area presents a green belt, formed by the Bejan forest, with the main role to protect it against the dominant winds, possible pollution sources, to fade the noise coming from the zoo, to purify the air. There is a gazebo with food and refreshments, with products which do not harm the animals, since many visitors tend to offer animals food in order to attract them.

The Bejan Park is designed in a mixed style (Fig. 1). This style reunites characteristics of regular green spaces with landscaping ones, achieving in fact a merge of the two composition methods, inside the same green space.

In the central parts of the composition, straight, broad routes are used, which allow access for the large public, also sheltering the important buildings or edifices (Fig. 2). As a general rule, there is a main perspective axe, but also secondary axes, all of them shorter when compared to the perspectives of geometrically developed gardens.

In the park centre, there is a pool with water lilies and turtles, representing the centre of the composition. From all around it alleys start in all directions, some towards the zoo and others towards the children playing grounds, the resting and quiet leisure area, at the park's borders, where it merges with the forest margin.

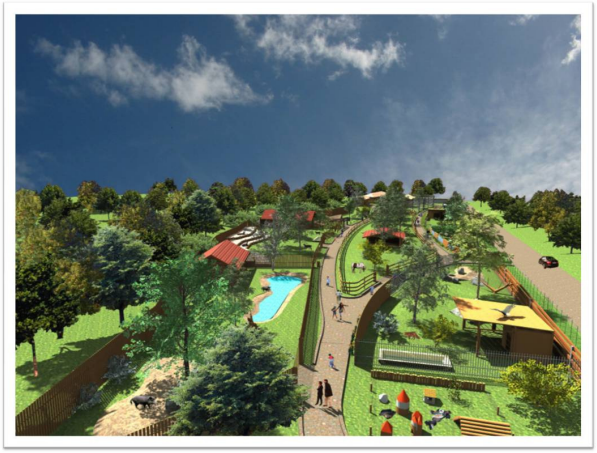

Fig. 3 – The Bejan Zoo – panorama

The transit from the central area treated in a geometrical manner to the

marginal one treated in a landscaping manner is not done blatantly, but gradually, using certain transition elements characteristic for a certain area, but which can be used on a part of the other area, thus achieving a harmonious transition.

Green areas designed in a mixed style present a multifunctional character, comprising numerous equipment and secondary systemisings, predominantly in the case of large surfaces, with a high visitor receiving capacity, simultaneously allowing a greater freedom to adopt various solutions (Simonds and Starke, 2006).

Access to and circulation in the park was made possible in order to highlight functional and visual relationships between different elements and to differentiate between various degrees of their importance. The material used for the alleys is natural stone.

The woody vegetation is the main construction material of a green space, a material which changes its volume, colour, texture and shape in the course of a year or during a longer period of time. Through this material, the designer of the green space creates shapes, volumes, compositions, as it is also the harmonizing all anthropic elements, which will form a unity in the end (Rosemary, 2009).

The proposed vegetation is made up by species of deciduous trees, in order to contrast the resineferous species of *Picea abies* which cover a significant part of the park. Their choice was made following criteria of adaptation to the environment conditions and the creation of a pleasant, attractive ambient (Fig. 3).

The plants taken into account for the new development fulfil the following conditions:

- Resistance tested in the geostationary conditions of the site;
- Require minimum of maintenance efforts (natural resistance to physical-chemical factors of the visual placement);
- Good resistance to anthropic aggression 3 years from installation (the root system is extending underground quickly enough in order to insure tolerance for soil compaction and vandalizing);
- Do not bear risks regarding public health state (do not stain surfaces neighbouring to planting spot);
- Do not constitute temptations for thieves and children (through edible fruit or persistent element of ornamental value);
- Are not toxic for people or the animals present there;
- Do not present direct or indirect physiologic antagonisms to other planned species or to the neighbouring vegetation (do not have chemical or hormonal inhibition mechanisms against local competing vegetation, are not favourite hosts for vermin);
- In general, the selected species can insure shadowing shortly after plating;
- The aesthetic and social impact on the destination landscape is optimal on medium on long term.

Proposed deciduous trees: *Carpinus betulus, Platanus acerifolia*.

Proposed deciduous shrubs: *Buddleja davidii, Cornus sanguine, Chaenomeles japonica, Forsythia x intermedia, Spiraea biliardi, Spiraea*

bumalda, Viburnum opulus, Weigella florida, Rhododendron sp.

Proposed hedge: *Ligustrum ovalifolium*

In choosing the plant species planned for the development inside the Bejan park, we considered the analysis of conditions specific to the area: climate, soil, sunshine period, dominant winds, number of days of soil freezing, pollution degree, anthropic factors, the necessity to fulfil architectural-ambient requirements specific for the development project (pleasant ambient, shadowing of certain areas, growth rhythm, colour panel, contrasting effects, creating linking elements between spaces and area unity), biodiversity.

In order to solve these requirements, we took into consideration, alongside architectural criteria, the most adequate biologic and ecologic characters of plant species which could use to their advantage the area's potential and the specific pedo-climatic conditions.

CONCLUSIONS

The research regarding the landscape planning proposition referred to the following works:

- building alleys with ecologic materials (natural stone);
- creating new green spaces, which are currently not developed, with shrubbery and trees of various dimensions and species;
- placing urban furniture proper for the area;
- achieving public lighting with the help of photovoltaic lighting system;
- achieving an automatic irrigation system on the entire surface of the green space;
- placing ecologic toilets.

No species of great height were introduced, nor with special requirements regarding climatic conditions. All these criteria were taken into account in the landscape planning project so as to be better adapted to local conditions, in order not to raise the maintenance costs (free access to the garden), but also for the needs of the Deva town inhabitants.

The creation of spaces optimal from the point of view of functionality and aesthetics was sought after, with a special positive impact on the natural and social environment. Through complex landscape planning we will raise the quality of the green spaces, increase the equipment degree of the area, the urban comfort, and improve the environment quality. The maintenance of the green space is easily carried out, and the expenses allotted to this process are reduced.

REFERENCES

1. Iliescu A.F., **2003** – *Arhitectură peisageră*, Editura Ceres, Bucuresti

2. Iliescu A.F, **2002** - *Cultura arborilor și arbuștilor ornamentali*, Editura Ceres, Bucuresti

3. Rosemary A., **2009** - *The essential garden design workbook*, Timber Press;

4.Simonds J.O.,Starke B.W., **2006** – *Landscape architecture – a manual of environmental planning and design*, The McGraw and Hill Companies.