Scientific Papers. Series B, Horticulture. Vol. LVII, 2013
Print ISSN 2285-5653, CD-ROM ISSN 2285-5661, Online ISSN 2286-1580, ISSN-L 2285-5653

QUALITY PARAMETERS OF URBAN GREEN SPACES

Anca STĂNESCU

University of Agronomic Sciences and Veterinary Medicine of Bucharest,
59 Mărăşti Blvd., District 1, 011464, Bucharest, Romania

Corresponding author email: anca_stanescu2001@yahoo.com

Abstract

The study approaches the problem of urban green space quality by relating the classic functional-aesthetic binomial with the ecological aspects of quality; the work analyzes the implication of ecological factors in the ensemble of urban green quality, considering that the green space is a fundamental component of the urban ecosystem and vegetation is one of the components of this interactive system which includes the socio-economic system with all its functional and spatial structures, urban biotope and biocenosis.

Key words: *aesthetic functions, quality, urban green space.*

INTRODUCTION

The urban green space can be defined as the part of the urban territory which is composed of organized (and unorganized) vegetal mass, and which′s character results from the interaction of several factors: human, socio-economical, cultural and environmental. Starting from this definition, one can assert that the quality of the urban green space is the ensemble of positive response effects to the biological and socio-economical needs of urban existence, but also to the need of urban ambience defined by the psyche-social needs of spatial identity and affiliation to the cultural landscape.

MATERIALS AND METHODS

The quality of urban green space is assigned the meaning of quality-value as a positive characteristic which results from two types of measurable and immeasurable characteristics:

1. Primary qualities which respond to biological and socio-economical needs by direct effects in the general state of health, of the environment and of micro-climate.
2. Secondary qualities which respond to the psyche-social needs through indirect effects on the psychological plan

The quality of the urban green is directly and mandatory involved in the quality state of the urban environment through its positive and effects in the different areas of interest: spatial planning, functional, aesthetic-ambient and ecological, having unchallenged effects in the ensemble of life quality.

The environmental factors which affect the urban space (climate, soil, landscape, biological and anthropical) also influence the quality of the green spaces, through a multitude of components (social, physical-chemical, inorganic and organic) which affect the state of balance of the urban ecosystem and thus the quality of the green infrastructure from the city. There can be made the assertion that the ecological field related to the quality of urban green is far more ample in proportion to the classical approach − through the functional-aesthetic binomial − and that it presumes interdependency relations between the fields of spatial-functional, aesthetic and ecological. The classical approach of quality by means of the functional-aesthetical binomial and the implication of the ecological factor conduce to the idea that the parameters of functionality represent criteria for evaluating the quality of urban green spaces, having as the result the efficiency in using the planted areas of the city (by enhancing the degree of socialization).

RESULTS AND DISCUSSIONS

The synthesis of the criteria and determinant factors of the urban green quality (Table 1) will take into consideration 4 levels of approach: physical, functional, aesthetical and ecological. Each of these approach levels is determined by a series of components, significance, criteria

and parameters of quality. The physical approach level primarily includes components which relate to the emplacement inside the city, localization through the relation green space – site, dimensioning, mean and duration of usage, shape. The functional approach level includes the following components: the functional character and the functional profile. The aesthetic approach level includes three components: stylistic composition, principles of composition and composition elements. The level of ecological approach takes into consideration the fact that the urban green system is an essential component of the urban ecosystem and also the ecological impact generated by the urban green system on the city. All these components, along with the significances, criteria, parameters and quantitative and qualitative determinations are integrated in the table 1.

CONCLUSIONS

The features and components of the overall urban green space quality are determined by the different types of approach:

-spatial-functional structure defined by the location inside the city and the relationship with it, dimensioning, shape, character and profile of functionality; all these have quantitative determinations and qualitative expression through effects: superior exploitation of the natural potential, percentages and proportions of the green texture and of the built texture, orientation, information, significance, accessibility, comfort in usage, multi-functionality through the recreational links, complexity and efficiency through spatial-functional diversity (Figure 1)

-the aesthetic approach defines the qualitative components which can be expressed through significance, semantics, aesthetical diversity, participation in the creation of urban ambiance and contribution to the forming of the cultural landscape (Figure 2)

-the ecologic approach includes components and features of quality which are expressed through efficiency in social and human plan: urban comfort, life quality, efficiency in the micro-climate plan, with positive effects in the improvement of urban environment conditions (Figure 3).

Table 1. Factors of the urban green quality

LEVEL OF APPROACH	COMPONENTS	SIGNIFICANCE ASSIGNED	QUALITY – CRITERIA, PARAMETERS, FACTORS		
			QUANTITATIVE DETERMINATION	QUALITATIVE DETERMINATION	STATEMENT
PHYSICAL LEVEL OF APPROACH	EMPLACEMENT - inside the city as an urban ensemble - the relation city - green structure	- compared to the residence areas - compared to the working areas - compared to endowments - compared to traffic	- distances	- zonation (areas, bands, points) - direction	- urban comfort - exploitation of natural potential
	- positioning inside the urban GS system - relation GS – system of GS	- in proportion to the same type of GS units - in proportion to different types of GS units	- distances	- personalization element of the green ensemble	- orientation (guiding marks) - information - significance
	- localization: relation GS – site	- in proportion to the proximities - in proportion to natural elements - in proportion to built areas		- accordance with the natural character of the site - harmony - contrast - neutrality	- decrease in time and distances to cover - accessibility - major influence on proximities
	DIMENSIONING - influence range	- surfaces - time for transiting	- ha (m2) of GS - minutes (hours)		- accessibility - comfort
	- serviced population	- users - number of	- indexes m2 of GS/user		- facility of usage - accessibility

		inhabitants from the serviced area - surface serviced	- m2 GS/inhabitant - m2 GS/ha (urban surface)		
	- means of usage	- individual - group	- number of users	- organized - unorganized - mixed	- social efficiency
	COMPONENTS	**SIGNIFICANCE ASSIGNED**	**QUALITY – CRITERIA, PARAMETERS, FACTORS**		
			QUANTITATIVE DETERMINATION	**QUALITATIVE DETERMINATION**	**STATEMENT**
	- usage span	- mean period of usage	- usage mean (hours) - maximum and minimum period of usage	- differential usage on categories of users	- comfort degree
	SHAPE	- point-like (spots)	- surface (m2/ha)	- diversification	- major influence on proximities - accessibility
		- linear	- length (m, km)	- direction - orientation	- decrease in physical discomfort on urban arteries
		- bands	- surface (m2, ha)	- contribution to physical structure of urban areas	- creation of urban green corridors - chain of recreational links
		- plasmatic	- surface (m2, ha) - perimeters (m, km)	- repartition and diffusive form	- beneficial effects in the urban microclimate - variety of the urban texture
FUNCTIONAL LEVEL OF APPROACH	FUNCTIONALITY CHARACTER	- integrated	- number of unites of GS - types of endowments - equipment, installations - functioning capacities	- inclusion in other urban functions (residence, commerce, culture, traffic, industry)	- mono-functionality - specialization
	COMPONENTS	**SIGNIFICANCE ASSIGNED**	**QUALITY – CRITERIA, PARAMETERS, FACTORS**		
			QUANTITATIVE DETERMINATION	**QUALITATIVE DETERMINATION**	**STATEMENT**
	FUNCTIONALITY CHARACTER	- integrator	- balance of GS functions in proportion to other integrated urban functions (percentages) - types of GS specific and complex endowments	- complexity of integrated functions - functional hierarchy	- multi-functionality - variety - complexity - superior functional integration at urban level - socialization
	FUNCTIONAL PROFILE	- mono-functional	- profile specific endowments - equipment, installations - arranged spaces (plantations and constructions)	- specificity of arrangements in proportion to users profiles and categories	- specialization - increased activity for distinct categories of users
		- multi-functional	- complex endowments, equipments, installations and	- balance of functional elements in relation to: - importance	- functional efficiency - functional diversity

			arrangements - plantation surfaces (m2, ha) - proportions, percentages	- users (percentages)	- increased degree of activity for all users categories - socialization
AESTHETICAL LEVEL OF APPROACH	STYLISTIC COMPOSITION	- architectural-geometric - free-landscape - mixed	- usage of style in different proportions (total, partial) - proportions, percentages	- unit - variety - conformism - nonconformism	- contribution to defining the cultural landscape
	COMPONENTS	**SIGNIFICANCE ASSIGNED**	**QUALITY – CRITERIA, PARAMETERS, FACTORS**		
			QUANTITATIVE DETERMINATION	**QUALITATIVE DETERMINATION**	**STATEMENT**
	COMPOSITION PRINCIPLES	- symmetry, asymmetry - axis - perspective - dominant - compositional centre - focal point - rhythm - harmony - contrast - accent - graduation	- proportion of usage in the compositional ensemble	- compositional character and anticipated effects: - dynamic - static - exuberant, sad - order, equilibrium - stringency - hierarchy - cohesion - diffuse - highlighting	- semantic significance: - grandeur - monumental - uniformity - variety - variety - illustrative - eloquence - plasticity
	COMPOSITION ELEMENTS	- landscape	- volume	- texture - proportion vegetal-mineral - shape, contour - symbolic language elements	- creation of specific and general ambiance - aesthetic diversity
		- waters			- surface
		- vegetation			- species
		- traffics			- construction and decorative materials
					- decorative objects
		- colour	- different rates and proportions in the colour spectrum	- base colours (primary and secondary)	- significance: symbol of the physical or functional character
		- light and shade	- brightness, penumbra, shade (rates and percentages)	- natural - artificial	- opportunity of character expression - visual and functional variety - comfort
LEVEL OF APPROACH	**COMPONENTS**	**SIGNIFICANCE ASSIGNED**	**QUALITY – CRITERIA, PARAMETERS, FACTORS**		
			QUANTITATIVE DETERMINATION	**QUALITATIVE DETERMINATION**	**STATEMENT**
ECOLOGICAL	THE URBAN GREEN SPACE SYSTEM – COMPONENT OF THE URBAN ECOSYSTEM	- presence in the urban area: - zoning - disseminated - concentrated - linear - punctual	- positioning - distances - influence range - plantations density - dominant species (percentages)	- amelioration of urban environmental conditions in grounds of: - sanitary - psychological - microclimatic	- diversity of urban texture - urban comfort - life quality - biodiversity - cultural landscape
	ECOLOGICAL IMPACT	- square - garden - park	- amelioration indexes of noxae and pollution (air, water,	- influence on proximities: - maximum	- efficiency in socio-human plan:

		- street bands and alignments	soil, dust, noise) - state of vegetation (percentages of ageing) - resistant/non-resistant species	- medium - minimum	- diversification of recreational activities - culture - education - efficiency in microclimate plan

Figure 1. Expo 2002 – Swiss National Expo – Yverdon-les-Bains, Switzerland. Image from inside the exhibition.

Figure 2. Image from Foggy Bottom, Norfolk, England. The vegetal element dominates through the composition of herbs and conifers.

Figure 3. Image from Tineretului Park, Bucharest.

REFERENCES

Archibugi F., 1997. The Ecological City and the City Effect. Ashgate Publishing Ltd., Aldershot, England, p. 58-59.

Bass B., 2002. Greening of Cities. Encyclopaedia of Global Environmental Change. vol. 3. John Wiley & Sons Ltd., Chicester., p. 93-95.

Turner T., 1996. City as Landscape. A post-modern view of design and planning. E& FN Spon, London.