

Received 23 Sep 2015; Accepted 11 Mar 2016

## Human Functions in Landscape Design Based on human oriented design process

**Ahmadreza Keshtkar Ghalati**- *PhD Student in Architecture, Faculty of Arts and Architecture, Tarbiat Modares University, Tehran, Iran*

**Mohammadreza Bemanian**<sup>1</sup>- *Professor of Architecture, Faculty of Arts and Architecture, Tarbiat Modares University, Tehran, Iran*

**Mojtaba Ansari**- *Associate Professor of Architecture, Faculty of Arts and Architecture, Tarbiat Modares University, Tehran, Iran*

### Abstract

Functions in landscape design include values in design and management process to satisfy moral and environmental needs that current attitudes see that as open space design by natural and man-made elements, while the basic intellectual layers related to human as the principles of environmental design have been forgotten. Human urban knowledge seeks to meet in health, biological, psychological, social and cultural human needs that landscape design also utilizes each of these cases, according to the plan will be considered. The result is moral landscape design is defined as the given Social and moral values in relationship between human and environment and the psychological functioning along environmental issues and performance are discussed. In this process human and environmental functions according to management priorities must be defined, and then the starting point is determined by the planning, that ethical and environmental values, and the executive would not be affected by technical issues.

**Keywords:** *Landscape design, Human Oriented Design Process, Moral Values, and Social Applications Ecosystem Concepts.*

1. Corresponding Author, Tel:09121081534, Email Address: bemanian@modares.ac.ir

## Introduction

The municipal green space is a part of the open municipality space whose natural and artificial areas that are under the umbrella of trees, bushes, flowers, grass, and other plants are kept, maintained, or established so as to improve the living, Eco systematic, and amenities of the citizens and non-rural population districts according to the monitoring and management of the human beings while considering the conditions, regulations and related specialties (Majnoonian, 1995). Of course, when the green space is inserted in the municipality body and structures, it joins the hierarchy governing the city and is divided to different scales based on the needs and conditions of its users and each of them can have separate regulations and measurements. Designing green space is a professional expertise that includes issues such as analysis, planning, design, management, and monitoring the natural and manmade environments.

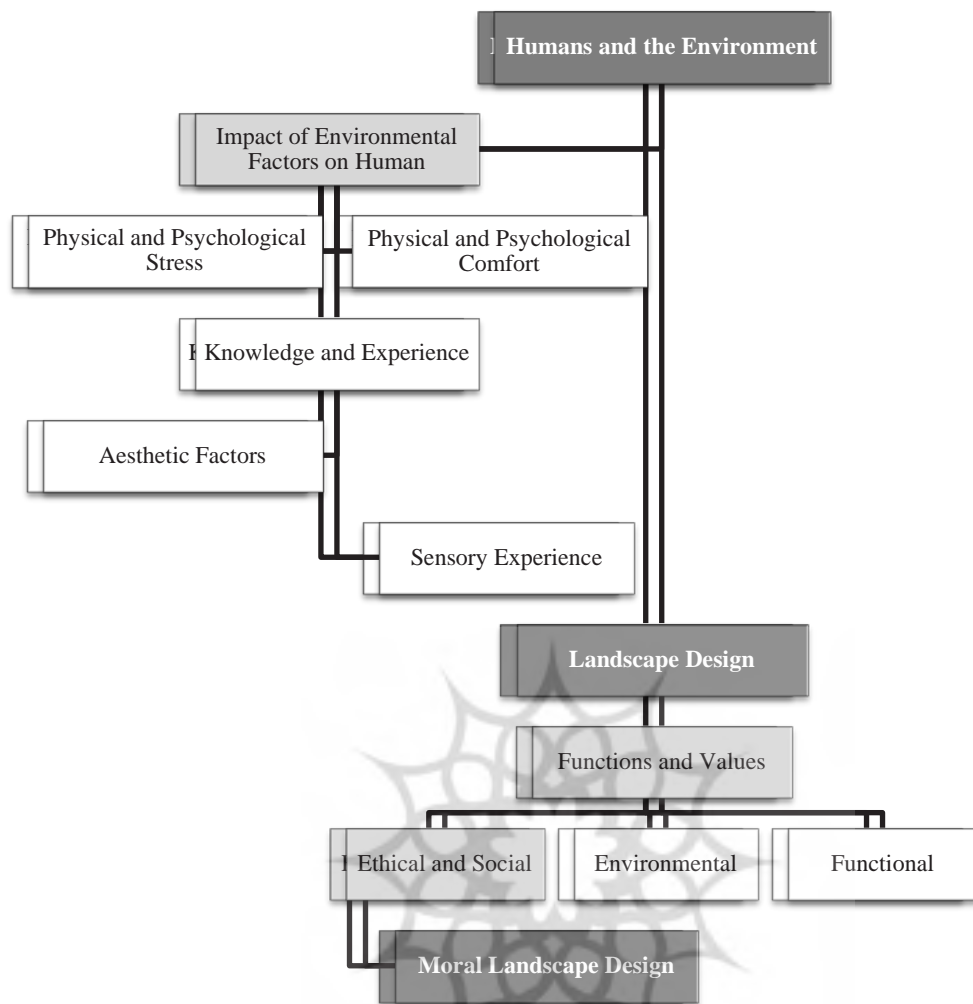
The professionals of this field can be important players in protecting the living environment in collaboration with other professions such as architecture, municipal planning, and civil engineering and can do this by designing and carrying out projects so as to provide for or satisfy humans' and living environment's needs (Hoseini, 2007). Creating the environments and landscapes which are dynamic, meaningful, and deserving asks for constant and great efforts trying to satisfy the locale and cultural awareness needs and tendencies of the knowledgeable and sensitive designer. The important social duty of the green space designer is creating the coordination between art and science so as to organize the planning and the design of the environment and landscape. Nowadays, as the humans the healthy comfort and locality have become very important, gaining the stable capability without destroying and lessening the quality of resources has become a vital fact in this profession (Mazloomi, 2002). The term "environment and landscape" is a comprehensive term that includes natural

surroundings as well as municipal landscaping. Municipal landscaping surroundings and the wide natural landscaping surroundings are discussed. Municipal surroundings and landscaping is a combination of different elements that are connected to each other by means of the network of roads. Some of these elements have been identified as green space and have important duties in the complex city systems in places where the green space planning has to be identified and analyzed within the format of municipal planning as it is exhibited in figure No.1. Designing the human oriented landscaping has been founded on the basis of the social and ethical values in relation with human and the surroundings and psychological as well as ecosystematic issues and operations are addressed in it (figure 1).

In this article initially the relations between men and surroundings in regards to landscaping and surrounding effects are explained and then the functions and hidden values in the environment are stated so that the factors and measurements of human oriented designs are achieved and in the end the process of human oriented planning and design in application of landscaping qualities are specified. It is a new process that is rarely discussed in current landscape design.

### 1.The relation between human and surrounding

Our knowledge and information in specifying men's behaviors and their reactions in regards to these surroundings are still limited. Thus, it will not be easy to specify and predict what surrounding are livable or usable and what reactions people have towards special circumstances or what factors will make them happy and satisfied or unhappy and dissatisfied so that they continue or discontinue residing in a space (Byyr, 2011). The effects of the environment's factors and landscaping and the effects of space specialties on men in designing surroundings will be described.



▲ Figure 1: Attention to human values in human based landscape design, Ref: authors

### 1-1-The effects of surroundings and landscapes on man

The factors influencing the way people know and experience a place are as follows: 1. Feelings, 2. Needs, 3. Wants and 4. Innate sense of beauty; the following factors can cause tension in individuals and affect the experience of the person from a place: 1. Crowded places; 2. the degree of brutality in local communities; 3. the feeling of not being able to control the surrounding including the lack of control over individual privacy and deprivation feeling and 4. The feeling that the person as he member of society is not valued or otherwise appreciated. Table 1 depicts the surrounding factors' effects on man.

It is necessary to decrease the tensions as a

green space planner and designer by means of design and management of the complex (Karimi, 1978). For example, in green spaces, as a part of the city space, the crowdedness can be controlled by providing more GDPs; even though these factors are outside the scope of green space design and must be dealt with in municipal planning level .

### 1-2-Space specific effects

What is felt as space is tested by the learned and the experienced material and is judged quality wise by the individual. A designer can best design the green space only if he has sufficient knowledge of the principles of recognizing beauty and knows plants well and is also well aware of the influencing factors in space identities and city spaces. These specifics are

as follows:

**1.Intimacy:** this points out to the individual's rights to control the information of others and is categorized into four categories: 1. Loneliness or complete visual limitation, 2. Close familiarity, 3. Unfamiliarity, 4. Restriction.

**2.Desirability:** desirability depends on various factors that are as follows: Sense of belonging, sense of security, separateness, efficiency and function.

**3.Sense of belonging:** in addition to ecosystematic values that nature brings about in cities, people are also aware of the social values that green spaces. Thus, depending on the community that is supposed to use the green space, the required social activities must be considered.

**4.Sense of security:** sense of security as one of people's basic needs increases or in other words strengthens the tendency of individuals' presence in a place. Effective factors in the sense of security are as follows: 1. Readable environment and comprehensible; so that the users know where in the surrounding they are located.; 2. The surrounding must provide the users with enough information so that they can perceive the adjacent surroundings; 3. The users; 4. Individuals must be able to see the people in their neighboring surroundings and identify their relationship with them regarding its friendliness or unfriendliness; 4. Users, must be able to identify probable activities in each part; the surrounding must convey clear messages in this regard.

**5- Attraction:** the attraction of a space/place depends on other factors in addition to recognizing and acknowledging beauty, factors such as: 1. Having application and mental passion; 2. Richness and variety; the possibility of creating unofficial meeting; 4. While being coordinated, complicated enough; 5. Creating the sense of place; 6. Creating private spaces with the privacy, and the case of self sufficiency, openness and the relation between spaces; 7.

Human scaling of spaces (table 2).

## 2.Functions and existing values in landscaping design

The expansion of human civilization and ruling of the industry, based on new technology and tendencies towards mechanical life in addition to the effects of destruction and annihilation of the natural resources and vegetations and the transformation of farming fields and gardens to structural and building settings, next uncontrolled population growth in cities and the living environment pollution not only has imbalanced Ecosystem and the ability to live but also has caused difficult for human beings as well so that the psychological effects coping with these difficulties have made men belligerent, irate, and to some extent impertinent (Tabarroki, 1992). Following this, ethical and social values, the required applications and architectural specifics in landscaping design will be specified.

### 2-1. ethical and social values

Nowadays, municipal life styles have resulted in the drawing back of the nature from fauets of city life and the relations of human beings with green natural surroundings have diminished, another process is being run. The ecosystematic changes even though caused by human oriented excuses, have taken a trend to fight humanity according to the medical, psychological, and specialties. Visual pollutions or environmental appearance pollutions are threatening citizens' health and well beings as one of the most important factors causing tension (Rostamkhani, 2005). Amidst the mayhem and chaos of the cities, green spaces as symbols of nature can bring peace to the human. The use of parks as a place to accommodate and gather people and professions can bring congenial moments to people's lives. Parks can complete a part of residential or service spaces in districts (Behbahani, 1996). A part of service activities that possibly can take place in parks such as holding exhibitions and different

1. In ecology it is referred to as "board capacity" "almost equivalent to GDP meaning the maximum number of people who can use an environment in instances where the green space is important ecosystem wise (for instance the national parks) attention to the surrounding board is vital as the excess results in destruction of the environment.

Outcome	case	Environmental factor
Crowded environments	Social	Stress
Violence in Society		
Lack of environmental control	Psychological	
Disvaluing individual	Cultural	
The first contact with environment	Senses	Knowledge and experience of the environment
Vision, hearing, smell, touch and taste		
instinctive reaction	Needs	
Survival, security, express individual identity, sense of efficacy		
Meet basic needs	Demands	
Need of satisfaction		
Knowledge of the people and the social and cultural conditions and past experience	Aesthetics	

▲ Table 1: Environmental and landscape influencing on human, Ref: authors

ceremonies can increase people's satisfaction rates. Green spaces can be used in order to eliminate tension and create psychological and physical peace and comfort in municipal settings. Even though the establishment of any kind of green space helps psychological and beautifying community comforts, the use of them asks for careful planning. It is essential to pay attention to free time planning regarding transmittal and expansion of green spaces. Table 3 exhibits ethical, social, and ecosystematic values in landscaping design. One of the factors that will play an important role in the favorability of a space is the density level of the users of that space. As the social applications of recreational parks is at the highest expected rate, hence, obtaining the green space GDP standards so as to increase the favorability feel of these spaces is of great importance.

## 2-2. application values

Plants are used as building material in landscaping architecture. Green spaces can have an important role in decreasing city density, creation of guiding routes, completion and improvement of the application of educational, cultural, residential facilities and saving land for future expansion of the city (Hekmati,

2007). Green space is the live part of the city structure and in cooperation with the dead part of the city structure constitutes structure, constituency, or appearance of the city. Green space can be responsible as the edge of the city, separation of municipal boundaries, and makeup of the route networks in this case (Saeednia, 2001). Table 4 exhibits the green space application values of the city system.

Plants can be an effective structural form in building the space depending on individual or mass volumes and shapes. When planted in rows and in groups, they can act as a wall. Shade spreading of the trees can substitute ceilings and the floors can also be defined through the spreading plants and vegetation (Pishbin, 2005). Plants as resources can be responsible for the visual or physical separation of spaces. Plants can also result in defining spaces. Table 5 exhibits the applications of green spaces in small scale.

In order for the green space application to be alongside the human oriented landscaping design, the human oriented design process must be based upon and specified on the discussed qualities premises. The human oriented process of landscaping design is explained next.

Influence on users feelings	Context	Definition	Feature
Loneliness or the full visual limitations	Absolute freedom	Right to control others information	Intimacy
Close acquaintances: being a small member of a family or social unit	Relative freedom		
Unfamiliar: being able to see others in a public place, without being seen	No threat to freedom		
Limitation: being able to see and be seen in public space	Treats constraints		
Sense of belonging	Form	Encourage the use of space	Utility
Feeling of security			
Attractiveness			
Efficiency	Function		
Performance			
Ecological values	Environmental	Space utility	Sense of belonging
Feeling of need to place	Social		
Green spaces social values			
People needed social activities			
Recreational needs	Function	Strengthen people's willingness to participate in one place	Sense of Security
Readable and understandable environment			
Sufficient information through the environment	Social		
Identification of friendly or unfriendly neighborhood association			
Detection of possible activities in each section	Cultural		
Aesthetic factors	Artistic	Space utility	Attractiveness
Richness and spatial diversity to create interest			
Proper functioning and spatial mental impulses for satisfaction	Psychological		
Possibility to make an informal meeting	Social		
Coordinated but complicated	Cultural		
Create a sense of place			
Intimacy in private spaces			
Openness and communication in public spaces			
Human-scale of spaces			

▲ Table 2: Space characteristics and how it affects the human, Ref: authors

Applicable aspects	Values
Aesthetic	Visual Concepts
Eliminate the undesirable landscape	
...Showing the boundary between two	
Emphasize particular elements	Environmental issues
Reminder of natural environment	
Reducing Air Pollution	
Reduce noise pollution	
Soil erosion control and stabilizing	
Light reflection control	Social features
Climate Control: solar radiation, temperature, wind and humidity	
Place for corporate and group gatherings	
Complementary part of the residential or service areas in the neighborhood	
Communication between individuals	
Location of service activities such as exhibitions and various events	
Relieve tensions and create mental and physical relaxation in urban environments	
Providing spiritual needs: rest, relaxation, privacy and leisure	
Feel relaxed due to color of plant masses, air subsidization and hearing the leaves	
Variety of activities	
Sense of freedom, intimacy and space utility	

▲ Table 3: Ethical, social and environmental values in landscape design, Ref: authors

### 3. The process of human oriented design

The earth planning, as a process to guide the earth development, is connected with the earth resources and the fully evolved and developed human being. During the last 150 years, the landscaping and planning architects have developed an organized for planning of the earth. The landscaping architects have specifically tried to find some ways to combine human requirements as to develop shapes and special types to develop the existing natural surroundings and increase their tendency to preserve nature altogether. So as to be able respond to people's needs in part, the landscaping architects have found it vital to preserve and promote the living environ-

ment's visual factors. This issue has become the essential point of some of them. Despite all that, an efficient and specialized landscaping architect is as concerned about the visual aspects as the essence of human being's experience as to the environment and its preservation (Bahramsoltani, 2005). People's definition of the environment's quality, according to social and economical conditions has changed as the time passes by and is still subject to change. Thus, knowing what people want is one of the duties of planning. Planners must convert people's issues and concerns as to their place of residence to policies and guidance in order to guide the planning process. Evedn though it is necessary to consider fu-

Applicable cases		Function	Scale	Feature
Role of plant masses in structure formation To explain the city as a dynamic system		Urban landscape	Micro	Artistic
Locating green space next to multi-story residential Leisure activities, education, culture and sports		Reducing urban density	Macro	Physical
Controlling the uncontrolled expansion of cities Green belts as a representative of city expansion		Defining edge and urban areas		
Role of green belts in geometric formation of city Urban spaces separator		Segregating urban spaces		
Visual and psychological	Separation of conflicting lands			
Landscape order				
Connection between open spaces and various applications		Impact on urban structure	Macro	Physical
Continuity, coherence and formal consistency of landscaping				
Application's communication	Visual connection of green space			
Single identity				
Highlighting city lines and defining city structure		The impact of green space on traffic control	Macro	Physical
Corrective action: Define and differentiate movement paths				
Defining Directions: green space adjacent to the road network				
Following the hierarchy of roads (size (width) and structure)				
Splitting paths (walking, cycling, riding, expressways (...and				
Making the sidewalk path more pleasant				
Modify intersections with spatial separation				
Loop and ramp at non leveled intersection of highways				

▲ Table 4: The functional values of green spaces in macro scale, Ref: authors

ture horizons (Strom, 2013). Diversification in various cultures and constituting factors of desirable surroundings which are different in different cultures from each other are determinant. People pay attention to their surroundings as public phenomena in today's cities and wish for satisfaction and pride senses caused by their quality. The planning process must include two factors: must be performable for all involved and must be credible and acceptable by all the experts (Makhdoom, 2001) so as to have descent and logical planning for a part

of earth, environmental as well as social and cultural resources must explored and investigated. Effective ecological parameters must be studied and evaluated for a part of earth in the planning process. Parameters such as land, water resources, geology, pedology, vegetation, and animal transmittancy are the ecological parameters that form the ecological structure of a region. The next step knows the social environment. Realizing what users according to their culture, economy, and knowledge want is a necessary point in planning (Farahani, 2007).



Applicable aspects		Feature
Characteristics caused by the shape and Individual or mass volume		Architectu ral form
Walls in a row or dense shape		
Roof replaced by shady trees and plants as floor covering		
Visual or physical separation of spaces and definition of them		Fencing
A calm and quiet subjective image	Static volume of circle and square	
Movement identity	Lengthy volume	
Moving with freedom to choose	Maze path and fence free	Visual control
Limiting space	Covering unfavorable views	
Preventing undesirable adjacency		
Increasing meditation and identity range	Guiding vision to desired elements	
Restricting outside view and keep outward view	Vision control	
Importance of viewer or user purpose	Vision point importance	
Strengthen the sense of privacy and enclosure	Visual separation	
Line of sight and human height	Rate of space privacy	Movement prevention
Size of the fence, shrubs, trees and overhead elements		
Traffic control		
Blocking Path: barbed and bladed plants		
Specify movement by defining edges: hedging		
Physical and visual separation: plants, natural phenomenon such as valleys, rivers, mountains or level difference		Space division
Dividing a simple space into several smaller, diverse environment		
Differences in species, spacing and height		
Divider such as Network, hedge, barrier, shadowy		

▲ Table 5: Architectural values of landscape, Ref: authors

The landscaping exhibited as a result of green space planning is the preparer and producer of men's activities. Each landscape finds an identity based on the way, in the past, people and the physical and natural surrounding connected with each other. In order to investigate and know the current condition of a part of earth allocated to the usage of green space, it is essential to pay attention to the following.

**1- Investigating and knowing ecological structure of a region:** to investigate and

study the effective factors in knowing the ecological structure of a region, studies in the form of various maps are presented. The expansion and complexity of a project specify how thorough and in depth the studies are. It is possible that these maps are rendered unusable for a part of earth due to the small size or other reasons.

**2- Investigating the quality of living environment:** in order to know the quality of the living environment, as mentioned before, the

ecosystematic pollution is important. To evaluate and plan for the earth, pollutant sources and the regions prone to them must be depicted on maps so that those places can be accurately known.

**3- Knowing the social environment:** social environment is effective in planning from two perspectives: the first one is the way the land in question was used in the past and the next is how the human's wants, needs, and interactions with the environment that is to be planned and designed will be in the future? From the interaction of the physical factors and natural living environment, there comes a base for human beings' activities that will be preparatory and scenic for various human beings' activities from one perspective. To study social environment, social structures must be recognized.

∞ **Local population:** That the users of a setting will be the people of the surrounding, it is necessary to have accurate information about the surrounding. Population characteristics will be according to the statistics of the demography, gender combination, and population density of the users and will be studied and investigated. Also, the degree of employment and unemployment of the local population are effective in specifying the number of users and the patterns of using the locale.

∞ **Historical specifics:** each landscape is a historical event recorder. Processing the history of a land or creating landscaping that in the future too have identities and recount a historical event is very important from tourism stance. Each element or valuable locale on land must be identified from the map (Bahramsoltani, 1998). The existence of such places on land is considered a privilege. These points can be used as the design key points.

**4- Knowing the appearance of an environment:** different factors are important in the landscaping appearance: shape of the land, vegetation population, human build structures, It is difficult to render any judgments regarding the sense of beauty As any of us has a dif-

ferent opinion regarding beauty. The sense of beauty experience is not perceived by just seeing. The relation between the elements that are seen, frequency these observations, the culture in which the person has grown up in; the level of training, past experience and even the specific comfort level are important in creating the sense of beauty in people. Thus, landscaping planning must reach public consensus in visual qualities.

**Knowing landscaping:** the important point discussed in management and planning of landscaping appearance is the vision axels. Vision from within a surrounding to the outside and vice versa has a predominant role in forming designing and planning ideas (Soozanchi, 2002). It is essential to collect people's opinions in those cases, in addition to recognizing these kinds of visions. Different visions might be divided to the following 5 categories and for each a different kind of decision is made.

- 1-Very good vision must be maintained;
- 2-God visions had better be maintained;
- 3-Relatively good ideas can be used with the specific arrangements;
- 4-Bad visions should be blocked;
- 5-Very bad visions had to be blocked (Nemati, 1998)

**Visual specifics:** the spaces created in cities create the foundation of carrying out external activities for men. All the external spaces, constitutes a series of spaces which have different characteristics (Tahmasbi, 1984). Each space has visual features of its own. Factors such as shape, scale, edge height, appearance and degree of transparency of the edge,, floor appearance and ..., enable us to easily distinguish spaces from one another (Makhzoumi, 2000). The way each space interacts with other spaces, existence or deprivation of natural elements inside a space and its parts, and also the degree and the type of use of men from these spaces create the above differences used in landscape (Behbahani, 1996). Table 6 exhibits planning and designing factors applied in landscaping qualities.

Design factor		Planning process
Climate, water resources, earth, geology, agrology, vegetation and animal distribution		Ecologic structure
Limiting factors of design or main purpose of it		Environment quality
Sources of pollution and affected sources		
Pollution severity and solutions to meet them		
Noise and air pollution control within the leisure		
The importance of water quality on plant populations		Social environment
Land utilization in past		
Demands, needs and human interaction with the environment in future		
Local Population: Statistics of age composition, sex composition and population density, employment and unemployment rates		
Historical characteristics: tourism, element or a valuable place on the land, as the key points of design		Landscape
Topography, plant communities, manmade events	Understanding the landscape	
Axis view: view from the inside out and from the outside in		
Form, scale, edge height, appearance and clarity of the edge and surface	Visual characteristics	
Five factors of space perception: edge, path, nodes, districts and landmarks		
Human activity, noise, odor, garbage or obscene sights		

▲ Table 6: Effective factors in planning and design process in landscape quality usage, ref: authors

A planner must have the ability to analyze existing spaces and create new spaces based on the needs and wants of users. Creation of places which have identity and are desirable is considered as the designer's capabilities. Mental obstacles are usually on the way of creative thoughts and these conceptual hinderers must be optimally resolved so that a designer can present his creation (Saeedi, 1971). The specifics of the spatial environment and landscaping have been expressed in table 7. If the design basics are formed based on humane and ethical foundations, the design plan

has to be defined according to the wants and needs of people and restrictions and the possibilities of the design must be determined as feasible activities and these facilities include cultural, economical, limitations, and possibilities of the land. The specifics of the design must be specified as important qualities of the landscaping in the next step. These specifics include spatial qualities and the past information about the existing space and similar spaces and also the users' past mental conditions and experiences, their cultural, educational, social, and economical conditions and the sense of

Applicable aspects	Design factors	Design Basics
Needs, demands and people's expectations	Project aims	Design plan
Cultural	Restrictions and facilities as possible activity	
Social		
Economic		
Land		
Spaces along each other	Spatial continuity	Design characteristics
Interfacing and crossing spaces		
Visible spaces		
About similar spaces	Past information	
Mental status and past experiences of cultural, educational, economic and social backgrounds of individuals		
Aesthetic sensibilities		
Garbage, noise, roads, contaminated ... water, polluted air and	Environmental factor	
Based on culture, economy, and users knowledge	Demands	Understanding the social environment
People's relationship with natural and physical environment in past	Landscape identity	
Cultural heritage and how people use land within the local environment framework		

▲ Table 7: Design process and understanding spatial characteristics of landscape, ref: authors

recognizing beauty. Lastly, landscaping design goals must be specified, based upon the environmental factors, the users' wants and the landscaping identity.

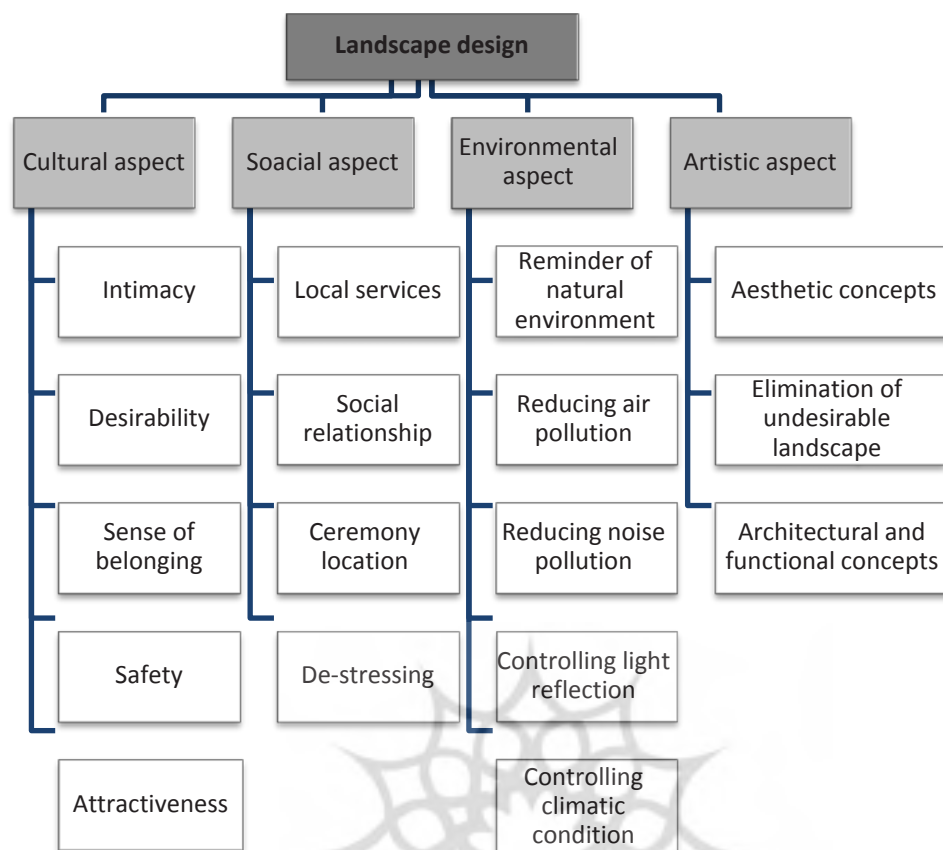
### Conclusion

Landscaping design has various design aspects and meanings and depending on the type and the condition of the project, each will have a higher priority and importance and becomes the goal or plan of the design. These aspects include artistic, environmental, social, and cultural facets and the related issues about each have been explained in figure 2.

As observed, in landscaping and surrounding design, we are faced with various humanistic and environmental aspects which are important and discussed as landscaping architec-

tural functions. Municipal and human oriented knowledge is trying to satisfy living, health, psychological and cultural needs of man. Landscaping design must pay attention to and benefit from these points depending the design.

Human oriented landscaping design procedure: we must consider all the actual and real cases as well as the cases we may encounter in the future if we want a design or plan to be carried out successfully and be sustainable and be welcomed by the public. These factors in landscaping design include economical, land facilities, people's wants, needs, and expectations which must be defined and specified in the design process framework. Human oriented factors in a logical process including



▲ Figure 2: The main aspects in landscape design, Ref: authors

plans and goals of the design are exhibited in figure 3.

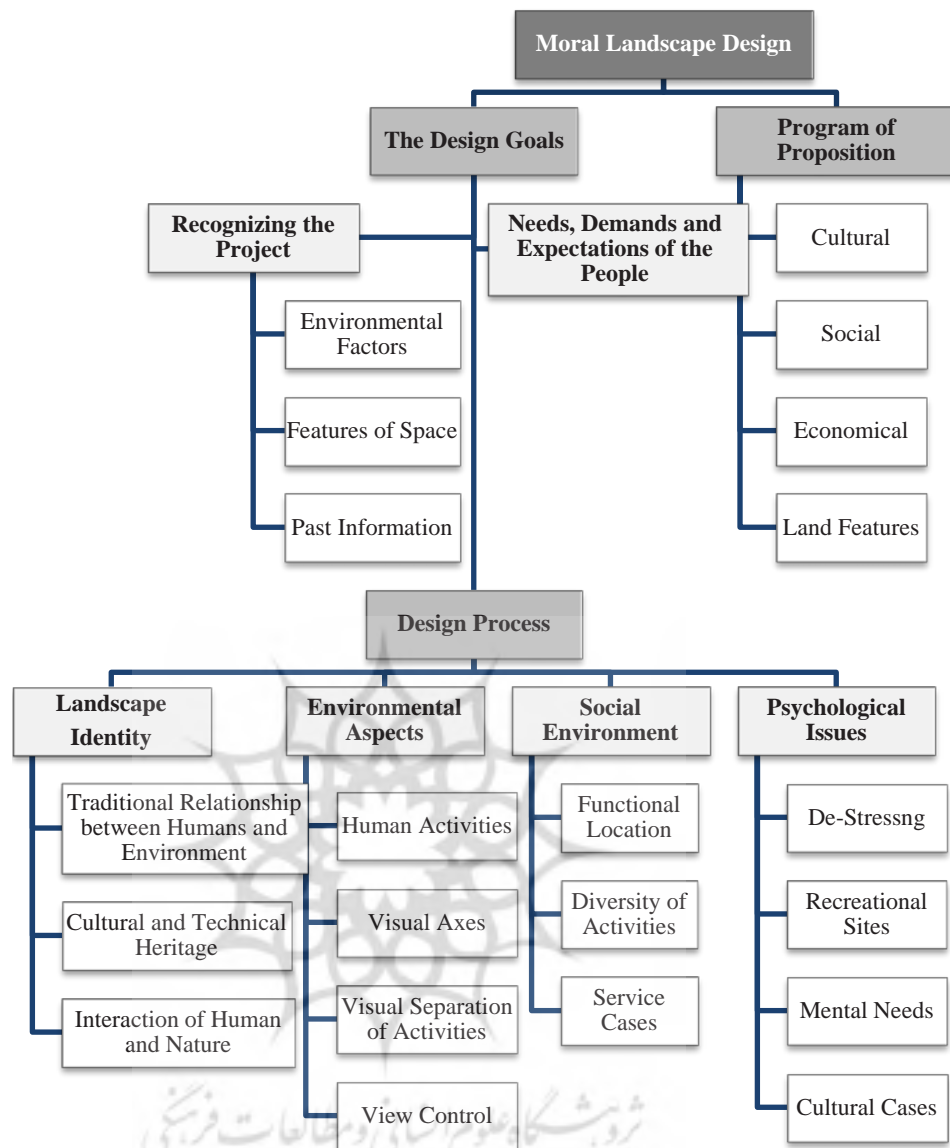
The priorities of the design and projects must be specified in landscaping design initially and in respect of the factors related to the design and also the depicted priorities shown in picture 3, the starting point and planning can be obtained. It must be said that the stated factors are discussed in planning level and the design cases and factors must be defined in a separate and specialized research depending on the step.

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