A Model for Analysing Effects of Urban Spatial Configuration on Aesthetic Perception

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ABSTRACT

This thesis addresses the relationship between the elements of urban spatial configuration and human perception in contemporary urban spaces to understand how particular elements of urban spatial configuration can effect on people's aesthetic perception. By qualitative grounded study in this research it hypothesised that the procedure of aesthetic cognition has different meanings and characteristic based on the elements of urban space configuration in different urban contexts. In this regard, theories of aesthetic evaluation of urban environment and the methodology for assessing aesthetic quality of urban environment investigated to take out the indicators of urban aesthetic based on human perception process. Then the indicators organized based on the process of human cognition in psychology into four main stages which are a study on a) the elements of urban space configuration (micro or macro) b) different approaches in organization between the elements (static or dynamic) c) subjective characteristics of good organization (formal or symbolic) d) effects of this organization on human cognition which leads to hedonic value (human aesthetic response). The outcome of this study reveals that every single aesthetic responses to the urban spaces regarding to the environmental configuration which is the outcome of interrelationship between immediate states of involvement, contemplative feeling, and sensual desire. It also enhances the knowledge concerning the role of symbolic and formal meanings of urban space configurations on aesthetic understanding of the environment. The study also proposed a methodological proposal (which prepares opportunities to be applicable in different scales of urban design) to apply the suggested model in each and every context.

Keywords: Urban spatial configuration, Aesthetic properties, Aesthetic cognition, Cognition process.

ÖZ

Bu çalışma, kentsel mekan örüntüsünü oluşturan elemanlar ile çağdaş kent mekanlarındaki insan algısı arasındaki ilişkinin irdelenmesi üzerine odaklanmıştır. Bu bağlamda, kentsel mekan örüntüsünü oluşturan elemanlar ve bu elemanların bir araya gelerek oluşturdukları mekan organizasyonlarının insanlarda oluşturdukları estetik algı üzerinden tartışılmaktadır. Nitel bir araştırma metodu olarak temellendirilmiş kuram bağlamında ele alınmış olan bu tezde, ana yaklaşım farklı kentsel bağlamlardaki mekansal kurguyu oluşturan elemanların etkisi ile estetik bilişsellik sürecinin farklı anlam ve nitelikte geliştiği hipotezi üzerinden ele alınmıştır. Bununla birlikte, kentsel çevrenin estetik mekan algısı, teori ile birlikte, kentsel mekanların estetik kalitesini değerlendirme yöntemleri göz önünde bulundurularak, insan algısı üzerinden kentsel estetik göstergelerin tanımlanmaya çalışılmıştır. Psikolojideki kullanıldığı şekli ile insan bilişi(kavrama) 4 aşama üzerinden ele alınıp, a-kentsel mekan kurgusunu oluşturan elemanları(mikro ve/makro), b-Elemanlar arasındaki ilişkinin farklı kurgusal yapısı (static/dinamik) c-iyi bir mekan kurgusunun öznel özellikleri (sembolik/formel) d-Bu organizasyonun hedonik değere yol açan insan bilişi üzerindeki etkisi olarak tarif edilmiştir. Bu araştırmada ortaya çıkan başlıca sonuç, mekansal örüntü üzerinden geliştirilen mekana yönelik her estetisel tepkinin, içselleştirilmiş etkileşim, derin hissiyat geliştirme ve duysal arzu etkileşim ile ortaya çıktığı yönündeki saptamadır. Bunun yanında, kentsel mekan kurgusunun sembolik ve formel anlamarının kentsel çevrenin estetik kavrayişi üzerindeki bilgiye katkıda bulunmuştur.Çalışma aynı zamanda, metodolojik bir önerme(farklı ölçeklerde uygulanabilir bir esnek çerçeve) geliştirerek, bundan sonraki çalışmalara yönelikde katkı sağlamaya çalışmıştır.

Anahtar Kelimeler: Kentsel Mekan Örüntüsü, Estetik Özellikler, Estetik Biliş Süreci

DEDICATION

To My wife

For her boundless love, encouragement and support

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INTRODUCTION

There is no doubt that urban space organization/design due to the mass housing construction following the Second World War and the effects of modern movement as well as the effects of globalization has undergone a radical transformation (Richardson & Bae, 2005). There are some scholars which talk about such problems. Koolhass believes that the new urban form described as the "*generic city*" leads to the conglomeration of objects which generally bear no relation to one another (Koolhass, 1993:940). Tschumi (1996, 23-24) also states that in the postmodern era urban spaces appear as places of spatial fragmentation in which the traditional methods of urban spatial configuration cannot be applied. Alexander (1980) described this problem as the cold landscape of the 20th century, due to the lack of a language for construction in configuration of urban spaces. In this regard, Trancik (1986:37) believes that in contemporary urban contexts buildings are treated as isolated objects. He believes that lost spaces occur as a result of the lack of aesthetic quality of configuration in contemporary urban spaces. Based on the above discussion, it can be seen that the adaptable language for the organization of contemporary urban spaces has disappeared. Consequently, the practice of Urbanism, which has embraced fragmentation and a culture of difference, leads to many problems for its users such as way-finding (Bentley et al., 1985:42), psychological illness (Cupchik, 2002), legibility, imageability (Lynch, 1960), and etc. There is, therefore, no doubt that urban spatial configuration has an effect on human understanding of the environment. The

study on the effects of urban configuration on the users of space are also called human behaviour study. In despite of the fact that urban design aimed to increase the quality of environment by fulfilling users requirement this study aimed to introduce a framework for aesthetic understanding of the environment by considering configuration between the elements of the urban space. The following sentences shed some lights on the discussions around urban spatial configuration and support the preparation of a reliable context for study in an urban space organization. Manuel de Solá Morales through reading of urban morphology and urban typology highlights the impact of infrastructures in the aesthetic understanding of cities. He believes that urbanization, parcel subdivision and edification encompass the layers that allow a better understanding of the spatial logics of city structure (Sola-Morales, 2008). From an ecological point of view Forman (2008) evaluated patterns of urbanization and its quality from the point of view of people in nature. He believes that principles of land-use could be extracted from transportation, hydrology, and landscape ecology. Busquets & Correa (2008) by focusing on the new conceptions of operative contextualism and new ways to organize infrastructure, attempts to provide legibility of contemporary urban interventions. Considering, all the problems regarding contemporary urban spatial configuration and the academic classification for the study of urban spaces, the core of this qualitative grounded theory study is to understand how the aesthetic cognition of the users of urban spaces is affected by the configuration between the elements of the urban spatial configuration.

To be able to introduce a comprehensive model to assess the process of aesthetic perception by considering the fact that there was a movement in the 1970's to 'aesthetize' contemporary urban spaces (Gibson, 1979) this study attempted to gather from related literature (since the 1970's) the principles of aesthetically suitable urban

spatial configuration. In this regard methodologies for assessing urban configuration based on human aesthetic cognition such as the prospect-refuge theory (Appleton, 1975), the preference matrix (Kaplan & Kaplan, 1989), the arousal model (Carroll, 1995) and the mystery model by Godlovitch (2004) well described. By focusing on the human cognitive process[1] in psychology (sensation, perception, conception) this study prepares a reliable context to understand how organization/configuration between elements of urban spatial configuration can lead to aesthetic cognition of the urban environment.

1.1 Problem Statement

By considering the issue of contemporary urban space configuration due to globalisation and modernisation and their effects on the urban space organization it seems that the urban spaces faced with the problems such as elimination of *aesthetic references*[2] (Lynch, 1981; Carmona et al, 2003; Bentley et al., 1985; Ventur, 1966; Alexander, 1980; Koolhaas, 1993; Thomas, 2002; Trancik, 1986). Following the same problems the definition of contextualization and vernacular principals of construction lost its own traditional meaning in contemporary urban spaces. This abolition leads to a lot of problems for its users such as psychological illness (Cupchik, 2002), way-finding, legibility (Bentley et al., 1985), imageability (Lynch, 1960), and etc. As a result of these problems, the aesthetic qualities of urban physical components will lead to in danger of inconstancy. Which has direct effect in losing the sense of belonging to the place.

[1] Also it's named as human cognition process in the literature. There are other scholars which have been used the term "perception process" instead. Consequently, using the term "perception process" through thesis refers to "human cognition process". Therefore, there is no difference between them.

[2] All objective elements of urban spatial configuration regarding to their organization and meaning might increase or decrease hedonic value.

Considering, the fact that Kaplan and Kaplan (1989), Rapoport (1990), Smith et all (1997), Cullen (1961), Bentley et al., (1985), Gehl (1996) Arnheim (1977), Nasar (1998), Sitte (1889), and Lynch (1960) strained to vivify the language of construction based on human aesthetic cognition but still ***there is no comprehensive method for assessing the effects of urban spatial configuration on aesthetic cognition***. The measurable criteria which have been proposed at the end of this research will introduce the principles of aesthetic organization in the design process to avoid the aesthetic problems in urban spatial configurations. Figure 1 illustrates the problem statement of the research.

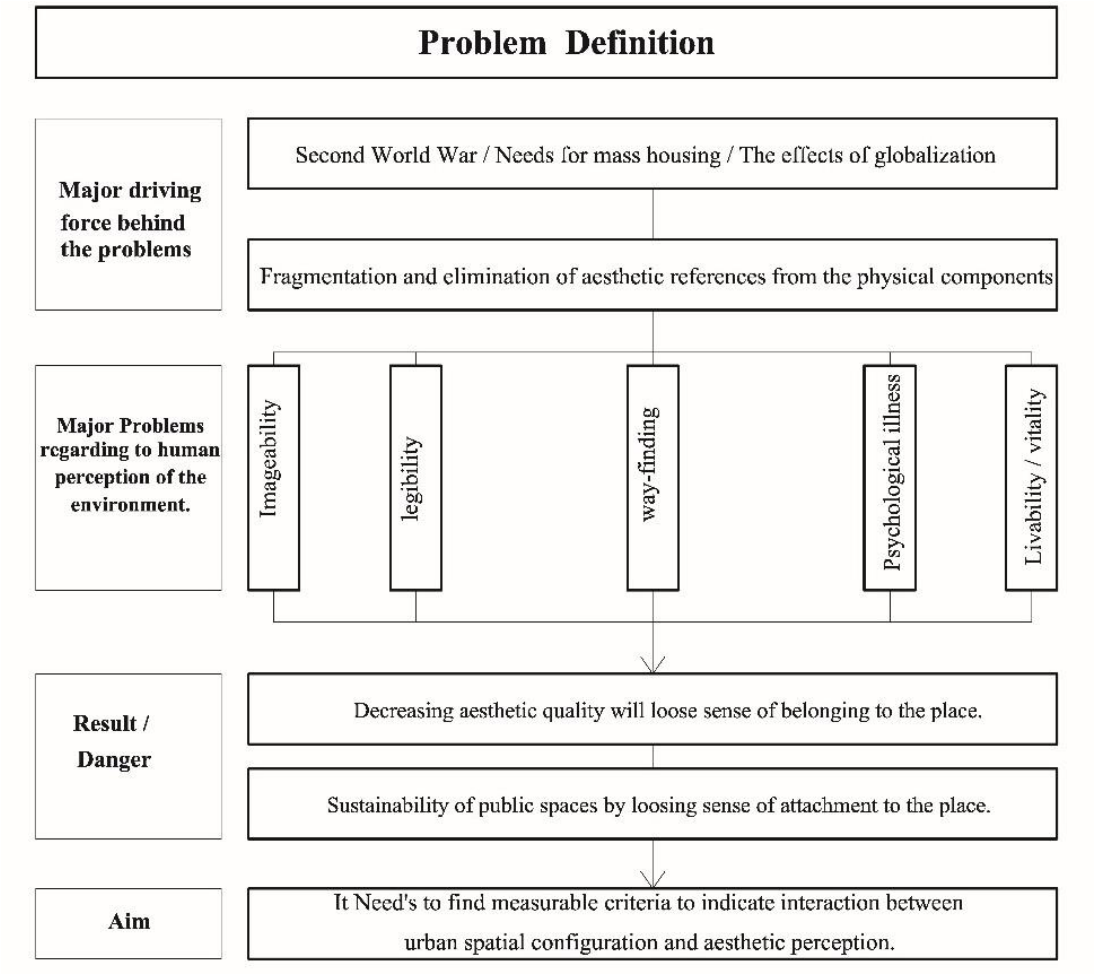
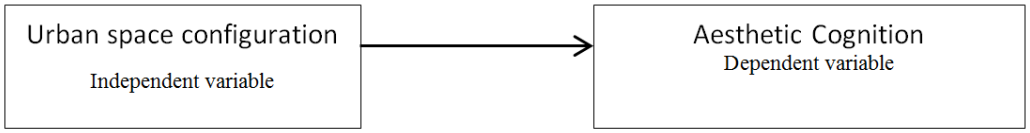


Figure 1. The problem statement of the research (Developed by Author).

1.2 Hypothesis

As mention above, the study seeks to propose a model to study on the effects of urban spatial configuration on aesthetic cognition. At this point, it can be discussed that *there is a relation between urban spatial configuration and aesthetic understanding of the environment. Therefore different configuration between the elements of urban space in different contexts will lead to different aesthetic response which is the main cause of different characteristics and meanings in different contexts*- this interaction is questioned within the aim and purpose of the thesis. Also the interrelation between urban spatial configuration and aesthetic cognition has been considered by many other researchers, the way of approach which is systematic review of the literature by considering human cognition process didn't study before.

Table 1. Effects of urban spatial configuration on the aesthetic perception (Effects of Independent Variable to dependent Variable).



In order to attain the main aim of this research to be able to test the hypothesis by regarding to the main key words of the study the following research questions (major question and sub-questions) have been addressed:

-How the environmental configuration cooperates with human perception process in order to arouse an aesthetic experience?

The essence of this question reveals that there might be a language to interpret the relationship between different configuration methods of the elements of urban design based on human cognition process. To be able to decode this language the following sub questions should be answered.

1- What are the principles of aesthetic urban space configuration?

2- What are the existing theories of aesthetic evaluation on the urban environment?

3- What are the methodologies for aesthetic assessment in urban spaces?

4- What is the process of human aesthetic cognition?

5- What will be the indictors of proposed model for aesthetic assessment of urban spatial configuration?

6- How experts can operate the proposed model to find out the aesthetic effects of spatial configuration in different scales of urban spatial configuration?

1.3 Aims and Objectives

Introducing a model for assessing the effects of urban spatial configuration on human aesthetic cognition is the main goal of this study. In order to catch the main goal the objectives of the study are:

- To find out the elements of urban configuration that has direct effect on the human cognitive process.

- To find out the principles of aesthetically suitable relationship between the elements of the urban spatial configuration.

1.5 Significance of the Research

The contributions of this study would be of interest to urban designers and scholars by enhancing our understanding regarding to the significances of symbolic and formal knowledge of space configurations on aesthetic understanding.

In addition to the literature, the study also contributes in the aestheticization of urban spatial configuration by introducing a model for assessing aesthetic effects of urban spatial configuration which will help experts to find how the organization on spatial configuration effects on human perception. The proposed methodology to assess

aesthetic effects of urban spatial configuration will be a comprehensive model to analysis the effects of urban configuration on visual aesthetic quality. The proposed model will be the outcome of the purely theoretical and qualitative investigation through systematic review of the literature.

Upon the essence of proposed method the expected outcome of this research would also be to make of a much broader opportunity for architecture and urban designer, to consider the ways of organizing in configuration of the elements of the urban environment to generate more aesthetically pleasing urban environment. Aesthetic survey also allows urban designers to understand which part of the city needs reshaping. As a result of this method experts in the field of urban design and even architectures will be able to propose possible visually aesthetic configuration before constructing or even in the process of regeneration of urban spaces.

1.6 Limitations of the Study

From the different dimensions that there are in literature to study on urban design, this thesis will focus on visual and perceptual dimensions. Consequently, physical dimensions of urban morphology will also take into account. Systematic review of the literature on theories, methods and techniques of aestheticization of urban space configuration will also be considered in the research process. Simultaneously, the indicators of good urban configuration based on human perception process will be taken to complete the methodology part. The study also limited itself to classify all collected theories and indicators which contribute in aesthetic perception of urban spatial configuration into four main stages: 1) Classification on sensation of objective elements of urban spatial configuration (in micro and macro scale). 2) Classification on perception of organization between objective elements of urban spatial

configuration (in static and dynamic organization). 3) Classification of conception of the environment regarding to the spatial organization of objective elements (formal and symbolic). 4) Hedonic value which is human response to objective environment.

1.7 Methodology

The methodology in this qualitative grounded theory study classified into two main parts: 1-The first part which is related to theoretical framework, *systematic review* of the literature have been used as an inclusive methodological approach to take out theories, methodology and indicators of aestheticization in urban space configurations. In this regard, "Urban Spatial configuration," "Aesthetic properties," and "Process of aesthetic cognition," were the dominating terms which appeared through the research. In this part as one of the tactics for study, by regarding to the Littell et al., (2008) and Petticrew & Roberts (2005) the following process have been considered (see table 2).

Table 2. The process of systematic review (Developed by Author).

Defining an appropriate research question.	-By regarding to the research problem, keywords and the methodological approach of the research.
Searching the literature to identify relevant work.	-Regarding to inclusion and exclusion criteria for choosing a good quality of studies for our review process. It is applied the inclusion and exclusion criteria for choosing high quality of research. -A documentary research method has been used as a method of data collection. 1- Primary, 2- secondary, and 3- tertiary documents have been considered through the research process.
Assessing the quality of studies.	-For eligibility and methodological quality to be in line with the aim of the research.
Combining the results and Summarizing the evidence.	-To take the indicators of high quality of urban special configuration based on human aesthetic perception.

2- In the second part, inventory mapping technique has been conducted to develop an integrated model by considering the collected indicators of aesthetic appreciation of

urban spatial configuration. Since, the collected indicators might be diversified and widespread, it needs to be organized in a systematic way. The proposed model structured by considering the human cognition process in psychology, which is: 1-Sensation, 2-Perception, and 3- Conception (process of understanding the phenomenon).

Finally, the study proposed a methodological inquiry that can be applied for aesthetic assessment of urban spatial configuration in the context with different features. In order to maintain the applicability of the model operational guidelines is also developed to support further usage of the proposed model.

1.8 Structure of the Thesis

The structure of the study is advanced out of the literature in the field of aesthetic perception and urban spatial configuration which is the part of environmental impact assessment study. Thesis structure is given by Figure 2 and organized under seven main chapters:

The first part defines the outline of the thesis. It describes the significance and background of the research, describes the problems, and declares the main aim and research objectives by highlighting the methodology and limitations of the research.

The second chapter provides a comprehensive review on the concept of "Aesthetic". Then, the main indicators of aesthetic assessment such as aesthetic properties, aesthetic experience, and aesthetic appreciation will define to prepare a theoretical framework to classify different approached in aesthetic assessments.

The third chapter focuses on urban aesthetics to find the principles of urban aesthetic regarding to the basic human needs. It also focused on the urban aesthetic design consideration by scholars to take the indicators of aesthetic urban spaces regarding to the elements of the urban spatial configuration.

The focus of chapter 4 is to assess the most well-known theories which currently have been applied in the aesthetic evaluation of cities. In this regards, theories have been classified and assessed within five main categories: Cognitive theories, Semantic theories, Evolutionary theories, Syntactic theories, and Normative Theories.

Chapter 5 describes methods that have been used by scholars and experts in appraising the aesthetic quality of urban spaces. The study on the methods of aesthetic assessment of urban spatial configuration will be based on the theories on the aesthetic appreciation of urban spaces. Methods applied for correlation analysis in the aesthetic appraisal of cities grouped in three main categories which are A) Meaning oriented approaches B) Preferred places approaches C) Environmental aspects approaches.

Consequently, Chapter 6 by considering the human cognition process in psychology and the collected indicators which refers to different dimensions of aesthetic perception in urban spaces proposed a model for aesthetic assessment in urban space configuration. The study also proposed a methodological inquiry to apply the proposed model in each and every context.

Finally, chapter seven will present significant contribution of the research, the conclusion, and proposals for future works. The structure of this thesis is presented in Figure 2.

Structure of the Research

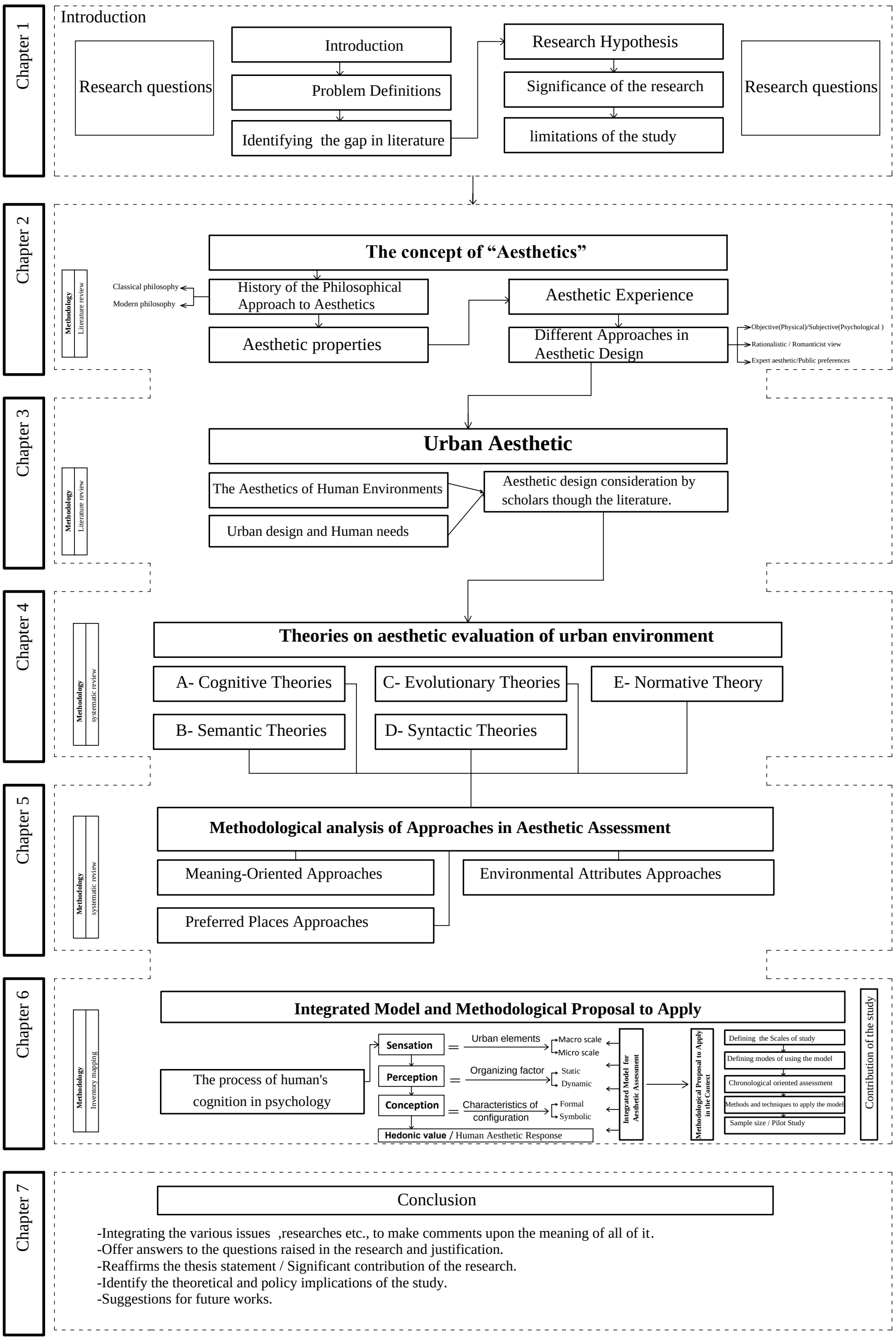


Figure 2. Structure of the thesis.

Chapter 2

THE CONCEPT OF "AESTHETICS"

2.1 The Definitions of Aesthetics

Aesthetics is a science that assesses the principals of beauty, properties of an object and their perception through human's feelings (Baumgarten, 1750). Webster's dictionary describes the term "*aesthetics*" as the study on theory of beauty and the psychological responses to it. The notion of "*aesthetic*" was first stated by the philosophers in the Art discipline attempting to explain the art and the beauty of it. Far ahead, aesthetics also became part of other disciplines like sociology, anthropology, marketing, and psychology (Charters, 2006). A simple explanation of aesthetics in any of above disciplines is

> "…the study of the feelings, concepts, and judgments arising from our appreciation of the arts or of the wider class of objects considered moving, beautiful or sublime" (Blackburn, 1994).

Here, it's necessary to clarify that there is a difference between "Aesthetics" and "Beauty". The field of *"Aesthetics"* covers the philosophy of beauty and the philosophy of art. From other hand, *"Beauty"* is the characteristic of an object a person or place that delivers a perceptual involvement of pleasure and meaning. Therefore, aesthetics is the study of beauty and its appreciation. Figure3 illustrate the interrelations between *Aesthetics* and *Beauty*.

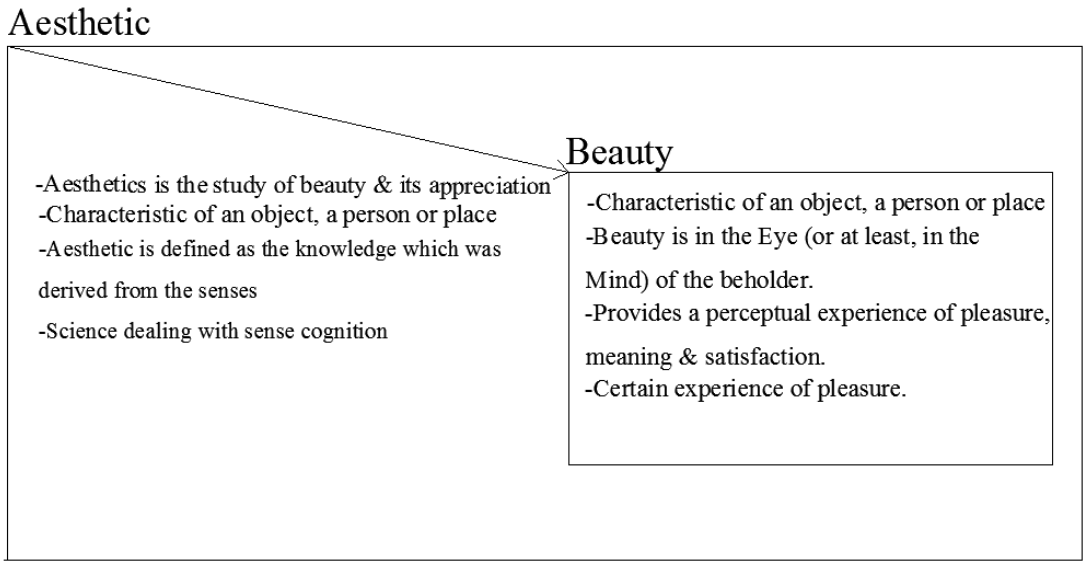


Figure 3. Differences and interrelation between *Aesthetics* and *Beauty* (Developed by Author. Adapted from Baumgarten, 1750; Goodman, 1968; Nedozchiwin, 1972; Balling & Falk, 1982; Blackburn, 1994; Postrel, 2003; Rees, 2003).

Based on Porteous (1996) the term "aesthetics" originates from the Greek words "*aistheta*" which means perceivable objects and "*aisthanesthai*" which means "to perceive". The verbal meaning of aesthetics described as the knowledge which was emanate from the senses (Çakcı, 2007). Aesthetics as a term for an independent philosophical discipline was presented for a first time in the work "*Aesthetica"* (Baumgarten, 1750). In Baumgarten's definition, aesthetics means

> "… Science dealing with sense cognition" (Baumgarten, 1750).

Later, the contemplation of aesthetics instigated as a branch of Western philosophy and philosophers continues to dispute the scope of the aesthetic experience, the nature of art, and the evaluation of beauty (Dickie, 1997; Sibley 2001; Railton, 1998). The nature of the aesthetic experience can now be seen as one of the aspect of sociology (Bourdieu 1984; Grunow 1997), psychology (Funch, 1997; Berlyne 1974), marketing (Brown and Patterson, 2000; Holbrook and Zirlin, 1985), and Anthropology

(Dissanayake, 1992; Douglas, 1982). For Schopenhauer, aesthetic was the subjective experience which can lead to establish the existence of beauty, in place of any other properties in the aesthetic object (Dickie, 1997). Reviewing the literature revealed that the term “aesthetics” has diverse connotation in different majors. Table 3 aimed to explore and assess the meaning of “aesthetics” through the literature.

Table 3. Definitions of Aesthetics through the literature (Developed by Author).

Author	Description
Baumgarten, 1750	A science which addresses the senses and cognition.
Goodman, 1968	Contains both symbolic and sensory elements.
Nedozchiwin, 1972	Scrutinizes the relationship between man and the environment.
Hegel & Nietzsche Quoted in Ferry, 1993.	The individual’s experience (subjective) of a thing and environment.
Funch, 1997	"An unconscious behaviour and a subjective process".
Balling & Falk, 1982; Gobster, 1983; Blumer, 1969.	"Formed based on the culture of the society."
Blackburn, 1994. Collinson, 2009	The study of the feelings and judgments based on appreciation of the arts and the environment.
Sircello, 1993.	“Combination of love, sublimity, and beauty.”
Antoniades, 1992.	“The eventual goal of any creative architect.”
Rees, 2003.	A sequence of principles involving the nature of beauty in art and architecture.
Merriam-Webster, 2011.	A branch of philosophy deals with the nature of beauty, taste and art regarding to appreciation and conception of beauty.

Constructive and critically analysis of Table 3 discloses that the term 'Aesthetics' has different meanings from sensory experiences relating to everyday objects to a varied range of conceptual classes such as expression and form, imagery and symbolism, feelings, beauty, and taste (Caroll, 2001). The study also revealed the indicators which have a direct relationship with the aesthetic appreciation of the environment are philosophy, art, psychology, culture, and identity.

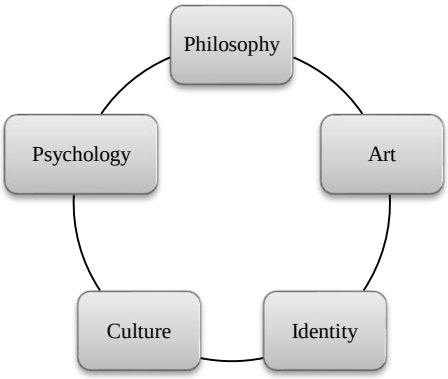


Figure 4. Elements that influence on aesthetics. (Adopted from Behzadfar et al., 2012)

Tsai (2009) illustrated a simplified categorization of subjective versus objective attributes when defining aesthetic expression (See Figure 5): First, an art object is perceived and understood through the senses; then responses are generated through the processes of description, evaluation, interpretation and judgment. However, the circumstances, contextual issues, social settings and cultural structures can condition these responses. It is possible that an underlying unity motivates human aesthetic judgments and that a universal aesthetic framework exists inherently within objects that allows the expression of aesthetic appreciation to occur. As illustrated in Figure 5 three major elements centred on the perceiver and the perceived object. The indications suggested that all of aesthetic phenomenon are operative and engaged which allow the expression of aesthetic appreciation to occur. As a result, Tsai's

research (2009) sought to clarify the nature of aesthetic appreciation as applied to the built environment to delineate its underlying principles and concerns. The model exposed in figure 5 applied to comprehend the concept of aesthetics in assessing aesthetic quality of the built environment.

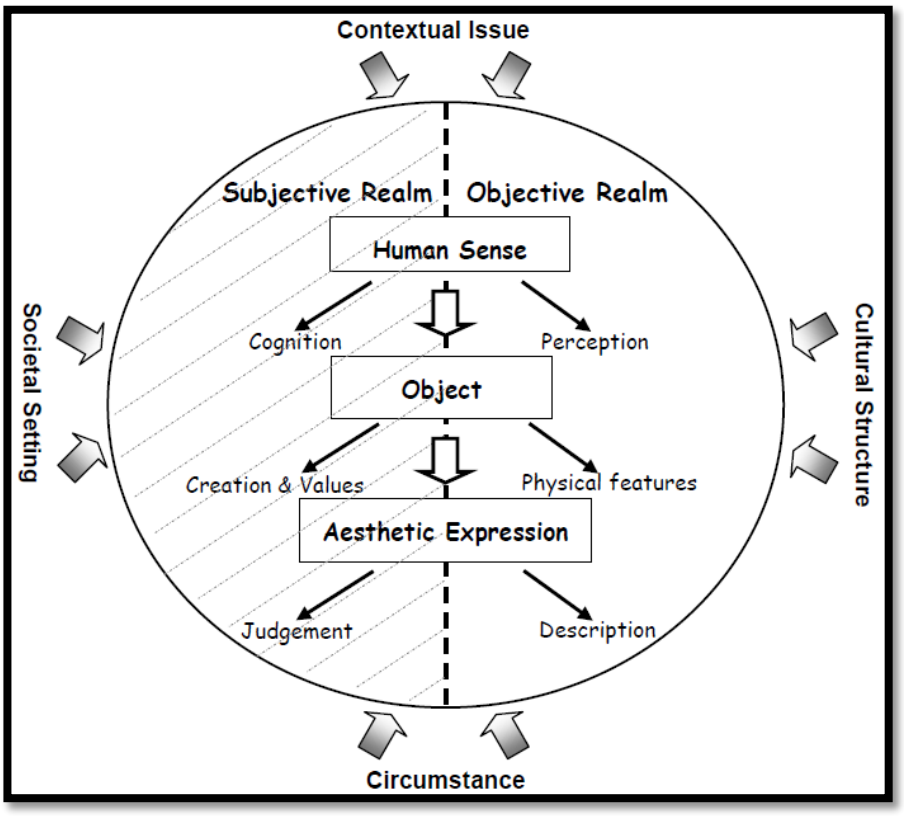


Figure 5. Visual diagram illustrating issues surround the notion of aesthetics (Adopted from Tsai, 2009:90).

2.2 History of the Philosophical Approaches to Aesthetics

2.2.1 Classical Philosophy of Aesthetics

Golden Ratio in Egypt pyramids and wall pictures of the Cave period are the tangible proofs that "aesthetics" comes from very old times. But in the period of ancient Greek civilization, it was starting to be known as a field of science (Yurtsever, 1988). Ancient Greek aesthetic and aesthetic principles of Plato formed the basics of the science of aesthetic. Plato (427-347 BC) considered the natural beauty as:

> "…comparative and the beauty in Geometry. In other words, whatever human can create as absolute." (Grutter, 2010; 37).

Plato state that:

> "…the appreciation of beauty is *a procedure that instigates through the gratitude of objects in the objective environment*" (Fenner, 2003).

He also believes that the term "Beautiful" created with the help of arrangement ratio, formal relationships, dimensions, rhythm, harmony, symmetry, and unity in variety. Therefore, the origin of beautiful have been looked in these principles which created by nature rules.

Plato's "theory of imitation" was developed by Aristotle (384-322 B.C). According to him, Plato's idealist forms of beauty inherent in tangible objects. He also believes that Aristotle (384-322 B.C) developed Plato's "theory of imitation". He believes that aesthetic objects should have a certain size and their unity and sense of the whole could be valued by the spectator (Hardt, 2008). The re-emergence of the classical influence of ancient Greece and Rome in the Western society have been seen in the Renaissance. This effect was revealed over classicism that invented the classical features of resident, regularity, proportion, balance and symmetry as the necessary/ fundamental factors for beauty.

2.2.2 Modern Philosophy of Aesthetics

The establishment of modern aesthetics has done through the 17th century in two countries Britain and Germany. The British empirical method to aesthetics verifies by aesthetic idealism in German (Lothian, 1999). Later, in the 18th century there was a change from sense perception to focus on the arts. In this epoch, aesthetic is reflected as the visual plea and the appeal of an object. This subjective sight of the aesthetic

understanding is continuously prominent in modern aesthetics. In the Modern era mainly two theories on aesthetics emerged:

A) The theme of *"taste"* which was originated in the 18th century, appreciates aesthetics that generate by objects (Dickie, 1974). According to this theory, in order to assess the aesthetics by human being the following five mechanisms are important: a) ability of perception, b) ability of reaction, c) objects to be observed, d) a mental condition affected from feedback to the object and e) a judgement of taste.

B) The other theory, "*attitude theory",* reveals that the gratitude of aesthetics is more subjective and needs specific modes of perception (Cross, 1994). The investigation for beauty and the consideration of taste in aesthetic judgment where the main concentration of the British empiricists. In the period recognized/called as the "Enlightenment" the Cartesian approach of aesthetic analysis used to philosophical themes (Lothian, 1999). Consequently, Kant (1790) also established an inclusive philosophical basis for understanding beauty and aesthetics. He considered the aesthetic experience as the mind's representation of the object and its configuration. Consequently the harmony between an object's visionary representation and our knowledge regarding to the object yields aesthetic pleasure. He concludes that: "*one cannot dispute about taste*" and refused the whole idea of aesthetics. As it explored in the affective theory of Urlich (1986) and prospect-refuge theory of Appleton (1975) *Kant's* definition of *aesthetics is parallel with contemporary definitions of aesthetics*.

Later, Santayana (1896) in "*The Sense of Beauty*" rejected Kant's disinterested aesthetics which mentioned the overriding quality of aesthetics is desire. He referred to the term beauty as "pleasure regarded as the quality of a thing" or "pleasure

objectified". The derived pleasure is objectified in the perceived object and this called beauty. Dewey's philosophy focused on experience, "a single, dynamic, unified whole in which everything is ultimately interrelated" (Edwards, 1967; 381). The 20th century has faced a development of the subjective perspective through various forms of attitude theory (Dickie, 1997). A recent approach to aesthetics has seen a focus on the symbolic purposes of artworks (e.g. Goodman, 1968), who's basically semiotic approach educated much current aesthetic thought. The following picture illustrates the chronological development of aesthetic thinking theories through the history. Understanding the process of aesthetic thinking in different period of time might shed light to find a reliable and comprehensive definition of aesthetic values in the contemporary period.

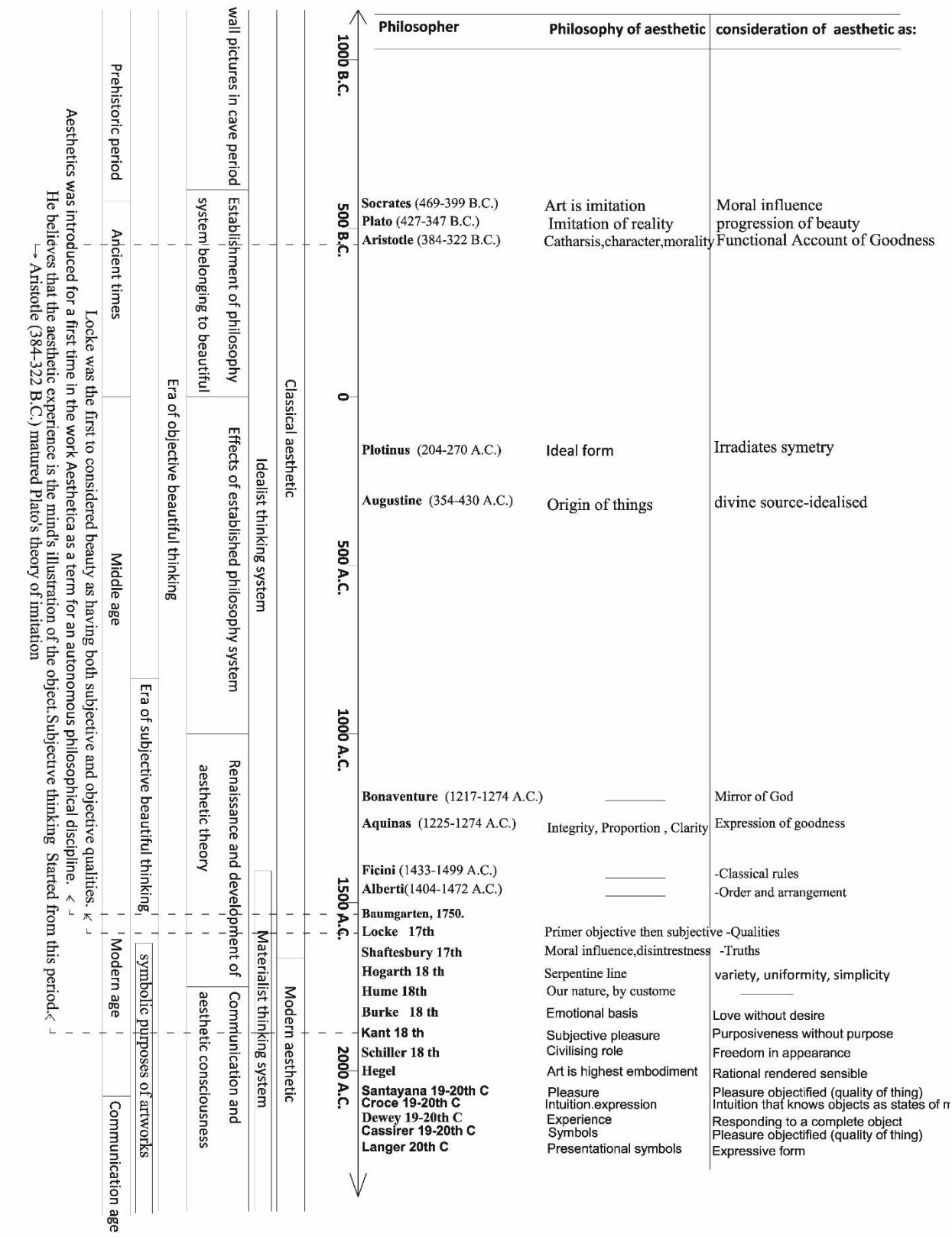


Figure 6. The chronological development of aesthetic thinking theories (Developed by Author).

To sum up, in the Greek, between the early Christian era and the Renaissance, beauty was imagined to be an objective physical feature. British empiricist in the 17th century, which specially started by John Lock to define and discussed aesthetic in both subjective and objective point of view. Through the end of the 20th century, aesthetic science has been developed and analysed beyond the comparative field of science (Nasar, 1988b). Furthermore, usefulness and beautiful concepts have been reanalysed in the 20th century (Illies and Ray 2009). The study on the literature of aesthetic has also revealed that current developments involved with formal characteristic of artworks or interrelating with a variety of other aspects, most notably cognitive, moral, and contextual factors (Walton, 1970; Gaut, 2007; Danto, 1981). This study also exposed a distinction between traditional aesthetic and contemporary aesthetic. A) Traditional aesthetic is based on the threefold relationship between 1-artists, 2-Art object and 3-perceiver which tries to focus on the nature of beauty, from the other hand, B) contemporary aesthetic actions are searching to find workability and benefits from aesthetics in order to appreciate the objects or the environment. In this regard, social, political, cultural, geographical issues also considers in contemporary aesthetic design.

2.3 Aesthetic Properties

Aesthetic properties are intangible and perceived qualities arising from the relationship of design elements. These qualities give a sense of beautiful objects or environment. Although the significance of aesthetic properties varies from one object or context to another (Albayrak & Caber, 2013) they aid to have a last subjective image formation of an object or environment (Baloglu & McCleary, 1999). Since the assessment of beauty is a cognitive process (Kaplan, 1985) aesthetics of a destination may help with the formation of the cognitive component of the destination image (Echtner & Ritchie,

1991). According to the different ways of understanding phenomenon in the human cognitive process, appreciation of aesthetic property can be classified into three main categories: psychological, organizational, and meaningful properties. Under the consideration of each category, the aesthetic properties of the given context can be assessed (See Table 4).

Table 4. Three general views on aesthetic property (Developed by Author, based on Montazeri, 2013)

<table>
<tr><th colspan="4">Aesthetic property</th></tr>
<tr><th>Psychological Properties</th><th colspan="2">Organizational Properties</th><th>Meaningful Properties</th></tr>
<tr><td rowspan="4">Psychological properties are the formal qualities of objects, such as their intensity, size and colour (Hendrik, Schifferstein, & Hekkert, 2008).</td><td colspan="2">Explain what can be seen and also why it prefers to see certain patterns over others (Ramachandran & Hirstein, 1999).</td><td rowspan="4">Subjective Properties which can perceive. Familiarity and prototypically, originality and novelty. (Hekkert & Leder, 2007)</td></tr>
<tr><td>Unifying properties</td><td>Order, balance or harmony, symmetry or ‘good’ proportion</td></tr>
<tr><td>Complexity and variety</td><td>Complexity and variety of patterns are preferred for their competence to generate arousal.</td></tr>
<tr><td>Unity In variety</td><td>If a person appealed in order and unity, they also (sometimes) seek variety and complexity. Predicting a balance would lead to maximum pleasure which concerns unity in variety.</td></tr>
</table>

It is clear that in an understanding aesthetic properties, collaboration of all the human senses, such as vision, hearing, touch, taste, smell and emotions are also effected. In this regard, Jacobsen (2006) debates on an integrative approach to study on aesthetic preference in experimental psychology. He suggests an outline which combines

different viewpoints to understand how aesthetic feelings are processed. He also includes “mind”, “body”, “content”, “Diachronia”, “Ipsichronia”, “situation” and “person”. Lastly, his work meets unified theory of processing aesthetics. Based on figure 7, Diachronia is a viewpoint that can change over time and Ipsichronia focusing on judgements within a given time, e.g. assessments between cultures, subcultures or social process. Therefore, each study on aesthetics and its properties needs a kind of experimental approaches by considering mentioned indicators (See Figure 7).

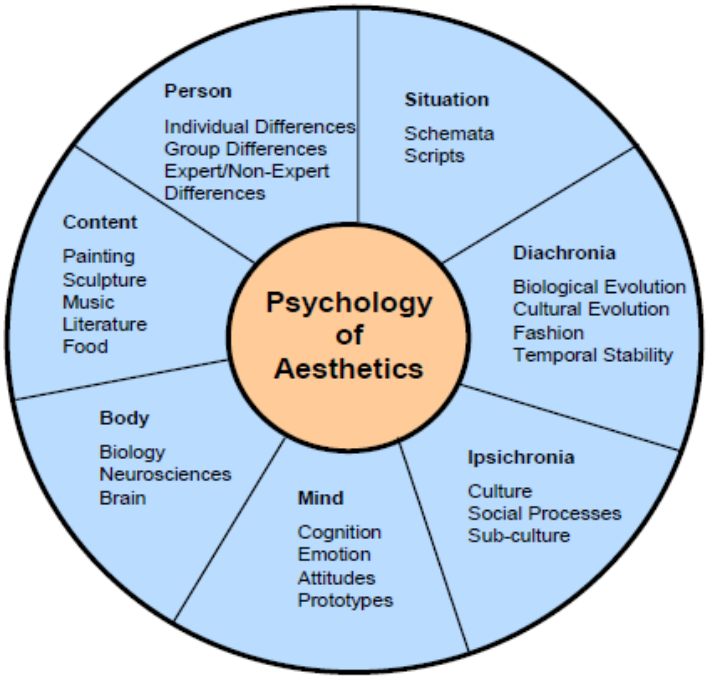


Figure 7. Jacobsen’s multidisciplinary approach to the study of aesthetic preference in experimental psychology (Jacobsen, 2006).

Lang (1988) divided aesthetic properties to formal and symbolic. The study of the physics of forms and the organization between their elements has been called formal aesthetics and the study of human reaction to the forms and their contents has been called symbolic aesthetics. Indicators of formal aesthetics include rhythm, colour, illumination, scale, shape, shadowing, order, proportion, hierarchy, spatial relations, incongruity, ambiguity, and complexity (Nasar, 1994). According to Lang (1988) the

key formal aesthetic qualities can be clustered as clarity, diversity and harmony. The principles that express the design characteristics are at the same time making the clarity and diversity appraisals assessable as quantitative values. Symbolic values in assessing aesthetic qualities are also fundamental which considers the meaning and function of configuration (See Table 5).

Table 5. Grouping of aesthetic qualities (Adopted from Bostanci and Ocakçi, 2011; Lang, 1988)

Aesthetic qualities				
Formal			**Symbolic**	
Diversity	Harmony	Clarity	Meaning	Function

In considering the criteria for formal aesthetic evaluation, relative literature (Lynch, 1984; Moughtin, 1992; Nasar, 1994; Baker, 1989) have been utilized. As Graves, (1941) and Kim (2006) acknowledged principles of increasing the aesthetic quality by following seven aspects which are harmony, variety, pattern, proportion, balance, emphasis, and movement. Symbolic aesthetic qualities can also grouped based on their meaning and functions. Consequently, to upsurge the aesthetic quality and accordingly beauty of urban spaces, consideration of all formal and symbolic meaning of objects in designing of the urban environment is required.

2.4 Aesthetic Experience

Aesthetic experience is another key issue which is needed to explore in an aesthetic of the environment. It is about the interaction between the environment and the observer. For Bell (1914) the aesthetic experience occurs when one is experiencing in an object significant form. Dewey (1934) also emphasized that the aesthetic experience is an experience that is maximally unified. Based on Beardsley (1969:3-11) in order to have

an aesthetic experience we should focus on the form and qualities of object therefore this experience would be unified and pleasurable. The particular qualities that we are looking for in the form of the object or environment are intensity, complexity and unity which all tied together with pleasure. In this regard, the necessary requirements for an aesthetic understanding are: a) An object or group of objects, b) Aim of use c) A resulting sensation; d) Degree of complexity and unity (Beardsley, 1958). Aesthetic experiences vary in degree in the dimensions of unity, complexity and intensity. It can also be categorized into three levels; sensory perception, cognition and meaning. With this background, informed by the literature in the field of experiencing environmental aesthetics, an analytical framework which shows the process of aesthetic experience is derived by considering Gjerde ‘s analytical framework of environmental aesthetics as a base to develop a framework for study in this thesis (see figure 8).

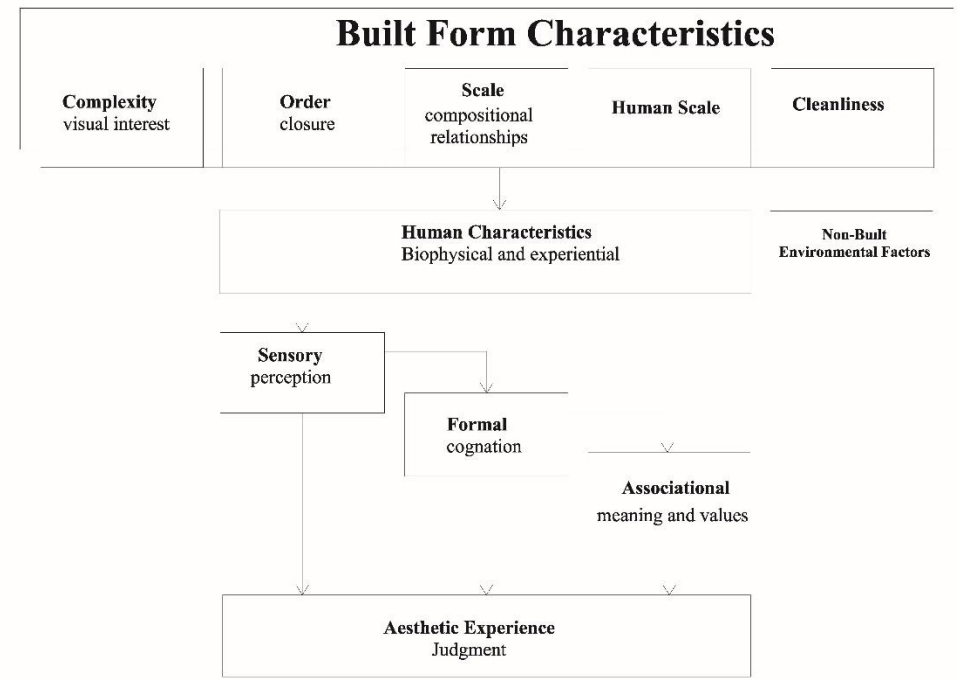


Figure 8. An analytical framework of environmental aesthetics (Adopted from Gjerde, 2010)

According to Figure 8 aesthetic experience or judgment of environmental configuration shapes based on immediate sensory and cognitive appraisal of the scene or object and alignment with schema which formed through experience and appraisal based on meanings and value.

2.5 Aesthetic Appreciation

Aesthetic appreciation is the result of the human subjective response to the experiencing of the environment. The term *aesthetic appreciation* introduced by Faerber (2011) to the interplay of objective (design) features and the perceiver's subjective factors. Faerber (2013) believes that four distinctive mechanisms transcend time and culture which are "sense of pattern, recognition of balance, and sensitivity to harmonic relationships, appreciation of rhythm". Psychological research on aesthetic appreciation has mainly focused on different object features to describe general, "objective" preferences for objects such as symmetry (Allesch, 1987; Fechner, 1876; Jacobsen & Hofel, 2002), proportions such as the golden section (Benjafield, 2010; Fechner, 1876), complexity (Berlyne, 1970; Eisenman & Gellens, 1968; Leder & Carbon, 2005), curvature (Carbon, 2010; Leder & Carbon, 2005) or saturation of colour (Blijlevens, Carbon, Mugge, & Schoormans, in press). Subjective factors also play an important role, but are often rather neglected by current approaches of empirical aesthetics. Such subjective factors range from personal characteristics (McManus & Cook, 2007) to personal socialization, culture (Jacobsen, 2006) and education. Qualitatively different from more objective factors mentioned above, attributes such as typicality, the arousal potential, and interestingness or boredom can only be seen as a combination of objective and subjective factors.

We aesthetically appreciate objects if they arouse us (Berlyne, 1970) and if they interest us (Berlyne, 1970; Leder, Carbon, & Ripsas, 2006). Further aspects are very important for an object to be aesthetically appreciated. Firstly, aesthetic appreciation affects us in the way that it suddenly sets itself apart from everyday context and disrupts our perceptual routine (Allesch, 1987). Secondly, an object just being interesting or only being beautiful or not boring, is not necessarily aesthetically appreciated; instead it must be a certain mixture of being attractive, interesting, arousing, not boring and probably should also be to some extent novel to us, therefore innovative (Hekkert, Snelders, & van Wieringen, 2003; Moulson & Sproles, 2000).

Kaplan (1987) identified four predictors of aesthetic preference for natural environments which are complexity, mystery, coherence, and legibility. Kaplan's idea of Mystery echoes the Appleton's (1975) prospect-refuge theory in which the prospect refers to what is implied, instead of directly experienced, by an observer. More recent studies have also focused on the predictors of environmental aesthetic preferences such as Naturalness, Openness, Vegetation, and Diversity or Variety (Arriaza, Canas-Ortega, Canas-Madueno, & Ruiz-Aviles, 2004) have been identified as distinct factors for predicting environmental preference. Therefore, preferences of environmental qualities tend to vary across various user groups (Van den Berg et al., 1998). Affective responses also represent emotional reactions to an environment. Studies on affective responses often explore the ways of people's evaluation of the environment and the consequential emotion. Researchers also revealed that "affective responses" are also connected to intellectual evaluations. Features such as coherence, man-made complexity, and historical significance are mental aspects which effects in making emotional responses (Ataov, 1998).

Every aesthetic judgment results from some interplay between sensuous pleasure and contemplative feeling, a simultaneous state of involvement and disinterestedness (Adorno, 1984; Goodman, 1976; Stephan, 1990). Kant's doctrine of disinterested pleasure reduces the aesthetic phenomenon to one of formal beauty, thereby disregarding content, expression and (art) historical context (Adorno, 1984).

Porteous (1996:118) believes that tangible arousal[3] may have an influence on the accomplishment of aesthetic satisfaction. Hedonic value is the pleasure acquired from perceiving the environment. In this regard, figure 9 shows that the interface between an observer and the environment makes hedonic value. Hedonic values arise from perceiving or experiencing the collective variables of an environmental configuration forms the basis of aesthetic experience and accordingly judgments in the urban environment.

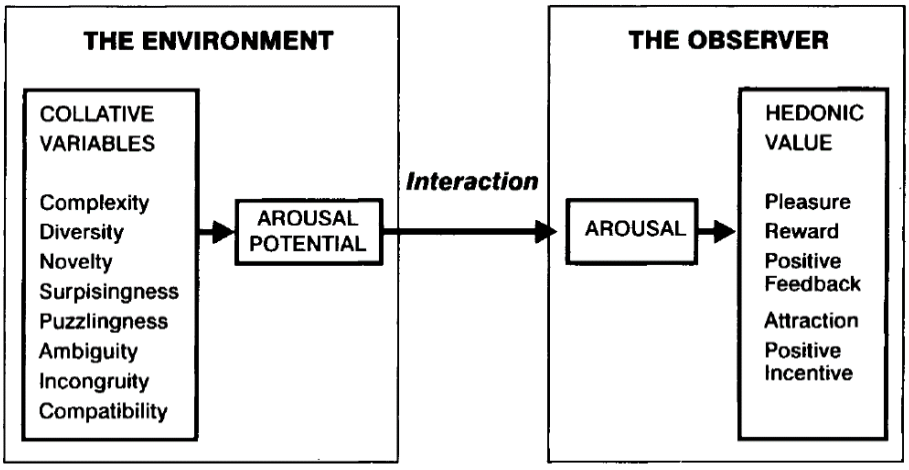


Figure 9. Aesthetic response to the environment (Porteous, 1996:119).

Figure 9 reveals the relation within the aesthetic preference and environmental variables such as meaningfulness and prototypically. For that reason, it is conceivable

[3] Tangible arousal considers attentive of a person is at the moment of observing the environment.

to consider that there is a relationship between aesthetic appreciation and the arousal potential of the environment. Negative or positive aesthetic response considering the amount of complexity or contradiction which accompanying with the configuration of the environment called *arousal potential*. The converse U-shaped interrelation between perception, novelty, and complexity are well introduced in figure 10. Figure 10 reveals that there is an optimum area in the complexity / spatial configuration. By increasing or decreasing the complexity of configuration between the elements the level of aesthetic perception will change. According to prospect-refuge theory the low configuration between elements which gives a sense of lost spaces doesn't have Genius loci. High level of complexity is also undesirable which decrease the quality of perceiving aesthetic of the environment.

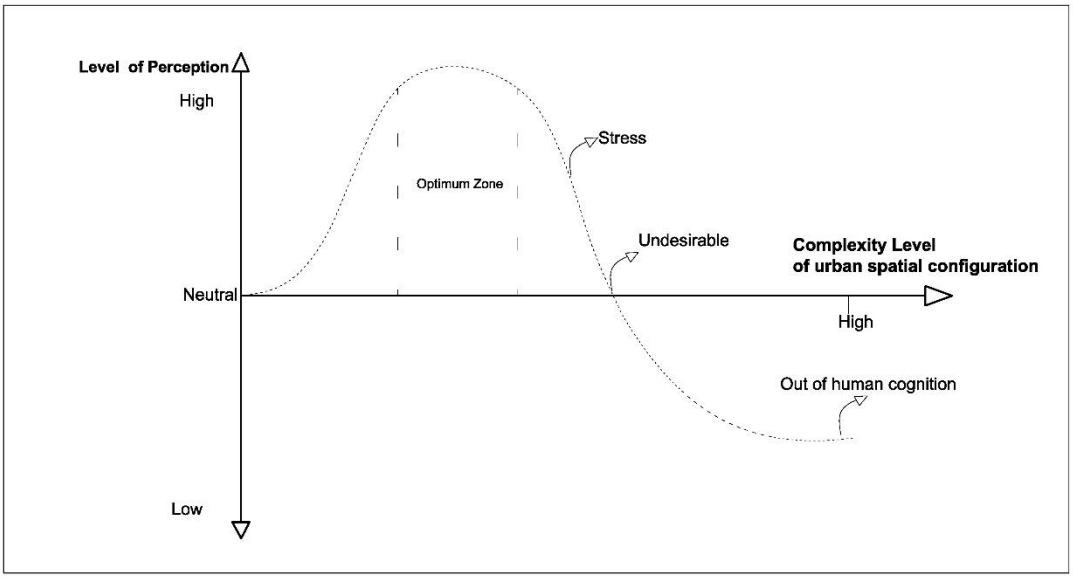


Figure 10. The Wundt-curve according to Berlyne and Wohlwill (Developed by Author).

In this respect, it is possible to claim that each single aesthetic react to the environmental configuration resulting from communication between sensuous desire, contemplative feelings and direct state of involvement in the environment. Cognition

process is a good terminology which interprets the process of understanding and appreciation of the environment. Which will describe in the following paragraphs.

2.6 Cognition Process

The most important part in understanding of cognition process is the process of perceiving the environment which called perception. People understand and assess the environments through the senses and all data come to us through the perceiving of the environment. The Oxford English Dictionary (2011) defined "perception" as the process of becoming aware of something. According to Atkinson et al., (1981:133)

> "… Perception is the process by which we organise and interpret patterns of stimuli in the environment". "… Perception is the way the world look (sounds, feels, tastes and smells too)".

Zigher (1985) believes that perception also considers the understanding of sensory information as a creative and constructive process which leads to sensory understanding with meaning.

Perception can also describe, as the identification, interpretation, and organization of sensory information to understand the environment (Schacter et al., 2010). Perceptual process consist of signals in the nervous system which changes effected from physical stimulation to the sense organs. Perception is not the passive delivery of these signals, but it shapes by expectation, attention, learning, and memory. Following Bernstein (2010:123) statement, perception encompasses top-down effects and the bottom-up process in the dispensation of sensory input. Let's declare that, bottom-up dispensation makes over low-level data to the higher-level by passing through the environment to achieve sufficient evidence to interpret it (see figure 11). Regarding to bottom-up processing, perception leads to cognition. It implies that to understand a phenomena

or environmental configuration we need to explore the surroundings to observe their objective configuration between elements.

In top-down processing, perception is shaped by cognition. The top-down processing refers also to the symbolic meanings which linked to the places, it mentions to peoples' expectations, individual experience, familiarity, knowledge, background and cultural experiences. Figure 11 demonstrates that in the procedure of observing the objective environment and their organization amalgamation of both bottom-up and top-down process is required.

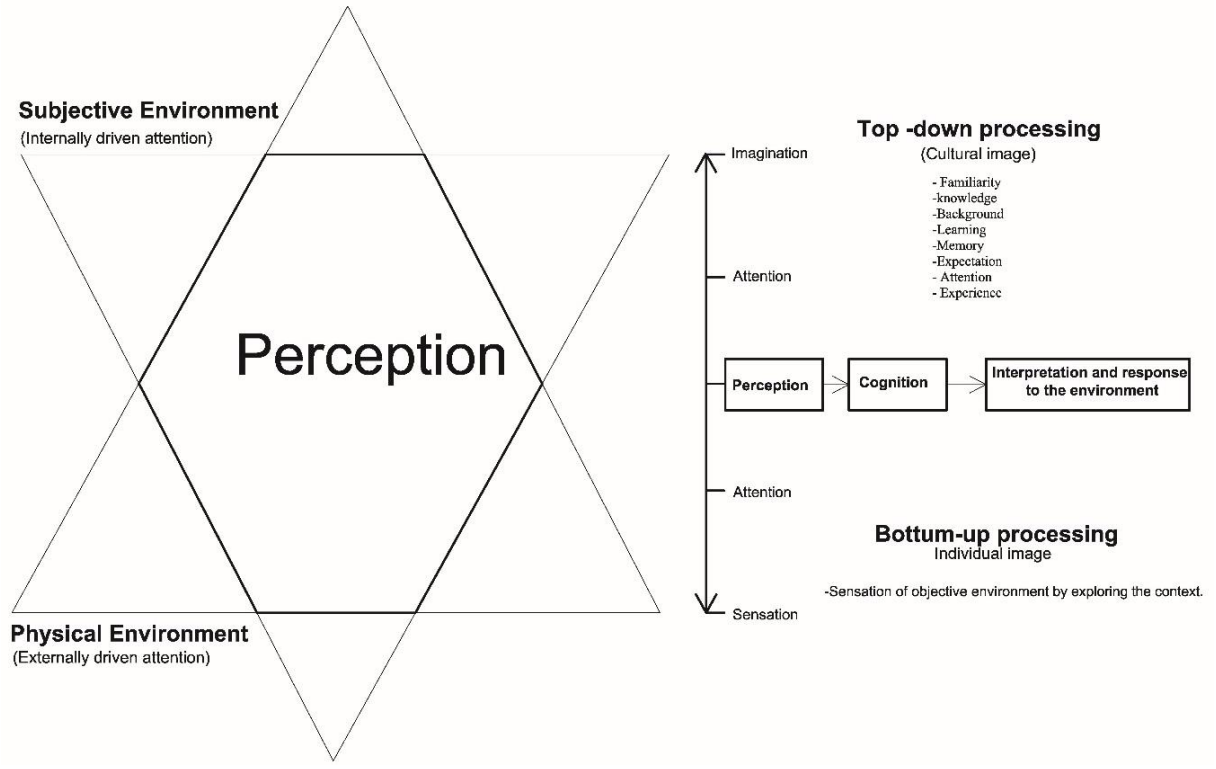


Figure 11. Top-down and bottom up procedure in understanding of the environment (Developed by author).

Williams (1996) depicts three interactions elements in the cognition processes which are representation, perception, conception. The process of cognition is characterised as the formulation of sensory information obtained from the real world. When sensory

information from the world imposes us, cognitive processes at the perceptual level attempt to explicate and understand it (Williams, 1996).

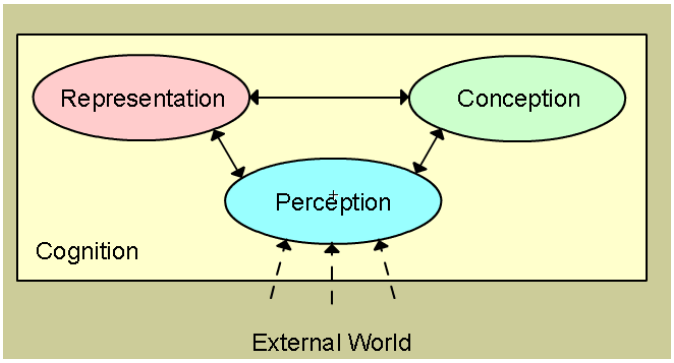


Figure 12. Idealized model of cognition - cognitive processing (Adopted from Williams, 1996).

To sum up, the perception of the environment will lead to create a mental image of the built environment. All indicators of built environment and non-built environment factors have its own effects on the achievement of comprehensive cognition. Anywhere in this thesis by refereeing to the term "*perception*" the aim is to define the process of cognition from its user's point of view.

2.6.1 Aesthetic Perceptions

The study of aesthetic perception looks for identifying and understanding the issues that contribute in perception of an object or how they can deliver a pleasant understanding. Stamps (1989) clarify that the importance of studies on the aesthetic of the perceived environment is based on the fact that the aesthetics of the urban environment is associated with the human need to have enjoyable sensations. Aesthetic perceptions are generally concerned with human responses to qualitative elements of objects such as colour, sound, line, form, and the way in which they are combined. The emotions of the perceiver are considered to be conditioned by their responses to the combinations of these qualitative elements. The expression of

aesthetic judgement may be considered to be the semantic interpretation or description of the observer's perception.

2.6.2 Perception of the Built-Environment

We perceive the world by the five main senses of our body which all contribute in cognition process by sending the perceived information to the brain; thus it will enable us to form and understand the environment. Rapoport (1974) by regarding to the perception of the built-environment stated that:

> "…Before elements can be organised into schemata and evaluated, they must be perceived (Rapoport, 1974).

Therefore, perception is the most important mechanism linking the environment and people. An analysis of perceptual processes in the built environment will inform the designer to know how cues are noticed and enable him/her to encode the environment for particular forms of behaviour. Referring back to Amos Rapoport (1974) who pointed out that "…the visual aesthetic experience can only be gained through the act of perception". Thus, one could say that the importance of perception understood in the notion of urban design. In this regard, perception of the environment is quite similar the term "Experience" which introduced by Tuan (1977). According to Tuan experience produce by a person's sensation, perception, and conception of space which refers to human cognition process (Tuan, 1977:8).

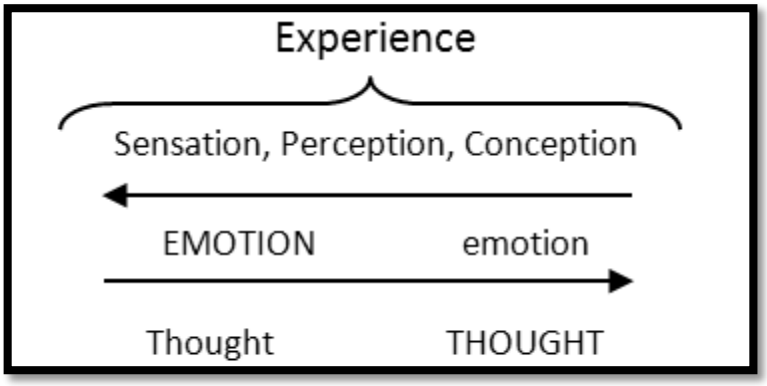


Figure 13. Experience and its production through the mode which construct reality (Adopted from Tuan, 1977:8).

2.6.3 The Process of Human's Cognition of the Built-Environment

The cognition process considers symbolic meanings by accompanying with the built-environment, it can also be influence by culture, individual experiences, context, and values (Fischer, 1997; 27; Bartuska & Young, 1994; 69; Biederman & Ju, 1988; 38-64; Lang, 1987; 86-92). Lang (1987; 191) based on principals of Gestalt psychology suggests that the cognitive process includes three interweaved factors: 1- symbolic meanings, 2- The association between physical characteristics and symbolic meanings of the built environment, and 3- Multi-sensory perception. Regarding to Lang's suggestion on cognition process, user perception includes more than a simple intellectual connotation associated to an observed object; moreover, this is related to the cognitive process from its beginning stage. The outcome of the perception-cognition processes will lead to the mental image of an environment. In line with the main aim of this thesis, the following issues are taken into account: 1- perceptions of users from different cultures can be similar according to the perceptual constancy suggested by Canter (1974:37-40), and 2- users' evaluations of the environment from different cultures can vary due to their interpretations of the built environment, which might be influenced by their personal experiences.

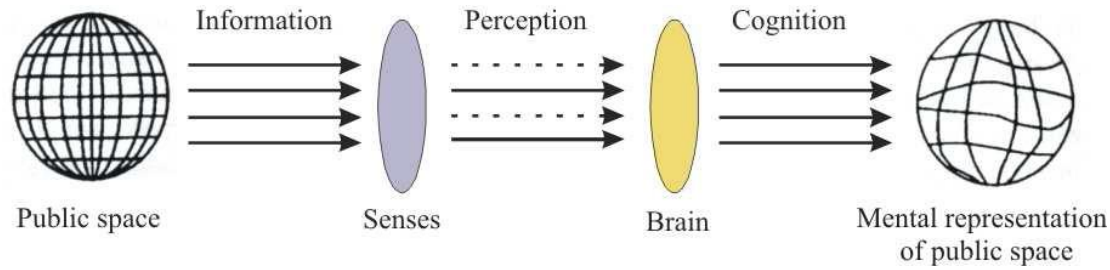


Figure 14. Process of perception- cognition of a public space. (Adopted from Golledge & Stimsom 1996:191).

For Rapoport (1977) the physical setting has meaning for observers and affects the human sense of quality of living. Human's first gain and collect the environmental information, then regulate them in his/her mind, finally, appraise the gained data and respond them according to his/her preferences. In Rapoport's environmental process of perception there are three main steps which are a.)Perception, b.)Cognition, and c.)Evaluation (Rapoport, 1977: 33). Nevertheless, in the process of cognition, preferences or cultural differences effects on the organization of observed elements in mind. In this research, urban image considers as a significant role in the cognition process. In this regard, Rapoport in his book "*Human Aspects of Urban Form"* emphasized the importance of organization of physical elements to create an urban image.

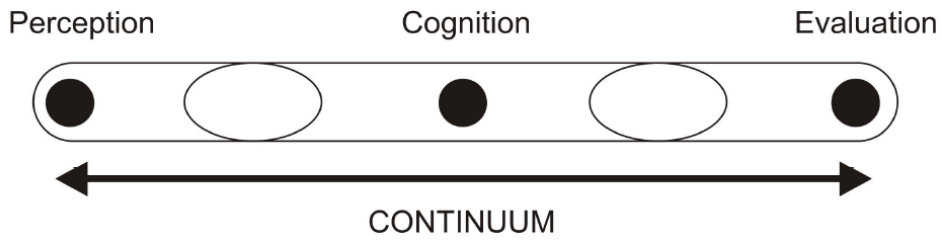


Figure 15. Rapoport's process of human environmental assessment (Adopted from Rapoport, 1977:37).

Rapoport's filter model in perceiving the environment (1977:38) determines the relationship between perceived and real world to explain the cognition process. The

real world presents the physical setting and the perceived world represents the symbolized stimuli after an evaluation with respect to filters.

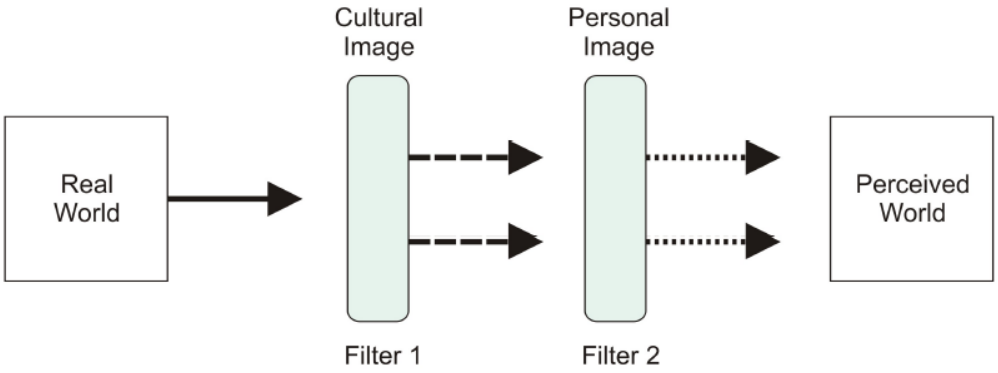


Figure 16. Filter Model of a perceiving process (Adopted from Rapoport, 1977:38).

The filters that occur in the stages of perception-cognition depend on the cultural, biological factors among the people. The first filter is titled as the cultural image. It is an evaluation process and is also called "information filter" (Rapoport, 1977: 38) or knowledge. On the other hand, the second filter represents the evaluation of the real world according to personal goals and individual characteristics. In this regard, Eraydin (2007) in her thesis also introduced a human psychological process of building an image. She also mentioned that the process of environmental cognition starts with the sensation. The sensation of the human environment interaction starts with the use of five senses of human beings. The second stage is perception, the sensory experiences and conscious information gathering. The sensation and perception can be thought as an ensemble because they are both based on the sensory collection. The first image that appears after these two stages is called the perceived image. The next stage is cognition, where some filters detect and determine individual images. The perceived image is the mental representation of the physical organization (See Figure 17). Cognition and evaluation, on the other hand, depend on the background information.

It is for sure that the physical arrangements influence the image. Thus, it is important for a designer and planner to understand the interrelation between the processes of sensation perception, and cognition.

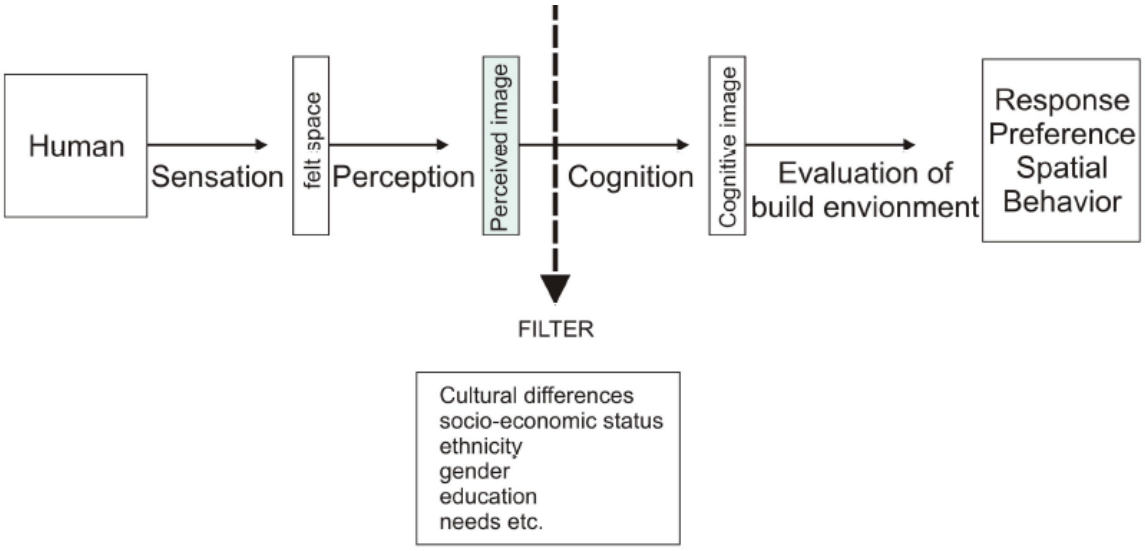


Figure 17. A human psychological process of building an image
(Adopted from Eraydin, 2007:18).

2.7 Different Approaches in Aesthetics Assessments

The study on the literature of "*aesthetic*" reveals that there are different approaches in aesthetic assessment of the urban environment. Thesis approaches can be classify into three main categories: Subjectivity vs objectivity approach and Rationalistic vs Romanticist approach, and Expert vs perception based approaches are the most important approaches which this research will explore them (See Table 6). Understanding these approaches will help to accelerate the process of assessment by focusing on the specific assessment approach.

Table 6. Comparison of different approached in urban aesthetics (Adopted from: Nohl, 2001; Chen, et. al., 2009; Junker & Buchecker, 2008)

Different approaches in aesthetic assessments		
A	Objective aesthetic (Physical aesthetic)	Subjective aesthetic (Psychological aesthetic)
B	Rationalistic view	Romanticist view
C	Expert aesthetic	Public preferences

2.7.1 Subjectivity vs Objectivity Approach in Urban Aesthetic Assessments

Kant's (1790) theory of aesthetics introduce a context to differentiate the subjective characteristics from the objective characteristics in aesthetic judgment. An aesthetic judgment is conceived as a singular judgment of the feeling of pleasure in the form of an object. Therefore, in order to assess the aesthetic judgment using the form "I feel_ in this situation" can be enough. One immediate consequence of this is that emotional state does not define any parts of the physical object, but only how a person feels. Aesthetics in this category considers judgments of perception based on the emotional state of displeasure or pleasure. Therefore, aesthetic judgments essentially encompass feelings. Common usage and lyrical language often shape this distinction, for example, when someone says "This environment is beautiful". If the emotional state mentioned in the subjective feature of the decision, then the accurate way to express the aesthetic of context or an environment is to say "I feel pleased, enchanted, happy, etc. In this environment". Concepts of the aesthetic may also be fundamentally personal, idiosyncratic and determined primarily by the culture in which an individual lives and grows up (Balling & Falk, 1982; Gobster, 1999). In this sense, it is quite often said that beauty is in the eyes of the beholder. As it is widely recognised that culture and learning clearly exert strong influences on the way humans perceive and respond to environmental information or the importance that they place on symbols and meanings associated with natural objects (Cosgrove, 1984; Schama, 1996). For instance Meinig

(1979) defines how a diverse group of people define a different set of uses and values for the same environment. Nevertheless, these culturally influenced reaction norms are the consequence of complex interactions between objects (or landscapes) and the minds of the observers (Carlson, 1979; Kaplan & Herbert, 1987; Daniel, 2001). Lothian (1999) delivers an inclusive review of the philosophical background for environmental aesthetic assessment, by tracing the history of competing *subjective and objective* models. Regarding to the objective explanation the aesthetic quality of the environment is to be found in the properties of the environment and by the subjective environment, *visual aesthetic quality* is a co-operative product of particular characteristics of the environment by interacting with applicable psychological (emotional, perceptual, and cognitive) processes in observer mid. (Daniel, 1976, 1990; Brown & Daniel, 1987, 1990; Daniel & Boster, 1976; Ulrich, 1983, 1993 Parsons, 1991). Dearden (1987) suggests that if beauty is inherent in objects, then methodologies to study responses to landscapes should be directed toward measuring those objects (see for example Daniel & Boster, 1976; Shafer & Brush, 1977). Many advocates of evolutionary theories, however, argue that the sense of beauty is the result of interrelation between in the property of objects and eye of the beholder. Rather, it is the co-operative product of communication between the physical appearance of the objects and the human nervous system that changed in a way such that the objects. This thesis considers the term "beauty" as properties that results in enhanced performance in some phase of our life (Appleton, 1975a; Penning-Rowsell & Lowenthal, 1986; Kellert & Wilson, 1993; Daniel, 2001). Consequently, Daniel (2001) declares that, generally, perception-based landscape appraisal research has always taken both objective and subjective perspectives into account. Upon above discussion

on the objectivity or subjectivity of aesthetic evaluations Table 7 reveals some distinction between objective and subjective approaches in aesthetic evaluations.

Table 7 The comparison between subjective and objective approaches in aesthetic evaluations (Adopted from Nohl, 2001).

Approaches in aesthetic evaluations	
Objective approach (Physical)	**Subjective approach (psychological)**
Aesthetic is an intrinsic quality of the environment	From observer point of view aesthetic is qualitative
It doesn't have any specific theoretical framework	It comes from the specific theoretical framework
It seeks to find out Physical Properties of landscape	It Seeks to find out physical indicators of human preference in the environment
Quantifying landscape quality based on absolute and unconditional assumptions.	It seeks quality of environment based on human preferences.
It is silence regarding to causal factors	It seeks to find out and interprets causal issues.
It is practical and needs specific strategy	Its experimental and testes hypothesis
It doesn't use the individual reaction in qualitative assessment of landscape	Economics, personal, social, cultural issues effects on aesthetic perception of the environment
The assessment is based on field survey	For Evaluation they are using alternatives such as photo, slid and film
It is cheap and fast	It's difficult, costly and slow
Its unique and the results are not generalizable	It needs Statistical Society and the results are generalizable.

2.7.2 Rationalistic View of Aesthetic in Contrast with Romanticist View

In Rationalists view, aesthetics seems as a knowledge of beauty. According to this domain, it is not sufficient to appreciate an art fact rather compulsory to understand why, describe, and assess the roots of this appreciation. In this view, aesthetic experience depends on the amalgamation of sensory pleasures therefore associations of general rules could not be easily formulated. While formulating such rules, the drawbacks like limited attention span of perceptions of human beings should be considered (Reich, 1992; 141-153). In this view, they think that laws cannot actually

describe aesthetics. Therefore, some perceptions cannot be clarified by good-looking to elementary effects. Bearing in mind of Romanticist View, Raskin (1857) state "*A thing of a beauty is a JOY forever*", which considered to be the basic statement of romanticist view.

2.7.3 Expert Approach in Contrast with Perception-Based Approaches

Expert approach interprets biophysical properties of the environment into formal design parameters (such as *line, variety, unity, and form)* presumed to be general properties of landscape quality resulting from aesthetic judgment. This approach refers to the objective characteristics of the philosophy of aesthetics. Additionally, *The perception-based approaches* (public preference) reflects biophysical properties of the environment as stimuli that bring to mind the aesthetically relevant psychological responses via relatively straight sensory-perceptual processes or through intermediation cognitive constructs - such as *mystery, prospect-refuge, and legibility.* Perception-based methods obviously originate from the philosophical and subjective map. Generally, psychological scaling methods and various surveys have been applied to achieve quantitative dimensions of observed qualities of environmental aesthetic (e.g. Daniel et al., 1977; Buhyoff & Leuschner, 1978; Daniel & Boster, 1976; Kaplan et al., 1972; Kaplan, 1975; Peterson & Neumann, 1969; Ulrich, 1977; Zube, 1974; Shafer et al., 1969). A critical and constructive investigation on the different methods in aesthetic assessment discloses that all methods have the same concern to upsurge the aesthetic values of the urban environment. Understanding how quality of the environment effects on aesthetic judgment will help to comprehend the process of human aesthetic cognition.

2.8 Summary of the Chapter

The study revealed that the definition of aesthetic has different meaning in different disciplines. The only common point in all studies on aesthetic definition refers to *human taste* which tries to find a better and comprehensive way to increase hedonic value in the observer and the environment. The study reveals that aesthetic appreciation comes from objective and subjective elements of the urban spatial configuration. Objective elements refer to the physical elements and their configuration. Subjective elements refer to symbolic elements and human minds interpretation based on their cultural, individual, social and political characteristic of a person and a lace that he/she lived. Aesthetic properties are qualities which arising from the relationships of design elements to have a final image formation of an object or environment. The study of aesthetic properties could be assessed based on Psychological, Organizational, and Meaningful properties. The term aesthetic appreciation refers to interplay of the perceiver's subjective influences and objective (design) features. Arousal potential upon the amount of contradiction or complexity together with the configuration of an environment might leads to negative or positive aesthetic response. The study also clarified three categories in the literature of aesthetic assessments. Which are formal aesthetic/symbolic aesthetic, Rationalistic view / Romanticist view, Expert aesthetic/ public preferences aesthetic. In despite of the fact that theoretically they are different with each other but they are referring the same issue. In this regard, we can see that formal aesthetic, rationalistic view, expert aesthetic refers to the objective elements and the way to organize to be seen and observed rationally from its user's point of view. In this classification experts implementation expected. From the other hand, symbolic aesthetic, romanticist view, public preferences are also referring to the way to increase subjective aesthetic of the

urban environment. In this classification, studies on public preferences are highly recommended in assessing of aesthetic quality of the environment.

Chapter 3

URBAN AESTHETICS AND HUMAN NEEDS

3.1 Urban Aesthetics

Urban aesthetic[4] is a tool for city identification; it is an indispensable element in the urban dynamics (Sternberg, 1991:78). To consider a city beautiful, not only judging its architectural style, buildings, traffic and their noise effects, but also social and historical features (as part of its total sensory package) should be take into account in the assessment. Despite the fact that some scholars put forward that increasing the aesthetic qualities of cities effects on its appreciation, others scholars claim that "*appreciation*" is itself a challenging notion. Because it is vague and hard to define and justify. The query of "*what it means to appreciate a city"* is indeed one of the difficult tasks of urban aesthetic design. Consequently, as Berleant (2007) claims "…the aesthetics of the city is an aesthetic of engagement". Therefore, aesthetic of urban environment considers observers engagement and participation to have its own influence in space

Urban spaces with great aesthetic values deliver pleasurable places to be for observation, relaxation, and personal reflection (Philipp et al, 1999). In urban environments, aesthetic design need to consider in respect of their settings. Stamps (1989) based on the fact that the aesthetics of the urban environment is related to the

[4] Based on Gibson (1970) the scientific attention on the aesthetic design of urban environment started from the 1970s.

human need to have pleasant sensations describes the significance of studies on the quality of the perceived environment.

To consider the place of aesthetic in urban design we should also consider George (1997) classification. As schematically clarified in figure 18 there are differences between the decision environments in first order design and second order design. George (1997) state that First-order design includes straight design of the elements of the built environment, e.g., urban amenities, buildings and street arrangement. Second-order design- indirect design- encompasses “planning” and the “decision settings” of improvement actors such as developers, investors, designers, and etc. Urban design can be consider with first-order design procedures, but is often concerned with organising the objective parts of the urban environment through plans, strategies, and frameworks, therefore it is commonly called as a second order design activity (Carmona et al., 2010). Tiesdell & Carmona (2006) considered the aesthetic as one of the complementary dimensions of urban design which should be considered during the design process.

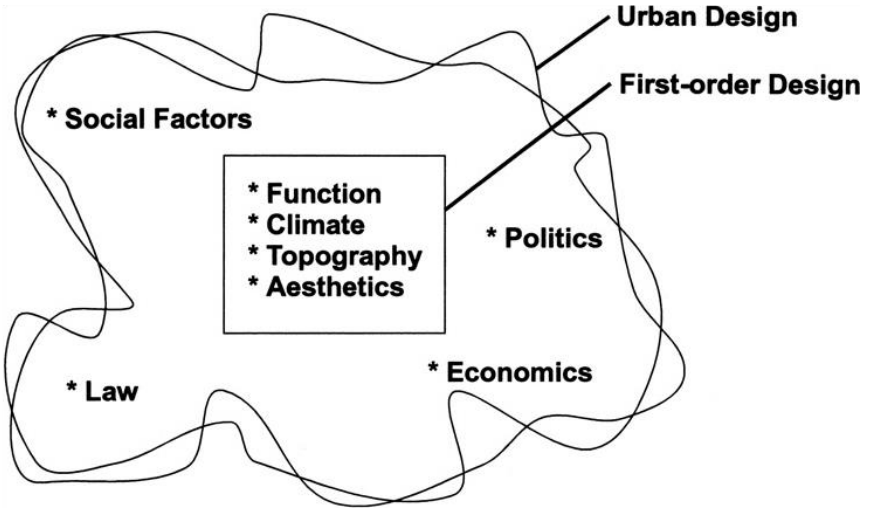


Figure 18. A different decision environments. (Adopted from Tiesdell & Carmona, 2006:55)

First order design projects involve factors that are relatively stable over the time. It takes to realize the design project (Tiesdell & Carmona, 2006:55). Factors such as function, climate, topography, and aesthetics are often extremely challenging to address, but nonetheless the nature of these factors can be expected in most cases to remain relatively stable while an object is being designed and constructed. Urban design projects involve these kinds of factors, but they also involve factors of an economic, political, social, and legal nature. Therefore, it seems that aesthetic quality in the urban environment can considered as a complementary dimension of sustainability, which should achieve together with other components of sustainable development, such as economic, ecologic and social aims. This assumption means that aesthetic quality, in our concept, goes beyond an external visual appearance and should observe through a more comprehensive approach related to other dimensions of the urban landscape (See Figure 19).

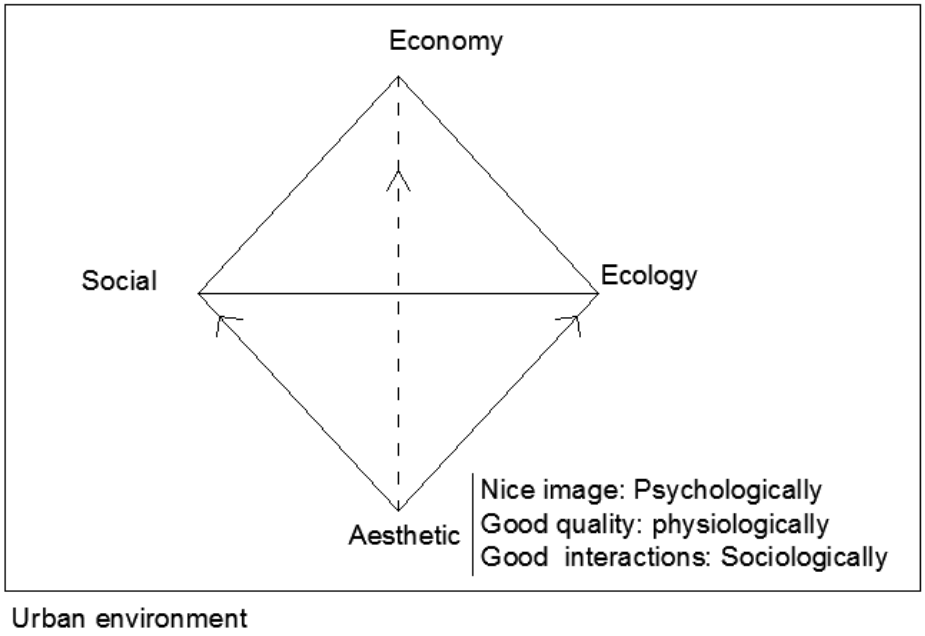


Figure 19. Aesthetic and the complementary paradigm sustainability (Developed by author).

Figure 19 reveals that aesthetic of the urban environment is not just to design a nice image. It can be analyses based on the good quality of configuration which is the main cause of nice image. It also states that urban aesthetic can be considered in human social interaction. The study of urban aesthetics is significant for the human comfort both psychologically and physiologically. It is also essential to comprehend how to solve the problems of urban aesthetics such as visual clutter and ugliness in order to make places more visually pleasing and beautiful. In this regard, the aesthetic value of spaces has been associated with user's assessment of these spaces. Observer, appraised positively their evaluation while they are in a beautiful room and negatively those in an ugly room (Bell et.al, 1998). Aesthetically pleasing environments have also been found to make people feel more comfortable and better. Aesthetically pleasing environments can also generate superior mood that increases people's enthusiasm to help another (Bell et al, 1998). It can also contribute in increasing people desire to talk to with each other as a result of all vitality and liveability of urban spaces will increase

(Bell et al, 1998) - The above statement once more highlights the importance of study on urban aesthetic.

The classic version of the arousal model in Russell and Lanius's (1984) work, reveals that the emotional quality of places and expressive reactions to the environments are in two fields: arousing - not arousing and pleasant-unpleasant. Berleant & Carlson (2007) explored the literature of urban aesthetic to assess movement, perception, and affect to include familiar problems of use and form in urban aesthetic design. In *The Aesthetics of Human Environments* Berleant & Carlson (2007) reveals the variety and comprehensiveness of urban aesthetics and suggested to use exciting potentials for the arena of urban aesthetic. They explain that environmental aesthetics can work as a method that brings together many approaches for understanding the aesthetics of urban spaces. According to Russell and Snodgrass (1987) people's evaluation and feelings in an environment has three key issues which are pleasantness (desire), excitement (motivated), and calmness (See Figure 20). The vertical axis in figure 20 – arousing (arousal) is independent in assessment and the diagonal axes are mixed in arousing and pleasantness.

> "It also reveals that, exciting environmental configuration is *additional* pleasurable and arousing than boring ones; environmental configuration are *more* pleasant but *less* arousing than distressing ones" (Russell and Snodgrass, 1987).

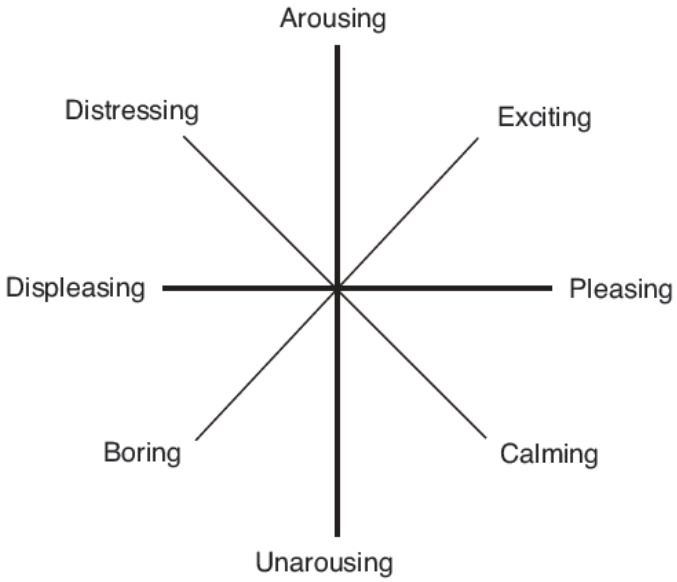


Figure 20. Dimensions of environmental appraisal (Berleant & Carlson 2007:166).

In the urban design, configuration between the elements of urban spatial configuration - which is perceptible to people - should satisfy its users. It should also reflect the user's public evaluative replies to the environments. *Perception of places* is subjective judgments around their emotional superiority – such as, their attractiveness. *Feelings in places* are the person's mental state – such as feeling happy. *Evaluations* of a place might affect *feeling in it* (I feel insecure), but they may also ascend independently.

3.2 Human Needs in urban Aesthetic Design

There is a group of requirements that can be used as a foundation for describing the aesthetics of urban spaces. Lots of applied models for human aesthetic assessment have been considered by scholars such as Lewis (1977), Peterson (1969), and Mikellides (1980) (See table 8). There is a considerable common point between the models, while each highlights a diverse feature of human life such as., Abraham Maslow's ranked model of human desires (Maslow, 1987), which is maybe the most dominant of all, attained as a "Theory of human motivations". All of these scholars convey significant awareness in analysing the human behaviour. Nevertheless, Maslow's model can be consider as the best and comprehensive one. Without a doubt,

by thinking on urban design issues, most architects and urban designers who dealing with user needs approaches to design, twisted to a number of adaptations from Maslow's classification of human needs. Maslow in *Motivation and Personality* (1954) offered a hypothetical model of human manners. He gained his holistic-dynamic theory of the previous psychological works of Gestalt theory and John Dewey. Maslow classified five groups of *basic needs* from the most vital to the most subjective in a pyramid of ascendancy.

> "… The most ascendance goal will exclude awareness. . . and when a need is approximately well satisfied, the next upper needs will appears" (Maslow, 1954).

According to Maslow's model, pyramid of needs starts with physiological needs which are the essential requirement for survival. Esteem needs, safety and security needs, self-actualization needs and affiliation needs can count as physiological needs. In continuing to describe the other human needs Maslow categorized a second set of needs which are *aesthetic and cognitive needs,* which shape the procedures of accomplishing the other needs. In some cases, human behaviour can describ by considering Maslow's model. But in others, the indicators that the model can consider in each calcification, turns the model from up to down.

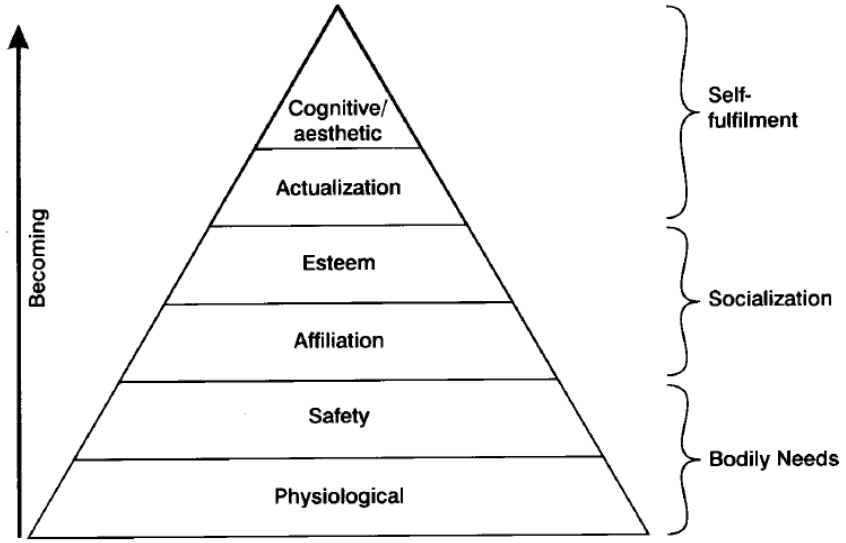


Figure 21. Maslow’s hierarchy of needs (Porteous, 1996:8).

The significances of considering the urban designer's responsibilities by means of the accomplishment of social requirements in this method, can just be exemplified by understanding the interrelationships between them (Tiesdell & Carmona, 2006; 217). Which is the interrelations form a multifaceted web which shows the uselessness of any naive model of urban design (See table 8). The significances in aesthetic of urban design based on Maslow’s model is essential to advance in element and features. Nonetheless, in order to comprehend the meanings of human needs in the urban environments table 8 reveals the basic human needs in urban environment which should be fulfil in order to get aesthetic sense of environment.

Table 8. Model of human needs adopted from Lewis (1977), Mikellides (1980), and Peterson (1969).

MASLOW (1987) HUMAN MOTIVATIONS	*LEIGHTON (1959) ESSENTIAL STRIVING SENTIMENTS*	*CANTRIL (1965) PATTERNS OF HUMAN CONCERNS*	*GROSS (LEWIS 1977)*	*STEELE (1973)*
		BASIC NEEDS		
Survival	Physical Security Sexual Satisfaction	Survival		Shelter and security
Safety and Security	Orientation in society	Security, Order		Social contact
Belonging	Securing of love	Identity	Belonging, Participation	Symbolic identification
Esteem	Recognition		Affection Status Respect Power	Growth Pleasure
Self-Actualization		Capacity for choice and freedom	Self fulfillment	
		COGNITIVE NEEDS		
Cognitive	Expressions of love, hostility, spontaneity		Creativity	Growth
Aesthetic			Beauty	Pleasure

3.2.1 The Basic Human Needs

Human needs indeed are extremely interdependent. Some requirements come from biological origins, some others are the yield of the sociocultural environment, and many others have a biological origins that is very much socioculturaly formed. Figure 22 reveals indicators of basic human needs and their interrelations. It is essential for experts and urban designers to know that in the aesthetic design of urban environments, all of these basic human needs should take to account while in designing process. The following six classifications on human needs developed based on Maslow's hierarchy of needs.

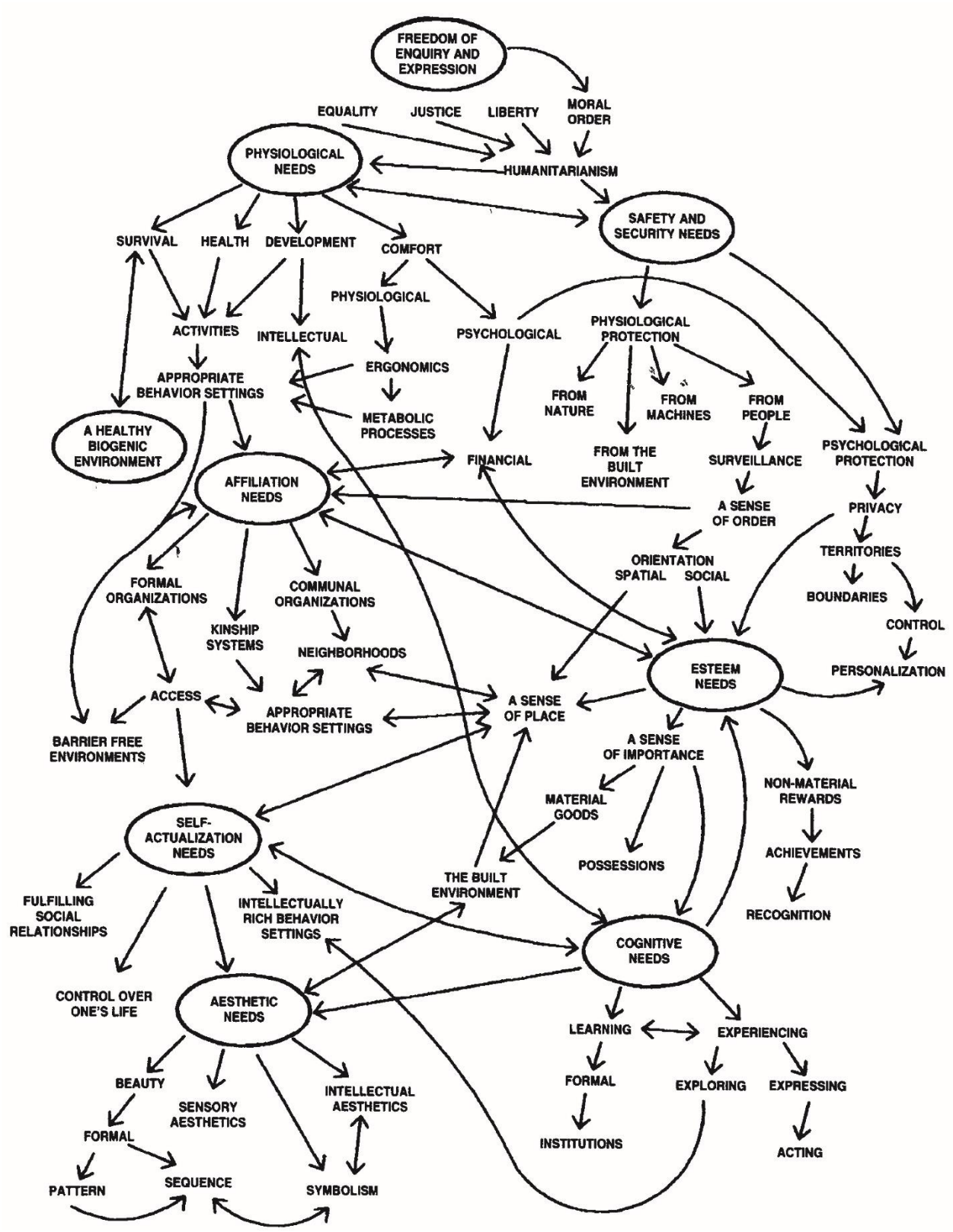


Figure 22. The hierarchy of human needs and design concerns (Adopted from Lang 1987: 10)

Considering the different dimensions of urban design and Maslow's hierarchy of needs the research revealed that in aesthetic assessment consideration of all dimensions of

urban design requires to fulfil the basic human needs (see Figure 23). This thesis limits itself to find the indicators of perceptual, visual and morphological dimensions of urban design and basic human needs.

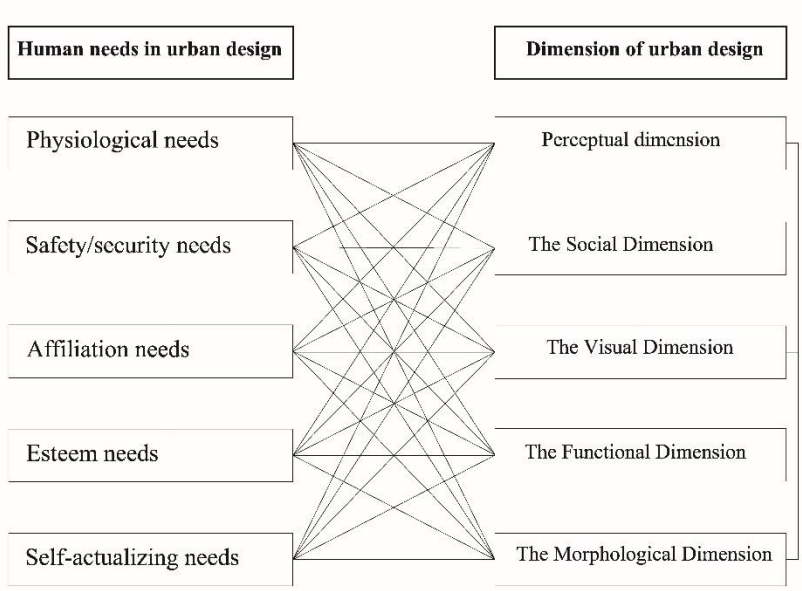


Figure 23. Human needs and the interrelation with different dimensions of urban design (Developed by author).

3.2.1.1 Physiological Needs

Human's physiological necessities reflect the fundamental human needs for survive. Oxygen, water and food, and to be able to sleep can count as the essential requirements for survive. The architectural necessity is for shelter could deal with higher order requirements that embrace the need for survival. As Tiesdell & Carmona state:

> "…The need for survival from the environment are not as essential for life but are required after. To be comfortable people has a need to be healthy. Health and comfort are physiological along with psychological conditions." (Tiesdell & Carmona, 2006:156)

Thus, in identifying how to design an urban environment to encounter physiological needs, with considerable depends on persons' prospects, which are, consecutively, grounded on their habituation levels.

3.2.1.2 Safety and Security Needs

There is a necessity for harm-evasion motor vehicles, robbers, between the most of wild animals, and etc. Freud (1949) considered the extreme location in encountering harm avoidance in his clarification for self-preservation. He thought that the majority of human performances can be determined by the belief of escaping pain and looking for desire. From this viewpoint, the urban design concerns by means of the arrangement of environments that deliver secure and safe surroundings which a person can follow his live. Safety requirements associated with a varied complex of added needs. The widest classification is into physical safety needs and psychological needs. Physical safety needs, consider achieving a safety of understanding that one is safe from physical harm such as moving cars and structurally unreliable buildings. Moreover, human being has the prerequisite to be mentally safe to bridle the environment from their subjective mind point of view. Understanding where they are in a specific time and space will also help them not be physically or socially lost. Furthermore, there is a necessity for privacy for accomplishing different activities to develop self-confidence. These requirements obviously shape the next higher set in Maslow's hierarchy which is necessary for affiliation. Security and safety can achieve within the nature of the social connotation of society. The outline of the environmental configuration also prepares or rejects the probability of various manners that are essential to be satisfied. The spatial configuration of cities for defensive reasons is a major feature in the design. The spatial configuration of the city is correspondingly a main factor in way finding (Passini, 1984; Lynch, 1960). Satisfying such needs can give one a sense of safety which comes from controlling of the situations. Indicators of safety and security are fundamentals in aesthetic perception by considering urban

spatial configuration. Therefore, it is highly recommended to design in such a way to increase the user's sense of safety and sense of security.

3.2.1.3 Affiliation Needs

Our association needs increase by understanding the point that we are affiliates of a social and a group. These groups might have different characteristic based on regular attributes as interests, kinship, and locality. It's essential for people to have a sense of community, relatedness, and belonging, as well as to obtain love and ratification from others. This classification of requirements consists of the necessity to be with others.

> "…we come to be very conscious of the signs of membership while we endeavor to be a follower of a group. But as soon as we accepted without apparent uncertainty and got the true membership, the symbols of attachment will be vital. Therefore, the *symbolic aesthetic* of the environment which we inhabit will be essential to group identities and our individual." (Tiesdell & Carmona, 2006:220)

Improvements in communications technology have enormously altered the shapes of manners allied to affiliation needs (Schmandt et al., 1990; Brill, 1989). The objective instruments such as telephone, automobile, airplane, and in general all inventions after the industrial revolution accelerate the process of urbanity. Consequently, in increased affiliation needs. It is essential for urban planners to comprehend these innovations and possible modifications to design with them in mind (Hitt, 1990; Whyte 1980; Jacobs 1961).

3.2.1.4 Self-esteem Needs

Everyone wants to have a firm based, stable, and typically high appraisal of themselves. They attempt to get independence, freedom of self-expression, and competence. There are two sorts of esteem needs: a) To stand in possession of self-esteem b) To be held in regard by others. In order to obtain a sense of achievement it is necessary for people to be capable to lead responsibilities, to manipulate, adjust and

arrange physical objects, or ideas to be considered as beautiful. Also, the architectural mechanisms for self-affiliation need to do with both symbolic aesthetics and regional control through symbolic or real obstacles. Correspondingly, types of urban and architectural layout and their creative appearance are frequently accompanying with particular society. It can also conclude that if people desire to be professed as a member of a group, we need to utilize the applicable architectural symbols which can applicable to people's self-esteem needs.

3.2.1.5 Self-actualizing Needs

While there is a need to have liberty of action in environment to be independent, there is also necessity to help others. Once esteem needs fulfilled, people frequently sense a new restlessness and discontent in themselves, therefore they are able to be innovative in what is the greatest fit for them. Jung (1968) has called this kind of needs as "individuatio" which is the kind of process toward self-realization and individuality. It may be attended for strive to suitable architectural signs (Tyng, 1969).

3.2.1.6 Aesthetic Needs

There are two groups of aesthetic needs one of them is for self-expression and the other one for beauty. Obviously, the aesthetic quality of the natural and built environments is a significant contrivance to obtaining a different kind of needs. It's also necessary to mention that in all stages of fulfilment of essential desires, there is a need for beauty which is defined within socio-culture. Regarding to Maslow's model at the uppermost level of basic human needs, there is also an intellectual requirement to comprehend the aesthetic ideas of architecture and urban. Certainly, aesthetic and cognitive needs have sometimes considered as the equal need. Some people like to know the builder's ideas and concepts in designing a building or urban environment, or in composing a piece of music and etc., to appreciate the culturally gained principles of beauty for their own

sake. Santayana (1896) named this requirement as the mental level of aesthetic appreciation. He considered aesthetic and moral judgments as marvels of mind. As already mentioned cognitive and aesthetic needs guide and shape the other needs requirements. The reason that Maslow put the aesthetic needs at the top of the pyramid refers to the fact that without fulfilling the other needs aesthetic needs doesn't have meaning.

3.3 Scholar's Urban Aesthetic Design Consideration

Using an empirical methods to address studies on environmental behaviour of urban open spaces has come to be common in the last few decades. Regarding to this issue, the robust association among the aesthetic dimension of urban space and the built environment are considered. According to the methodological approach of this research, in order to prepare an objective context for the study (to obtain general validity) and equal distance to each researcher, I decided to bring together the indicators (which affect aesthetically suitable urban configurations) without having any critical standpoint. Since the indicators of aesthetic appreciation in each context vary, the proposed model should encompass all indicators.

Throughout the industrial revolution, the majority of materials and its physical conditions were created for a hygienic-aesthetic conversion. Majority of urban structures with its bolivar planning which arise nowadays have been used for the first time by Baron Haussman, who reconstructed Paris (preliminary from moral, political criteria, utility-aesthetic), highlights the way that the city has particular organization in the way to fulfil human requirements and it signifies the pattern of post-industrial and industrial civilisation (Haussman, 1877). The actual aesthetic problems which emerged after the Second World War marked not only mechanisms connected to

proportions, axes, urban perfections, and symmetry, but also the integration of the technological features with the public space infrastructure to act such as boulevards, markets, clubs, parks, etc.

The *City Beautiful Movement* was an advanced philosophy of North American urban planning and architecture that thrived during the 1890s with the aim of presenting monumental grandeur and anesthetization in cities. The *City Beautiful Movement*, developed principals of beauty not only for its own purpose, but even to make civic and moral quality between urban inhabitants (Bluestone, 1988). Supporters of this movement states that such aesthetization can promote social order which would increase the quality of life. While criticizers of this movement believe that the movement was just focused with aesthetics with considering social improvement. Jacobs (1992) referred to this movement as "architectural design cult".

The Austrian architect and city planning theoretician Camillo Sitte highlighted the visual involvement inurbane spaces. Sitte (1889) saw the city organization of the 19th century as an inflexible cluster of street organisations without artistic values. *By considering* the beauties of art and attainments of the historical urban space configuration, Sitte stated that aesthetic of urban design would be achieved by cautious configuration of the elements of urban design by following basic rules which can gain from careful investigation of samples from Renaissance, ancient, mediaeval, and even baroque of urban design. Sitte by considering a picturesque approach in urban design introduced artistic principles in public squares by respiting the following principles: 1) in configuration and designing of urban squares the size and shape of public squares should consider. 2) To use monuments for visual concentration the centre of public

squares should be kept free of chaos. 3) Irregularity is suitable in the configuration. 4) Enclosed public squares are highly recommended (Sitte, 1889).

Far from absence of rules and principals of urban aesthetic design in the 1950s, Lynch faced himself with an accumulation of the elements of urban design. Therefore, he introduces "Normative theory" by considering psychological "needs" to create order, visual coherence, and etc. (Lynch & Kepes, 1954). Lynch in in *The Image of the City* connected aesthetic traditions which were fundamentally incompatible such as City Beautiful Monumentality and Modernist functionalism, Picturesque Townscape and Abstract Formalism, and Renaissance Optics with each other. Lynch (1958:26) in a conference of urban design in 1958 defined the term orientation as "an essential value of the urban beatification by involving emotional coherence or feelings of security". Further he developed and explain the principals of urban configuration by considering districts, landmarks, paths, edges, and nodes as the vital elements which describes the excellence of the city image. Lynch also defined the features of a good city form. He believes that a good city should have continuity, motion awareness, dominance, form simplicity, clarity of joint, time series, and figure-background clarity. Consequently, Reed et al., (2011) exposed that visual indicators could be explained in analysing the aesthetic quality of the urban environment. These indicators such as colour, texture, form, line, can also be considered as the main components of the space configuration. Gestalt psychology also developed the notion of the principals of space configuration by an explanation of the requited relationship in shape or space arrangement. Later, Gestalt school formulated principles of grouping and coherence to explain the goodness of configuration. The most common indicators of this configuration follows the roles of organizations such as continuity, proximity, orientation, common ground, similarity, and closure, (Boring, 1942; Koffka, 1935). Alexander et al. (1980) relayed

that the positive image of the environment be influenced by the density in space configuration by its well-defined borderline. Therefore, each building and their organization should be a good neighbour to the next ones. Rapoport's (1990) study of environmental behaviour identified nine mechanisms linking environments and people. Which are *perception, cognition, physiology, anatomy, evaluation, action, behaviour, meaning, affect, and supportiveness* (See Table 9).

Table 9. Description of Rapoport's nine mechanisms linking people and environments (Adopted from Rapoport, 1990).

Description of Rapoport‟s nine mechanisms linking people and environments.	
Physiology	–Adaptation, comfort with regard to temperature, humidity, light levels, glare, noise, etc.
Anatomy	– Sizes and highs of elements.
Perception	– The sensory reception of information from the environment.
Cognition	– This concerns the mental processes that intervene between perception (acquisition of information) and knowledge about the environment.
Meaning	– This is related to the anthropological aspects of cognition, includes latent aspect.
Affect	– The emotions, feelings, moods, etc.
Evaluation	– This leads to preferences and choices based more on wants than on the needs.
Action and Behavior	– The response to cognition, meaning, affect, and evaluation.
Supportiveness	This can be physiological, anatomical, psychological, social, cultural, affective, regarding choice, activity systems, behaviour, and so on.

Consequently, Rapoport introduced features of the successful urban spaces which are all needed to do with its shape and size. He relies on that a successful urban

environment might have highly articulated surfaces, high levels of enclosure, enclosing elements complex profiles, and narrowness (Rapoport, 1990:288). Smith et al., (1997) stated that our instinctive plea for beauty comes from appreciation of rhythm, a sense of pattern, appreciation of balance, and sensitivity to harmonic urban environment. Regarding the implied principles of beauty Nasar (1998) clarified two sorts of variable in urban design context: considering the features of formal aesthetics, this research highlight complexity, mystery (both associated with visual variety), openness, and order. Regarding to the features of symbolic aesthetics Nasar specified variables of subjective aesthetic such as style, perceived use, upkeep, and vegetation.

Bentley et al., (1985) introduced the definition of *Responsive Environment* to upsurge the amount of choice by considering visual appropriateness, personalization, richness, variety, permeability, robustness, and legibility. This thesis highlight the need for more enriching and democratic environments which increase choice in the using of urban spaces. Trancik (1986) by analysing modern urban spaces and historic examples conclude the three approaches in the theory urban design: a) figure-ground theory, b) place theory, and c) linkage theory. He states that the incorporation of these principles in urban spatial configuration would lead to better urban form with high aesthetic quality from its user's point of view.

Jacobs and Appleyard (1987) suggested that seven objectives are required in good urban configuration. They state that a high quality of the urban spatial configuration might create access to opportunities, liveable, identifiable, and controllable space, it also might create imagination and joy. Kaplan and Kaplan (1989) by study on the human behaviour and environmental experience, advanced qualities which have impact people's visual understanding of urban environment which are coherence,

complexity, legibility, and mystery. Moughtin (1992) by decoding the principles of traditional design concluded that order, unity, balance, rhythm, contrast, harmony, symmetry, scale, and proportion can be count as the main indicators of aesthetic design in an urban environment. Consequently, Smith et al., (1997) introduced a list of qualities such as connection, mobility, personal freedom, diversity liveability, and character that need to fulfil in urban design. Lawson (2001) study on human needs in urban spaces, determined that in order to design aesthetic urban environment it needs to consider size and distance, sensation and perception, meaning, foreground and background, colour, verticality, symmetry, scale and social order. Burton and Mitchell (2006) proposed six key aesthetic configuration principals in order to organise a confidently understandable urban space which are comfort, safety, familiarity, legibility, distinctiveness, and acceptability. There are other groups of researchers which empirically assessed aesthetic appreciation in urban spaces, such as good configuration (Ferry, 1993), maintenance and upkeep (Nasar, 1994), vegetation (Cackowski and Nasar, 2003; Galindo & Rodriguez, 2000) novelty and typicality (Hekkert, et al., 2003; Nasar, 1994), and order (Nasar, 1998).

In his documentary movie with the name of "*The social life of small urban spaces*" William H. Whyte (1979) sums up the attributes and qualities that make a public space successful. These qualities are suitable space, street, sun, food, water, trees and triangulation (Whyte, 1979, 42:34). These attributes refer not only to the physical environment and design of the space, but also to the sense of community and the everyday interactions (1979). Following William H. Whyte's perception of the attributes of public space and what makes a successful site, the non-profit organization "Project for Public Spaces" (2012) created a tool or a kind of "protocol" that would assist in the identification and evaluation of those attributes. This "protocol" has given

the main guidelines in order to form the research questions of the thesis. The Place Diagram has developed based on the Project for Public Spaces (2012) which was an attempt to identify those attributes that make a place aesthetically successful-by fulfilling all human needs (Project for Public Spaces, 2012). The criteria, the four attributes stated in the figure 24 are the four qualities of space that are used in this research. Comfort, Sociability (stated as Sense of Community and Sociability in the research), Access and Linkages (Accessibility in the thesis) and Uses and Activities are the four "key qualities" of place under investigation. These qualities tries to satisfy human needs in the place and consequently the responds of the users will lead to aesthetically appreciate the place.

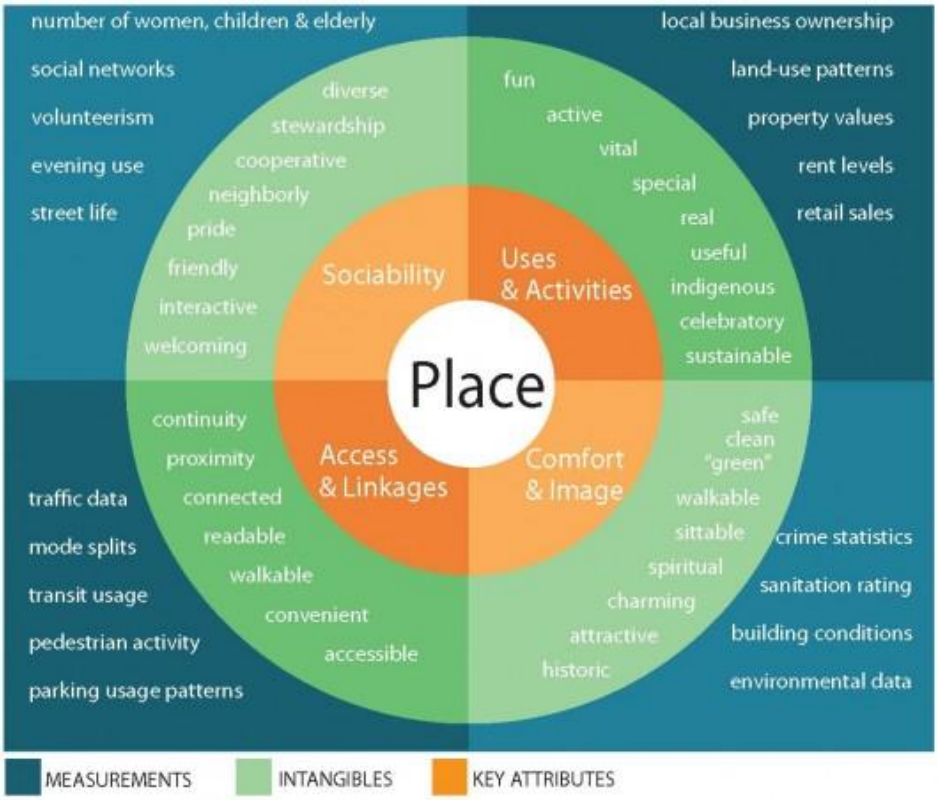


Figure 24. The Place Diagram, developed in the Project for Public Spaces (2012).

Finally, figure 25 chronologically illustrates urban aesthetic design consideration from scholar's point of view.

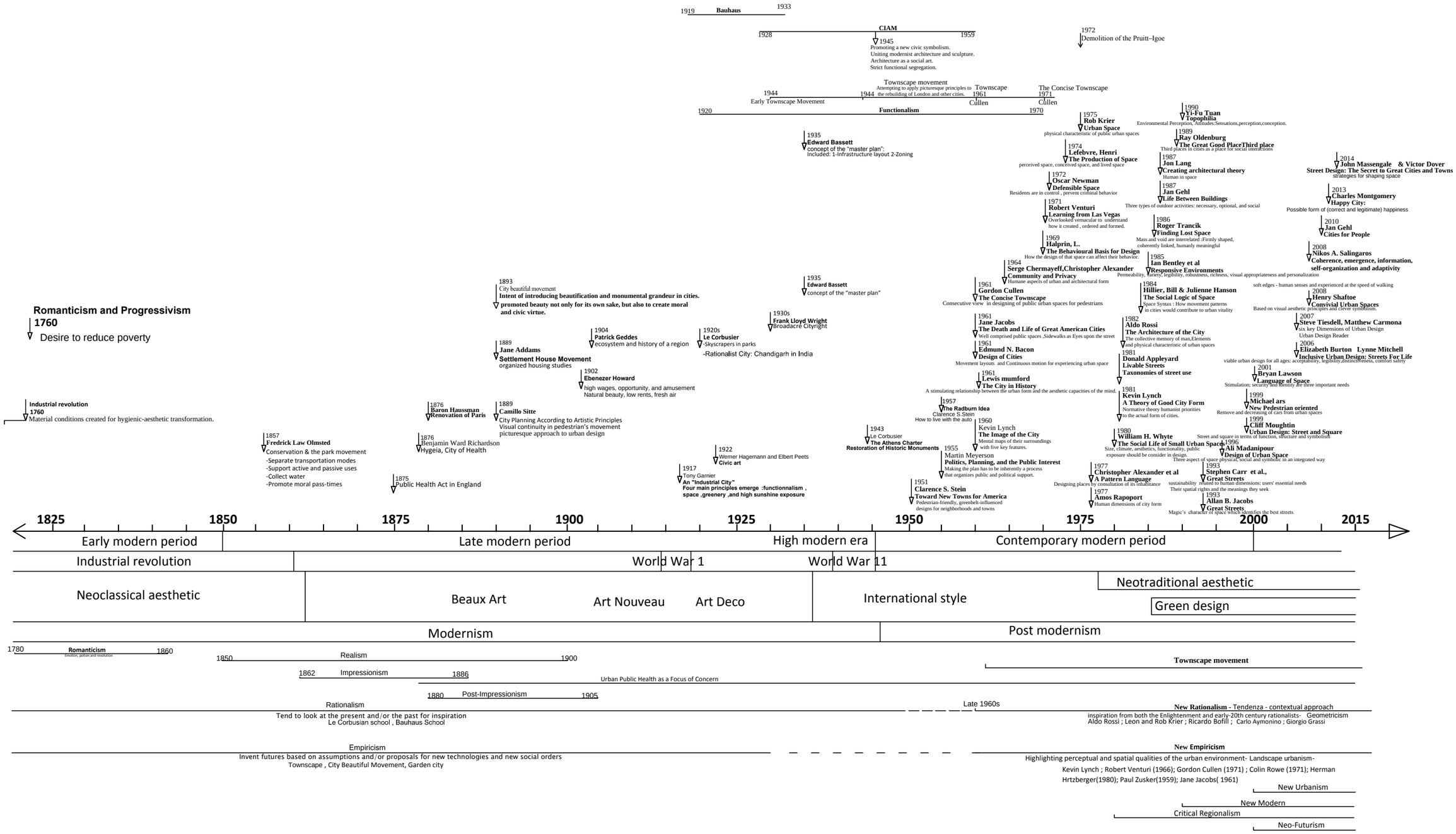


Figure 25. Chronologically assessment of urban aesthetic design consideration from scholar's point of view (Developed by Author).

3.4 Summary of the Chapter

This chapter has reviewed the definition of "urban aesthetic" and basic human needs which leads to aesthetic appreciation in an urban environment. It revealed that urban aesthetic is a term to work in the area of increasing the aesthetic quality of the urban environment by considering fulfilment of its user's requirements in order to increase the ability for its users to appreciate the environment. Urban aesthetic is an art of integrating elements of the urban space configuration. Aesthetic of urban environment also increase social interaction between users. As Berleant (1960) sates, "the aesthetics of the city is an aesthetic of engagement", therefore, it is quantitative approaches that gives a chance for the users to precisely measure visual aesthetics. In this regard, qualitative assessment seeks to regulate the value of non-visual and visual aesthetic features and also the phenomenological apparatus for understanding the effective nature of perception.

Maslow's hierarchical model of needs, introduces guidelines for urban designer to fulfil the requirements of human needs in decision making and design process. In this regard, human Physiological needs, safety and security of public urban spaces, affiliation needs in public urban spaces, esteem needs, self-actualization needs and aesthetic needs are the most important requirements on people in urban spaces in order to appreciate the environment. Reviewing the literature also revealed that aesthetic of the urban environment is not just visual matter; in order to have more pleasurable urban environment the place should offer enjoyable perception of environment, comfort, delight, symbolic values and social interaction among its users. The aesthetic quality of cities appears related to the quality of both their spatial organization of urban form and its meaningfulness. In general, the aesthetic quality of cities is determined, at least

in part, by a clear definition and articulation of spaces, the Gestalt relationships between built and spatial forms, the convenient treatment and maintenance of facades and exteriors, and the presence of intelligent symbolisms and associations.

Chapter 4

THEORIES ON AESTHETIC EVALUATION OF URBAN ENVIRONMENT

In this chapter, the most well-known theories currently applied in the aesthetic evaluation of cities are discussed. These theories have been classified based on the aims and objectives and the effects of urban aesthetic on human aesthetic perception as cognitive, semantic, evolutionary, syntactic and normative theories. This chapter have been organized and developed based on Olascoaga's (2003) research on appraising the aesthetic quality by considering urban spaces.

4.1 Cognitive Theories[5]

Cognitive theory highlights the perception and the knowledge of the urban form. In this regard, Boyer's *city of collective memory* is more temporally oriented, recalling traditions and the previous image of cities. Tuan's "Topophilia" describes the reasons of loving places and the process of "cognitive experience". Lynch's image of cities is more spatially oriented through the use of mental maps. Gestalt theory has also emphasized on the dynamic and structural nature of perception. This chapter have been organized based on Olascoaga's (2003) research on appraising the aesthetic quality by considering urban spaces.

4.1.1 Boyer's City of Collective Memory

The City of Collective Memory describes a chain of different mental and visual models by which the urban environment has been recognized, illustrated, and planned. Boyer

[5] Cognitive theory considers the processes development in a person's thought. It also assess how the cognitive processes influence and also the possible performance interacting with the environment.

classifies three major “maps”. The first one shared in the traditional city which called the city as a work of art. The second one is the characteristic of the modern cities which called as the city as panorama, and the third one is applicable to the contemporary cities which are called the city as spectacle. His study is a richly explained and documented study that pays extensive attention to the hidden and unspoken codes that normalize the order imposed on and derived from the city (Olascoaga, 2003).

Boyer’s city of collective memory confirms the significance of history is in the perception and understanding of cities. Before describing her theory, Boyer criticized the spatial fragmentation of cities because of postmodern market economy, policies on urban planning and historic preservation, and urban designers and architectures practises. Boyer's hypothesis is in view of the element structure of urban areas. These don’t stay steady in time, yet are liable to courses of action of persistent change-changing, growing, evolving, adapting, or decaying. A city could be same, however, its shape is not generally the same. Architecture and landmarks of urban spaces are witness to these alterations.

Boyer (1990) in the “In the City of Collective Memory” scrutinized the principal relationship between building design, urban structure, and history. For the city which is the aggregate appearance of structural engineering it conveys in the weaving and unwinding of its fabric, the memory hints of prior building structures, city arrangements, and open landmarks.

> “…in spite of the fact that the name of a city may stay perpetually steady, its physical structure always develops being disfigured or overlooked, adjusted to different purposes or destroyed by distinctive needs” (Boyer, 1950:96).

Boyer considers urban spaces to be “semi archaeological” objects, containing “different layers of historical time overlaid on different architectural layers” (Boyer, 1950:19).

However, the identity of cities may be kept alive by the collective expertise of their users. Distinct components of a town that belong to totally different periods may be integrated into perception by the recollections and traditions. Additionally, Collective memory is the existence of continuous thought which still moving in the present, these memories are dispersed and multiple, ephemeral and spectacular, not recollected and written down in one unified story. Instead, collective memories are reinforced by a group enclosed in space and time. They are relative to that specific community, not a general history shared by many different groups (Boyer, 1950:67).

To have a profound discernment and comprehension of the city it is important to build up a basic feeling of its history. Every city has historic dimension, which permits the apprehension of profound meanings and traditions rooted in its structure. Therefore, remembering its past enhances the perception and consequently the aesthetic understanding of the city. This feeling of history would be firmly bolstered by the basic translation of the city’s reported symbolism. We travel in reverse in time through memory and through the recorded symbolism of photographs, paintings, the cinema, and architecture, these accumulations section history from their own perspective, recomposing the artifacts through a system of references and similar rehashing that resituate the past in the present (Boyer, 1950: 69-70).

The *city of collective memory* has the significance of perceiving the physical elements of the city from an historic perspective. Considering this sense, Boyer’s theory can be

compared to Lynch's image of cities. While Lynch serves to highlight the elements of the urban structure in space, Boyer attends to record these elements in time.

By considering cognitive theory, Boyer's city of collective memory highlights the significance and importance of history in perception of the cities. Landmarks and architectural elements of a city should refer to their historical background to display a sense of attachment to the place. As a result of collective memory in cities, the identity of a city not only can keep alive by the collective experience of their citizens, but also distinct components of a town by recalling their traditions will produce a nice image in the citizen's cognition.

4.1.2 Topophilia and the Evolution of Thought

The term "Topophilia" *means love of place* or attachment to the place. Topophilia is a strong attention and unique characteristic that people will appreciate it and will convert it to a particular characteristic. It was first introduced into geography by Tuan (1961) and by considering the work of French phenomenologist Gaston Bachelard. Bachelard was studying on the "images and pleasurable contemplation that are aroused by certain types of space configuration, particularly in enclosed spaces" (Tuan, 1961). In his book, *Topophilia* (1974), Tuan include a much broader range of experiences and emotions between people and place, describing the term "Topophilia" as "… the affective bond between people and place or setting," not only the feelings towards enclosed spaces which already stated by Bachelard. Tuan introduced an extensive range of experience in his research on the complex relationships between places and people. "Topophilia" analyses the quest for an environment in the city from a rationalistic point of view, differentiates different sorts of environmental experience, and defines their character. What professor Tuan has attained in his book can be called a philosophical reflection on the aesthetics of environments. Tuan by drawing heavily

on both Greek and Chinese thought looks at psychological structures, symmetry, culture and urban lifestyles which are all connected with environmental perception relies on the fact that culture and experience emphatically affects the understanding of environmental. The physical environment can impact an individual's sense of spaciousness and size. In his theory, the key term is "Experience". Experience is a cover that reflects all terms in various modes to construct a reality. These modes range from more straightforward and uninvolved faculties of smell, touch, and taste to active visual perception and the incidental mode of symbolization.

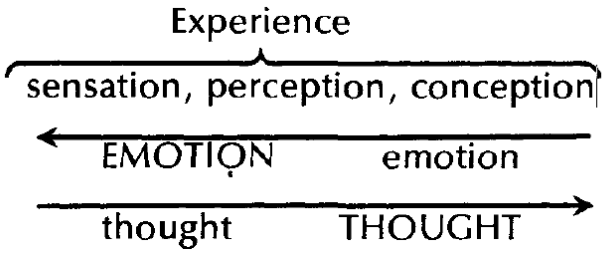


Figure 26. Indicators of experiencing the environment (Adopted from Tuan, 2001:8)

Consequently, in the Evaluation of Thought Tuan clarified that three main processes of experiencing space; 1-sensations 2-perception 3-conception as the most important process in the experiencing aesthetic of the environment. According to figure 26 Tuan also state that the emotion and thought which are parts of individual properties will effects on human final interpretation of the environment.

4.1.3 Lynch's Mental Image of Cities

Lynch in his seminal work *The Image of the City* (1960) established a technique of mental mapping; the idea was to study on the effects of the visual elements of the cities through citizens' mental images of their environment. He classified for describing city image based on the effects that they have for human cognition. The theory of mental image of cities was originally developed as study motivated by several reasons such

as: a) To stretch possible links between psychology and the experience of the built environment. b) To manifest an interest in urban aesthetics. c) To respond the constant preoccupation about city evaluation. d) To incorporate the experience of citizens in planning decisions (Lynch, 1984).

Lyncs's theory of the mental image of cities considers convenience and capacity and of human beings to hold a mental representation of a complex entities such as a city. People can draw, remember, describe and locate elements of the city. People would utilize cognitive maps or mental images for orientation within the city. This ability would also contribute to the tranquillity of people moving throughout the city and emotional security.

> "Each person has a comparatively intelligible and comprehensive mental appearance of their city which shaped in communication among place and self. This image is indispensable to their real function. It also is significant to people's expressive wellbeing." (Lynch, 1984)

The most important quality of cities for establishing their mental image is its spatial legibility or "imageability." However, Lynch acknowledges the existence of other properties that are also a part of a beautiful townscape. Sensuous delight, meaning or expressiveness, rhythm, stimulus, choice are the other basic properties in a beautiful environment (Olascoaga, 2003).

Lynch identifies five basic elements for mapping the city's public image: (1) edges (boundaries or breaks), (2) districts (sections of similar character), (3) paths (channels of movement), (4) nodes (relevant junctions or concentrations), and (5) landmarks (relevant man-made or natural elements). With these elements, it is possible to draw the basic components of cities, utilizing geometric analogies:

1. Edges, in general, have a planar development following the contours of the land. The geographical setting generally defines the edges of cities. The edges constitute not only natural (waterfront, river, forest, etc.) or man-made (road, railroad, etc.) boundaries of linear configuration, but also as axes that direct the city development. In each of this cases since they prepare a chance to visualize the environmental configuration. It will be useful to consider them in an aesthetic assessment.

2. Districts as multi-functional tracts fill all the surface development of the urban form. Districts are basically constituted by sets of buildings, open spaces, and corresponding furniture. Districts are delimited and crossed by paths.

3. Paths are streets, especially arterials, or roads, which functionally and visually connect the city. Paths define axes of linear configuration. An important element of the American city that constitutes both a path and an edge is the highway. It serves not only for communication within the city but primarily as a regional or interstate path; it also subdivides the city, or at least a part of it, as a wall or break.

4. The individual elements of the urban form, such as buildings, plazas, parks, or furniture constitute point elements. When these elements become relevant because of their axial position or dimensions or concentration, they constitute nodes or focal points.

5. Point elements, nodes, paths, districts, or edges can also become landmarks because of their qualities, attached meanings, and associations.

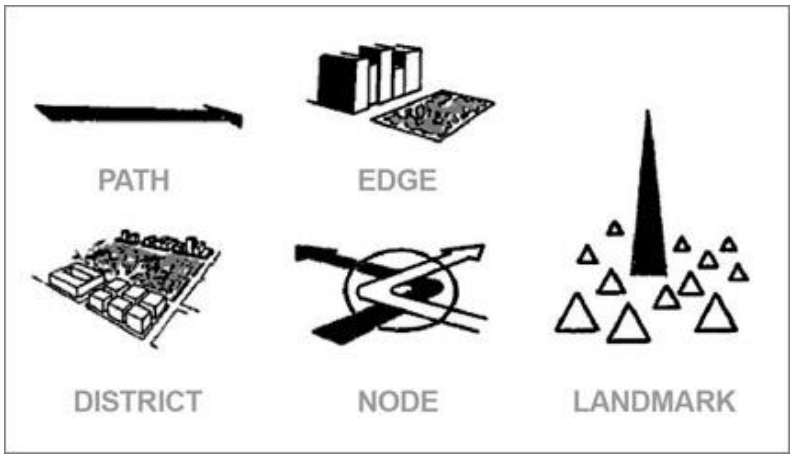


Figure 27. Five basic elements for mapping the city's public image.

Lynch's theory seems to have the limitation of only mapping an abstract image of the city. The real experience of townscapes appears to be three-dimensional. Urban space seems to be visually defined by the interrelationship of the built elements. The physical characteristics, design relationships, and properties of the urban form are perceived in more detail at a human scale.

The Image of the City proposed a theory that seems to disclose how the spatial knowledge of the environment works. This theory has had a fundamental impact in studies of environmental configuration and cognitive psychology. This theory also established a holistic approach to the understanding of urban form. Citizens hold mental images of their cities, which make an urban form more understandable and comprehensive. Differences in age, gender, culture, and familiarity will also effects in the people's image making of the environment. The elaboration of people's mental image is also a part of their aesthetic experience in cities.

4.1.4 Gestalt Theory of Aesthetics

In order to prepare more coherent configuration Gestalt psychology boosted the idea of increasing human cognition of space configuration by clarification of the relationship among the components of space arrangement (See Arnheim, 1977; Mass,

1990). It mainly concerns the perception of forms and shapes. It was also a movement in cognitive psychology which denied the rational method in human behaviour studies. Instead, for assessing complex visual phenomena, it called for exploratory strategies. Gestalt psychology also regards visual perception as global, and holistic, which integrated with human behaviours. Favouring a dynamic interpretation of behaviour; people respond to environments as entities in an integrated way. Organizational and dynamic nature of perception have been highlighted by Gestalt psychology. Based on this philosophy, human relation and communication with architectural elements is independent and direct. By the study on visual perception as well as the study on visual illusion Principles of Organization are emerged based on this theory. Indicators of this theory which will explain in the following paragraph are indispensable for a favourable and successful visual perception of the environment. Principals of *figure-ground relationship* and *grouping* such as proximity, continuity, closure, and similarity) and are the two main propositions of organization regarding to Gestalt psychology. Later Gestalt school introduced rules to illustrate the beauty of configuration (Rules of Grouping and Coherence), which are Proximity, Closure, Continuity, Similarity, Common ground, and Orientation (See Koffka, 1935; Boring, 1942; Metzger, 1953). According to this idea people don't perceive their environment by considering distinct visual elements, but rather in terms of configurations between those elements. This statement is somehow refers to the thesis hypothesis and the relation between environmental configuration and aesthetic understanding.

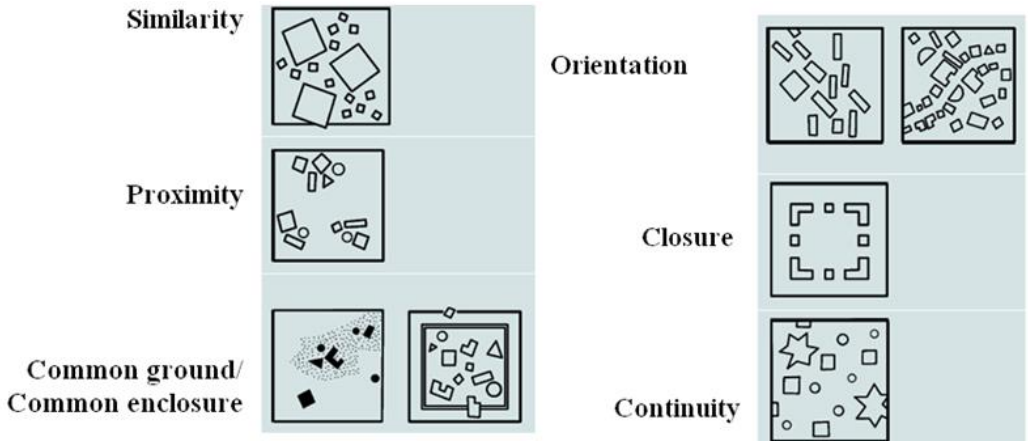


Figure 28. Gestalt Principles of Organization and Coherence (Adopted from Carmona et al., 2003:171).

4.1.5 Cullen and Townscape Movement

Townscape movement in Britain strains to implement picturesque principles to reconstruction of London and other cities. Later, starting from the early 1950s, urban designers such as Williams at Berkeley and Christopher Tunnard at Sydney and Yale applied ideas of civic art in American cities. The generator of this movement was Thomas Gordon Cullen, an English architect, who is known by his book, "Townscape" (1961), and the newer version of it, "The Concise Townscape" (1971). He proposed the "art of relationship" which could possible through "manipulation of scientific flexibility". "Serial vision" is a key term in this approach (see Figure 29).

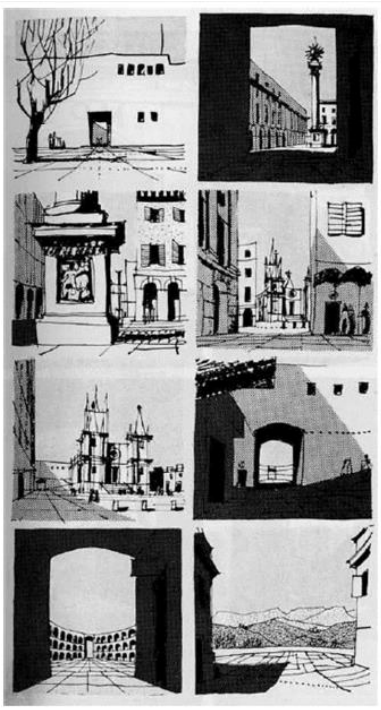


Figure 29. Serial vision and Townscape (Adopted from Cullen, 1961).

Cullen 1961 stated that architecture and urban designers by designing cities from a holistic point of view makes constantly-changing urban spaces. Therefore, it will have its own influence in comprehending the association among urban elements (Cullen, 1961). Cullen called this theory as "serial vision" which would require continuous building poche based on that the figure ground depict. Cullen claimed that townscape could not be appreciated in a technical manner and had to be appreciated by human taste. He claimed that the urban environment is usually experienced by movement in it. He, consequently, stated that

> "…the urban environment should be considered and designed from the point of view of the moving person, where. The whole city becomes a plastic experience, a journey through pressures and vacuums, a sequence of exposures and enclosures, of constraint and relief." (Cullen, 1961:12).

Cullen argued that townscape could not be appreciated in a technical manner and had to be appreciated with an aesthetic sensibility. Cullen's idea of the townscape is valuable by means of appraisal which analysis aesthetic of the urban environment.

4.2 Semantic Theories

Semantic theories describe the meanings of urban spatial configuration to uncover and interpret symbolisms and values. In this regard, 1. Rapoport's theory of nonverbal communication which identifies the meanings of built environments (with cues for appropriate behaviour) and 2. Norberg-Schulz's phenomenology of place which defines the indicators of meaningful place thought their character of the palace have been assessed in this thesis. Understanding the essence of this theory will prepare a chance for urban designers to know how symbolisms can effect on human perception of urban environment.

4.2.1 Rapoport's Theory of Nonverbal Communication

Rapoport (1982) explicates a new framework to understand how the urban environment for the individual comes to have significance. The purpose of Rapoport's theory of nonverbal communication is to identify and understand with the meaning (or meanings) of the built environment.

> "… Built environments have meaning because they constitute a part of the material culture. Meaning is related to every physical object produced by people. The human mind primarily works by imposing meaning in space by using of cognitive classifications, and schemes. Schemata and classifications are manifest through the products of material culture" (Rapoport, 1982:48).

Built environments have the ability to provide a meaningful setting for life. As a result, people behave differently in differing context. Context and behaviour within a specific culture are interrelated. Therefore, the meaning of the built environment directs appropriate behaviour.

The way that people behave and act dissimilar in different settings puts us forward to another point, which is that people act appropriately in different settings because they make compatible their behaviour with the norms for behaviour suitable to the context which defined by culture. This suggests that the built environment makes available indications for performance, therefore, the environment can be understood as a shape of non-verbal association (Rapoport, 1977:3). Signs provided by the built environment, establish nonverbal rules or codes for social behaviour. Newcomers and children correspondingly learn these signs through processes of enculturation and acculturation (Rapoport, 1982:48). A community shares these cues as common codes of communication. The interpretation or decoding of these cues requires cultural and contextual knowledge.

> "…Once the rules operating in a setting are widely known and the cues identify that setting without ambiguity and with great consistency, these then elicit appropriate meanings, appropriate definitions of the situation, and, hence, appropriate behaviour"(Rapoport, 1982).

Among the possible potential cues of the built environment for nonverbal communication, Rapoport lists physical elements (vision, smells, sound); social elements (people, objects, activities and uses); and temporal differences (Rapoport, 1982:68). Between these, visual cues are the most numerous and predominant. Visual cues consist of colour, materials, shape, size, space quality, greenery, decorations, furniture, age, ordering, topography, location, density and maintenance. Rapoport distinguishes between perception and association as two complementary ways of comprehending the built environment.

> "… urban cognition is the product of both social significance (associational world) and visual form (perceptual world) and" (Rapoport, 1977:3).

The distinction of signs (perception) essentially precedes the understanding of their meanings (association). Rapoport, believes that architects and urban designer tend to highlights perception, while the public emphasizes association. Designers are most interested to work on spatial relationships of the built environment, from the other hand public is mostly focused on the contextual importance. As a result, the lack of agreement among the public and designers can create conflict and misunderstandings that should be fixed. Regarding the aesthetic assessment of cities, Rapoport's approach is useful for understanding that the perception of the built environment is related to and influenced by associations to previous images and schemata of the environment. Rapoport's theory on non-verbal communication is therefore important for the distinction of practices on preference that make more emphasis either on the perception of the spatial organization or on associations and meanings of cities.

4.2.2 Norberg-Schulz's Phenomenology of Place

Norberg-Schulz's primary aim in his statement on the phenomenology of place is to explore the psychic effects of architecture (Norberg-Schultz, 1980:5). A phenomenology of architecture is centred on the concrete experience of the built environments. According to Norberg-Schultz (1980) the main aim of architectural design is

> "…to make a site become a place, that is, to expose the meanings potentially present in a given environment".

A phenomenology of architecture is therefore described through a phenomenology of place (Relph, 1976). By "place" the aim is to refer the environment made up of concrete things having material substance, shape, texture and colour. A place is therefore a qualitative, "total" phenomenon, which we cannot reduce to any of its belongings, such as spatial relationships, without losing its concrete nature out of sight

(Norberg-Schultz, 1980: 7). Over character a place dresses to be meaningful. The character of place, is architecturally characterize through the symbolic articulation of form, ornaments, styles, orders, light, and time (direction, rhythms, and goal), and of structure (walls, columns, floors, and roofs), colours, textures and materials, openings. According to Norberg-Schulz, the experience of a meaningful place is essential for the welfare of people. While people identify themselves within a meaningful place, they feel at home (Norberg-Schultz, 1980:50). A meaningful place is basically correlated with dwelling. In general, the meaning is a psychic function which depends on points toward a sense of belonging and empathy. (Norberg-Schultz, 1980:166). In the process of building settlements, people bring together meanings that would help to build them and build culture. Norberg-Schulz's phenomenology of place is important for appreciating the city as an articulated "system of symbols" which establishes culture and values (Costonis, 1989). The aesthetic experience of cities is partially determined by the appreciation of its meaningfulness. This theory aimed to have a second look at the relationship between architecture, place, cultural identity, and belongings. According to this theory, architecture offers a probable mechanism for inscribing themselves into the environment. It may enable a form of identification, and help to arouse a sense of belonging (Olascoaga, 2003). The sense of belonging is thus the most important factor in the aesthetic appreciation of meaningful place by its users.

4.3 Evolutionary Theories

Evolutionary theories of environmental preference define aesthetic response from a survival perspective. These models are organized based on Darwin's theory of evolution. In this section, Kaplan's evolutionary theory of environmental preference and Appleton's prospect-refuge theory is analysed. Evolutionary theories of environmental preference and its advocates highlight the importance of spatial

configuration and people's preference from a survival perspective. Therefore, the strong influence in people's preference in the environmental configuration is highlighted in this theory.

4.3.1 Kaplan's Evolutionary Theory of Environmental Preference

The purpose of Stephen Kaplan's theory is to explain environmental preference from an evolutionary perspective of information processing (Kaplan, 1987). This theory is quite similar in purpose to Appleton's prospect-refuge theory. Both theories have a behavioural basis, link preference for survival, and concentrate on environmental information. But, they differ in the features of environmental information on which they are focused. Appleton's theory focused to know where to obtain this information (place behavioural conditions) while Kaplan's theory is interested in specifying what kind of information to search (preferred attributes). In Kaplan's evolutionary theory of environmental preference, "*preference*" is considered as feeling to make choices and the expression of an innate guiding of behaviour that can quid a person toward desirable environment (Kaplan, 1967). This means that there are conscious and particularly unconscious capability in human psychology that promises the selection of those environments most favourable to survival. In order to make this selection, individuals need to obtain certain information from the environment. They would need an understanding and familiarity of their environment and the ability for orienting them in it. People require an understanding of their environment. They would also feel attracted to the environmental elements that deliver new information. Therefore, environmental preference would be affected by the possibilities for understanding and exploring the environment (Olascoaga, 2003).

Consequently, Kaplan and Kaplan (1982) introduced four attributes of the environmental configuration for understanding and exploration which leads to affect

aesthetic preference. They provide a preferred framework (Table 10) which views preference as a prerequisite to make sense of a place and to be involved in it. "Predictors" leads to the understanding of landscapes "legibility" and "coherence". An environment has "coherence" when its elements are organized by order making it easier to comprehend. The perception of "coherence" is immediate and the assessment can be based on a picture plane. There is "legibility" in an environment when its elements prepare a degree of information that enhances its understanding. In analogy to Lynch's theory of mental image of cities, which is explained in the previous section, legibility allows suggestions for orientation. There are also two aspects that relate to the study on the environmental configuration which are "complexity" and "mystery". There is complexity in an environmental configuration when "a richness of elements in the setting" is perceived. Complexity refers to the presence of various or diverse elements in the environment. "Mystery" in an environment refers to the partial presence of elements by obtaining additional information by moving deeper into the setting. The new information is not the information which people have their mind, the information concluded from what is in the scene (Kaplan, 1987). Their proposed four predictors of preference can be applicable to a different variety and scales of environmental configuration.

Table 10. Preference framework (Adopted from Kaplan and Kaplan, 1982).

	Understanding	**Exploration**
Immediate	Coherence	Complexity
Inferred, Predicted	Legibility	Mystery

As Kaplan mentioned, there is a natural tendency to prefer those built environments most favourable for understanding and exploration. The most aesthetically preferred

cities (or parts of a city) have a significant amount of coherence, legibility, complexity, and mystery. “Complexity” prepares enough data to promote interest while “coherence” prepares a fast understanding of the scene. “Legibility” reduces feelings of disorientation and simultaneously the sense of “mystery” encourages exploration in the environment (Figures 30).

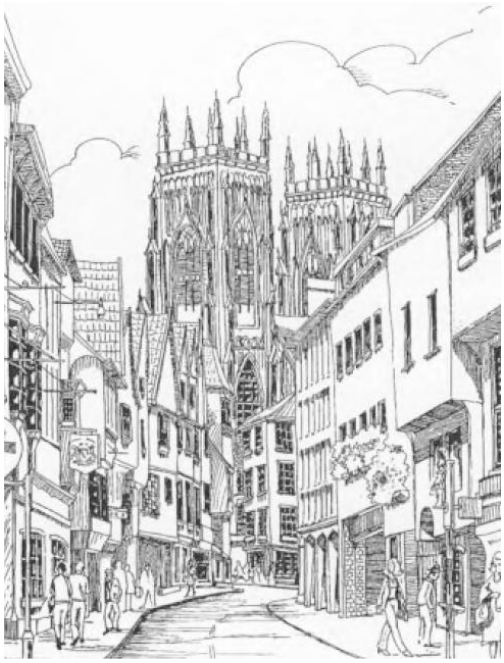


Figure 30. Coherence, complexity and mystery in York, England (Porteous, 1996:122).

Kaplan’s evolutionary theory of the environmental preference logically related and has affective responses to the cognitive process for the purpose of survival. Preference therefore appears to be a unique phenomenon of distinct mental capabilities which intensely rooted in human nature and also is necessary for the well-being and aesthetic appreciation of the environment.

4.3.2 Appleton’s Prospect-Refuge Theory

Appleton in his book *The Experience of Landscape* (1980) aimed to investigate on human environmental preferences to explore how to design a better place that people

encourage to involve on it and share? and why do we prefer some places rather than the others? Which are all refers to research questions in this thesis.

Appleton's Prospect-Refuge Theory is based on the idea that we instinctively prefer places that allow us to clearly observe our surroundings (prospect) and feel comfortable, relax, and sense of home in an urban environment (refuge) (Appleton, 1984). Consequently, the main purpose of his theory was to establish a model to relate the idea of preference in classification of landscape environment mainly through behavioural sciences. Appleton's prospect-refuge theory is organized in his broader "habitat theory" according to which groups and individuals would be encouraged to those environments that appear most likable to live. Aesthetic satisfaction, therefore, experienced in the thinking of the environment. (Appleton, 1996). Preference focused on environmental features that symbolize positive conditions for living (whether in actuality or only in appearance). Therefore, aesthetic environmental satisfaction is based on biological satisfaction. As Appleton (1996) mentioned it rises from an impulsive response to that environment as a habitat which works a place that prepares opportunity to achieve biological needs. Prospect-refuge theory is based on the environmental behavioural conditions and is for survival. In order to search for their needs or to see real dangers or potential of the environment, human beings, as well as animals, should have visual control over their surroundings. In this regard, "Prospect" refers to the favourable condition or given opportunity in environment for having wide vistas or panoramic views. On the other hand, "refuge" indicates the favourable condition or given opportunity of the environment to understands the potential or real dangers for self-protection and safety.

Although the theory initially developed to explain aesthetic preferences in natural landscapes, the theory can be applied to build environments to increase the aesthetic values of their spatial configuration. Considering the theory in cities, open spaces allow people for safety, light, and sight (prospect). The aesthetic quality of these environments can also be increased with the incorporation of greenery, shadow, buildings signify, shelter, and comfort facilities (refuge). Entrances, fences, and eaves highlight the symbolic role of refuge. Based on this theory, the aesthetic quality of environmental configuration can determine by the abundance of prospect and refuge symbols.

Figure 31. Less quality of aesthetic design regarding to prospective refuge theory.

Figure 32. High quality of aesthetic design regarding to prospective refuge theory.

Designing based on prospective-refuge theory aimed to design in a way that to increase aesthetic satisfaction in the environment. Therefore, the balance combination of prospect and refuge in the aesthetic design of environmental configuration is needed.

4.4 Syntactic Theories

Syntactic theories established the “rules of communication” for the understanding of cities. In this part, the study focused on Hillier and Hanson rules on the spatial configuration by regarding to the effects of the network integration on user’s aesthetic perception.

4.4.1 Hillier and Hanson’s Space Syntax

Hillier (1996) motivated on the interconnectivity (visually and physically) of spaces as the key determinant of their functional success. He claimed that the spatial configuration might appear to encourage characteristics of human activity through subsequent behaviour and spatial cognition (Hillier, 1996). As it's known, movement is the most important use of the public space, therefore, the theory to be set is based on the assumption that movement is the essential associate of the spatial configuration (Hillier, 1996:152). People move linearly through the spaces, by following the specific routes. The configuration of public spaces and streets responds to this linear movement. The main routes or axes of a city can be recognized through the analysis of maps or direct observation. The interrelation of these axes constitutes the spatial configuration of cities, which can be represented by axial maps (see, Figure 33). According to Hiller and Hanson’s theory, the more integrating paths and streets would be those that favour pedestrian or vehicular movement with the less number of turns.

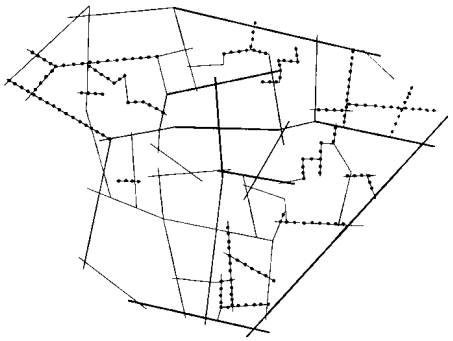


Figure 33. Axial Map of Apl, Franc (Adopted from Olascoaga, 2003).

Consequently, Hillier and Hanson (1984) Based on statistical procedures and topological notions, developed space syntax as a system to analyse and interpret the configuration of urban spaces. Hillier and Hanson propose the construction of a virtual language that represents the rules based on their spatial configuration (Hillier and Hanson, 1984:12). According to space syntax, the urban grid, by its configuration, would canalize different flows of movement. The best designed cities would be the ones which their spatial configuration most favours ‘‘natural movement,” and, consequently, provide “movement economies”. This means that

> “…the mutual effects of movement and space on each other that arise from building masses and patterns of land use and, which are influenced by movement in space, promote the cities’ characteristic, and increase the sense which everything are working properly in order to generate the specific kinds of excitement and well-being” (Hiller, 1984:153).

Hillier considers that the aesthetic experience of cities is related to their movement patters and the level of integrity between the paths. It also highlights that attentiveness on activities or specific use in a street may give it standing point in the minds of observers. In this sense, space syntax is valuable when predicting that the more functional streets define more strength of use.

4.5 Normative Theory

Normative theory indicates how a thing should be or behave. In regard to this thesis, by referring Normative theory, it aimed to seek and identify how a good city configuration should be based on their user’s point of view. In this regard, Lynch’s Normative theory of a good city form that supported by empirical and humanistic knowledge and the theory of responsive environments by Bently et al., analysed in this part.

4.5.1 Lynch's Theory of Good City Form

Lynch's conclusion of the investigation on the principals of a Good City Form (1981:37) comes to the point of "Normative theory" which related to the value of the city to its special characteristics. He proposed the normative theory as a good way of balancing environmental configuration and increasing aesthetic quality, to show how an urban configuration would be shaped based on its human senses and values. According to this theory, identity, transparency, structure, congruence, and legibility are characteristic of good urban configuration. The theory of good city form aimed also to establish general relationships between the urban form and human values.

According to Lynch the goodness of a city form is measured by how well it supports: (1) health and safety, (2) perception and cognition, (3) behaviour and function, (4) transportation and communication, and (5) private and public use. He calls these supporting roles performance dimensions and identifies them respectively as efficiency and justice, access, control, vitality, sense, and fit, (Lynch, 1981:118). The sense of a city is composed of several aspects or sub-dimensions - some of them corresponding to form and some others to subjective ad cultural values. Regarding to objective and subjective elements of urban spatial configuration Lynch defined the aspects of identity and structure as the prerequisites of good city form (Lynch, 1981). He also defined "Identity" as the recognition of the city's uniqueness, character, and distinctiveness. The term "structure" defined by Lynch to the perceived composition of the different parts of a city that would be useful for orientation. In this regard, cognitive maps represent the structure of a city. The hypothesis has the goodness of being a combination of diverse ways to deal with urban and ecological aesthetic. The theory also supports interrelated theories with diverse foci which have been mentioned

in previous paragraphs (Olascoaga, 2003). Those are more elaborated in some of the concepts mentioned by Lynch (1981).

4.5.2 Bently's Theory of Responsive Environment

Responsive Environments by Bently et al., (1985) presents a practical effort to give such an all-encompassing vision for the city. According to Bently et al., all designers, seek to integrate economic, behavioural, social needs to answer the question of how inclusive, controllable and friendly places should be?

Responsive Environment provides a set of practical design such as places that deliver their users "with a fundamental democratic setting, increasing their opportunities by increasing the degree of choice obtainable to them" (Bently et al., 1985: 9).

They claim that, a physical environment can influence the degree of choice by considering seven potentials of the built environment which are (a) *permeability*, (b) *robustness*, (c) *richness*, (d) *visual appropriateness*, (e) *variety*, (f) *legibility*, and (g) *personalization*. Through these seven qualities, responsive environment strained to know how the physical environment and its particular qualities contribute to choice. They also introduced design-conception sheets that define applicable ways for designers to support the quality through environmental design. The following paragraphs will define the definition regarding to the effects on aesthetic understanding of cities.

"Permeability" is the first quality in responsive environment which is related to the way that a design affects where people can go and cannot go within a city (Bently et al., 1985: 12). They claim that the urban designers always need to consider permeability first, for the reason that it involves vehicle and pedestrian circulation within the city. By increasing

the number of alternative routes in an environment, people's freedom of decision making on movement and consequently responsiveness of that place will increase

*"**Variety**"* refers to the diversity of uses that a place provides, e.g., shopping, housing, employment, recreation and etc. Maximizing the variety of uses for a given project by demonstrating how one can assess the level of appeal for various uses to determine the widest mix of uses possible, functionally and economically.

"***Legibility***" is the third quality in a responsive environment by considering the level of comfort with which people can comprehend the spatial arrangement of a place. Bently et al., by drawing largely on Kevin Lynch's *Image of The City* (1961) provide applicable ways which the designer can enhance and determine the perceptual clarity of the landmarks, paths, boundaries.

*"**Robustness**"* is the fourth quality in a responsive environment. Places which can be used for many diverse aims to propose its users a lot of choice than places which design limits them to a single fixed use. The Environments which has this quality of choice have an excellency which called as robustness environment (Bently et al., 1985: 56). A critical operational design consideration here is the development of visual cues that express significantly the levels of decision already discoursed by the first four qualities.

"***Personalization***" refers to designs to encourage people to put their own mark on the places in the place that they live or have social activities. The last two qualities emphasis on details of open spaces and buildings in this regard *richness* considers methods to increase the choice of sense "experience" to prepare an enjoyable place for the users.

In the normative theory and its advocators such as Lynch and Bently et al., aimed to increase the quality of urban space by considering their spatial configuration between elements. They tried to find the qualities in spatial configuration by regarding to the user's taste to find how these qualities should be and should work.

4.6 Summary of this Chapter

The different theories which assessed in this chapter present common and interrelated themes; they are all attempts to find a way and principals to increase the quality of urban spatial configuration. Some theories emphasize the perceptual; others stress more cognitive aspects; some approaches focus more on visual and spatial aspects of cities; others pay attention to socio-cultural aspects. In the analysis of urban environment there are a variety of approaches and theories that are not necessarily in opposition, but they are supporting each other in terms of increasing the quality of the urban environment. As considered by Appleton, we can all comprehend very clearly the reason for accepting the dichotomy between visual and cultural approaches which is already a fact of life. We should not accept it as unavoidable.

Rapoport and Norberg-Schulz are focused on interpreting and understanding the meanings of the urban form and its sense of place, which are reinforced by the urban spatial organization. Kaplan and Appleton more focused on ideal characteristics of places for reasons of survival. Lynch in the image of cities and Hillier and Hanson in space syntax are worked in the exploration of the spatial organization and configuration of cities. Tuan states that experience and culture strongly influence the interpretation and understanding of the environment. Boyer's city of collective memory highlights the dynamic structure of cities and worked on the principals of perceiving urban form from a historic perspective.

All the theories discussed in this chapter approved that the aesthetic quality of cities is favourable for their citizens. Regarding to these theories, individuals are generally satisfied with a city if it has meaningful character and good spatial organization. The aesthetic quality of urban spaces affects in civic societies satisfaction and also effects on a sense of belonging and identity. The study in this chapter has also revealed that in the aesthetic experience of urban environment, it is important to study on aspects related to both "the apparent arrangement of the visual urban environment" and "observer's psychological structure". Table 11 briefly explains theories on the aesthetic evaluation of the urban environment.

Table 11. Theories on aesthetic evaluation of urban environment (Developed by Author).

	Theory	Author	Criteria	Thesis concern by regarding to aesthetic perception
Cognitive Theories	City of Collective Memory	Boyer 1990	- Recalling traditions and the past imagery of cities. -The city as a work of art, the city as panorama, the city as spectacle. - Cities can be kept alive by the collective experience of their citizens. - Elements of a city, which belong to different periods, can be integrated into perception by the memories and traditions. - Perceiving the structural elements of the city from an historic perspective.	-Distinct components of a town by recalling their traditions might produce a nice image.
	"Topophilia" the Evolution of thought	Tuan 1961	- Affective bond between people and place or setting. - Philosophical reflection on the aesthetics of urban environments. - Culture and experience strongly influence the interpretation of environment. - Three main process of experiencing the environment is sensation, perception, conception. - Direct (active) and indirect (passive) modes of symbolization.	-Experience and culture strongly influence the interpretation and understanding of the environment.
	Mental Image of Cities	Lynch 1960	- Basic properties in a beautiful environment are meaning or expressiveness, sensuous delight, rhythm, stimulus, choice. - To reveal how the spatial knowledge of the environment operates? - Mental images of their cities, which make urban form more comprehensible and intelligible.	- Principles of organization and five basic elements for mapping the city's public image are essential for a successful and favourable visual perception of scenes.
	Gestalt theory of aesthetics	Koffka 1935	- Perception of forms and shapes. - Experimental methods instead, for studying complex visual phenomena. - It emphasized dynamic and organizational nature of perception. - Principles of grouping and coherence. - Need for balance between order and complexity in environments.	- Exploratory strategies instead, for assessing complex visual phenomena. - Principles of Organization are introduced that are essential for a successful and favourable visual perception of scenes.
	Townscape movement	Cullen, 1961	- Attempting to apply picturesque principles to cities. - Townscape could not be appreciated in a technical manner and had to be appreciated with an aesthetic sensibility. - Vision evoked memories, experiences and emotional.	- Serial vision and the art of juxtaposing.
Semantic Theories	Theory of Nonverbal Communication	Rapoport 1982	- Possible potential cues of the built environment for nonverbal communication. - Physical elements (vision, sound, smells); social elements (people, activities and uses, objects); and temporal differences. - The distinction of cues (perception) necessarily precedes the interpretation of their meanings (association). - The perception of the built environment is related to and influenced by associations to previous images and schemata.	Nonverbal communication which identifies meanings of built environments by means of cues for appropriate behaviour.
	Phenomenology of Place	Norberg-Schulz 1980	- Experience of a meaningful place is fundamental for the well-being of people. - People identify themselves within a meaningful place: they feel "at home". -Anticipated a reassessment of the relationship between architecture, place, cultural identity, and belonging.	-Appreciating the city as an articulated "system of symbols" which establishes culture and values. To make a site become a place, that is, to expose the meanings.
Evolutionary Theories	Theory of Environmental Preference.	Kaplan 1982	- Preference is considered an expression of an intuitive guide of behaviour, an inclination to make choices that would lead the individual away from inappropriate environments - Environmental preference would be affected by the possibilities for understanding and exploring urban spaces. - Mystery in a landscape, when the partial presence of elements indicates that additional information is obtained by moving deeper into the setting.	- The most aesthetically preferred cities have a significant amount of coherence, legibility, complexity, and mystery.
	Prospect-Refuge Theory.	Appleton 1984	- How to design a better place that people encourage to share and involve? - Individuals and groups would be attracted to those environments that appear most favourable to living. - Aesthetic satisfaction, experienced in the contemplation of the urban environment.	Based on this theory, the aesthetic quality of environmental configuration can determine by the abundance of prospect and refuge symbols.
Syntactic Theories	Space Syntax.	Hillier and Hanson 1996	- Procedures, Hillier and Hanson developed space syntax as a system to describe and analyse the configuration of urban space. - Is based on one central proposition: that the fundamental correlate of the spatial configuration is movement. - The best designed cities would be the ones which their spatial configuration most favours ''natural movement," and, consequently, provide "movement economies".	-Interconnectivity (visually and physically) of spaces as the key determinant of their functional success.
Normative Theory	Theory of Good City Form.	Lynch 1981	- To show how an urban configuration would be shaped based on its human senses and values. - Goodness of a city form is measured by how well it supports: (1) health and safety, (2) perception and cognition, (3) behaviour and function, (4) transportation and communication, and (5) private and public use. - The sense of a city by identity and structure.	-The theory of good city form aimed to establish general relationships between the urban form and human values.
	Theory of responsive environment.	McGlynn et al., 1985	- How built comprehensible, friendly and controllable places of our environment? - Seven qualities of the built and human environment - In design of public space we should seek to integrate behavioural, economic, social and aesthetic needs. - Places that provide their users "with an essentially democratic setting, enriching their opportunities by maximizing the degree of choice available to them".	-Physical environment can influence the degree of choice by considering seven potentials of the built environment.

Chapter 5

METHODOLOGICAL ANALYSIS ON AESTHETIC PERCEPTION

This chapter defines and evaluates methods that have been used by researchers for appraising the aesthetic quality of urban spaces. The chapter also focused on quantitative and qualitative methods which considered to the appraisal of urban space configuration. Methodological analysis of researches of aesthetic perception in this research is structured based on the theories on the aesthetic appreciation of urban spaces that have been discussed in the previous chapter. Also, there might be other approaches for assessing the quality of urban spatial configuration the study focused on the approaches that have been considered elements of urban spatial configuration regarding to the aesthetic satisfaction of its users.

Methods applied for correlational analysis in the aesthetic appraisal of cities grouped in three main categories: A) *Meaning oriented approaches* which considers associations related to distinct urban elements. B) *Preferred places approaches* identify most liked or disliked landscapes and urban areas. C) *Environmental aspects method* analyse the effects on preference of qualities such as complexity, form, and mystery.

5.1 Meaning-Oriented Approaches

These methods of assessments demonstrate that people perceive meanings and associations by attaching to the environment. These meanings can also be associated with values, cultural background, individual characteristic, etc., structured

questionnaires for rankings and ratings utilized in meaning-oriented approaches are simple and most commonly have been used by the researchers. The level of difficulty or complexity of these approaches depends on the number of responses to be analysed and the broad use of statistics for analysing data. Inferences of these methods depend on analysis of variance, factor analysis, the chi-square test, and correlation analysis. Different statistical software exists for doing these calculations. SPSS (statistical package for social science), Statistica and Minitab are the most common use in the area of social science. The researchers need to work on data input, data analysing and the evaluation of findings which it requires some effort and also time consuming (Olascoaga, 2003).

5.1.1 Semantic differential scales and Hershberger's experimental study

Hershberger (1988) experimental study aimed to compare differences between laypersons and architects in the attribution of meanings of the built environment (Hershberger, 1988:86-100). The study focused on three groups of 26 students (each from the University of Pennsylvania) comprised of graduating thesis students in architecture, pre-architects, and a non-architect random sample (Hershberger, 1988: 176). These groups rated the buildings which already selected from the campus of the University of Pennsylvania (Hershberger, 1988:177). They used for ranking 30 pairs of semantic differential scales (see figure 34).

Factor analysis of responses revealed three common orthogonal factors: Organization (e.g. clear-ambiguous, ordered-chaotic, and rational- intuitive), Space-Evaluation (e.g. loose-tight, open-closed, pleasing annoying, cheerful-gloomy, etc.), and Potency (e.g. bold-timid, strong-weak, and permanent-temporary). Though, the evaluative and affective components of the factors (e.g. good-bad, exciting-boring, delightful-dreadful) performed unstable and non-orthogonal (Hershberger, 1988; 84-170).

By comparing responses between groups the study was found that the Potency-Aesthetic indicators of research most important for the architectures, but it were less important for the Pre-Architects and Non-Architects. Conversely, the Space-Evaluation dimension was dominant for the Pre-Architects and Non- Architects. The study also revealed that the evaluation and organization was not highlighted from any of the groups (Hershberger, 1988:182). Findings demonstrate a difference in the level and amount of perception of the buildings among the groups of Architects, Pre-architects and Non-architects. The Architects emphasizes potency affective meanings, while Pre-architects and Non-architects stress spatial evaluative meanings. The result proposes differences in how Experts and Non-professionals evaluate and perceive elements of the urban spatial configuration.

Spaciousness:	Spacious	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Confined
	Open	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Closed
	Loose	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Tight
Organization:	Ordered	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Chaotic
	Clear	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Ambiguous
	Straightfwd	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Indirect
	Rational	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Intuitive
	Controlled	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Uncontrolled
	Considered	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Rash
	Simple	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Complex
	Unique	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Common
	Continuous	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Discontinuous
	Plain	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Ornate
Potency:	Strong	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Weak
	Bold	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Timid
	Permanent	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Temporary
	Profound	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Superficial
	Interesting	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Boring
	Exciting	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Calming
	Rugged	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Even
	Active	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Inactive
	Specific	____ : ____ : ____ : ____ : ____ : ____ : ____ :	General
Evaluation:	Cheerful	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Gloomy
	Pleasing	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Annoying
	Welcoming	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Forbidden
	Beautiful	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Ugly
	Comfortable	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Uncomfortable
	Good	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Bad
	Delightful	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Dreadful
	Revolution.	____ : ____ : ____ : ____ : ____ : ____ : ____ :	Conservative

Figure 34. 30 Pairs of Semantic Differential Scales (Adoped from Hershberger, 1988).

Hershberger's experiment reveals differences among groups due to degree of professional education. However, there can be some variation of emphasis among architects from different institutions.

5.1.2 Semantic differential method and Perovic and Folic's (2012) research to identify visually aesthetic values

Public open spaces in the city of Niksic are analysed from the perspective of the subjective and visual perception in Perovic and Folic's (2012) research. The research is based on empirical study and the semantic differential method. The aim of their research is to build an objective criterion for designing of aesthetically suitable public open spaces of the city in the 21st century. By focusing on the subjective assessment of the urban spaces through observing photographs as a methodology by focusing on

the visual and aesthetic dimension of urban spatial configuration. The outcomes point out that dynamic, associative, multifunctional, inclusive, authentic and homogeneous space with lots of natural elements leads to desirable visual effect on users.

The aim of their study is to identify visually aesthetic values, respectively positive and negative effects that create typical public open spaces. The results will further can use for selecting of objective patterns and their organization for increasing the aesthetic quality of cities. By considering the fact that the study of urban space from the visual perception point of view is multidimensional and diverse. Their study has been developed in this field by considering the Gestalt psychology (Gibson, 1950; Arnheim, 1954; Koffka, 1935) which emphasizes the importance of the perception in the organization of the elements. They also designed and applied a research methods by considering a method of visualization (Mambretti, 2011), mental map (Lynch, 1960), computer models (Do & Gross, 1997). Consequently, observation and judgment of photographs and semantic differential method were used in their research. The information about visual aesthetic experiences of space quality has been achieved by this methodology. The survey was involved with 300 respondents with 17 bipolar pairs of adjectives in the semantic scale questions rated from -3 to 3. (See Table 12)

Table 12. Scale of semantic differential - arithmetic mean (Adopted from Perovic and Folic, 2012).

Repulsive	-3	-2	-1	0	1	2	3	Attractive
Disarranged	-3	-2	-1	0	1	2	3	Arranged
Artificial	-3	-2	-1	0	1	2	3	Natural
Boring	-3	-2	-1	0	1	2	3	Interesting
Disturbing	-3	-2	-1	0	1	2	3	Comforting
disharmonized	-3	-2	-1	0	1	2	3	Harmoniously
Dysfunctional	-3	-2	-1	0	1	2	3	Functionally
Intense	-3	-2	-1	0	1	2	3	Relaxed
Unsocial	-3	-2	-1	0	1	2	3	Social
Unattractive	-3	-2	-1	0	1	2	3	Attractive
Cold	-3	-2	-1	0	1	2	3	Warm
Uninspiring	-3	-2	-1	0	1	2	3	Inspiring
Poorly	-3	-2	-1	0	1	2	3	Diverse
Uncertain	-3	-2	-1	0	1	2	3	Certain
Unavailable	-3	-2	-1	0	1	2	3	Available

Data analysing was based on the arithmetic mean the comparative exploration of the outcomes. The respondents categorized into two groups of 150 members. The organization was based on profession, education. The scales were identical for all respondents and the participants had 15 to70 years old in the survey. The first group of respondents was the lay person without considering their level of education. The second group includes the students of the third and fourth year of architecture, landscape architecture, urban planning. The research done based on 12 typical public open spaces of Niksicfig (See Figure 35)

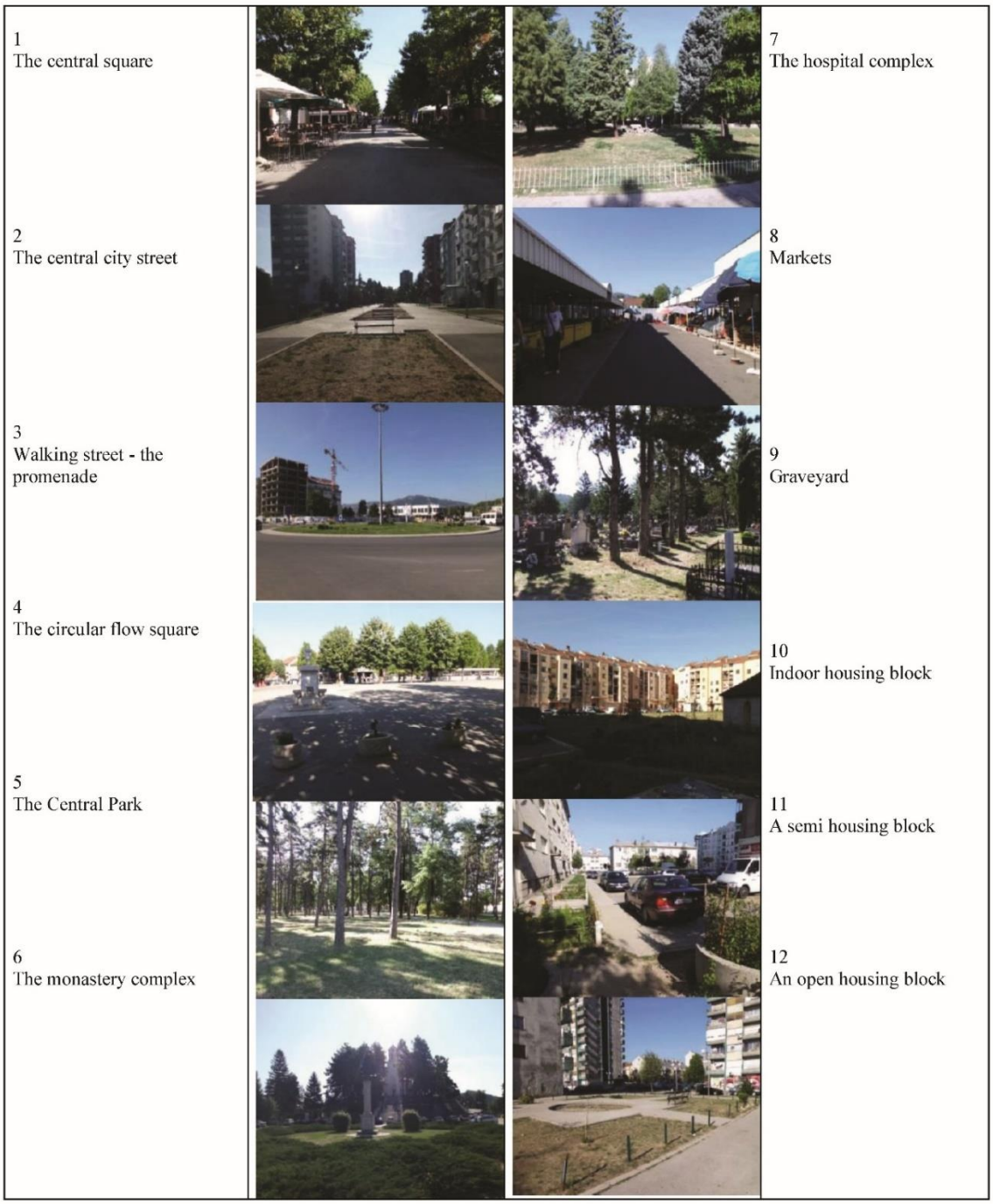


Figure 35. The images that participated in the survey (Adopted from Perovic and Folic, 2012).

Through comparative analysis of arithmetic means for estimating the value of an evolved group of respondents for the each photograph, the research come to a conclusion about the most favourable visual resource of the city which can serve as a general criterion for the design of public open spaces. Their study also revealed that public open spaces of Niksic have aesthetically appropriate visual- aesthetic

characteristics and which on needs revitalization. The outcomes based on the scale of semantic differential method revealed that the best evaluated photo was photo number 6 (+1.40) then the photo number 5 (+0.74) then the photo number 7 (+0.64), then the photo number 3 (+0.35). The least positively evaluated photo was photo number 2 (0.32). The other photos were evaluated negatively from its respondent's point of view. The photo number 9 rated -0.31. The photo number 12 rated -0.49. The photo number 4 rated -0.50 and the photo number 11 rated -0.89. The lowest was evaluated in the photo number 8 (- 1.24). Consequently, the contribution of their study was to identify overall objective and desirable visual effects of public open space basis on subjective assessment. The outcomes prepare a guideline for increasing the aesthetic quality of existing and design of new open spaces.

5.1.3 Quantification of Collected Data Based on Entropy Approach

Bostanci and Ocakçi (2011) define an objective research method for assessment of urban environments from an aesthetic point of view. The assessment in their research is done through the scale of the urban skyline. In this sense, the aesthetic principles of the urban skyline by adapting the visual codes of the design elements converted to numerical quantity. They used to define the aesthetic quality of cities based on relation and order of the environmental integrity and their structure. In Bostanci and Ocakçi's (2011) study, coding models for skyline associated with the formal aesthetic design principals with the advanced entropy approach. Justifying aesthetic values by creating the formal aesthetic design criteria which could be quantifiable during visually assessing the city was the main aim of their research.

The entropy method[6] makes the research possible to quantitatively appraise the aesthetic quality and potentials of the urban spaces. For skyline evaluation, while each criterion represents a probability value on the operation done according to its appearance frequency (Bostanci and Ocakçi, 2011). In their research, the visual properties regarding to the formal aesthetic assessment criteria are coded and their quantities are specified in the study. The tables (see for example Table 13) are organized by considering visual coding quantities and following Equation is applied as process of their research:

$$H = -\sum_{i=1}^{n} p_i \ \log_2(p_i + \varepsilon).$$

The H in the Equation has a quantitative expression on a "bit" basis which is the "entropy value". P_i is the quantity of the probable cases. In Bostanci and Ocakçi's study, visual coding quantities of the objective aesthetic assessment principles are the probable cases. Appraisal of clarity and diversity matters by considering their formal aesthetic assessment principles.

In their first assessment, the entropy values of diversity which considered between the aesthetic evaluations criteria for the historic Peninsula displayed a distribution with a value of 3.05 bit. The entropy value of the skyline of Ortakoy was assessed and found to be 3 bits. The entropy value of the Historic Peninsula was also assessed and found to be fairly close to Ortakoy (See Table 13). The skyline example, measured from the Atasehir Housing Estate (See Figure 36) was found to be with an entropy value of 2.64

[6] Entropy is an approach that is based on the quantitative measure of the degree of disorder in a system.

bit (See Table 13), simultaneously, a disorder was noticed in the relation among organization between elements (See Figure 37).

Figure 36. Atasehir Housing Estate, Istanbul (Adopted from Bostanci and Ocakçi, 2011).

Table 13. The entropy results for diversity, Atasehir, Istanbul (Adopted from Bostanci and Ocakçi, 2011).

Evaluation criteria	Visual coding number	Entropy results
Contour effect	27	0.53
Mass unit	14	0.44
Vertical elements	16	0.47
Horizontal elements	1	0.08
Elements of form	2	0.13
Elements of colour	5	0.25
Hierarchical phasing	5	0.25
Dominant effect	0	0
Elements of repetition	6	0.28
Elements of continuity	2	0.13
Time layers	1	0.08
Sum	79	2.64
		2.64 bit

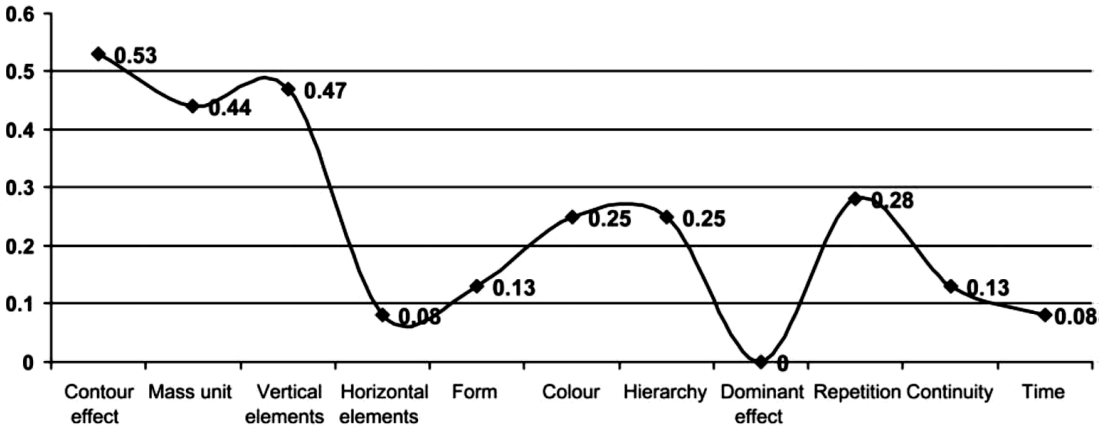


Figure 37. Formal aesthetic criteria and the distribution about diversity for the case of Atasehir, Istanbul (Adopted from Bostanci and Ocakçi, 2011).

To sum up, when the case studies for the assessment of the formal aesthetic design criteria of Istanbul's skylines in different part of the city (which reveals different ways of configuration between the elements of urban spaces) were examined with the entropy approach, proximity between the entropy values of the urban skylines was noticed. Therefore, with this method, the aesthetic qualities of urban skylines are made comparable. As a result, the entropy method can be considered as an appropriate approach in aesthetic evaluation of urban design since it could work with the meaning of the urban configuration which comes from visual observation of the environmental integrity and their structure.

5.1.4 Reed's (2011) indicators based evaluation

A research done in Loughborough University by Reed (2011) discloses that in assessment of urban environment visual terms can be clarified in clarification of spaces. Reed adapted his methodology to the visually analysis landscape environment based on Swanick (2002) research (See table14). The components visual qualities of environmental configuration have been assessed based on the indicators such as scale, enclosure, line, colour, balance, movement, pattern, diversity, texture, and form. Consequently, the indicators classified in four categories from less quality to high quality. The respondents evaluated the questions accordingly.

Table 14. Visual components and attributes (Adopted from Swanick, 2002).

Scale	Intimate	Small	Large	Vast
Enclosure	Tight	Enclosed	Open	Exposed
Diversity	Uniform	Simple	Diverse	Complex
Texture	Smooth	Textured	Rough	Very rough
Form	Vertical	Sloping	Rolling	Horizontal
Line	Straight	Angular	Curved	Sinuous
Colour	Monochrome	Muted	Colourful	Garish
Balance	Harmonious	Balanced	Discordant	Chaotic
Movement	Dead	Still	Calm	Busy
Pattern	Random	Organized	Regular	Formal

In general, these methods of assessments demonstrate that people perceive meanings and associations attached to the environment. Meaning oriented approaches are useful to understand that meanings involved in the built environment can focus on some affective or organizational factors to manifest social status or personality qualities. These methods also reveal that the meanings of the built environment are influenced by personal biases, professional education and, cultural, social and economical factors.

5.2 Preferred Places Approaches

Preferred places approaches refer to the most liked or disliked urban spaces and landscapes. Preferred places approaches are universal and the questions would be measured from people in each profile. The questions regarding to favourites, preferred, most pleasant places can also be asked in this method. In general, interviews for preferred places-oriented approaches contain open questions.

> "…difficulty in processing this information is related to the number of interviewees, the number and complexity of responses, and to the researcher's ability to code and categorize them" (Olascoaga, 2003).

Nevertheless, numerical assessments depend on excluding frequencies of responses to establish comparative percentages. Preferred places approaches are comparatively and easy to apply.

5.2.1 Categories of Favourite places in Newell's (1997) Research

Newell (1997) conducted research on most favourite places to determine if cultural differences motivate the environmental preferences (Newell, 1997). 223 students were interviewed. The respondents were from the State University of New York and the University of Maynooth, Dublin and the University of Saint-Louis (Newell, 1997:499). Through open-ended questions, the students were requested to identify their favourite place, as well as to give the reason for their selection (Newell,

1997:500). Organization and assessment of the responses from the three groups revealed that about 29% of all respondents had a great favourite for their own place and family home (e.g., Table 15) (Newell, 1997:504).

Table 15. Categories of favourite places and the percentage of responses in each case study (Adopted from Newell, 1997).

Category	United States n = 70	Ireland n = 89	Senegal n = 64	Total N = 223
Own place, room, belongings	10.3	17.8	15.7	15.3
Family home and surroundings	20.6	13.3	7.8	13.9
Beaches, coastline, seas, ocean	4.4	21.1	15.7	14.8
Inland waters, rivers, lakes, ponds	8.8	2.5	2.0	4.3
Woods, forests, tropical rainforests	17.6	7.8	3.9	10.0
Recreation areas, parks, trails	11.8	1.1	5.9	5.7
Mountains, panoramic views	7.4	10.0	0.0	6.2
Pastoral countryside, fields	0.0	14.4	5.9	10.0
Built environment, pubs, streets	7.4	6.7	17.6	11.5
Outdoors, nature, the Earth	8.8	5.6	25.5	15.3

However, American students additionally indicated ecological and familiar reasons; Irish students argued aesthetic and ecological reasons; while the Senegalese students pointed out place "affordances" and spiritual reasons. Newell concluded: The biophilia hypothesis is strongly supported by the data, because 61% of the favourite places mentioned are natural environments (Olascoaga, 2003).

5.2.2 Ferdous's (2013) research on the degree of success of urban space

Ferdous in his research (2013) conclude that it is possible to assess and define the degree of success of urban space configuration by considering aesthetic values in space configuration. The research methods involved semantic differential rating method and structured questionnaire in order to collect data. Eight urban open spaces and plazas in Dhaka, Bangladesh dignified as a case study.

The study considered two phases, a) mixed-methods approach in initial research to identify preferences in terms of the visual characteristics of urban plazas by using

photo and their interpretation. b) In the second stage of their research in order to identify the visual features of urban spaces and ranks of the association between aesthetic responses they used field survey (Ferdous, 2013).

Four bipolar rating scale items pleasant–unpleasant, like–dislike, desirable–undesirable, and beautiful–ugly was used to evaluate answers which collected from semantic differential rating scale. 35 people from each case study area have been participated in Ferdous's (2013) research. Cultural familiarity, educational background, and the relevance of the experience was the method of selection of the participant. In each case study area from each participant a set of visual stimuli questions with a 5-point Likert scale method was asked (Table 16).

Table 16. Five Point Likert Type Scaling method.

Extremely low				Extremely high
1	2	3	4	5

In table 16 number 1 signifies completely enclosed for "environmental enclosure," as an example, spatial configuration in urban space is fully surrounded by any negative visual barrier then the Likert-type scale amount will be 1. And the rate of number 5 will be Vice versa. The results of their study by the "space inventory observation" method illustrated in Table 17.

Table 17. The outcomes of the space inventory observations.

Urban plaza	Surrounding enclosure	Height of enclosure	Water feature	Vegetation	Monuments/sculptures
1. Dhanmondi 8	Moderate enclosure	Moderate height	Quite a lot	Quite a lot	None at all
2. Dhanmondi 32	Partially open	Low	Great amount	Great amount	Moderate amount/size
3. Sangshad Bhavan	Partially open	Low	Moderate amount	Quite a lot	Moderate amount/size
4. Zia Uddan	Partially open	Extremely low	Moderate amount	Great amount	Quite a lot
5. Rayer Bazaar	Partially enclosed	Moderate height	Very few	Moderate amount	Great amount/size
6. Ramna	Partially open	Low	Moderate amount	Quite a lot	Moderate amount/size
7. Shahid Minar	Completely open	Extremely low	None at all	Very few	Great amount/size
8. TSC	Moderate enclosure	Low	None at all	Moderate amount	Very few

Note: TSC = Teacher Student Centre.

Pearson correlation analysis was applied to identify the levels of association between the variables and revealed that the power of association between the variables is moderately strong. In Pallant's research correlation coefficients from 0.10-0.30 discloses a weak correlation. Numbers from 0.30- 0.50 exposes a medium correlation. Coefficients from 0.50-1.0 discloses a strong correlation. To construct the aesthetic response, strong relationships statistically justify linking the variables which have been assessed in the survey (See table 18).

Table 18. The Variables of Aesthetic Response and Correlation Coefficient among them.

Variables	1	2	3	4
1. Pleasant–unpleasant	1	.783[a]	.812[a]	.710[a]
2. Like–dislike	.783[a]	1	.755[a]	.650[a]
3. Beautiful–ugly	.812[a]	.755[a]	1	.706[a]
4. Desirable–undesirable	.710[a]	.650[a]	.706[a]	1

[a]Correlation is significant at the .01 level (two-tailed).

Ferdous (2013) also used the method of Cronbach's Alpha to test the reliability of his research. An alpha (α) score of 0.7 or above in Cronbach's Alpha reveal good reliability between the elements (Tabachnick & Fidell, 2007). In his study, Cronbach's alpha for the four items of aesthetic response is 0.916 which is well above the 0.7 suggested (see table 19).

Table 19. Reliability Statistics of Aesthetic Response.

Cronbach's alpha	Cronbach's alpha based on standardized items	Number of items
.916	.918	4

One-way ANOVA[7] between the groups was applied to assess the levels of correlations between the respondent's aesthetic response and the visual characteristics. In this regard, *F* ratio represents the difference within the groups. In his research, A big *F* ratio shows more differences between the case studies. Consequently, If "the *F* ratio was near to 1 it demonstrations that there is no difference among the case studies" (Pallant, 2007; Hinton, 2004). The outcomes of the one-way ANOVA assessment of the variables of the four dependent variables are fully explained in Table 20. The *F* ratio greater than 1 represents noticeable dissimilarities.

Table 20. Visual Characteristics and Aesthetic Response: Significant Values.

Dependent variables	Surrounding enclosure		Height of surrounding Enclosure		Water features		Vegetation		Monuments/ sculptures	
	F	Significance	*F*	Significance	*F*	Significance	*F*	Significance	*F*	Significance
Pleasant–unpleasant	7.052	.000	11.941	.000	2.465	.063	1.869	.135	8.735	.000
Like–dislike	5.200	.002	6.768	.001	2.793	.041	1.988	.116	8.079	.000
Beautiful–ugly	7.286	.000	4.514	.012	5.100	.002	1.988	.116	9.022	.000
Desirable–undesirable	3.970	.009	8.379	.000	3.144	.026	1.043	.374	5.841	.001

The study revealed that the built environment is less preferred than the natural. From the other hand the strong preference for decorative architectural elements such as arcades or streetscapes were recognized. The study also revealed that city edges and

[7] Based on Pallant (2007) ANOVA or Analysis of variance considers the average scores among the groups by considering the percentage of inconsistency within each of the groups.

industrial areas are the least preferred places. The qualities such as safety, calmness, and peacefulness were the reasons that justify a preference for these places.

In general, preferred places approaches are useful for identifying types of urban preferred environment. Outcomes attained through these methods are essential by considering that these methods prepare a chance for cross cultural studies. The high degree of preference for natural landscapes, and their corresponding feelings of calmness and peacefulness tend to confirm evolutionary theories of environmental preference. Preferred places methods are universal. Any competent person prepared to ask about preferred, favourites, or most pleasant places, and capable of processing this information quantitatively can use this method.

5.3 Environmental Aspects Approaches

Environmental Aspects Approaches (EAA) analyses the effects on preference of properties such as form, complexity, and mystery. In general, the findings of EAA prove to be reliable. As Appleyard (1969) stated

> "…features of a place can be recalled by their distinctive physical form, visibility, intensity of use, and cultural significance" (Appleyard, 1969).

The study on the evolutionary theory of environmental preference revealed that mystery, coherence, complexity, and naturalness are the preferred environmental attributes. In this regard, correlational methods focused on to the analysis of environmental characteristics are universally applicable. The number of respondents and the quantitative analysis of the responses are the important factors in applying the correlation methods over preferred attributes. The larger number of respondents will lead to the high quality and reliability of outcomes. Although lots of software for

facilitating statistical calculations exists, the inputting the information, the processing of data, and the interpretation of results have need of time and effort.

Methods adapted to defining preferred environmental attributes are significant for understanding which qualities and characteristics of the built environment repel or attract the public in general. The findings of these methods have a propensity for verifying the evolutionary theories of environmental preference.

5.3.1 Herzog's (1995) study on preference of the variety of urban environments

Herzog (1995) conducted a research on preference for urban environments by following Kaplans's informational model. His research assessed the interrelations between danger, mystery, and preference as well as physical features of settings, pathway curvature, and openness in urban alleys. His study correspondingly combined Appleton's concepts of prospect (spaciousness) and refuge (Herzog, 1995). A sample of 354 undergraduate students at Grand Valley State University were asked to rate variables of urban environment which were coherence, legibility, complexity, mystery, typicality, spaciousness, refuge, nature, preference and age of the construction. The case study areas were categorized as contemporary buildings, concealed foreground, older buildings, and tended nature (Herzog, 1995:71).

The results exposed that tended nature rated the highest in preference and the older buildings rated the lowest. Consequently, all the predictor variables revealed a high correlation with preference. Nevertheless, multiple regressions indicated significant contributions of mystery, coherence, and nature in aesthetic understanding (Olascoaga, 2003).

3.3.2 Appleyard's (1969) method on recalling places

Appleyard (1969) conducted a study on the attributes of recalled places in Ciudad, Guyana. 300 citizens from four selected residential areas and 20 additional residents

(construction engineers and company executives) were interviewed (Appleyard, 1969; 132). They were asked to draw a location map by recalling places of the city verbally. Appleyard presumed that people would recall a building or place by a combination of three factors: visibility, cultural significance, and distinctive physical form. He classified the characteristics of recalled places into: 1-Form (size, shape, movement, boundaries, surface, quality, and signs). 2- Visibility (intensity, viewpoint significance, viewpoint, and immediacy), and 3- Significance (use singularity, symbolism, and use intensity, and rated them in three distinct levels (high, medium, low). Interrelations between attributes of form manifested a relationship among shape, quality. Size and contour reveal "… larger buildings lean towards to be of high quality, isolated, and have unique shapes" (Appleyard, 1969: 139). In Appleyard's research closeness (immediacy) and visibility of buildings from the streets (viewpoint significance) founded that are correlated. Consequently, his study highlighted the moderately significant correlations between recall frequencies and physical attributes (Appleyard, 1969:141).

5.3.3 Nasar's (1983) study on collative properties

Nasar (1983) conducted a survey by considering the relationship between environmental attributes and preference based on Berlyne and Wohlwill's study on collative properties (Nasar, 1983). 81 professional architects, planners, and graduate students in planning and architecture from Harrisburg and State College in Pennsylvania, evaluated the physical characteristics of 60 residential scenes were randomly selected by land-use consideration. Eighteen 7-point bipolar adjective scales were asked to rate the scenes. Bipolar adjective scales categorized as: diversity, mystery, coherence, enclosure, novelty, identity (or clarity of use), naturalness. Table 21 illustrates the list of bipolar adjective scales in Nasar's study (1983).

Table 21. List of Eighteen 7-Point Bipolar Adjecdve Scales (Nasar's study, 1983).

Diversity:								
Diverse	x	x	x	x	x	x	x	Simple
Ornate	x	x	x	x	x	x	x	Plain
Colorful	x	x	x	x	x	x	x	Dull
Novelty:								
Commonplace	x	x	x	x	x	x	x	Unusual
Identity:								
Clear	x	x	x	x	x	x	x	Ambiguous
Mystery:								
Much inform.	x	x	x	x	x	x	x	Little inform.
Coherence:								
Organized	x	x	x	x	x	x	x	Disorganized
Fitting	x	x	x	x	x	x	x	Unfitting
Prom. (shape)	x	x	x	x	x	x	x	Absent
Prom (texture)	x	x	x	x	x	x	x	Absent
Enclosure:								
Closed	x	x	x	x	x	x	x	Open
Prom. (vert.)	x	x	x	x	x	x	x	Absence
Naturalness:								
Prom. (build.)	x	x	x	x	x	x	x	Absence
Prom. (bricks)	x	x	x	x	x	x	x	Absence
Prom. (green.)	x	x	x	x	x	x	x	Absence
Nuisance factors:								
Well-kept	x	x	x	x	x	x	x	Dilapidated
Prom. (cars)	x	x	x	x	x	x	x	Not in sight
Prom. (poles)	x	x	x	x	x	x	x	Not in sight

Factor analysis with Varimax Rotation exposed four interrelated clusters: diversity, clarity, enclosure, and nuisances. Additionally, 104 people from 6 different neighbourhood action groups rated the same scenes, in two sets, using four 7-point adjective scales: interesting-boring, pleasant-unpleasant, desirable- undesirable, and high-low rate of attracting and robbery. Rating responses of these variables were also highly correlated. Correlations between evaluative ratings and physical attributes manifested a composite preference for those scenes with diversity, naturalness, and clarity of use (identity), and upkeep (low nuisance), for both non-professional and professional groups (Olascoaga, 2003).

5.3.4 Heath et al., (2000) study on the influence of complexity in the preference

Heath et al., conducted a study by investigation on the influence of complexity in the preference of skylines of high-rise buildings (Heath, et al., 2000:30-540). 60 undergraduate psychology students at Queensland University of Technology rated images of 9 skylines (Heath, et al., 2000: 30-540).

> "…the Affect Grid (circumplex) is a scaled grid of concentric circles arranged on two orthogonal axes: arousing-sleepy, and pleasant-unpleasant (or ugly-beautiful), which define the quadrants of 1- exciting, 2- distressing, 3- gloomy (or depressive), and 4- relaxing" (See Figure 36) (James and Russell, 1998:122).

An object is rated with a dot on a scale from 0 for centre and 4 for biggest circle. This dot can lie on one of the axes if only one of the bipolar adjectives predominates or can lie on one of the quadrants if there is a combination of both axes in the appraisal.

Different images of skylines reveal combinations and variations of three levels (high, medium, and low,) of both facade articulation, silhouette complexity and complexity of a similar skyline. Through assessment of analysis of variance, an important main effect of silhouette complexity in both preference and perceived complexity considered (Heath et al., 2000). The study revealed that facade articulations were highly corresponding to complexity, but it was not significantly correlated to preference. Silhouette complexity clearly influenced ratings of the four variables of the study-being associated with higher preference, greater complexity, greater pleasure and higher arousal.

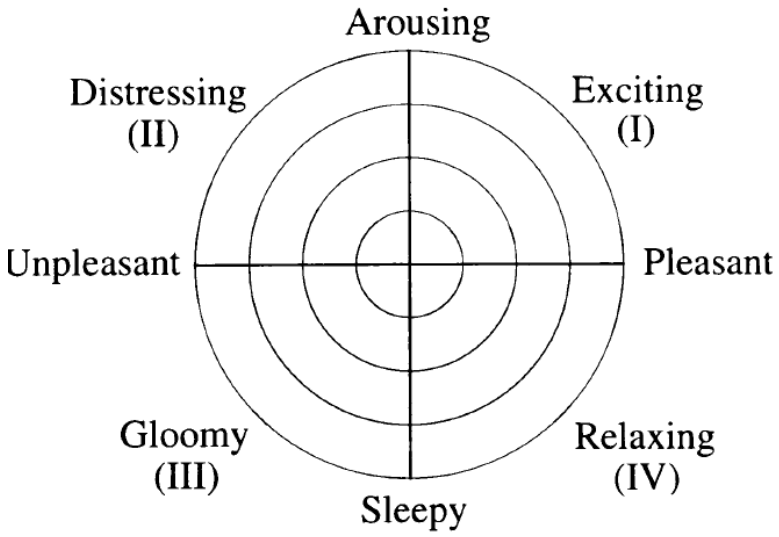


Figure 38. Diagram of an Affect Grid or Circumplex. (Based on James A. Russell, Environmental Aesthetics: Theory, Research and Applications, 122).

In general, methods oriented to determine preferred based on environmental characteristic are essential for understanding which specific characteristics and qualities of the built environment repel to attract the general public. The findings of these methods lead to validate the evolutionary theories of environmental preference. To a large extent there seems to be natural propensity of human beings to choose natural landscapes and some "informational" or "collative" properties, such as legibility, mystery, coherence, prospect (spaciousness), refuge (buildings with a visible entrance), complexity (diversity or ornateness). However, their research also manifests a preference for other attributes in evolutionary theories, such as size (within distant views), shape (contour), care (upkeep), and clarity of use (identity). Table 22 prepares overview and brief explanation on methodological analysis of researches on aesthetic perception of the urban environment.

Table 22. Methodological analysis of researches on aesthetic perception of urban environment (Developed by Author).

Methodological analysis of researches on aesthetic perception of urban environment				
	Author	**Aim**	**Methodology / Analysing method**	**Findings**
Meaning-Oriented Methods Associations related to distinct urban elements.	Hershberger 1988	-To compare differences between architects and laypersons in the attribution of meanings to building.	-Rating 30 pairs of semantic differential scales (or intervals of polar adjectives). -Space-Evaluation (such as open-closed, loose-tight, and cheerful-gloomy, pleasing-annoying, etc.), Organization (such as ordered-chaotic, clear-ambiguous, and rational-intuitive), and Potency (such as strong-weak, bold-timid, and permanent-temporary).	-This result suggests differences in how professionals and non-professionals perceive and evaluate urban landscapes.
	Perovic and Folic 2012	- The aim of their research is to form an objective criterion for the design of desirable public open spaces of the city in the 21st century. - based on subjective visual perception, to identify visual values, respectively positive and negative effects that create typical public open spaces.	- The survey involved 300 respondents at the semantic scale from -3 to 3 between 17 bipolar pairs of adjectives. - The research is based on empirical analysis and the semantic differential method. - based on the subjective assessment of the space through observing twelve photographs of typical visual resources of Niksic, with emphasis on the visual and aesthetic dimension. - They designed and applied a research methods, in studies of visual perception, such as mental map (Lynch, 1960), experimental method, method of visualization (Mambretti, 2011), computer models (Do & Gross, 1997), observational method, method of semantic differential, surveys and interviews method and others and the combination of multiple research methods, - A method of observation and judgment of photographs and semantic differential method were used in their research. - Data processing was based on the arithmetic mean and then on the comparative analysis of the results. - The classification was based on the following criteria: education, profession and implied that the respondents.	- Research results point out that poly functional, dynamic, associative, homogeneous, inclusive, authentic spaces with lots of natural elements achieve desired visual effect on users. - The results will further be used for determination of objective patterns for improvement of existing and design of new public open spaces of the city. - The contribution of the study was that the overall objective desirable visual effects of public open space are identified on the basis of subjective evaluations, which can serve as guidelines for the rehabilitation of existing and design of new open spaces of the city.
	Bostanci and Ocakçi, 2011	- Describes an objective research method for the evaluation of cities in aesthetic terms. - The evaluation in their research is carried out via urban skyline scale. - The skylines of Istanbul's various urban areas are evaluated by using entropy as an innovative method in urban design applications. - The main aim of their research was to rationalize aesthetic value by making the formal aesthetic design criteria quantifiable during reading the city and its visual analysis.	- Entropy, according to the information theory, is the quantification of the information amount of the coded data. - For obtaining measurable quantitative aesthetic values for urban skylines, these values have been compared with each other. - In the context of the formula, the use of logarithmic and probability-based quantitative approaches is seen.	- With this method, the aesthetic qualities of urban skylines are made comparable. Therefore, the entropy method has been put forward as an applicable innovational approach in the matter of aesthetic evaluation in urban design. -
	Reed 2011	- Reed adapted his methodology to visually analysis landscape environment based on swanick (2002)	- Meaning oriented methods. - Structured questionnaires for ratings and rankings utilized in meaning-oriented methods. -The degree of complexity or difficulty of these methods depends on the number of responses to be processed and the extensive use of statistics for analyzing data. Inferences of these methods rely on factor analysis, analysis of variance, the chi-square test, (Folks,1981) and correlation analysis. -Diverse statistical software is available for performing these calculation. - The degree of complexity or difficulty of these methods depends on the number of responses to be processed and the extensive use of statistics for analyzing data.	- Reed (2011) reveals that in analysing urban environment rather than listing the physical elements that make up an environment, visual terms can be explained in interpretation of spaces. - -

Preferred Places-Oriented Methods identify most liked or disliked landscapes and urban areas	Newell 1997	- Newell conducted research on favorite places in order to determine if cultural universals motivate environmental preferences. - -	- All in semirural landscapes, were interviewed (Newell, 1997;499).Through open-ended questions, they were asked to identify their favourite place (the one that they would like to save from damage or destruction), as well as to give the reason for their selection(Newell, 1997;500). - Categorization of responses and percentage calculations of the three groups combined revealed that about one-third (29%) of all respondents had a great preference for their own place and family homeS	- American students additionally indicated ecological and familiar reasons; Irish students argued aesthetic and ecological reasons; while the Senegalese students pointed out place "affordances" and spiritual reasons. Newell concluded: "The biophilia hypothesis is strongly supported by the data.
	Ferdous 2013	- examined that “aesthetics” also have a significant impact to determine the extent of success of urban plazas and urban open spaces in combination with other quantitative factors - -	- Research methods included a structured questionnaire to collect data and used semantic differential rating scales as a measuring instrument. - His research involved two phases, mixed-methods approach. -The main study or second phase used field survey and sought to identify levels of association between aesthetic response and the visual characteristics of urban plazas. - A semantic differential rating scale was used to mea¬sure responses with four bipolar rating scale items: pleasant–unpleasant, beautiful–ugly, like–dislike, and desirable–undesirable. - To corroborate the findings of the first phase, the field survey was conducted at eight urban plazas. Prior to the main study, a pilot study evaluated the survey methods, the appropriateness of interview techniques, and questionnaire details, such as the number and wording of questions as well as the effectiveness of the use of probes, and the sequence of questions. - Selection of the participant group was based on the relevance of their educational background, experience, and cultural familiarity, and each participant was provided with a set of visual stimuli and a 5-point Likert-type scale questionnaire for each plaza. - To identify the levels of association between the variables, Pearson product–moment correlation analysis was applied, and the strength of correlation between the variables is quite strong. - Ferdous also used the method of Cronbach’s Alpha to test the reliability of his research. - Interviews for preferred places-oriented methods consist of open questions.	- Outcomes from this research indicate that a positive aesthetic response was linked to specific visual characteristics of urban plazas, suggesting that this information could be used to more effectively refurbish existing and design new urban plazas as public spaces.

Environmental Attributes-Oriented Methods analyse the effects on preference of properties	Herzog 1995	He explored the relationships among mystery, danger, and preference as well as between them and two physical features of settings, openness and pathway curvature, in urban alleys and field/forest settings containing pathways.	- Preferences in 354 undergraduates for slides of urban environments containing prominent natural elements were studied as a function of content categories, viewing time, and 9 predictor variables. These included spaciousness, refuge, coherence, legibility, complexity, mystery, typicality, nature, and age. - A nonmetric factor analysis yielded 4 dimensions: Older Buildings, Concealed Foreground, Tended Nature, and Contemporary Buildings.	Tended Nature was best liked, and the Older Building dimension was least liked. Regression analyses revealed 3 variables as independent positive predictors of preference: coherence, mystery, and nature. Results support the usefulness of S. Kaplan and R. Kaplan's (1982) informational model of environmental preference in that the observed predictors included a primary landscape, understanding, and exploration variable.
	Appleyard 1969	- An investigation of the attributes of recalled places -	- The investigator assumed that people would recall a building or place because of the combination of three factors: distinctive physical form, visibility, and cultural significance. - Intercorrelations among form attributes manifested a relationship among size, contour, shape, and quality, indicating that "larger buildings tended to be isolated. -	- He discriminated the attributes of recalled places into (1) form (movement, contour or boundaries, size. shape, surface. quality. signs), (2) visibility (viewpoint intensity, viewpoint significance, immediacy), and (3) significance (use intensity, use singularity, symbolism); and rated them in three levels (low. medium, high). - The study revealed moderately significant correlations between physical attributes and recall frequencies.
	Nasar 1983	Study of the relationship between environmental attributes and preference, based on Berlyne's and Wohlwill's works on collative properties.	Scenes were rated using eighteen 7-point bipolar adjective scales categorized as: diversity, novelty, identity (or clarity of use), mystery, coherence, enclosure, naturalness, and nuisance factors. -Factor analysis with Varimax Rotation revealed four related clusters of factors: diversity, nuisances, enclosure, and clarity. Additionally, One hundred four people from 6 different neighbourhood action groups rated the same scenes, in two sets, using four 7-point adjective scales: pleasant-unpleasant, interesting-boring, desirable- undesirable, and high-low rate of robbery and assault. Rating responses of these variables were highly correlated	Correlations between physical attributes and evaluative ratings manifested a composite preference for those scenes with ornateness (diversity), upkeep (low nuisance), naturalness, and clarity of use (identity) for both professional and non-professional groups.
	Rosley & Rahman, 2013	- Aimed to determine the effect of demographic factors of both experts and stakeholders, which is believed to affect the validation process of the indicators in the visual aesthetic assessment and to unveil their similarities as to validate and develop future guidelines in the environmental and landscape planning.	- The driven indicators are tested through a systematic approach by using Research Model Analysis to authenticate its veracity. The design, stratification and administration of questionnaire with special reference to demographic factors were based on the 5 photographs taken in selected rural area for both 126 stakeholders and 51 expert using Different Item Functioning analyses. - However, the process required a comparative analysis of both group's preferences based on t-test analysis, whereas the range value of t-value should be between +2 to -2. - The seven indicators that are accepted for the study are - Mystery, Legibility, Coherence, Stewardship, Naturalness, Legibility, Openness, and Complexity.	- The findings identify *Complexity* as the valid indicator that agreed by both groups. - The analysis result enables the study to identify the homogenous indicator, which is preferable by experts and stakeholders.
	Heath et al., 2000	Conducted an investigation about the influence of complexity in the preference of skylines of high-rise buildings.	- Methods oriented to determining preferred environmental attributes are important for knowing which specific characteristics and qualities of the built environment attract or repel the general public.	- Through repeated measurements of analysis of variance, a significant main effect of silhouette complexity in both perceived complexity and preference was found. - Findings of these methods tend to verify the evolutionary theories of environmental preference. That is, to a large extent there seems to be natural disposition of human beings to prefer more natural landscapes and some "collative" or '"informational" properties, such as complexity (diversity or ornateness), legibility. Coherence, mystery, prospect (spaciousness), and refuge (buildings with a visible entrance).
	Fairhurst 2004	- Fairhurst (2004) indicates how visual quality is assessed. -To determine the extent and significance of the visual impact, and if negative, methods to mitigate these effects.	-Attempts to classify or score the value of something is inherently subjective and influenced by individual interpretation, results will not be absolute and can only be measured against the criteria and parameters that have been assigned for their assessment.	-assessment combines visual quality attributes (Views, sense of place, visual absorption capacity and aesthetic appeal) with landscape character and gives the environment a high, medium or low visual quality value. -

Chapter 6

INTEGRATED MODEL AND METHODOLOGICAL PROPOSAL TO APPLY IN THE URBAN CONTEXTS

This chapter developed based on theoretical findings and discussions in the previous chapters to introduce a model to assess aesthetic effects of urban spatial configuration on human cognition. Systematic review of the literature revealed that scholars attempted to increase aesthetic quality of urban spaces by introducing and exploring a theory and methods to find an acceptable configuration principals between the elements of urban spatial configuration and their aesthetic values from users' point of view. Therefore, the study highlights the claim that *there is a relation between human aesthetic perception and organization between elements of the urban spatial configuration*. In order to explore these interrelations, human cognition process in psychology (Gero and Fujii, 2000) considered as a method of assessment of this interaction. Consequently, exploring cognition process in psychology based on the elements of urban spatial configuration prepares an opportunity to explore the processes of conceptualization of environmental cognition from its user's point of view. In this regard, the definition of perception (see chapter 2.6) and the indicators which lead to hedonic value will prepare a foundation for designing a model for aesthetic assessment of urban spatial configuration.

6.1 Objective and Subjective Approaches in Aesthetic Cognition

In despite of the fact that preferences and cultural differences affect the aesthetic judgment of perceived elements, urban image plays a significant role in evaluating the aesthetic gratification. This thesis based on the discussion in chapter 2.6. exposed that

each study on urban aesthetics could be discussed into two main categories a) Objective / Physical based aesthetic and b) Subjective / Psychological based aesthetic (Hetherington et al., 1991; Herzog, 1989; Ribe, 1994; Hull and Buhyoff, 1984; Gobster 1983).

A) **Objective / Physical aesthetics:** The first classification refer to the psychological effects of physical elements and their organization in the assessment of urban aesthetics. Scale, dimension, form, colour, all physical dimensions of urban spatial configuration and urban amenities and the way that they are organized can be considered in objective aesthetic assessments. Since space production effects on observer cognition based on the physical organization between elements, expert implementation can be considered in aesthetic design and assessment of urban spatial configuration. Anywhere in this thesis by referring to *objective/psychological aesthetic* the intervention of experts for aesthetic design of urban spatial configuration are considered.

B) **Subjective / Psychological aesthetic**: The second classification, which is that of the psychological aesthetic refers to the physiological effects of the objective elements of urban design and their organization based on the physical inter-relationships in the human subjective mind. In this classification the psychological effects of space configuration on observer's subjective mind are analysed. The discussion in this part also highlights the importance of individual characteristic, cultural background, and education in aesthetic understanding of the environment. Accordingly, public preferences in aesthetic assessment will consider in this classification (see Table 23).

Table 23 Two Main Classifications in Aesthetic Assessment (Developed by Author).

Aesthetic analysis of urban environment	
Subjective / Psychological aesthetic	Objective / Physical aesthetic
Public preferences aesthetic design approach	Expert Aesthetic design approach

Based on discussion in chapter 2.3 by regarding to the principals of aesthetic properties, formal and symbolic arousal possible of the built and non-built environmental characteristics are the main indicators of aesthetic properties which leads to aesthetic judgment (see figure 37 a, and b). Attributes of the built environment which leads to arousal potential could be assessed based on formal and symbolic elements of the urban spatial configuration. Non-built environmental attributes could also be assessed by study on cultural experience, personality, sociological and psychological factors and education. Figure 37c illustrate that static and dynamic organization between elements of urban spatial configuration prepares an opportunity for cognition of environmental attributes. These organizational factors between objective elements of urban spatial configuration and the effects of non-built environment on human subjective mind will lead to conception of the environment[8]. Consequently, the study revealed that the hedonic value[9] which is the last stage in cognition and is the result of conception of the environment prepares an opportunity to judge and aesthetically assess the environment (See Figure 37e). In this stage,

[8] Conception is the human minds interpretation of sensed dada during the cognition process.

[9] Human minds responses to the environment are called hedonistic value.

methodologies for assessing preferred places approaches (see chapter 5.1.2) for aesthetic assessment of urban spatial configuration can be considered.

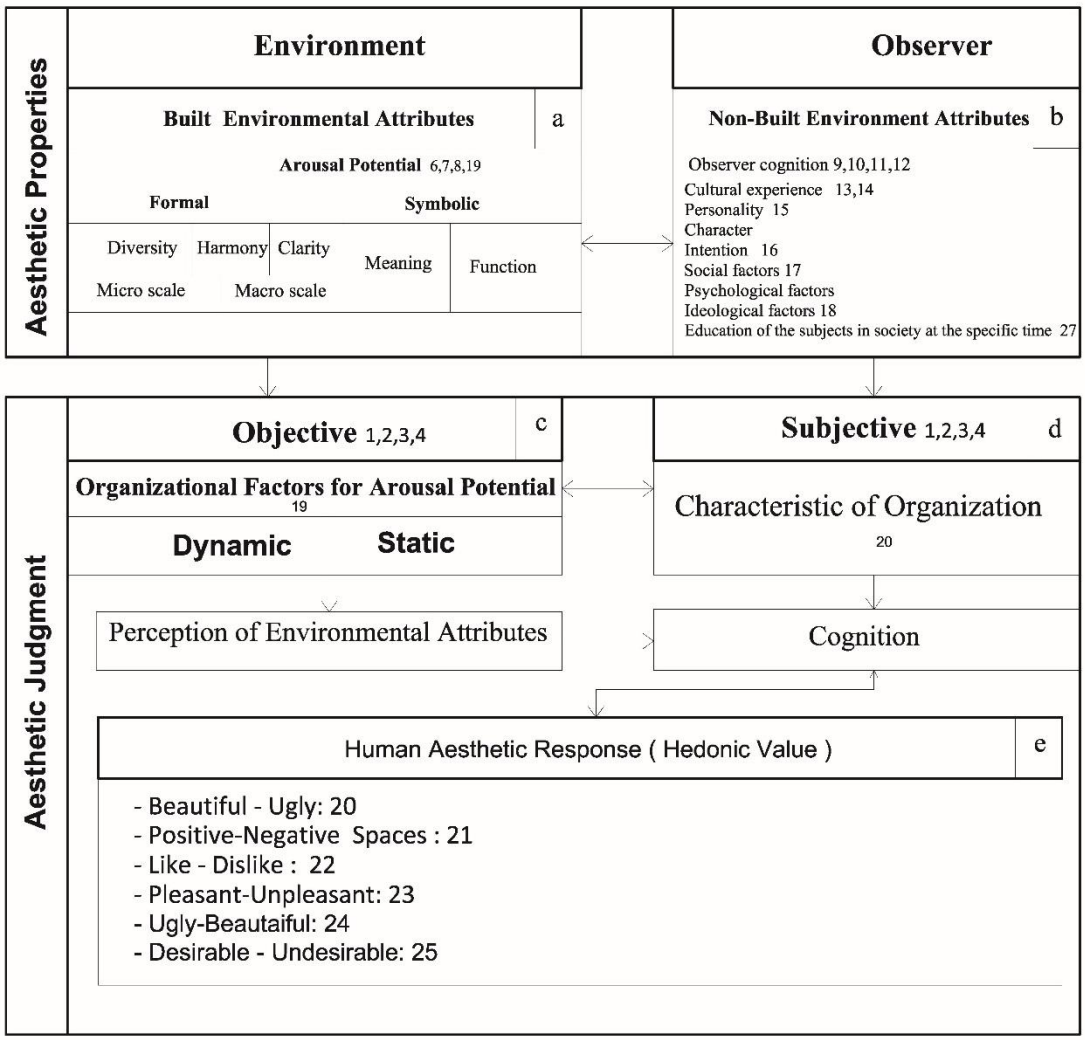


Figure 39. Aesthetic properties and its effects on the aesthetic judgment in the built environment (Developed by Author).

Figure 37 also prepares overall view on how built and non-built elements of urban spatial configuration leads to aesthetic judgment. To be able to assess the process which leads to human response, therefore, understanding the process of aesthetic

cognition will prepare an opportunity to fulfil the requirements of aesthetic assessment in the context.

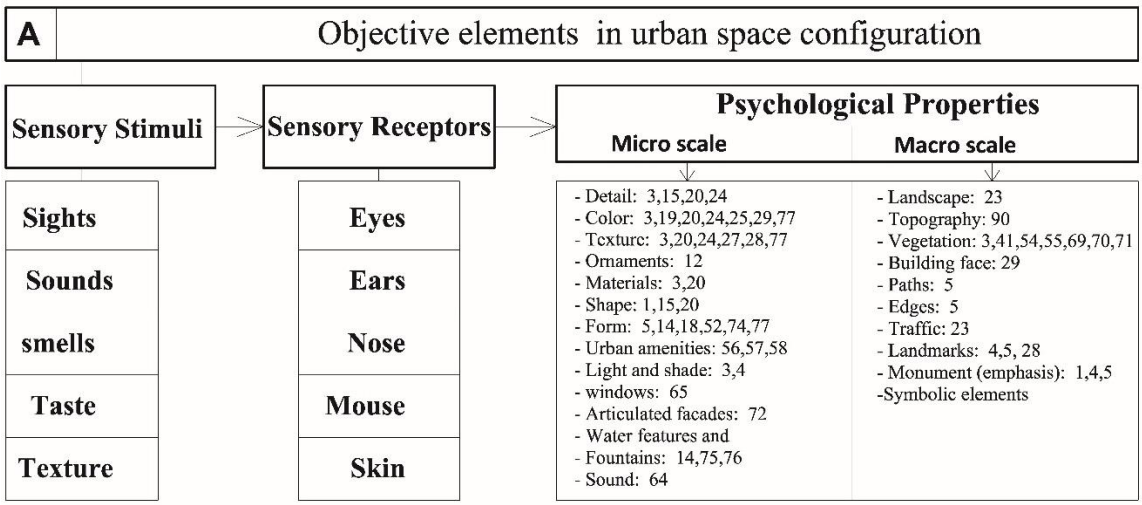
6.2 The Process of Aesthetic Cognition of the Urban Environment

The process of aesthetic cognition of the urban environment have been classified in this thesis in four main stages. The phases are organized according to the process of human psychological cognition process which are: sensation, perception, and conception (Gero and Fujii, 2000). The following paragraph describes each stage in detail and tries to organize the aesthetic indicators which have been collected in theoretical study.

6.2.1 Sensation of the Physical Elements of Urban Space Configuration

Sensation is the first step of understanding phenomena. In this step sensory stimuli of human being (seeing, hearing, smelling, tasting, touching) by its sensory receptors (eyes, ears, nose, mouth and skin) collect information from the environment. In the Reid's *Theory of Sensation and Perception* which highlighted by Copenhaver (2000) the term sensations suggest a conception of an object and a belief about material objects, because our constitution is such that particular perceptions constantly arise in conjunction with particular sensations (Copenhaver, 2000). Table 24 reveals how human being senses the physical environment. The study classified the objective elements of urban space configuration based on the degree of their effect on human perception in two types: macro-scale and micro-scale. During the classification of the objective elements there might be some indicators which is not suitable to put just in one specific scale, in this regard, each researcher based on the problem which want to study and based on the expert's opinion can also categorize the objective elements of the urban spatial configuration.

Table 24. Sensation of the objective elements of urban space configuration (Developed by Author).



6.2.1.1 Micro-Scale in Urban Spatial Configuration

Micro elements of urban spatial configuration have concentrated on the public face of architecture and more detailed considerations of urban design. Aesthetic assessment in micro-scale (AAMS) is a term that has been coined to describe the features of the built environment in human-scale. AAMS describes the physical features of development at the level-of-detail of a single building or the elements of urban spaces which are perceivable as human scale.

> "…urban design on a micro or small scale considers missions such as coloured and textured to decorate urban spaces and the choice of street furniture" (Tiesdell & Carmona, 2007).

In general, assessing elements of urban special configuration in micro scale contains objective properties of urban spaces which observer can sense while he/she passing through the environment. Accordingly, this thesis considered building detail, building colours and materials, shapes and even urban amenities such as furniture and fixtures as micro elements of the urban spatial configuration.

6.2.1.2 Macro Scale in Urban Spatial Configuration

Macro scale in urban spatial configuration refers to the objective elements and indicators which are considered and assess in a city or neighbourhood scale. The pattern of land use; street, square, park typology, urban amenities and their configuration, topography in the place, symbolic elements an landmark, and overall shape of buildings/townscape are the most important elements of urban special configuration in the macro scale.

Regarding to the chapter 5, methods and tools which discussed in environmental aspects approaches prepare opportunity to assess the aesthetic quality in this stage. Each researcher based on the problems which want to study might increase or decrease the indicators of aesthetic assessment in macro scale.

6.2.2 Organization Factors (Arousal potential) lead to Hedonic Value *(perception)*

The second step in cognition process is perception. In this stage, the human mind tries to visualize the organization between the elements by interpreting the relation between the elements of the urban spatial configuration. Perception tries to find a meaningful relationship between the elements of the urban spatial configuration. In this regard, scholar attempts to find a rational relationship with the organisation of the objective elements of urban spatial configuration which have been discussed in chapter 4.

According to the discussion in chapter 4, perceiving the organization between elements of urban spatial configuration refers to the semantic theories, evolutionary theories, cognitive theories, normative theories and syntax theories. It means that scholars based on their way of approaches to evaluate the aesthetic effect of the urban spatial configuration might focus on one of these approaches. By considering the five main classifications (see chapter 4) in the organization between elements of urban spatial

configuration, the second stage of cognitive process can be considered as the main stage in the cognition of the urban environment. Accordingly, Lang (1988) classified organisation between elements of urban spatial configuration into static and dynamic.

A) The first classification which called static organization between objective elements of urban spatial configuration refers to the principals of organization and coherence which creates aesthetic values from its user's point of view. Simultaneously, this kind of organization increase aesthetic values inculcating the sense of immovability. Static organization between elements of urban spatial configuration could be assess in organizational properties such as Similarity (Koffka, 1935; Boring, 1942), Density (Boring, 1942; Alexander, 1980; Madanipour, 2010), Enclosure (Sitte, 1889; Koffka, 1935; Stamps, 2005), Scale (Zevi, 1957; Moughtin, 1992; Lawson, 2001), Floor organization (Arnheim, 1954), Proportion (Zevi, 1957; Moughtin, 1992; Jacobsen & Hofel, 2002), Solids and voids (Lawson, 2001; Trancik, 1986), Order (Nasar, 1998), Symmetry Weber et al., 2008; Jacobsen & Hofel, 2002), Maintenance and Upkeep (Nasar, 1994) of the urban environment.

B) The second classification which called dynamic organization between objective elements of urban spatial configuration refers to the kind of organization which inculcate the aesthetic sense of movement. Dynamic organization between elements of urban spatial configuration can also assess in organizational properties such as Harmonious relationship (Weber et al., 2008; Graves, 1941; Waterman & Wall, 2009), Balance (Moughtin, 1992; Kim, 2006), Orientation (Koffka, 1935), Continuity (Koffka, 1935; Lynch, 1960; Cullen, 1961), Time Series (Lynch, 1960), Robustness and Permeability (Bently et al, 1985), Diversity or variety (Arnheim, 1954; Smith et al., 1997), Proximity (Boring, 1942), Richness (Bently et al, 1985), Complexity

(Rapoport, 1990; Frewald, 1990), and Good configuration (Arnheim, 1977). Both static and dynamic organizations between the elements of urban spatial configuration are called “organizational properties” which leads to hedonic value.

The presented indicators of static and dynamic organization between elements of urban spatial configuration could be assessed based on method and tools which discussed in Meaning-Oriented approaches and Environmental aspects approaches for aesthetic assessment of urban spatial configuration (see chapter 5.1 and 5.3). The collected indicators in this part are based on the different theories and researches which discussed in chapter 4. Further study needs to find the other indicators of aesthetic organization between elements of the urban spatial configuration.

Table 25. Organizational factors of objective elements (Developed by Author).

B			
Organizing factors leads to hedonic value	**Organizational Properties**	**Static**	**Dynamic**
		- Similarity: 2 - Density: 2,17,23,24,25 - Enclosure: 1,2,12,59,60, 61 -Scale 4,14,15,19,20,23,25 - Floor organization: 3 - Proportion: 4,14,24,27,28,32 - Solids and voids: 4,9,19 - Order: 14,19,56 - Symmetry: 4,14,19,32,52 - Emphasis: 27,28 - Defined edges - Maintenance and Upkeep: 53, 54	- Harmony: 4,14,17,22,24,27,28,52 - Balance: 4,14,27,28 - Orientation: 2 - Continuity: 2,5,6,21 - Time Series: 5,12 - Robustness: 8 - Permeability: 8,9 - Diversity or variety: 3,8,16, 24,28,42 - Curvature: 34,35 - Proximity: 2 - Richness: 8 - Complexity: 11,12,31,36,37,38,72 Good configuration: 3,56,78,79,80

6.2.3 Aesthetic Characteristic of Urban Spatial Configuration *(conception)*

The next stage of the cognitive process interprets the formal and symbolic meaning of the physical relationship between the elements. In this research, these characteristics are called "the aesthetic characteristics of urban configuration" or "meaningful properties". This study divided the literature of the aesthetic characteristics of urban configurations into two separate classifications, viz. that of formal conception and symbolic conception (See Table 26):

6.2.3.1 Formal Conception

Formal conception is the result of the objective elements of urban spatial configuration and their organization in human subjective mind. Collected indicators in this part refer how objective elements of urban spatial configuration and their organization can fulfil human aesthetic requirements in urban spaces. Formal conception in urban spatial configurations could be assessed based on subjective indicators such as: Environment for all (Jacobs & Appleyard, 1987; Burton &Mitchell, 2006), Vitality (Zevi, 1957; Lynch, 1981; Kim, 2006), Liveability (Jacobs & Appleyard, 1987; Smith et al., 1997), Legibility (Bently et al, 1985; Kaplan and Kaplan, 1989; Kim, 2006; Ferry, 1993), Visual appropriateness (Bently et al, 1985), Comfort (Carr et al, 1992; Burton & Mitchell, 2006), Coherence (Appleton, 1975), Accessiblity (Waterman & Wall, 2009; Trancik, 1986; Waterman & Wall, 200; Ferry, 1993:24), Personalization (Smith et al., 1997), Tidiness (Nasar, 1983; Ferry, 1999); Imageability (Lynch, 1960), Clarity (Alexander, 1980; Thomas, 2002; Ferry, 1993), and the opportunity for passive or active engagements (Carr et al, 1992; Ferry, 1999).

6.2.3.2 Symbolic Conception

Symbolic conception of the cognitive process refers to subjective qualities which are coming from the organization between the elements of urban configuration. Human

mind based on discussion regarding to semantic theories and cognitive theories (see chapter 4) tries to interpret the environment in a way that to give its users the sense of meaningful place. The mechanism in aesthetic understanding in this stage is to decode and interpret the subjective values of an organization based on the users' ideology. Therefore, their cultural background, way of life, education, individual characteristic and etc., might effect in the symbolic conception of urban spatial configurations.

Symbolic conception in urban spatial configurations can be assessed based on subjective indicators such as symbolic values (Vining &Stevens1986 ; Lothian, 1999), Cultural stability and identity (Costonis, 1982; Bourassa,1991), Authenticity and meaning (Lynch,1960 ; Jacobs & Appleyard,1987 ; Alexander,1980 ; Ellin, 2006; Hekkert & Leder, 2007), Sense of belonging to the environment (Alexander,1980), Meaning of place (Lynch,1960 ; Jacobs & Appleyard,1987 Lawson, 2001), Style (Heft & Nasar, 2000 ; Stamps&Nasar, 1997), Identity and control (Lynch,1981, jacobs & Appleyard,1987, Gehl,1996), Mystery (Kaplan and Kaplan, 1989), Safety (Burton & Mitchell, 2006; Ferry, 1993), Efficiency / Justice / Sense of the whole (Lynch,1981), Imagination and joy (Jacobs & Appleyard,1987), sense of place(Norberg,1991), Historical significance (Appleton,1975) and Novelty (Weber et al., 2008; Nasar, 1994) of the place.

Table 26. Formal and symbolic conception as subjective properties of the urban space configuration (Developed by Author).

C			
Aesthetic Characteristics of urban configuration	**Meaningful Properties**	**Formal conception**	**Symbolic conception**
		- Environment for all: 10,21 - Vitality: 4,6,7,27 - Livable: 10,16, - Legible: 8,11,18,21,26,57 - Visual appropriateness: 8 - Comfortable: 13,19,21,58 - Visual importance: 87,88,89 - Coherence: 11,31 - Accessible: 7,9,15,16,23,24,57 - Openness: 39, 40 - Personalization: 16 - Tidy: 62,63 - Familiarity: 58 - Imageability: 5 - Clarity: 5,17,20,57 - Passive or Active engagement: 13,18 - Visual Richness	- Symbolic values: 83,84 - Cultural stability and identity: 85,86 - Authenticity and meaning: 5,10,16,17,22,26 - Sense of belonging: 17 - Meaning: 5,10,17,19 - Style: 29,82 - Identity and control : 7,10,15 - Mystery: 11 - Safety: 21, 57 - Efficiency and Justice: 7 - Imagination and joy: 10 - Sense of the whole: 7 - Sense of place: 95 - Historical significance: 31 - Novel ; 26,52,53,81 - Positive image: 1,17

The collected indicators in this part are based on the focus on the different theories and researches which discussed in chapter 4. Further study is needed to find the other indicators of formal and symbolic conception between elements of the urban spatial configuration. These indicators based on the problems to be study in each research might increase or decrease. Since this stage refers to human subjective mind's interpretation of objective environment, methodologies for aesthetic assessment in Meaning-Oriented Approach (See Chapter 4.1) introduces tools and techniques for assessing these indicators.

6.2.4 Hedonic Value as a Last Stage in Cognition Process

The final phase in the cognitive process contains the human aesthetic response and judgment of the urban environment. It can also call human reaction to the environment. Human cognition upon indicators of the urban configuration which the observer gained in the last two stages (see 6.2.3 and 6.2.4) and non-built environmental factors, lead to

respond to the environment. In this stage human aesthetic response regarding to the spatial configuration and its aesthetic values could be assess by a simple questions which is applicable by Likert scaling method or even semantic differential method by regarding to indicators such as Beautiful/Ugly (Porteous, 1996); Positive/Negative (Carr et al, 1992); Like/Dislike (Daniel and Meitner, 2001); Pleasant/Unpleasant (Porteous, 1996) and Desirable/Undesirable (Ferdous, 2013). Techniques and tools in preferred places approach to aesthetic assessment of urban spatial configuration (See Appendix 1) prepare a good context to study on hedonic value as a last stage in cognition process. Figure 38 demonstrates the association among the findings of this research and the cognitive process in psychology. The findings prepares a framework to rationalize the relation between human cognition processes (sensation, perception, conception) and collected indicators from a systematic review of the literature.

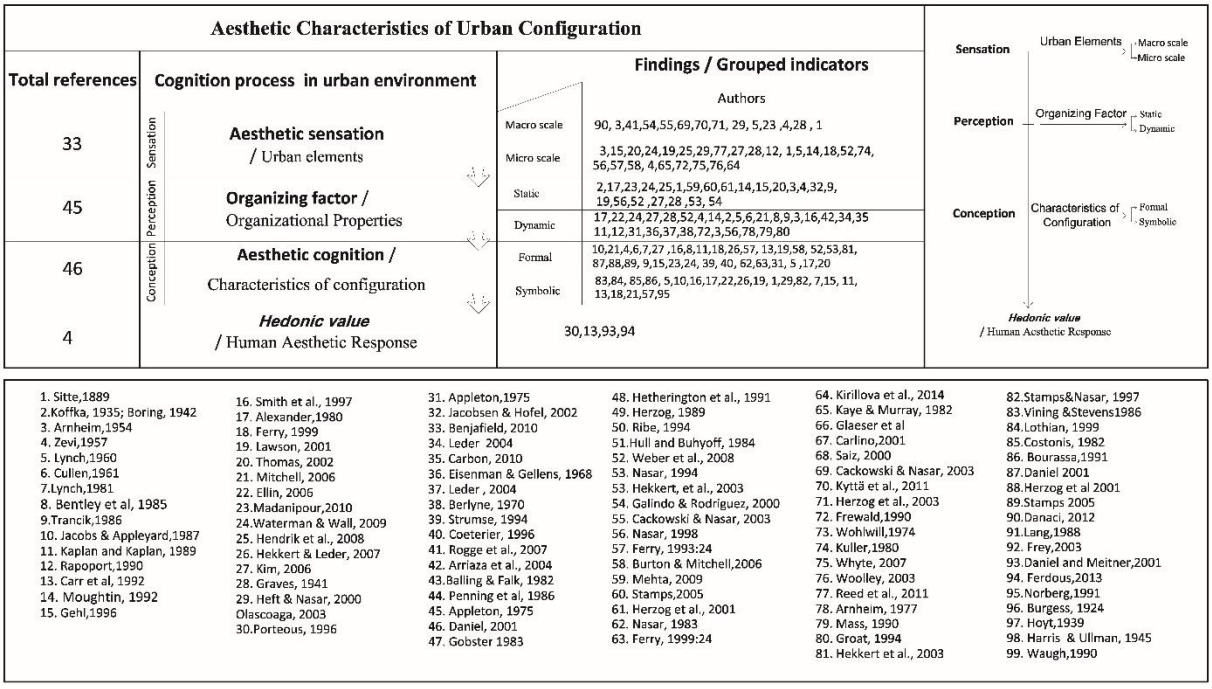


Figure 40. Mapping of the indicators on the aesthetics of urban environment (Developed by Author).

To be able to combine the theoretical investigation in this study with the findings in cognition process figure 39 prepares guideline which shows how indicators in each and every process can be assessed by considering their related theories in aesthetic evaluation. It also revealed that the process of aesthetic cognition are somehow interrelated by the theories on aesthetic evaluation of the urban environment. The methodology to implement to assess the theories of aesthetic evaluation of the urban environment are applicable by three main classifications in methodological analysis of aesthetic perception. In this regard meaning oriented approaches in aesthetic perception are somehow interrelated by all theories on aesthetic evaluation of the urban environment. From the other hand, in the cognition process as figure 39 illustrates meaning oriented approaches and its indicators are applicable in the last three stages of cognitive process. Preferred places approaches to assess aesthetic values of spatial configuration can embed to assess the aesthetic values in the last stages of cognition process which refers to the hedonic values. Consequently, the collected indicators and methodologies in environmental aspect approaches can be implemented in the first three steps of cognitive process.

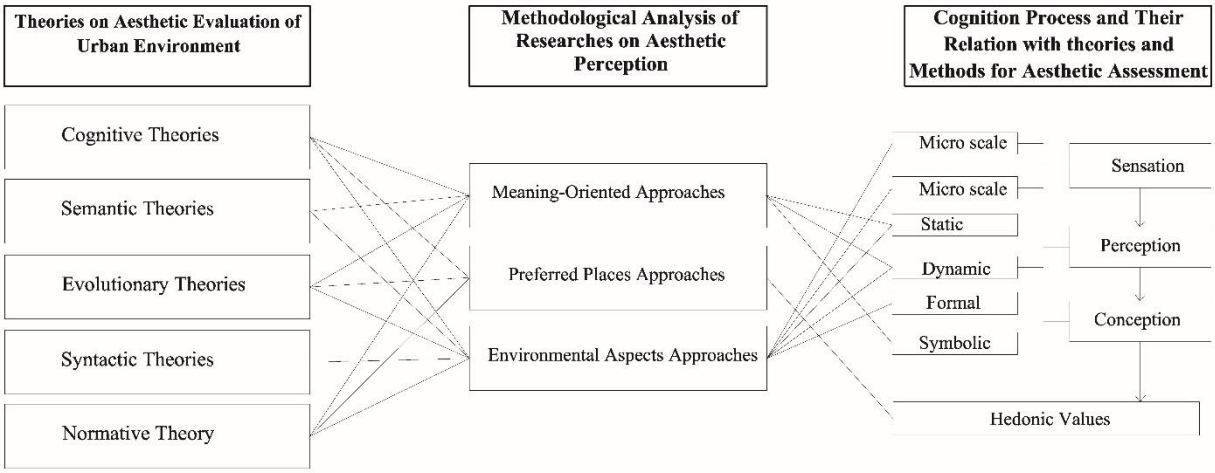


Figure 41. The interrelation of cognition process and methodological analysis.

This study delivers an inclusive approach by considering indicators of environmental aesthetic in the cognition process. Scholars such as Sola-morales (2008), Forman (2008), Busquets (2006) strengthen the claim that: "context" impacts on aesthetic appreciation. To be specific, the study recognized that the different spatial configuration is the main reason of aesthetic values in the different context of cities, which can be discussed under the heading of morphology, such as land use. The six categories that the author proposed in this research (See Figure 40e) prepare an opportunity to apply the proposed model in context. In view of the fact that the proposed model for assessing the aesthetic quality of urban spatial configuration is based on the process of human perception, it will provide an opportunity to apply this model in each and every classification. But, to be able to apply the model in the other form of classification for urban morphology further study is required. Finally, the features of the aesthetic appreciation of the environmental configuration (See Figure 40) recognised by the amalgamation of all discussions in this thesis and classified based on human cognition process in psychology.

Aesthetic Analysis of Urban Environments

Objective / Physical Aesthetic [43,44,45,46]

Expert Aesthetic Design Approachs [47,48,49,50,51]

Aesthetic Elements of Urban Spacial Configuration [92,24]

Sensation

Perception

Organizing factors (Arousal potentials) [91]

a Psychological Properties

Micro scale	Macro scale
- Detail: 3,15,20,24 - Color: 3,19,20,24,25,29,77 - Texture: 3,20,24,27,28,77 - Ornaments: 12 - Materials: 3,20 - Shape: 1,15,20 - Form: 5,14,18,52,74,77 - Urban amenities: 56,57,58 - Light and shade: 3,4 - Windows: 65 - Articulated facades: 72 - Water features and - Fountains: 14,75,76 - Sound: 64	- Landscape: 23 - Topography: 90 - Vegetation: 3,41,54,55,69,70,71 - Building face: 29 - Paths: 5 - Edges: 5 - Traffic: 23 - Landmarks: 4,5, 28 - Monument (emphasis): 1,4,5

b Organizational Properties

Static	Dynamic
- Similarity: 2 - Density: 2,17,23,24,25 - Enclosure: 1,2,12,59,60, 61 -Scale 4,14,15,19,20,23,25 - Floor organization: 3 - Proportion: 4,14,24,27,28,32 - Solids and voids: 4,9,19 - Order: 14,19,56 - Symmetry: 4,14,19,32,52 - Emphasis: 27,28 - Defined edges - Maintenance and Upkeep: 53, 54	- Harmony: 4,14,17,22,24,27,28,52 - Balance: 4,14,27,28 - Orientation: 2 - Continuity: 2,5,6,21 - Time Series: 5,12 - Robustness: 8 - Permeability: 8,9 - Diversity or variety: 3,8,16, 24,28,42 - Curvature: 34,35 - Proximity: 2 - Richness: 8 - Complexity: 11,12,31,36,37,38,72 Good configuration: 3,56,78,79,80

Memory

Information Filter

Cultural experience 13,14	Personality 15	Intention 16	Sociological 17	Psychological	Ideological 18	
Age	Sex	Familiarity	Expectation	Ethnicity		

Perception

Conception

Subjective / Psychological aesthetic [43,44,45,46]

Public Preferences Aesthetic Design Approachs [47,48,49,50,51]

Aesthetic Characteristics of urban configuration

c Meaningful Properties

Formal	Symbolic
- Environment for all: 10,21 - Vitality: 4,6,7,27 - Livable: 10,16,101,102 - Legible: 8,11,18,21,26,57 - Visual appropriateness: 8 - Comfort: 13,19,21,58 - Novel ; 26,52,53,81 - Visual importance: 87,88,89 - Coherence: 11,31 - Accessible: 7,9,15,16,23,24,57,70 - Openness: 39, 40 - Personalization: 16 - Tidiness: 62,63 - Historical significance: 31 - Familiarity: 58 - Imageability: 5 - Clarity: 5,17,20,57	- Symbolic values: 83,84 - Cultural stability and identity: 85,86,100 - Authenticity and meaning: 5,10,16,17,22,26 - Sense of belonging: 17 - Meaning: 5,10,17,19 - Positive image: 1,17 - Style: 29,82 - Identity and control : 7,10,15,101 - Mystery: 11 - Passive or Active engagement: 13,18 - Safety: 21, 57 - Efficiency and Justice: 7 - Visual Richness - Imagination and joy: 10 -Comfort: 13 - Sense of the whole: 7 - Sense of place: 95

Conception

Hedonic value

Human Aesthetic Response [30,13,93,94]

d

- Beautiful -Ugly:30
- Positive -Negative space :13
- Like -Dislike : 93
- Pleasant-Unpleasant: 30
- Desirable -Undesirable: 94

-Exciting-Boring : Berleant & Carlson (2007)

-Calming - Distressing:Berleant & Carlson (2007)

e Future work

Central Business District (CBD) [96,97,98,99]

Aesthetic elements in CBD space configuration

Organizing factors leads to arousal potential

Conception of urban configuration

Inner City

[96,97,98,99]

Aesthetic elements of Inner city space configuration

Organizing factors leads to Arousal potential

Conception of urban configuration

Inner Suburbs

[96,97,98,99]

Aesthetic elements of Inner suburbs space configuration

Organizing factors leads to Arousal potential

Conception of urban configuration

Outer Suburbs

[96,97,98,99]

Aesthetic elements of Outer suburbs space configuration

Organizing factors leads to Arousal potential

Conception of urban configuration

Rural Urban Fringe

[96,97,98,99]

Aesthetic elements of Rural urban space configuration

Organizing factors leads to arousal potential

Conception of urban configuration

Traditional Part

Aesthetic elements of Rural urban space configuration

Organizing factors leads to arousal potential

Conception of urban configuration

1. Sitte,1889
2.Koffka, 1935; Boring, 1942
3. Arnheim,1954
4. Zevi,1957
5. Lynch,1960
6. Cullen,1961
7.Lynch,1981
8. Bentley et al, 1985
9.Trancik,1986
10. Jacobs & Appleyard,1987
11. Kaplan and Kaplan, 1989
12. Rapoport,1990
13. Carr et al, 1992
14. Moughtin, 1992
15. Gehl,1996
16. Smith et al., 1997
17. Alexander,1980
18. Ferry, 1999
19. Lawson, 2001
20. Thomas, 2002
21. Mitchell, 2006
22. Ellin, 2006
23.Madanipour,2010
24.Waterman & Wall, 2009
25. Hendrik et al., 2008
26. Hekkert & Leder, 2007
27. Kim, 2006
28. Graves, 1941
29. Heft & Nasar, 2000
Olascoaga, 2003
30.Porteous, 1996
31. Appleton,1975
32. Jacobsen & Hofel, 2002
33. Benjafield, 2010
34. Leder 2004
35. Carbon, 2010
36. Eisenman & Gellens, 1968
37. Leder , 2004
38. Berlyne, 1970
39. Strumse, 1994
40. Coeterier, 1996
41. Rogge et al., 2007
42. Arriaza et al., 2004
43.Balling & Falk, 1982
44. Penning et al, 1986
45. Appleton, 1975
46. Daniel, 2001
47. Gobster 1983
48. Hetherington et al., 1991
49. Herzog, 1989
50. Ribe, 1994
51.Hull and Buhyoff, 1984
52. Weber et al., 2008
53. Nasar, 1994
53. Hekkert, et al., 2003
54. Galindo & Rodriguez, 2000
55. Cackowski & Nasar, 2003
56. Nasar, 1998
57. Ferry, 1993:24
58. Burton & Mitchell,2006
59. Mehta, 2009
60. Stamps,2005
61. Herzog et al., 2001
62. Nasar, 1983
63. Ferry, 1999:24
64. Kirillova et al., 2014
65. Kaye & Murray, 1982
66. Glaeser et al
67. Carlino,2001
68. Saiz, 2000
69. Cackowski & Nasar, 2003
70. Galindo & Rodriguez,2000
71. Herzog et al., 2003
72. Frewald,1990
73. Wohlwill,1974
74. Kuller,1980
75. Whyte, 2007
76. Woolley, 2003
77. Reed et al., 2011
78. Arnheim, 1977
79. Mass, 1990
80. Groat, 1994
81. Hekkert et al., 2003
82.Stamps&Nasar, 1997
83.Vining &Stevens1986
84.Lothian, 1999
85.Costonis, 1982
86. Bourassa,1991
87.Daniel 2001
88.Herzog et al 2001
89.Stamps 2005
90.Danaci, 2012
91.Lang,1988
92. Frey,2003
93.Daniel and Meitner,2001
94. Ferdous,2013
95.Norberg,1991
96. Burgess, 1924
97. Hoyt,1939
98. Harris & Ullman, 1945
99. Waugh,1990
100.Ravenscroft, 2000
101.Taylor, 2003
102.Liempt &van, 2014

Figure 42. Aesthetic design thinking model of the urban environment (Developed by Author).

6.3 Methodological Proposal to Apply the Model in the context

The following paragraph describes a methodological inquiry to apply the proposed model for aesthetic assessment in the urban contexts. To be able to apply the proposed model it needs to know a) The scales of the study (extent of assessing area), b) Modes of the study (typology of aesthetic assessment in the context) c) Applying the proposed model (totally or even partially) d) Using the specific technique and tools to apply the proposed model. Consequently, to be able to apply the proposed model the researcher should develop *inventory mapping code* before starting the site survey (See Figure 41). The methodological proposal, which will describe in this part prepares a guideline which reveals how to apply the proposed model in the context.

6.3.1 The Scale for the Study (stage 1)

The term scale of the study refers to the extent of the area for study. Considering the collected indicators from a systematic review of the literature (See Figure 41) and the severity of influence of the physical elements of urban spatial configuration on human cognition, the study introduced four main classifications for aesthetic assessment in urban special configuration: Building scale (parcel scale), Street scale (plot series), Neighbourhood scale, and City scale. Each and every researcher could also define his/her own unique scale in regards to the problem that wants to study.

6.3.1.1 Building Scale (parcel scale)

The main aim of the study on building scale (micro scale from the urban designer's point of view) is to find out the aesthetic value of individual buildings. The model state that building details and ornamentation; building elements and their configuration (overall form); architectural style; their colours; their opening (window and doors); cultural and symbolic elements; their typology and orientation effects on human aesthetic perception.

6.3.1.2 Street Scale (plot series)

To be able to study on the dynamic of urban spaces, movement in urban environments prepares an opportunity to explore the arousal potential of the environment. In this regard, paths are the most important elements in an urban space configuration which have a direct effect on human aesthetic cognition. The statement also previously considered as serial vision in Cullen's study (1960). In this regard, by considering plot series from a morphological point of view, to be able to assess observer's perception in street scale, the buildings that are constructed in each plot will have its own effects on the perception of the environmental configuration. Assessing in street scale (plot series) is considered as a macro scale in urban design. By referring to macro scale the social, political, economic, cultural dimension of urban design will also effects in aesthetic appreciation of the urban averment. Common ground / common enclosure, similarity, proximity, continuity, orientation, and closure are the main indicators in the aesthetic organization in this scale. To assess aesthetic effects of urban special configuration not only all indicators in building scale should consider, but also urban solid and void, urban amenities and their organization, tidiness, defined edge, pavement, will also effect on human perception of space organization.

6.3.1.3 Neighbourhood Scale

Aesthetic assessment of the neighbourhood scale compound all indicators of aesthetic satisfaction that discussed in the last two scales. Moreover, experts for aesthetic assessment of this scale should also be aware of the principals of inclusive urban design. The term serial vision in this scale and also in city scale is meaningful by considering the principles of mysterious design in an urban environment. According to Kaplan and Kaplan (1982) mystery in environment and human preference to explore the context, irregular patterns of streets prepare such as an opportunity for the observer.

Design principles such as Organization of urban amenities, Organization of floors, Density, Vegetation, Visual enclosure, Harmonious relationship, Solid and void , Robustness, Permeability, Diversity, Proximity, Richness Vitality, Liveability, Legibility, Accessibility, Imageability, Passive or Active engagement, Symbolic values /Authenticity, Identity, Safety, Sidewalks and other street escape features, Tidiness of urban environment should considered in aesthetic assessment in neighbourhood scale. Different types of street patterns due to different type of serial vision will lead to different types of urban perception. In this regard, street patterns and their configuration models, length, width, level of the enclosure, topography and the speed of walking of the pedestrians and even cars movements prepare different aesthetic values in human perception.

6.3.1.4 City Scale

Aesthetic assessment of city scale considers all indicators of design which discoursed in building scale, street scale, and neighbourhood scale. In this scale pattern of land use, street, square and park typology, the study on urban net, thinking on urban infrastructure, and considering climatic factors in the organization and assessment of urban spaces will effects in human aesthetic perception. Figure 41 illustrates four main classifications for aesthetic assessment in urban special configuration which are Building scale, street scale, neighbourhood scale and city scale.

Figure 43. Four main classifications as a scale for the study (Developed by Author).

6.3.2 Different Modes of Application of the Model (stage 2)

As already discussed, the main aim of the proposed model is to assess the psychological effects of urban special configuration to find a suitable method to increase the aesthetic values of their configuration. The proposed model can be applicable within one or two or more contexts to find elements which leads to aesthetically satisfaction or dissatisfaction. The model prepares an opportunity for experts to wisely intervene in the context. The three different modes of implementation in the context are:

A) In the first mode, the study aimed to analysis aesthetic aspects and interrelation in different part of the one context (the context could be in building scale, street scale, neighbourhood scale, and city scale). Since the process of human perception is same and people perceive the environment based on what they observed, all the indicators of the model should be consider in assessment. The model prepares an opportunity to assess psychological effects of each and every indicator on human perception. Also, this model will be able to disclose positive and negative effects of urban spatial configuration on human cognition of the environment, the outcomes in this mode of assessment are specific to the assessed context and might not impediment it in the other context of a same city (See Figure 42A)

B) The second mode of assessing aesthetic values of the context (the context could be in building scale, street scale, neighbourhood scale and city scale) to compare two or more contexts with the same scale (See Figure 42B). In this type of comparison, we can compare aesthetically successful designed context with the one which needs implementation. The effects of social, cultural, economic, geographical properties of the urban spatial configuration can easily evaluate in this mode of aesthetic assessment.

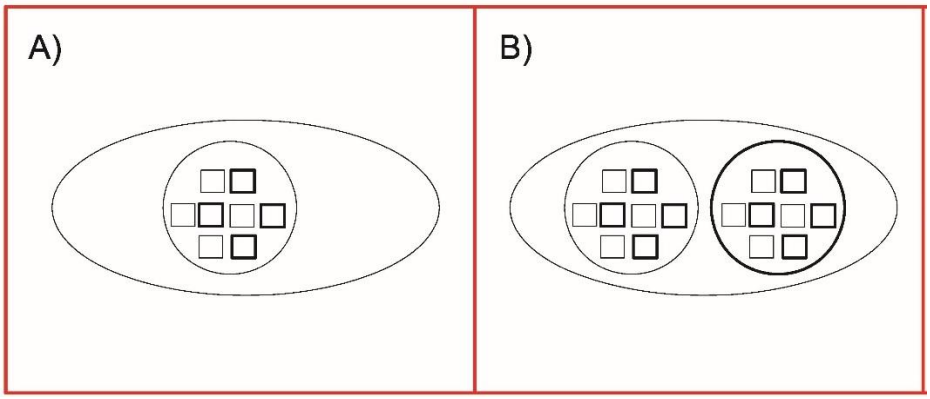


Figure 44. Different modes of study in an urban environment (Developed by Author).

C) The third mode of aesthetic assessment prepares multi-scale approaches to comparatively assess different scales of the study (See Figure 43). It can assess aesthetic values of building scale within street scale or neighbourhood or city scale. In doing so, the aesthetic values of street scale can also be considered within the neighbourhood scale or within the city scale. In this mode of assessment even aesthetic values of neighbourhood scale can be considered within the city scale. The third mode of aesthetic assessment introduced as a kind of statement in this thesis and needs further study to find a suitable model to be applicable in multi-scale approaches.

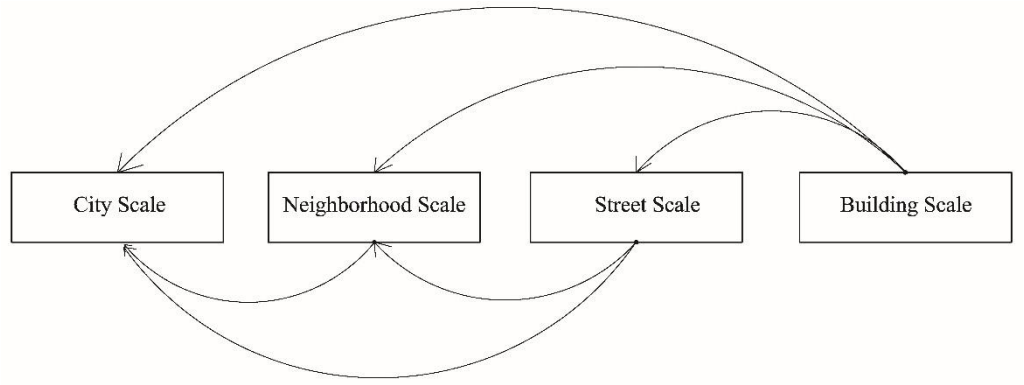


Figure 45. Multi-scale approaches as a mode of study (Developed by Author).

6.3.3 Applying the proposed Model (stage3)

As it is sown in the proposed model for aesthetic assessment (See Chapter 6.2.4) the indicators of study for aesthetic assessment have been classified into seven main categories: 1- Assessing the effects of micro scale elements, 2- Assessing the effects of macro scale elements, 3- Assessing the effects of static organizations, 4- Assessing the effects of dynamic organizations, 5- Assessing formal conceptions, 6-Assessing symbolic conceptions, 7-Assessing hedonic values. The study of aesthetic assessment can be focused on one individual category or even it can consider all indicators of each category to have a more reliable assessment (See Figure 44).

6.3.4 Techniques and Tools (stage4)

Regarding to the aim and objective of each research the techniques and tools for applying the proposed model in the context might be different. Preparing to interview and questionnaire based on the proposed indicators of the model might be a common one. (The questionnaire survey can be composed of two parts: In part A, questions can ask to define the profiles of the respondents. In part B, questions can be organized regarding to indicators which have been classified and developed in 6.2.4, and 6.3.3). The method which might use for structuring the questionnaires can be based on a Likert scale (De Vaus, 2002) with five or seven response items from strongly agree to strongly disagree or semantic differential method (Heise, 2010).

The other methods of social survey: Site surveys, Observation, Customer satisfaction research, Expert opinion, and Social analysis might have been considered during the research process by regarding to the problems under investigation in their research. Appendix A-G describes in detail the technique and tools in aesthetic assessments of urban spatial configuration.

6.3.5 Determining the sample size and implementing a pilot study (stage5)

The next stage for applying the proposed model is the pilot study on the case study area, to be sure that all questions are understandable by the responders. And the appropriateness of interview techniques and questionnaire details can be checked by the pilot study (De Vaus, 1993). In order to get reliable outcomes there should be a certain amount of respondents' considering the population of selected context. In this regard slovin's formula (Altares, 2003) can be applied to determine the sample size for study with the margin error of ±5%. ($n = N / (1 + Ne^2)$ n = Number of samples - N = Total population - e = Error tolerance.)

6.3.6 Statistically Analysing the Collected Data (stage6)

To be able to compare the outcome the SPSS (statistical package for social science) version 21 (or any other latest or previous version of it) can use to statistically analyse the collected data in each selected context. In the meantime the collected data from the context (Likert scaling method) is ordinal. In this regard, if the aim was to compare two different contexts Spearman's rank correlation coefficient method (Spearman, 1904) is suggested to analyse the indicators. The outputs from Spearman's Correlation coefficient (r_s) are arranged between -1 and +1. Indicator in different context. In respect of this, we can describe the strength of the correlation using the following criteria

± 0.80-1.0 – Very strong negative/positive linear correlation.

± 0.60-0.79 – Strong negative/positive linear correlation.

± 0.40-0.59 – Moderate negative/positive linear correlation.

± 0.20-0.39 – Weak negative/positive linear correlation.

± 0.00-0.19 –Very weak negative/positive linear correlation.

0 – No linear correlation.

From the other hand, if the aim was to compare or assess different indicators of contexts Kendall's tau-b correlation testing method and Spearman's rank correlation in SPSS will also prepare an opportunity to assess which context has a more aesthetically valuable and why. It can also describe the strength of the possible correlations between the case studies. Finally, figure 44 suggests a methodological proposal to apply the proposed model. The methodological proposal also can call inventory mapping technique. Each researcher to apply the proposed model for aesthetic assessment needs to use this inventory mapping technique to shed the light before starting the research.

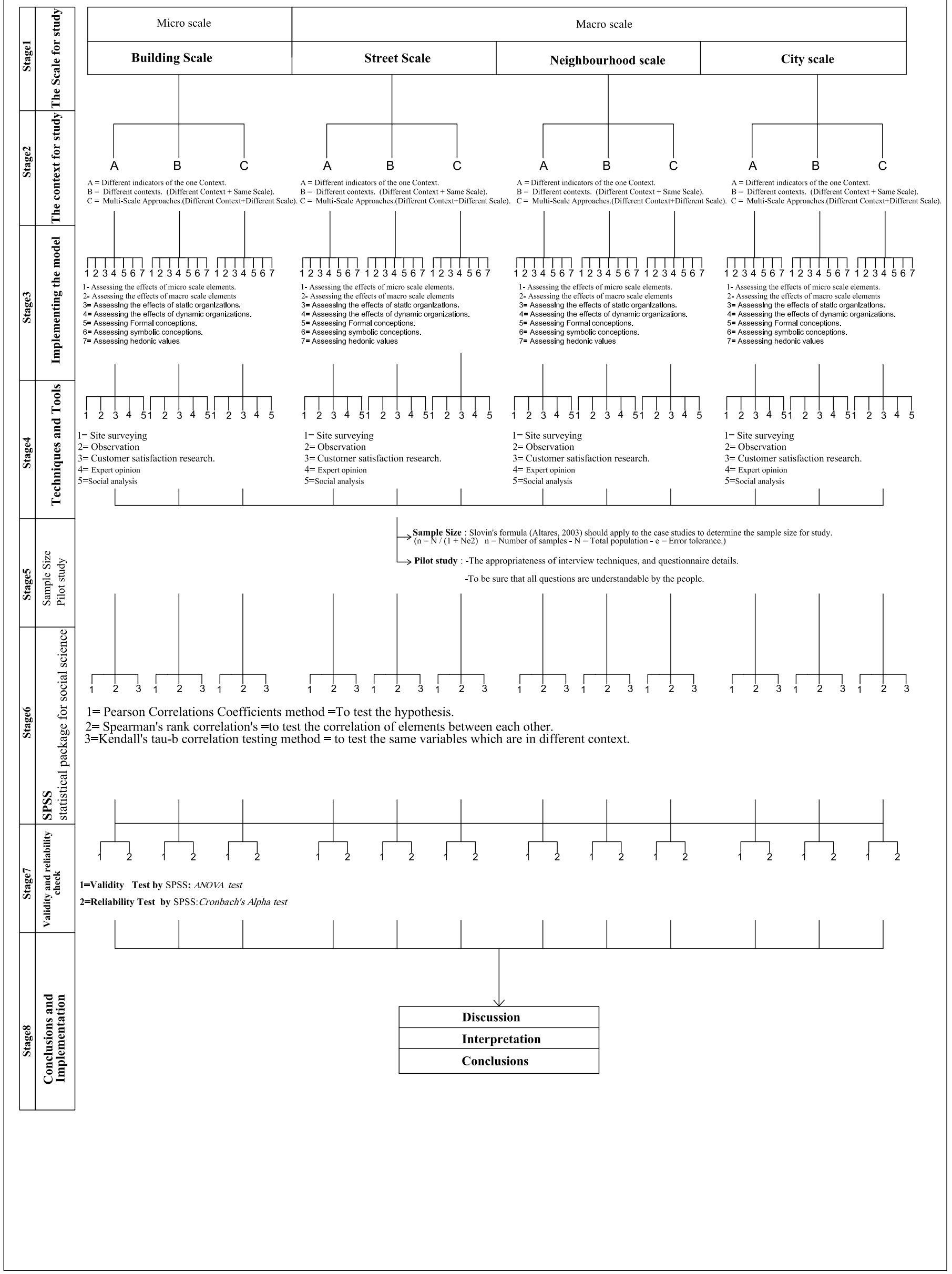


Figure 46. A methodological proposal to apply the proposed model (Developed by Author).

Chapter 7

CONCLUSION

In this study urban aesthetic considered as a term which defines man-environment relationships. Consequently, within the scope of this study schema of urban aesthetic based on human perception process defined. The study revealed that urban aesthetic can work as one of the essential goals for the future of good quality of the urban environment.

The study exposed that in today's cities, urban designers dealing with the problem and principals of making urban environments as unifying and collective framework to give an aesthetic sense of perception in their designed environment. The study also revealed that in an unsuccessful cases of urban spatial configuration, the architecture and urban planner's effect come to be as a cosmetic treatment in space configuration which leads to ill planned and ill shapes for public uses. Consequently, this kind of urban development converts objective elements of urban spatial configuration as isolated objects positioned in the urban environment which don't meld with its surrounding. It also revealed that in contemporary urban development decisions about growth patterns are made without considering the three-dimensional relationships between elements of urban spatial configuration to regard on human needs and behaviours. As a result of thesis problems, unshaped anti-spaces, which does not have an aesthetic quality in terms of satisfaction from its user's point of view emerged in contemporary environmental settings. In the light of the above discussions, there is surely a need for

aesthetic understanding of the spatial configuration for urban designer and its psychological effects on human cognition. Therefore, it prepares a context for urban designers to consider the rule and principals of urban spatial configuration base on the users' point of view before construction or even during the regeneration process.

In this regard, the study was set out to explore the concept of aesthetic perception of the elements of urban spatial configuration to introduce a model to explore the relationship between the elements. The study sought to answer the questions of how the objective environment can work with human cognitive process in order to assess the aesthetic experience.

Thus, the main aim of this study was to set up a model for assessing the aesthetic quality of urban spaces based on the process of human cognition in environmental configuration. For the main purpose of this study three objectives were determined.

1- To find out the elements of urban configuration that has a direct effect on the human cognitive process.
2 - To find out the principles of aesthetically suitable relationship between the elements of the urban spatial configuration.
3- To find out the aesthetic characteristic of good configuration between the elements of the urban spatial configuration through the systematic review of literature.

The overall research was organized in four main parts. The first part was a theoretical framework through systematic review of the literature. Then the second part was to apply the collected indicators of aesthetic assessment based on human cognition process. Finally to introduce a methodological proposal for applying the proposed model for aesthetic assessment of urban spatial configuration. In the first part of the research which composed of four chapters (Chapter 2, Chapter3, Chapter4, and

Chapter 5) the study aimed to build the theoretical framework. In this regard, in chapter 2 the concept of “AESTHETICS” and its definition through history assessed. The study revealed that the human perception of the environment (or an art object) is the most important factor which effects on people’s aesthetic understanding of the environment. Therefore, human cognition process and different approaches in aesthetic assessments studied in this chapter. Chapter 3 assessed the term urban aesthetic and conclude that urban aesthetic and human needs are interrelated. It concludes that successful configuration between elements of urban spaces by fulfilling human needs are predominant prerequisite which leads to urban aesthetic.

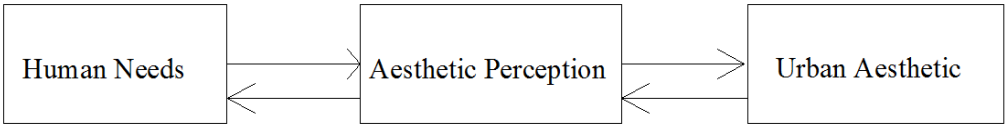


Figure 47. The interrelation between human needs, aesthetic perception and the urban aesthetic (Developed by author).

In chapter 4 the most well-known theories which currently applied in the aesthetic evaluation of the cities discussed and classified into five main categories: Cognitive theories, Semantic theories, Evolutionary theories, Normative theories and Syntax theories. Consequently, in the chapter 5 the scholars' approaches in assessment of aesthetic perception have been explored regarding to the aim of the research. Finally, in chapter 6 the study introduced an integrated model and methodological proposal for aesthetic assessment of urban spatial configuration based on human cognition process.

7.1 Findings of the Research

The findings of the research are classified into four main sub-headings, as below:

-Theoretical findings.

- Findings on the theories of the aesthetization of the urban environment

-Findings on methodological analysis of researches in aesthetic assessment.

-Findings regarding to the proposed model for aesthetic assessment.

In addition, based on these findings, strategy for urban aesthetic assessment by referring to the main research question was presented.

7.1.1 Theoretical findings

Regarding to the theoretical findings, the study revealed noticeable information about the "human aesthetic perception" and its interrelation with the human cognitive process. In this regard it highlighted that urban aesthetic perception is a process which perceptible by users. In this regard, the study stated that the process of cognition is at the heart of the way we understand our environment. It also highlighted that the aesthetics is a science that leads to beauty, properties of an object and their perception through our feelings.

The study on the process of the aesthetic thinking through the history classified into two main parts: A) study under the category of classical aesthetics focused on beauty as a procedure that instigates through the gratitude of objects and their configuration in the natural environment. B) Modern aesthetic considered aesthetics as the visual appeal and the attractiveness of an object. In the Modern era, the matter of taste in aesthetic judgment and the search for the underlying clarifications of beauty found to be dominant. Considering both classifications, it was found that the aesthetic satisfaction of the environment comes from the amalgamation of 1) *Built environmental factors* which are the physical elements of urban spatial configuration and their organization, and 2) *Non-built environmental factors* such as individual characteristic, cultural factors, education and etc.

There were three main key words during the study of aesthetics which are aesthetic properties, aesthetic experience, and aesthetic appreciation. It revealed that, attributes

of aesthetic properties e.g. psychological, organizational, meaningful properties will lead to aesthetic experiencing of the environment. In this regard, aesthetic appreciation of the urban environment will be human mind's subjective appreciation of the way the people experiencing the environment.

To be able to assess the aesthetic quality of the urban environment, the different methods of aesthetic assessment which discussed in chapter 3.3.2 revealed that there are two main approaches: The first one which is related to the objective elements of urban spatial configuration and the way to organize them which called subjective, rationalistic or expert approach. The second category refers to the human subjective assessment of spaces which are also called Romanticist view or perception based approach. By comprehending the essence of aesthetics and the way of classifying them through the literature chapter three come to assess the meaning of urban aesthetic to explore the factors which has direct effects on the aesthetic appreciation of the urban environment. In this chapter, it was found that the urban aesthetic is a tool for city identification. The assumption of "*The aesthetics of the city is an aesthetic of engagement*" means that the aesthetic quality of urban spaces, goes beyond an external visual appearance and should observe through a more comprehensive approach related to other dimensions of the urban spaces. To consider a city aesthetically not only judging its buildings and architectural style, vehicle and pedestrian traffic are considered but also historical and social elements as part of its total sensory package should take into the aesthetic assessment process. Good quality of urban spatial configuration has also been found to make people feel better and feel more comfortable. Therefore, aesthetic urban spaces increase vitality and liveability of the place. The study also realized that satisfaction of all basic human need will effects on the human aesthetic perception of the urban environment. Physical needs, safety and

security needs, affiliation needs, esteem needs, and self-actualization needs considered as necessity requirements which should deliberate in an aesthetic designing of urban space configuration. For this reason, the aesthetic quality of urban spaces is not something luxurious or unnecessary, but it is necessary for the well-being of individuals and societies in term of survival and enjoying the potentials which the environment offers.

7.1.2 Finding on the Theories of the Aesthetization of Urban Environment

Regarding to cognitive theory, Boyer's *city of collective memory* recalls the aesthetic effects of traditions and the previous image of cities. Distinct components of a town by recalling their traditions refer to their historical background to prepare a sense of belonging in the place which leads to produce a nice image in its citizen's cognition. In this regard, culture and experience emphatically impact the understanding of the environment (Tuan, 1974). In the Lynch's Mental *Image of Cities* it was found that the most important quality of cities for establishing their mental image is its spatial legibility or "imageability." People appreciate the places which are easily memorable. Gestalt psychology developed the idea of emerging human perception of environmental configuration. It emphasized on the dynamic and structural nature of perception. *Principles of organization such as* Similarity, Proximity, Closure, Continuity, Common ground, Orientation *introduced* as essential for a successful and the favourable visual perception of scenes. The idea highlighted the fact that people don't perceive their environment by considering distinct visual elements, but rather in terms of configurations between those elements.

Under the classification of semantic theories according to Rapoport's (1977) non-verbal communication it revealed that signs in the built environment are the non-verbal rules or codes of social behaviour. Regarding to Norberg-Schulz's phenomenology of

place (1980) it was found that the experience of a meaningful place is essential for the welfare of people. While people identify themselves within a meaningful place, they feel at home. Appreciating the city as an articulated "system of symbols" will also establish a culture and values. In this regard, aesthetic perception anticipated a reassessment of the relationship between architecture, place, cultural identity, and belonging.

Considering evolutionary theories of environmental preference, environmental aesthetic preferences would be affected by the possibilities for understanding and exploring urban spaces. Kaplan's Evolutionary Theory of Environmental Preference (1987) exposed that the most aesthetically preferred cities (or parts of a city) have a significant amount of coherence, legibility, complexity, and mystery. Appleton's Prospect-Refuge Theory (1984) which aimed to vivify *why do we prefer some places rather than the others?* found that the aesthetic quality of environmental configuration can determine by the abundance of prospect and refuge symbols.

Syntactic theories consider the "rules of communication" for the understanding of cities. In this regard, Hillier and Hanson's space syntax theory state that movement is the essential correlate of the urban spatial configuration. According to this theory, it was highlighted that the functional streets define more strength of use. Therefore, interconnectivity (visually and physically) of spaces is the key determinant of their functional success.

Finally, theories discoursed under the classification of Normative theory justifies how a thing should be or behave. In this regard, Lynch's Theory of Good City Form established general relationships between the urban form, human senses and values

and conclude that a good city could be measured by the study on the health and safety of the place, perception and cognition of the environment, behaviour and function in the space, transportation and communication, private and public uses. In *Theory of Responsive Environment*, Bently et al., (1985) emphasized the fact that to increase the aesthetic quality of the urban environment, it needs to recognize how a place should be inclusive, controllable and friendly. In this regard, it realized that, a physical environment can influence the degree of choice by considering permeability, robustness, richness, visual appropriateness, variety, legibility, and personalization.

7.1.3 Findings on methodological analysis of researches on aesthetic assessment

The study by considering meaning oriented approaches revealed that the aesthetic appreciation of the environment from laypersons and architecture might be different. Therefore, subjective assessment considered in this approach. These meanings can also be associated with values, personal biases, professional education, and cultural background. Meaning-oriented approaches are useful to understand that meanings which involves to the built environment can focus on some affective or organizational factors to manifest social status or personal qualities.

Interviews, questionnaires by semantic differential method or Likert scaling method, observing, photographs, and mental mapping techniques considered as a data collection method in meaning oriented approaches. The indicator of aesthetic satisfaction between elements of urban spatial configuration which belongs to cognitive theory and normative theory (See Chapter4) also considered in this part for aesthetic assessment.

The study exposed that preferred places approaches are universal that can be assessed based on people from each profile. Indicators which have been highlighted in the

theories of aesthetic evaluation of urban environment (most profoundly cognitive theories, evolutionary theories and normative theories) considered base on preferred place approaches. Open-ended and structured questioners by semantic differential rating scale and Likert scaling method considered as a data collection method in the preferred place oriented approaches.

From the other hand, environmental aspects approaches considered psychological effects of objective elements and their organization of the human subjective mind. Consequently, it was found that the methods of visualization (Mambretti, 2011), mental map (Lynch, 1960), computer models (Do & Gross, 1997), observational, semantic differential, surveys and interviews by the Likert scaling method can be considered as a tool for aesthetic assessment in environmental aspects approaches. Depending on the problem to be discussed in the environmental aspect approaches all the indicators that have been discussed in the theories of aesthetic evaluation (See Chapter 4) of urban spaces might be considered.

7.1.4 Findings on the proposed model for aesthetic assessment

According to the proposed model, static and dynamic organization between elements of urban spatial configuration prepares an opportunity for aesthetic cognition of environmental attributes. The study revealed that the amalgamation of organizational factors between objective elements of urban spatial configuration and the effects of non-built environment on human subjective mind leads to the conception of the environment. Therefore, in an aesthetic assessment of environmental configuration both approaches should be considered.

Overall, the study proves that aesthetic assessment in the field of urban design is an attempt to upsurge the aesthetic quality of the urban environment. In this sense, the

built and non-built environmental elements of urban spatial configuration (aesthetic properties) which directly effect on human arousal potential, collected by reviewing the related literature and classified based on the human cognitive process in psychology. The outcomes put forward that an aesthetic response is the result of the interconnection between sensual desire, immediate state of involvement, and contemplative feelings. It is also revealed that the main source of aesthetic judgment is the organizational factors of the objective elements of the urban spatial configuration. In this regard, a negative or positive aesthetic response can emerge by considering the amount of complexity in the configuration of an environment. As a result, it is conceivable to accept that there is an association among aesthetic appreciation and the arousal potential of an environment. It also determined that to upsurge the aesthetic quality of the environment, the amalgamation of all symbolic and formal consideration is required. The contributions of this study would be of interest to urban designers and scholars by increasing the awareness concerning to the role of symbolic and formal meanings of environmental configurations on the aesthetic understanding of it. Since the methods is founded on the observer's point of view, it can be possible to apply the model in each given setting with each and every cultural background of the users.

7.2 Recommendations for Future Studies

As a future study various research problems can be defined by considering assessment of the psychological effects of urban spatial configuration in regards to the competing definition of the place. The applied methodology for aesthetic assessment can also be elaborated by referring the different context of a city upon their own specific research questions. The proposed model also can be applicable by using structured questionnaires and in-depth interview in regarding to various subject matters.

Also, as discussed in the limitation of the study it focused on the effects of morphological dimension and perceptual dimension of urban design. The study to find the aesthetic effects of another dimension such as the functional dimension, the temporal dimension, the social dimension on the human aesthetic cognition prepare another context for research.

As discussed in Chapter 6.2.3 the proposed model prepares an opportunity to assess aesthetic effects of spatial configuration within one specific scale e.g. in building, street, neighbourhood, and city scale. The idea of multi-scale approaches which comparatively assess different scales of the study within each other needs another mood of aesthetic assessment which have been proposed as a future study.

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APPENDICES

APPENDICES

The following appendixes prepares a context to understand the essence of each indicator. For each indicators there are also some methods and techniques to study in the context. In the part which describes theories of urban aesthetic design, there are five classifications which already discoursed in chapter 4. All proposed indicators in the model supposed to be in one of these categories. Therefore in deep understanding of the related theories for each indicator will help to have good quality of implementation. This study classified the theories for anesthetization of urban spaces in to five categories: A) Cognitive Theories. B) Semantic Theories. C) Evolutionary Theories. D) Syntactic Theories. E) Normative Theory.

The part which has been described in chapter 5 as methodological analysis tries to classify the indicators into three distinct parts which are 1-Meaning-Oriented approaches, 2-Preferred Places approaches. 3-Environmental Attributes approaches analyses the effects on preference of properties.

Appendix A: Techniques and methods to study on the indicators in Micro scale

Psychological Properties	Micro scale	Analysis topic	Related theory	Methodological analysis	Techniques and methods	Tools							
						Photographs	Maps	Questionnaire	SPSS(Graphs)	Table	Granh	interview	Related literature
		Buildings details	E	1	Site surveying	○	○		○	○	○		○
					Observation	○	○						
					Customer satisfaction research.			○				○	
		Colour, Water features	B	1	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
		Texture	B	1	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
		Ornament	B	2	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Historical analysis –documentary research-stylistic approach			○					○
		Material	B	1	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
		Shape, Form Windows	B	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○	○		○	○	○		○
					Historical analysis –documentary research-stylistic approach			○					○
		Urban amenities	E	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Expert opinion			○				○	
		Light and shade	C	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○

Appendix B: Techniques and methods to study on the indicators in Macro scale

Psychological Properties	Macro scale	Analysis topic	Related theory	Methodological analysis	Techniques and methods	Tools							
						Photographs	Maps	Questionnaire	SPSS(Graphs)	Table	Graph	interview	Related literature
		Landscape Topography Vegetation	C	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Expert opinion	○	○	○	○	○	○	○	
		Building face	C	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Expert opinion	○	○	○	○	○	○	○	
		Paths	D	3	Customer satisfaction research.			○				○	
					Observation	○							
		Edges Landmarks	A		Site surveying	○			○	○	○		○
					Lynch Analysis	○	○			○	○	○	
		Monument, Symbolic objective elements	A	1	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○	○		○	○	○		○
					Historical analysis – documentary research-stylistic approach			○					○

Appendix C: Techniques and methods to study on the indicators in properties of static Organization

Organizing factors leads to Arousal potential	Static Organizational Properties	Analysis topic	Related theory	Methodological analysis	Techniques and methods	Tools							
						Photographs	Maps	Questionnaire	SPSS(Graphs)	Table	Graph	interview	Related literature
		Similarity, Emphasis, Defined edges	A	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Expert opinion , Facade analysis,	○	○	○	○	○	○	○	○
		Density	E	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Expert assessments	○	○	○	○	○	○	○	○
		Enclosure, solids and voids	E	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Figure – Ground analysis Facade analysis, Social analysis		○						
		Scale	E	2	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying, Facade analysis, Social analysis	○			○	○	○		○
		Floor organization, Proportion, Order, Symmetry	E	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Figure – Ground analysis Facade analysis, Social analysis		○						
		Maintenance and Upkeep	E	3, 1	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Facade analysis, Social analysis Land use analysis								

Appendix D: Techniques and methods to study on the indicators in Dynamic Organization

		Analysis topic	Related theory	Methodological analysis	Techniques and methods	Tools							
						Photographs	Maps	Questionnaire	SPSS(Graphs)	Table	Graph	interview	Related literature
Organizing factors leads to Arousal potential	Dynamic Organizational Properties	Harmony, Balance Proximity	A	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
		Continuity, Time Series and orientation	C	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Facade analysis, Figure ground analysis	○	○	○	○	○	○	○	○
		Robustness	E , C	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Land use analysis, Observation, Social analysis		○	○					
		Permeability	E	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Accessibility analysis , Social analysis		○	○				○	
		Diversity or variety, Complexity	C , E	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Land use analysis		○	○					

Appendix E: Techniques and methods to study on the indicators in formal conception

Aesthetic Characteristics of urban configuration	Cognitive formal conception	Analysis topic	Related theory	Methodological analysis	Techniques and methods	Tools							
						Photographs	Maps	Questionnaire	SPSS(Graphs)	Table	Graph	interview	Related literature
		Environment for all,	E	1	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Social analysis			○				○	
		Vitality	E	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Social analysis			○				○	
		Legibility , Accessible, Imageability, Clarity	A	3	Customer satisfaction research.			○				○	
					Observation	○	○						
					Site surveying	○	○		○	○	○		○
					Social analysis			○				○	
		Visual appropriateness, Openness Tidiness	C	3	Customer satisfaction research.			○				○	
					Observation	○	○						
					Site surveying	○	○		○	○	○		○
					Social analysis			○				○	
		Comfortable, Personalization	C	2	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Social analysis			○				○	
		Passive or Active engagement	B	2	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Social analysis			○				○	
		Physical Richness	C	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Facade analysis, Social analysis	○	○	○	○	○	○	○	○

Appendix F: Techniques and methods to study on the indicators in Symbolic conception

Aesthetic Characteristics of urban configuration	Cognitive Symbolic conception	Analysis topic	Related theory	Methodological analysis	Techniques and methods	Tools							
						Photographs	Maps	Questionnaire	SPSS(Graphs)	Table	Graph	interview	Related literature
		Symbolic values, Style, Historical significance	B	1	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Documentary research , Facade analysis,	○	○	○	○	○	○	○	○
		Cultural stability and identity, Sense of the whole	B	1	Customer satisfaction research.			○				○	
					Social analysis			○				○	
					Site surveying	○			○	○	○		○
		Authenticity and meaning,	B	1	Customer satisfaction research.			○				○	
					Social analysis			○				○	
					Site surveying	○			○	○	○		○
		Sense of belonging, Sense of place	B	1	Social analysis			○				○	
		Livability	C	1	Social analysis			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
		Mystery, Novelty	C	3	Social analysis			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
		Safety	C	2	Social analysis			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
		Efficiency and Justice	E	1	Social analysis			○				○	
		Imagination and joy, Positive image	C	3	Social analysis			○				○	
		Visual Richness	C	3	Customer satisfaction research.			○				○	
					Observation	○							
					Site surveying	○			○	○	○		○
					Facade analysis, Social analysis	○	○	○	○	○	○	○	○

Appendix G: Techniques and methods to study on the indicators Human Aesthetic Response

Human Aesthetic Response	Analysis topics	Related theory	Methodological analysis	Techniques and methods	Tools							
					Photographs	Maps	Questionnaire	SPSS(Graphs)	Table	Graph	interview	Related literature
	Beautiful - Ugly	B	2	Social analysis			○				○	
	Positive/negative space	B	2	Social analysis			○				○	
	Like or Dislike	B	2	Social analysis			○				○	
	Pleasant-unpleasant	B	2	Social analysis			○				○	
	Desirable - undesirable	B	2	Social analysis			○				○	
	Comfortable - Uncomfortable	B	2	Social analysis			○				○	