Role of Kaplan's Preference Matrix in the Assessment of Building façade, Case of Gorgan, Iran

Sanaz Memari[1] and Mahdieh Pazhouhanfar[2*]

[1] M.A. of Architecture, Faculty of Engineering, Golestan University, Gorgan, Iran.

[2] Assistant Professor of Architecture, Faculty of Engineering, Golestan University, Gorgan, Iran.

ABSTRACT: Buildings play a key role in organization and arrangement of city appearance. Specially, their facades have profound impact on the quality of urban landscapes while playing an important role in assessing urban environments by citizens. The introduction of superior building facades in terms of popular preferences is mostly based on visual elements of building facades. Furthermore, aesthetic preferences should not be explored without investigating the consequences of their interaction with environment which forms mental concepts; whereas, few studies have explored building facades based on preference of observer. Therefore, current research has been conducted as a survey in order to evaluate the role of each variables in Kaplan's preference matrix on building façade preferences. Our questionnaire was based on information factors including "coherence", "complexity" and "mystery", while excluding "legibility". In this survey, 100 respondents have rated their preferences for 48 building façades located in Grogan, via a photo questionnaire. Data collected from the questionnaire were analyzed by using SPSS software. According to the correlation test, there was a significant correlation between preference and triple information factors (coherence- complexity- mystery). Furthermore, according to the regression test, the model consisting triple information factors (coherence-complexity-mystery) can predict 62.3% of preference toward building facades. In addition, it was revealed that complexity and mystery are significant in predicting the preference for building facades compared to cohesion. Finally, it is suggested that the focus of design on building facades should be based on complexity and mystery as they make building facades to be more preferred.

Keywords: Pollution, Visual Preference Coherence, Complexity, Urban Landscape, Mystery, Visual.

INTRODUCTION

The design process for city is never accomplished and details at every morphological level are disposed to constant change (Lynch, 1960). Some people believe in positive effects of the changes on context of cities since they address its political and financial benefits (Gjerde, 2011). On the other hand, the speed of this change is so rapid that there isn't sufficient time and opportunity to consider citizens' opinions and utilize them into design. Therefore, the designer plays the key role in the process of designing. Parts of this negative change the urban area are associated with neglected aesthetic aspects which are essential to improve the quality of building facades. Consequently, the real visual needs of citizens toward building facades are mostly ignored. Thus, the necessity of conducting research on building façade preferences

should be emphasized.

Desired urban scope encompasses rich visual structures. The rich visual structures are organized elements which can be detected by observers through reviewing the general form, the focal points in the detailed parts or in the inconsistencies in the middle or cornerstone. Moreover, the use of ornaments and decorative elements can divide the facade into different scales and affect its visual perception profoundly (Salingaros, 2003). Even if building facades, according to minimalist point of view, would be considered merely as an exterior wall, contemporary building facades neither have a positive role in improving the visual quality of the urban scape, nor make feelings of joy, satisfaction, and vitality among citizens which are the most important indicators of desired

and favorable urban spaces. Instead, most of current building facades with poor design qualities cause anxiety, tension and distress and affect observant negatively.

Problem Statement

Despite all research on building facades which have evaluated them from expert perspective, less attention has been paid to the preferences of people. In previous studies, many efforts have been made to introduce superior building facades in terms of visual elements. Since perception of beauty is always associated with personal emotions and the individual's mental background, the aesthetic preferences could not be considered apart from the investigation of the mental concepts of individuals towards the environments. Therefore, current paper aims to examine the visual preferences of people toward building facades in terms of variables of Kaplan's preference matrix.

In a meta-analysis study, exploring relationship between preferences of environment including natural and built kinds and four variables in Kaplan's preference matrix and three more variables (complexity, coherence, and mystery), it was revealed that there is a correlation between them. While, results reported a weak relationship between legibility and preference, legibility does not have direct linear relation with preference and there is a weak link between them (Stamps Iii, 2004). Other studies have also reported the limited impact of legibility on preferences (e.g., Gimblett, 1990; Herzog, 1989; R. Kaplan & Kaplan, 1989; Pazhouhanfar & Mustafa Kamal, 2014). Thus, in current study by omitting legibility, the role of other three variables, including coherence, complexity and mystery in public preferences are explored. The purpose of this paper is to identify and compare the components of Kaplan's preference matrix which are effective in preference. As a result, through considering and implementing effective components in designing building facade, the visual quality of urban scape will be improved. This result is important since people are affected by these perspectives every day.

Research Background

Environmental comfort is one of the factors that is very vulnerable and has a sensitive nature against various pollutions. These pollutions could cause environmental degradation and negative effect on the perceptions of individuals of the surrounding environments. Some of these pollutions are recognized as physical pollution, symbolic and legibility pollution, visual pollution, visual pollution, color pollution, and light pollution.

The concept of visual pollution refers to the presence of any kinds of disturbance and poor visual quality in the city (including views, forms, volume of buildings, and windows, etc.). The visual pollution of the environment is one of the factors that can make the perception of the environment monotonous (Carmona & Tiesdell, 2007). In general, the way in which contemporary urban scape perceived by people is mostly different with the aesthetic aspects in designer's viewpoint. Consequently, citizens are unwittingly tolerant of a poor urban environment and poor visual qualities which are not preferred by them. However, lack of aesthetic satisfaction impacts nervous system negatively (Porteous, 2013). Negative effects of undesirable landscapes and boring environments along the roads and the outskirts of the city can make people impassive and indifferent, and less responsive to the environments. Since people do not like their surrounded environments, they are not trying to maintain its vitality. Consequently, such environments have been abandoned (Bell, 2012). All of these negative outcomes are due to creating an environment and urban landscapes regardless of preferences of the citizens.

Preference and selective choice are emotional reflections to a part of the surrounding environment. Preference is identified as part of the cognitive processes and product of perception that should be understood in order to study human perception while encountering with the environment. In other words, individuals by virtue of preference for a place or a landscape make communication and interaction with their surroundings and experience sense of place for specific settings. Preference is an indicator of human perception and his behavior (Nasar, 1997). Studies regarding preference have focused on analysis the reactions of ordinary people (non-specialists) toward content of the environment and their spatial understanding as well. The reaction of individuals as a unit of analysis is used to create a predictive model (psychophysical models) or a framework for explaining aesthetic experiences (cognitive model). In conceptual models, some studies use judgments based on preferences as indicators to distinguish the place or things that are of importance to users (Galindo & Hidalgo, 2005). Preference studies are a practical and systematic approach that can be useful to measure people's preferences and to identify environmental characteristics which make a scene desirable. In general, it can be concluded that the concept of preference is identified as a simple conceptual response to a particular place by individuals (Abbasalizadeh Rezakolai, Samadi, & Tabatabaian, 2015). Previous related studies have examined different research gaps (e.g., Importance of aesthetics and visual

preferences of people on built or natural environments -the role of preference in promoting quality of environments and strengthening the relationship between individuals and environment- interaction between individuals and their surrounding environments which comes from their preference). Therefore, during the last few decades, more attention has been paid to landscape assessment issues. Specially, many studies have been conducted on the assessment of the built and natural environments. Some studies have also compared the natural environments with built environments in terms of preference. It was revealed that people prefer natural environments rather than built environments (Kaplan & Kaplan, 1989; van den Berg, Koole, & van der Wulp, 2003). Moreover, studies indicated that the presence of water can have a positive effect in the environmental preference (Yang & Brown, 1992). Further, due to effectiveness of natural environments on improving the health of individuals and reducing stress, visiting natural environments can contribute to preference on natural environments compared with built environments (Ulrich et al., 1991). Studies have indicated that complexity has a positive effect on preference (e.g., Falk & Balling, 2010; Ode & Miller, 2011). According to previous studies, mystery also has a significant effect on preference among other three variables of preference matrix (complexity, coherence, and legibility; Kaplan & Kaplan, 1989). In another research it was claimed that individuals are more likely to prefer scenes which are high in mystery specially in natural environments (Gifford, 2007).

Concepts and Theoretical Framework

Prior to examine the building façade preference, its theoretical framework should be reviewed. One of the most environmental psychology theories which have been studying widely for years is the Theory of Environmental Preference. The preference matrix is a theoretical tool based on principles of evolutionary psychology (Kaplan & Kaplan, 1983). Kaplans have introduced humans as information processors, which is developed from evolutionary psychology. First an individual must be able to recognize objects in the environment in order to be able to survive, then make predications and finally evaluate the consequences. This process builds a mental construct which is called a cognitive map.

The key dimensions make an environment desirable recognized as follow: (1) whether an individual can make sense of the environment and (2) whether an individual can be involved with the environment through learning and/or exploration (Paxton, 2006). Making sense and involvement can both be examined from the standpoint of time (present/future). In General, the preference matrix is composed of two binary dimensions. Together, these two dimensions define four contain variables which are conceptually distinct predictors of environmental preference. The theory of preferences is based on the assumption that people have two basic needs in relation with the environment: one is perception and the other one is cognition. When these two needs meet with two levels of consciousness, there become four factors. These two levels of consciousness can be summarized in two categories of quick and immediate perception and inferential perception. These four variables called "information variables": coherence (immediate perception), complexity (immediate cognition), legibility (exploratory perception), mystery (exploratory cognition). These four variables have been introduced as a predictor of preference. In addition to this categorization, there is another classification that separate environmental information to two dimensions and three dimensions. Thus, "coherence" and "legibility" are among the perceptual variables that make the environment meaningful to the individual, and "complexity" and "mystery" are other variables of environmental preference that by providing variation in the content of the environment attracts people. On the other hand, "coherence" and "complexity" are considered as two-dimensional factors. Moreover, "legibility" and "mystery", on the contrary, requires a three-dimensional insight to be completely understood.

Table 1. Kaplan's Preference Matrix

The Framework of the Proposed Kaplan Model for Human Preferences			Perception Make Sense (Understanding)	Cognitive Involvement (Exploration)
Information Specification				
Present	Quick Info	Two-dimensional	Coherence	Complexity
Future	Predictable Information	Three-dimensional	Legibility	Mystery

These four variables, considered as information variables, each have an operational definition as follows:

Table 2. Definition of Information Variables in the Kaplan's Preference Matrix

Coherence	Legibility
Coherence comes from immediate revealed information, which is two-dimensional and perceptive. The coherence of environment or setting is related to the ordering and organizing of its elements. If the setting is homogeneous and consistent, users can easily understand and interact with it. Kaplan believes that cohesion can be achieved by repeating the same context of texture, while some degree of contradiction can also contribute to coherence. Coherence is similar to Gestalt's principle of organizing, which refers to the fact that elements in the form of a group are recognized to be unique. In fact, the goal of applying coherence is to systematize the setting through integrating identical groups which achieved by repetition or replication of components, and conflict reduction.	The concept of legibility is about navigation. Clearing and identifying paths is very important since it creates a sense of security in the individual. Legibility is about reading the environment and understanding it. The understandable ambience of the environment is contributing to its legibility. Therefore, any sign, landmark or focal point can enhance the environmental legibility. When the setting is experienced for the first time, one analyzes the environment in order to read it. Prospect can also have a positive effect on reading the environment through opening up the landscape. Even texture compositions have played an important role in improving legibility through getting a context more recognizable.
Complexity	Mystery
Complexity refers to the degree of diversity of elements in the environment. The more complex the environment, the more information is available. According to the Kaplan theory, more diversity in the environment encourages individuals to explore more in the environment. The two concepts of coherence and complexity should not be used interchangeably, since an environment with high coherence can be very complicated at the same time. Moreover, multiplicity of colors, textures and shapes are some examples of complexity.	Mystery is one of the factors that leads to more exploration in the environment. Mystery provide lot of information that by thinking and contemplating in the environment can be achieved. Mystery makes it easy for users to explore the environment in order to learn more about it. There are several ways to create mystery in the environment, including the creation of winding paths and purposeful use of vegetation for blocking the line of sight.

(Kaplan & Kaplan, 1989)

Each of above-mentioned qualities creates a qualitative environment that makes it attractive and preferable compared to others. Clear or simple prospects make a quick recognition and an organizing implementation by the observer while in landscapes which have high levels of complexity, environmental perception decreases due to the increased information received by the observer. Legible perspectives provide security. Therefore, through legibility environment reassure viewers that they will not feel lost and are able to navigate easily. Mysterious prospects through encourage the viewer to explore the environment, improve their learning capacity and provide them more experiences. However, in Kaplan's view, in addition to complexity, cohesion, mystery and legibility, the environmental familiarity is also effective factor in preference. The optimal level of these factors can lead to a preference for a landscape, environment or location. In general, it can be concluded that in Kaplan's theory of environmental preferences, human beings are considered as information processors who are trying to get acquainted with cognitive processes and related variables that determine preferences for the environment. In this theory, information plays a key role in human experiences and the source of this information is also available in the environment (Paxton, 2006).

METHOD

Participants

100 undergraduate and graduate students at Golestan University were selected randomly and asked to answer the photo questionnaire voluntarily.

Stimulus Material

The tool used for collecting the data is a photo questionnaire, in which participants respond to questions regarding to their preferences through watching pictures that include different building facades. Since previous studies (e.g., Reeve & Simmonds, 2007) have confirmed similarity between information received from photograph of the building facade and the direct observation, in this study, the photo was used as an alternative for on-site survey. Moreover, other studies have been considered it scientifically valid to look at the photo to answer the questionnaire instead of visiting the site (e.g., Rosenthal & Rubin, 1986; Sanoff, 1991). Therefore, almost five hundred photographs of the modern and old three-to-five-story building facades in the city of Gorgan were originally prepared by the author in April 2015. All photos were taken with a 16-megapixel camera, between 10 to 15 A.M., on sunny days from building facades. All photos have the same characteristics, including:

1) having high quality, 2) Be taken in height of eyes level in standing position, 3) common zooming adjustment in order to contain same portions and decorating details.

Then a professional photographer was invited to select the 100 photographs among a collection of 500 photographs in order to ensure that only appropriate and good quality images were selected. Due to avoiding personal and deliberate choices out of wide range of different building facades, a group of five architecture experts were asked for selection of 48 photographs out of 100 photographs. Samples of these photos are displayed in Fig. 1. By adding two photos to the first and two photos to the end, the number of displayed slides was 52 slides, although the data related to these 4 photos was not analyzed. The first two photos were removed due to the possibility of misunderstanding of the questions and the last two photos were removed due to the possibility of tiredness which can lead to invalid response.

Fig. 1. Examples of Photo of the Building Facades Rated in Photo Questionnaire

Procedure

Participants are invited to the conference room. After a brief explanation of the purpose of the study and how to fill out the questionnaire by the author, 52 colored slides were displayed on the screen by means of projector one after the other. The author did not influence on participants in responding to questioner. Thus, the participants were completely independent in their preference. After responding to the first 25 slides, there was a break time. After the break, participants were asked to resume the process and respond to the rest of the questions.

Research Design

Dependent variable: The preferences of individuals toward building facades in this research are considered as dependent variable.

Independent variables: Coherence, Complexity, Mystery, and Legibility are the information factors that make Kaplan's preference matrix variables. Due to the ineffectiveness and even the negative effect of Legibility

on preferences, three other variables- Coherence, Complexity, and Mystery- have been evaluated as Independent variables.

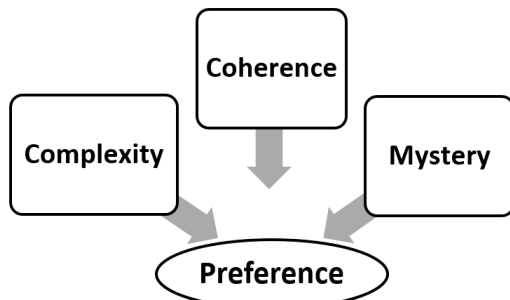The conceptual model of this research is illustrated below as Fig. 2:

Fig. 2. Conceptual Model of Research

As mentioned, due to the negligible effect of legibility on preference, current study explores Kaplan's preference matrix based on three variables: complexity (consisting of 4 items with reliability of 0.92; sample question: This building facades contains a good variety of components that keep me involved), coherence (consisting of 4 items with reliability of 0.87; sample question: There is a clear order in the physical arrangement of building facades) and the mystery (consisting of 4 items with reliability 0.96; sample question: This building facade makes me feel there is something interesting to explore). Preference was evaluated by one question: (I prefer this building façade

over others). Consequently, 13 questions with a seven-point Likert scale (range from 1 completely disagree to 7 fully agree) were provided to measure overall preference and components of Kaplan's preference matrix for each image. The collected data was used to analyze statistics including: mean, correlation and regression tests.

The Study Area

The city of Gorgan located in Golestan province-Iran, has been selected as a case study for the study of building façade preference. Gorgan is located between 54 degrees 13 minutes to 54 degrees and 45 minutes east longitude and 36 degrees and 31 minutes to 36 degrees and 59 minutes north latitude, in the southern part of Golestan province. The city is bounded from the north to the city of Aq Qala, from the south to Semnan province and the Alborz dynasty, from the east to the city of Aliabad Katoul, and from the west and northwest to the Kurdoki and Bandar Gaz cities. The area of this city is 16152 square kilometers while its height is 36.49 meters above sea level. The population of this city in 2011 was 536 329 and the area of the new city is 3676 hectares. In addition to neighborhoods of historical context, the city has neighborhoods that are completely new or integrated from both contexts. In this paper, most of the construction facades selected for photography are often located on the streets of Gorgan Pars, Golshahr and Naharkhoran Blvd, which include newly built buildings. They can properly demonstrate the weaknesses and strengths of the current approach in design of building facades and their impact on urban landscape quality. The location of Golestan province in the country, Gorgan city in the province and the mentioned streets are delineated in the following map as Fig. 3.
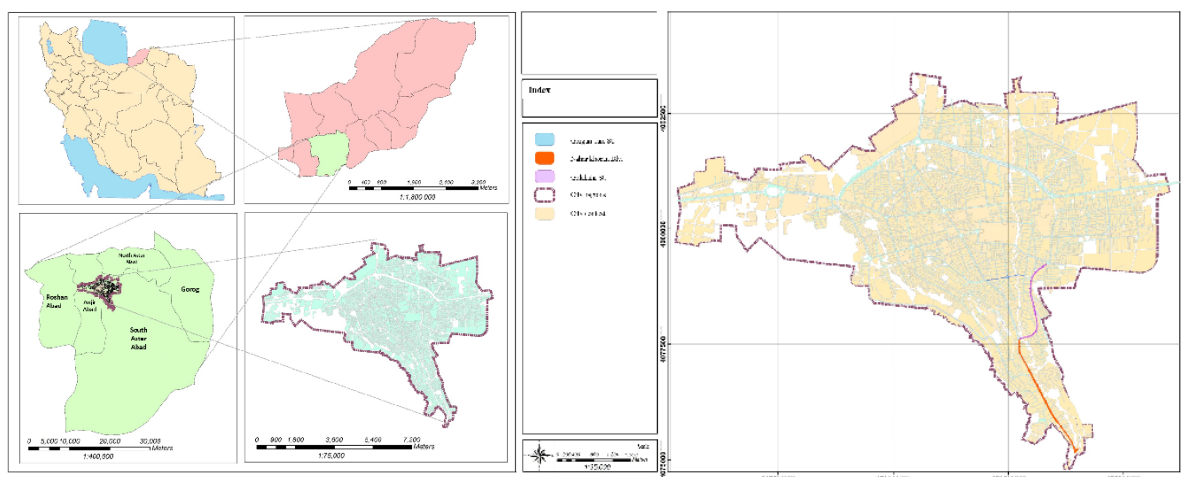

Fig. 3. Location of Gorgan City in Map of Political Divisions of the Country (Left) - Location of the Study Area in the City of Gorgan (Right)

RESULTS

In this section, the data obtained from the photo questionnaire are analyzed. The findings are presented in two sections: Descriptive statistics and Inferential statistics.

Descriptive Statistics

Participants

100 volunteers were invited from undergraduate and postgraduate students in Golestan University of Technology including 90 percent undergraduate students and 10 percent postgraduates, 81 percent girls and 19 percent boys.

MEAN AND STANDARD DEVIATION

The results of Table 3 indicate the information including mean and standard deviation. Accordingly, among three variables of building façade preference, cohesion is the highest, and complexity and mystery are in the next priorities in terms of the mean.

Table 3. The Mean and Standard Deviation of the Research Variables

Variable	Mean	Std. Deviation
Coherence	3.83	1.62
Mystery	2.84	1.56
Complexity	3.08	1.25

Inferential Statistics

Correlation Coefficient Analysis

The correlation coefficient represents the direct or inverse relationship, as well as the intensity of the relationship between two or more variables which range from 1 to 1+. According to the results of the correlation test in Table 4, two variables of complexity and mystery have a direct strong relationship with the dependent variable. Coherence variable, with respect to the correlation coefficient, has a direct correlation of 0.37, but relatively weak compared to complexity and mystery with the dependent variable as preference. The components of preference are also correlated with each other significantly.

Table 4. Correlation Matrix between Variables

		Preference	Coherence	Mystery	Complexity
Pearson Correlation	Preference	1.00	0.37	0.71	0.75
	Coherence	0.37	1.00	0.33	0.43
	Mystery	0.71	0.33	1.00	0.74
	Complexity	0.75	0.43	0.73	1.00
Sig. (1-tailed)	Preference	0	0.000	0.000	0.000
	Coherence	0.000	0	0.000	0.000
	Mystery	0.000	0.000	0	0.000
	Complexity	0.000	0.000	0.000	0

Multiple Linear Regression Analysis

The results of Table 5 demonstrate that R value, which revealed the correlation between the independent and dependent variables, is 0.789. Therefore, there is a strong correlation between the preference and the variables of complexity, coherence and mystery. The R^2 value indicates how much preference can be predicted

by independent variables. According to the result, complexity, coherence and mystery can explain 62.3% of variations in the preference.

Table 5. Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.789a	0.623	0.623	0.95026	1.939

a. Predictors: (Constant), Complexity, Coherence and Mystery
b. Dependent Variable: Preference

Table 6 confirm that the regression model can significantly predict the variation of the dependent variable. Since the significance level in this analysis is less than 0.05, the regression model is statistically significant, and the model is a good predictor of the dependent variable.

Table 6. Analysis of Variance of Regression

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3875.66	3	1291.888	1430.682	0.000b
	Residual	2344.15	2596	0.903		
	Total	6219.82	2599			

a. Dependent Variable: Preference
b. Predictors: (Constant), Complexity, Coherence and Mystery

Table 7 gives information on predicator variables. It is obvious that the constant values and dependent variables are all statistically significant in the model (according to the sig column). Standardized regression coefficient or Beta in this analysis are 0.054 for coherence, 0.342 for mystery and o 0.478 for complexity, which indicate the effect of each of the independent variables on dependent variable.

Table 7. Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.607	0.056		-10.779	0.000		
	Coherence	0.051	0.013	0.054	4.026	0.000	0.811	1.233
	Mystery	0.337	0.018	0.342	19.276	0.000	0.462	2.166
	Complexity	0.590	0.023	0.478	25.771	0.000	0.421	2.374

a. Dependent Variable: Preference

DISCUSSION

In this paper, the components of the matrix of preference were investigated and the effect of each component on the preference was analyzed. According to previous studies, Legibility as independent variable was excluded due to a small effect on the prediction of preference. Therefore, in this study of the remaining three variables (complexity, cohesion and codification) were evaluated. Results confirm the hypothesis of this study: There is a relationship between preference and three variables of coherence-complexity-mystery. These independent variables predict 62.3 percent of preference. Both complexity and mystery have a direct, and strong correlation with the dependent variable. Moreover, cohesion has a direct relation, but relatively weak, with preference as dependent variable. There is general agreement on the fact that complexity, mystery and coherence are three important effective variables on preference respectively.

In this study, complexity, with strong correlation (r = 0.75), was the most important factor influencing preference toward building facades that is compatible with previous studies (e.g., Herzog & Kropscott, 2004; Tang, Sullivan, & Chang, 2014; Van der Jagt, Craig, Anable, Brewer, & Pearson, 2014). Moreover, scholars believe that the perceived complexity of buildings is an important indicator of determining the attractiveness of the building facades (Imamoglu, 2000; Rapoport, 1990; Stamps, 2004). Therefore, visual complexity can improve the quality of a scene (Herzog & Shier, 2000). Moreover, through research, it was revealed that complexity is as an important variable in appearance (Berlyne, 1974). The number of perceptible elements in a scene and the dramatic differences between them are indicators for measuring visual complexity. Visual complexity is related to the level of information that is visible to the observer. In order to better understanding of complexity, Gestalt's theory helps with relating visual stimuli of building facades to regular patterns and creating a regular structure in the mind that provides a complete understanding of the environment. Coherent shape of the building facade and the patterns that exist in the structural facades are some of the physical factors that can be of importance in defining the space discipline; In fact, with more complexity in the facade, the sense of arousal in the observer is increasing. While, the pleasing quality of the building facade has a reversed u-shaped relationship with complexity, it indicates that the median level of complexity is associated with maximum pleasure and the level of high or low complexity is associated with minimal pleasure (Crozier, 1974; Wohlwill, 1968). However, some studies have revealed that there is a direct linear relationship between complexity and pleasure (Stephen Kaplan, Kaplan, & Wendt, 1972; Wohlwill, 1976). This contrasts come from a variety of factors, such as the impact of familiarity of building facade on complexity perception (Imamoglu, 2000). In general, with respect to the relationship between complexity and the preference, and the importance and priority of complexity in preference among other variables, it is recommended to avoid low and high levels of complexity in design of building facades, which respectively leads to boredom-indifference and turbulence-visual pollution.

After complexity, the second effective variable recognized as mystery which is one of the qualities that leads to more exploration in the environment. Mystery requires meditation and reflection in the surrounding environment, as there is a lot of information that it provides. Therefore, the design of building facades should contain levels of mystery to provide additional information for the observer to encourage him to discover through exploring the scene. Moreover, the positive effect of mystery in predicting the preferences of urban scape has been confirmed in previous study (Ikemi, 2005). After complexity and mystery, coherence is the last variable that has an impact on the preference toward building facades. However, compared to the decisive role of complexity and mystery, the magnitude of this impact is small. Meanwhile, in a meta-analysis of 11 studies, Stamps (2004) has reported that among four components, coherence has highest correlation with preference. In current research the correlation between coherence and preference was revealed weak which is compatible with previous studies (e.g.,Van der Jagt et al., 2014). The weak effect of coherence on building façade preference shows that the overall organization of elements compared to the other factors, such as complexity and encoding, is less important in designing of building facades.

Fig. 4. Five Best Selected Building Facades from Left to Right

CONCLUSION

The creation of visual quality in urban space from the perspective of aesthetics is one of the great goals to be perused. This can be achieved through emphasizing the aesthetic values in order to maintain sense of the place, creating a physical and visual coherence, and creating order and visual coordination across the street. Organizing the scape is the most important concern in urban scape. Identifying its positive points through the preferences of people toward building facades can be considered as constructive steps to reduce visual pollution in urban scape. In summary, based on the results of current study, the effective role of each variable including coherence, complexity and mystery on preferences toward building facades were confirmed. Accordingly, two factors including complexity and mystery are significant in predicting the preferences of people. After considering complexity and mystery, coherence is of importance in preference. It is suggested as guidelines in design of building facades to move forward in a qualitative framework. For instance: 1. use complexity in design of building facades through providing diversity of visual elements and increasing attractiveness, 2. Utilize mystery through the combination of elements at different levels which leads to improvement of the level of information transmission in order to make building facade interacting positively and constructively with the observer. As a result, building facades which are aesthetically rich in qualitative values were attractive to citizens and create a pleasant urban scape.

As mentioned in the theoretical framework section, according to the Kaplan theory, individuals prefer the kinds of environments and landscapes which meet two basic needs: quick understanding- exploration. Based on

the results, complexity and mystery are two most key factors affecting the visual preferences of individuals toward building facades (Table 1) which are classified as exploratory factors. Consequently, it can be concluded that what makes the building be preferred in the citizen's perspective is more about cognitive involvement while exploring them rather than perception and making sense as quick understanding. Thus, existence of variety of elements and diversity of visual factors in building facades (i.e., complexity), which promise to provide more information to the individual over time (i.e., mystery) are predictor of building façade preference while coherence as a quick understanding parameter is placed in the next priorities.

Transformation of qualities such as complexity and mystery to guidelines in design of building facades requires the provision of strategies that are in line with the implementing rules as physical elements. This study shed light on identifying the priority of the preferred parameters in design of building facades. Future studies should be organized in order to provide design strategies consistent with the varaibles which are indicated to be effective in preference. Specifically, according to the result of current study, subsequent studies should focus on parameters of cognitive involvement and exploration, including complexity and mystery. As a result, in those studies building facade will not be considered merely as a two-dimensional surface but as a potential scene to understanding the deep layers of perception. Prior to the identifying practical factors in the systematic design of building facades, first it is essential to determine the factors of preference (which is the aim of current study) and then the visual factors (proposed research gap for

future studies). Although the identification of effective factors in the Kaplan matrix on preferences, does not directly contribute to design of building facades, but it can facilitate the way for proper understanding of the visual factors of preferred building facades that can be explored in future studies. In fact, the factors of preference matrix for execution in practice need to be transformed into visual factors such as color, material, form, and etc. Investigating the relationship between these visual factors and preference can provide designing solutions for successful urban scape. Therefore, in order to further exploring the effective factors of the Kaplan preference matrix, subsequent studies should determine the visual factors associated with each factor in preference matrix which lead to introduce the visual characteristics of preferred building facades. Moreover, according to the literature, other variables can affect the preference too. Gender and other demographic information could be other effective independent variables on preference which should be investigated in the future studies.

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