

A Comparative Study on Designers and Non-Designers Emotion of Urban Sculptures Using Affect Grid

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Abstract: Public art as an element of urban project is created, selected and located in public spaces by designers. Being in a public domain, another group, which has an interest for public art, is the lay-public or the non-designers. The differences, which do exist between the aesthetic appraisal of designers and non-designers, have created a disparity of affinity for art projects. This study compared the similarities and dissimilarities of emotional responses of designers and non-designers for 24 color photographs of urban sculptures as public art in Tehran. Affect Grid as a single-item instrument was used to measure the emotional expressions of the respondents with two dimensions of 'Pleasure' and 'Arousal'. To find the two groups agreement or disagreement the Circumplex based analysis methods as circular profile and circular plot have been used. The study confirms that there are significant dissimilarities between the emotions of both groups. Nevertheless, the divergences of the two groups were not derived only from the designers' homogeneity. The two groups have had similar emotions while their attitudes were different for selected urban sculptures.

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1. Introduction

The large cities are filled of repetitive activities, urban perturbations, chaos of visual design elements, and the like where many citizens are fatigued from these disarrays (Pormand & Mosevand, 2011). Tehran is also faced with problems like excessive population, pollution, dirt, traffic, and the like which decreased the city's environment quality (Seifollahi & Faryadi, 2011). To offset the visual turbulence of urban spaces, art incorporated with other alleviation strategies into architectural design projects in the name of public art. Urban sculpture, street furniture, billboards, fountains and other artistic elements in urban landscape and architecture fruitfully enhances the aesthetic quality of cities and softens the urban area in which people behave more relaxed. Recently, the urban sculpture especially has been one of the most appropriate solutions to beautify environment and reduce the visual fatigues in Tehran (Pormand & Mosevand, 2011). Various types of sculptures have been used in the city such as statues, free sculpture, and celebrity sculptures. Symbols of successful events and people are the supreme icon in this city and have always been tools to improve the area.

Although art installations positively contribute in the built environment, dissatisfaction of public has been mentioned as a main factor of its failure. According to McClellan & Senie (2008), most public arts slip into the urban scape without a

ripple, often ignored by its immediate audience or used according to their everyday needs. Therefore, the success of a public art project is related to satisfaction of its users, which live and employ within the place.

In this regard, a substantial research has been developed concerning the alerting of designers to favorites of public. The designers have appeared to be unaware of the observers' pleasure on what a delightful architecture looks like (Gifford, Hine, Muller-Clemm, & Shaw, 2002). Mostly, it has been shown that instead of thinking of public's responses, they evaluated architectural design projects with their own criteria. This result has been supported by findings from research undertaken about prediction of non-designers by designers in ratings of conceptual properties of modern buildings (Brown & Gifford, 2001). There is evidence of what designers have preferred while have received the negative reactions of non-designers. For instance, the Clock Tower building in San Francisco, which from the viewpoint of architects is 'fresh and innovative', public perceived it as 'abomination' stimuli (Brown & Gifford, 2001). In the field of public art, also there are some examples of differences between designers and non-designers. For example, the monumental sculpture of Richard Serra's Tilted Arc in New York (Chang, 2008) or unsatisfactory role of public art in mitigation of the Phoenix freeway problems (Blair, Pijawka, & Steiner, 1998). Such situations have

occurred, when designers do not have enough knowledge on public satisfactory parameters for what they proposed in urban environment.

The role of emotional responses is important in the comparison of the aesthetic appraisal of an object between designers and non-designers, and its importance lies in the liking and disliking of research stimuli (Gifford, Hine, Muller-Clemm, Reynolds, & Shaw, 2000). Generally, most of the studies, which compare the preference and emotion of design professionals and non-designers have been concentrated on façade. It is only in recent years that the study of aesthetics and affect in built environments has been more focused on landscape (Karmanov & Hamel, 2009). However, there have been few attempts to compare the preference and emotional responses of designers and non-designers of urban sculptures as a popular public art form in urban design. The purpose of the present study is to measure the preferences and emotional responses of designers and non-designers of urban sculptures. To understand how the affective feelings of designers and non-designers are similar or dissimilar, we used the affect grid instrument. A short questionnaire approach in identification of the judgments is about the feelings express by a single word.

2. Single Item Measurement Tool

The affect single-item measurement tool measures the affective expression that people verbally express when faced with something pleasing or displeasing (Russell, 1980). Theoretically, this measurement approach is based upon the Circumplex model with a circle and a number of variables arranged in the perimeter of the circle. The Circumplex model vastly has been used in psychological studies from different conceptual viewpoints with various key dimensions such as "Interpersonal behavior", the "Mood and Affect", and the "Vocational Preference" (Gurtman & Pincus, 2003). There are two lines of investigations regarding Circumplex. Some researchers considered this structure as a conceptual model, while others applied this approach as a measurement device. The present study does not make a new theoretical text on the Circumplex model; we applied Circumplex to describe it as a measurement tool of affective response of people.

The emotional measurement instrument base on Circumplex system proposes one straight question about human mood and receives a straightforward answer. It consume less time to reply versus multiple-item checklists or long questionnaires (Russell, Weiss, & Mendelsohn, 1989), (Jacob et al., 1989), (Killgore, 1998), (Markey & Markey, 2009). Nonetheless, it received the lower attention and

seems inadequate to multi-item questionnaires with over-plus questions. When researchers have time to assess the respondents' mood through long questionnaires, they could obtain huge amount of information from respondents. However, they associated with problems like respondents' fatigue and combination of affective and cognitive adjectives. In the field of built environment, the Osgood, Suci, & Tannenbaum (1957)'s semantic differential adjectives with dimensions of Evaluation, Activity, and Potency, the Craik (1971)'s adjective checklists and the Mehrabian & Russell, (1974)'s with dimensions of Pleasure, Arousal, and Dominance are the most used systems in measuring of affective meanings. When the aim of research is only measuring of the people current emotion, the two dimensions of Potency in Osgood, Suci, & Tannenbaum (1957) and Dominance in Mehrabian & Russell (1974) refer to cognition attributes (Russell, Ward, & Pratt, 1981). Russell et al. (1981) explained that people commonly applied affective and perceptual cognitive adjectives to explain their feeling for different stimulus. They showed the division between the emotional adjectives from the cognitional adjectives and proved that two basic dimensions of human emotion adequately could be represented on the Circumplex space with dimensions of Pleasure and Arousal. Therefore, in the research base on affect it is better to exclude the extra dimension of cognition and apply a two-dimensional questionnaire. The affect based Circumplex model is a measurement tool that summarizes even these two affective dimensions in only one question. Although, the instrument based on the Circumplex model relies on just one question and one single answer, researchers suspiciously disregard using the single item measurement tool based on Circumplex. According to Russell, Weiss, & Mendelsohn (1989), probably the doubt might be on, whether all information achieves through a self-report questionnaire can be short within just the two adjectives of Pleasure and Arousal. Russell et al. (1981) interpreted that each quadrant in the circle presented a wide range of related affective adjectives. It contains all the information once obtain from a long questionnaire and could present the most affective states in human affective states (Jacob et al., 1989 and Ekkekakis & Petruzzello, 2002).

The main challenge in using of the Circumplex based measurement approach has been addressed in individuals' difficulties in recognizing the content of each dimension and complexity of the appearance to respond (Ekkekakis & Petruzzello, 2002). Researchers who successfully applied this method suggested preparing an instruction to prevent of respondents confusing in how to show the mood

quality in system. For example, Jacob et al. (1989) provided a manual written to instruct subjects to be able understand the theory of the circle mood assessment and the rating of mood intensity. Gifford (2000) used a dartboard space to ask the architects and laypersons groups about their emotional feelings to 42 large modern architectural buildings.

Affect grid is another single-item questionnaire, which is based on Circumplex idea but in a square shape. Through an investigation, Russell, Weiss, & Mendelsohn (1989) proved the simplicity of applying affect grid format to the circular format. The broad use of the affect grid format in emotional assessment is another proof on its simplicity as using the therapeutic techniques Petrillo, Winner, & Hill (2005) and in exercise psychology Ekkekakis & Petruzzello (2002), Killgore (1998), Eich & Metcalfe (1989). In this research, also, the affect grid is used as a single-item questionnaire to measure the respondents affect responses.

3. Method and Material

3.1. Participants

A number of 96 designers (landscape architecture students) and 105 non-designers participated in this research base on the non-probability sampling method (convenience or available sampling) (Stangor, 2011), (Vaus, 2002). 38% of the participants were male and 61% were female between years of 18 to 36 years old. All respondents were university students and in the same academic level to avoid the extra efforts to taught respondents in responding into the affect grid format that was indicated in the case of layman (Ekkekakis & Petruzzello, 2002). Respondents voluntary took part in this research without any compensation.

3.2. Stimuli

There are some debates regarding using the pictorial tools that could not completely generate the onsite feelings (Karmanov & Hamel, 2009). Even though, it is not always possible and easy way to take each respondent to the site of each research stimuli. In the built environmental research, frequently researchers applied presentational tools to provide both external validity (on site feeling and allow internal validity (experimental control) (Nasar, 2008).

In this research, we used the total numbers of 24 colour photos of existing urban sculptures in public spaces of Tehran as the research stimuli. Photos were scanned from Tehran (2008) and made in a convenient size of 8" x 10" (Nassauer, 1983). The book presented urban sculptures were installed within Tehran public open spaces between years of 2002 to 2008. We selected the photos according to

the photographic quality standards, which have been addressed in Nassauer (1983) as the similar viewpoint, lighting and so on. Urban sculptures photos divided to 4 sets of 6 photos in it, randomly. To reduce the participants fatigue in responding, one set randomly was presented to each participant in an appropriate viewing time of 15 second (Herzog, Kaplan, & Kaplan, 1982).

3.3. Questionnaire and Procedure

The affect grid format is employed in measuring the similarities and differences of the affective responses of designers and non-designers of urban sculptures. The research participants indicated their emotion to urban sculptures photos in a quantitative questionnaire.

In performing the data collection, there were four days in measuring the designers and non-designers affective responses base on the affect grid. The first two days were allocated to the designers group and the next two other days given to the non-designers group. In days before data collecting, each respondent provided with a time to be in the declared location. All respondents were punctual and came in the provided time. Upon arrival, each of respondents trained on the structure of affect grid, meaning of each area on the square, and the variables around it. Three trained accompanies had duties to establish data gathering, responding welcoming and explanations on the affect grid format. In description of the affect grid, the Russell, Weiss, & Mendelsohn (1989) instruction was used to clearly exemplify the meaning of various areas on grid (centre, right side, left side, vertical and horizontal lines, and the four variables arranged in its around). To avoid the misunderstanding of respondents and to be sure that all subjects realize the content of rating technique, Jacob et al. (1989) recommended a preparation procedure in the rating technique before scoring of mood quality. We asked them verbally to explain the degree of Pleasure and Arousal elicited in him or her by an exemplified urban sculpture that was not included in the final collection. Then, we asked respondents to use a single mark to show their impression for each urban sculpture within the affect grid.

The questionnaire were involved with three simple questions. First was asking the basic information of participants like gender and age. Second was choosing the most preferred and least preferred urban sculptures from the presented photos set. Third was asking respondents to mention their emotion to selected best and worst urban sculptures in affect grip format. We used the Russell, Weiss, & Mendelsohn (1989) 's proposed question about the

respondents' emotion as "Please rate your reaction to each stimulus as it occurs".

3.4. Affect Grid Structure

This part provided a simple description on the affect grid format based on the Russell, Weiss, & Mendelsohn (1989)'s instruction. First, it presented the content of variables. Then, it described the structure and meaning of each area on square.

Affect grid involves a square format with two main axes that presented with variables of Pleasure vs. Displeasure (on the horizontal axes) and Arousal vs. Sleepiness (on the vertical axes). The two variables are bipolar, conceptually independent and have no linear or curvilinear relationship to each other (Ekkekakis & Petruzzello, 2002 and Russell, Weiss, & Mendelsohn, 1989). In the corners of the square, there are two other bipolar adjectives between the two main variables as Excitement opposite of Depression (right side) and Stress opposite of Relaxation (left side). The meaning of four quadrants axes provide through combining the two adjacent axes' meanings (main variables). For example, an exciting feeling about a place is a combination of Pleasure and Arousal. A stressful quality is a combination of both unpleasant and Arousal's variables and in a similar way for the rest of the two other adjectives.

The bipolar variables are presented in a 9 scales in a square format with 81 rooms. The centre of the square presents a neutral emotion as position (0). The feeling which is presented close to the centre is weak and it will be strong farther from the centre as (1) 'slightly Pleasure', (2) 'quite Pleasure', (3) 'very Pleasure', (4) 'extremely Pleasure' and (-1) 'slightly unpleasant', (-2) 'quite unpleasant', (-3) 'very unpleasant', (-4) 'extremely unpleasant'. The right half of the grid gives positive emotions and the negative emotions are presented on the left side. The vertical line of the square presents level of Arousal and Sleepiness. The maximum Arousal is in the top and the maximum sleep is in the bottom. The respondents depict their feeling that influenced by research stimuli through a single point in any room of the square (Figure 1).

4. Results and Discussion

This study measures the similarities and dissimilarities of the affective responses of designers and non-designers of urban sculptures. This is followed by an investigation of the level of agreement within designers and non-designers groups in emotional responses to the urban sculptures. To measure the two groups emotion the affect grid format has been used and the Affect Circumplex analysis method is applied.

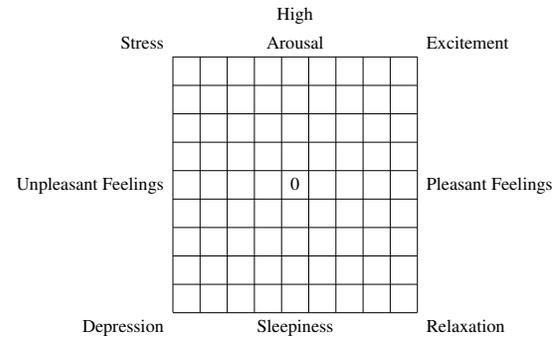


Figure 1 – An Affect Grid Example by Russell, Weiss, & Mendelsohn (1989)

Based on the literature, in analyzing the Affect Circumplex, several methods have been used by researchers. Schinka, Velicer, & Weiner (2003) gave several methods to analyze Circumplex data, categorized as individual analysis and group analysis. Circular profile and individual summary are two individual analysis methods. Circular profile, circular plot and group summary or group mean are group analysis methods. The mean analysis gives the average of all values, as a point inside the Circumplex disc. It is used in many studies to summarize group tendency, but its disadvantage is that it does not effectively show the group variation in response to a target. Thus, this research is based on group analysis, with two analysis models of circular plot and circular profile.

In this research, the affective responses of designers and non-designers are measured converting it to 'Pleasure' and 'Arousal' values from 1 to 9. The emotional responses of designers and non-designers will be presented through the circular plot and circular profile (spider diagrams) for the most and the least preferred urban sculptures.

Figure 2 shows the circular plot of the designers and non-designers' emotional responses for the most and the least preferred urban sculpture. All the affective ticks of the two groups for the preferred, and the least preferred urban sculptures are separately presented by symbolisms of (+) and (-). The preferable urban sculptures have been identified by (+) and the least preferred urban sculptures by (-). As can be shown Figure 2 (a), the designers' ticks for preferable urban sculptures almost are placed on the right side, and for the least preferred urban sculptures are placed on the left side. Nevertheless, the non-designers' marks are not separated as the designers' responses in Figure 2 (b). There are some signs that indicate their emotion of the least preferred urban sculptures, but they are placed on the positive side of the model.

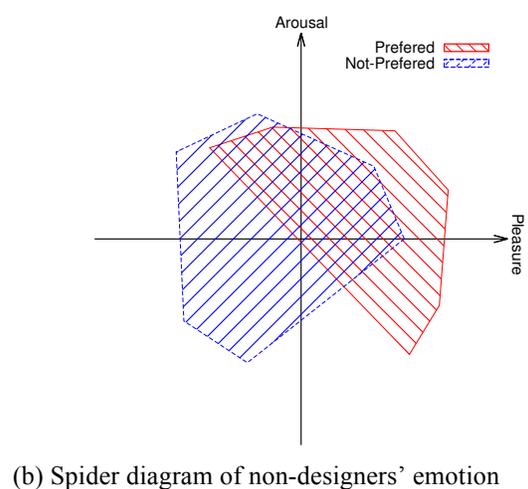
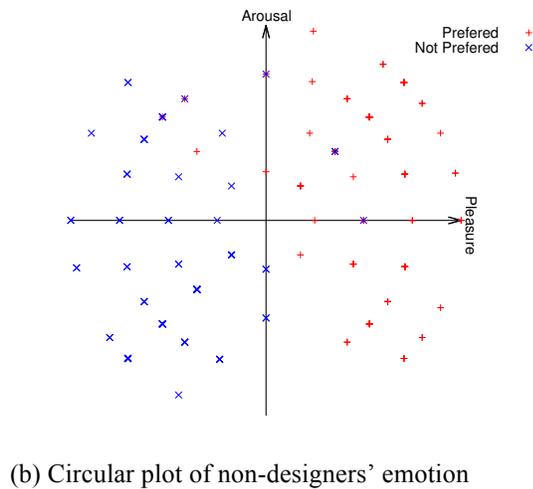
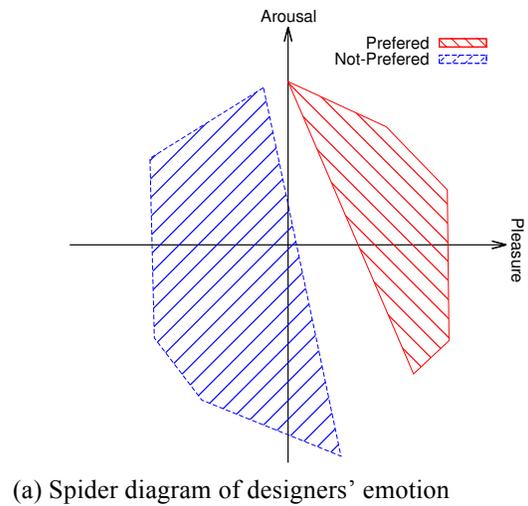
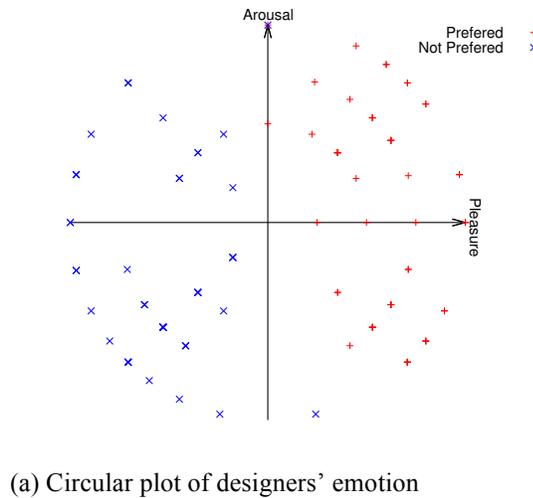


Figure 2: Emotional Circular Plot

Figure 3: Emotional Spider Diagram

Figure 3 shows the spider diagrams of the emotional responses of the designers (a) and non-designers (b). The spiders visually show the relationships between the emotional responses of two groups for liking and disliking urban sculptures. In the designers' spider (a), there are two entirely distinct emotional spider diagrams for preferable sculptures and the least preferred sculptures. The designers' emotional responses for the preferable urban sculptures are marked on the positive side of the model and more right on the top. For the least preferred urban sculptures are marked more on the left. The spider diagrams of preferred urban sculptures for non-designers (b) are drawn also on the negative side of the model. The non-designers' emotion of the least preferred urban sculptures as well has been placed on the positive side of a model. In some parts, they overlapped each other.

The Figures 2 and 3 visually show that the greater similarity of emotional responses of urban sculptures was obtained for designers' responses not for non-designers' emotions. The pleasing responses of designers of preferred urban sculptures have been presented exactly on the positive side, and the displeasing emotions for the least preferred urban sculptures have been presented on the left side of the diagram. It showed that when designers select the most and least urban sculptures, they have been pleased and aroused, similarly. According to Devlin & Nasar (1989), the practice experiences that are obtained during their training courses may influence the affective response of design professionals in project designing. In the case of urban sculptures, the result of this research confirms that the training of designers' group harmonizes the way in which they act in feeling.

In both circular plot and circular profile, the two entirely distinct emotional spider diagrams were

for designers, while the non-designers' marks were not kept within positive and negative bounds and extend over so as to cover partly each other. It may be expressed that the disparities within non-designers emotional responses were due to their misunderstanding and complexity of the appearance of this instrument to understand by non-designers (Ekkekakis & Petruzzello, 2002). However, in this study both groups that were involved are educated in university and were in the same level of intelligence and brainpower and it is probable that this group understand how to reply into affect grid format. Hence, the divergences between the emotions of non-designers could not be referred to their incapability in understanding the affect grid space. The circular plot and spider diagram results show the way that the designers and non-designers groups felt about urban sculptures and marked into the emotional spaces. The same behavioural systems of designers constitute an extremely homogeneous group as compared to non-designers in emotional responses to buildings (Gifford et al., 2000). Therefore, the great similarity of emotion has been assumed between the designers group in emotional responses to the most and the least preferred urban sculptures.

As shown in Table 2, except the one most and one least preferred urban sculptures, the rests are in different positions among designers and non-designers preferences. In order to investigate more the emotional response of both groups, the spider diagram of the four most and four least preferred urban sculptures of groups have been measured (Figure 4). The emotional responses of both groups to the selected most and least preferred urban sculptures presented, similarly. The interesting is that the way designers and non-designers represent their emotional feelings toward urban sculptures are very close, and yet the sculptures they choose as most and least are different from each other. This could be pertained to the problems, which addressed by Devlin & Nasar (1989) as the communication problem between the two groups. It means that they are similar in their emotion and feeling of urban sculptures, but are different in their preference of urban sculptures.

5. Conclusion

The differences between designers and non-designers in landscape design may cause having unsuccessful projects which have not been liked by those who using it (non-designers). To overcome this problem understanding these differences could help designers to move toward non-designers emotional need. In this research, we applied a short single-item measurement survey (based on Circumplex) instead of the multi-item questionnaires to measure the emotional

responses of designers and non-designers of urban sculptures.

Table 2: Most/Least Preferred Sculptures by Designers and Non-designers

a. Most Preferred Sculptures

Designers		Non-designers	
Sculpture	Percentage	Sculpture	Percentage
3	16.67	3	10.53
7	8.33	9	9.47
11	8.33	12	8.42
4	6.67	10	7.37
19	6.67	1	6.32
10	5.00	17	6.32
16	5.00	4	5.26
17	5.00	7	5.26
18	5.00	8	5.26
6	3.33	18	5.26
9	3.33	15	4.21
12	3.33	19	4.21
15	3.33	23	4.21
22	3.33	2	3.16
24	3.33	11	3.16
1	1.67	22	3.16
2	1.67	16	2.11
8	1.67	5	1.05
13	1.67	6	1.05
14	1.67	13	1.05
20	1.67	14	1.05
21	1.67	21	1.05
23	1.67	24	1.05

b. Least Preferred Sculptures

Designers		Non-designers	
Sculpture	Percentage	Sculpture	Percentage
2	12.07	2	10.00
12	8.62	23	8.89
13	8.62	10	7.78
23	8.62	14	5.56
1	6.90	19	5.56
20	6.90	20	5.56
9	5.17	24	5.56
10	5.17	1	4.44
11	5.17	8	4.44
14	5.17	11	4.44
22	5.17	16	4.44
6	3.45	18	4.44
17	3.45	21	4.44
3	1.72	5	3.33
4	1.72	6	3.33
5	1.72	12	3.33
8	1.72	13	3.33
15	1.72	17	3.33
16	1.72	22	3.33
19	1.72	9	2.22
21	1.72	4	1.11
24	1.72	15	1.11

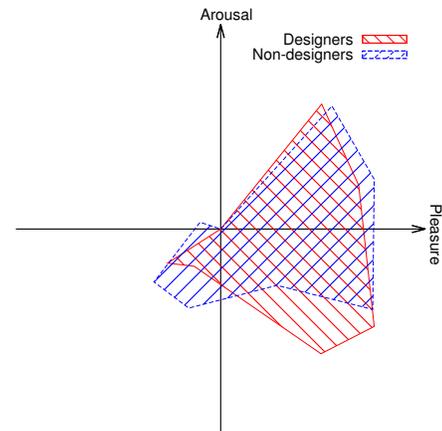
The affect grid provides many interesting results in investigation of the similarities and dissimilarities of the designers and non-designers. It has been shown that the designers are more homogeneous group and non-designers are extremely diverse group in feelings of liked or disliked urban sculptures. Moreover, the spider diagram of emotional response of designers and non-designers demonstrates that the feelings of designers toward most and least preferred sculptures are completely separated while in non-designers the emotional responses for most and least preferred sculptures at some points are the same. This result shows the difficulty of understanding the non-designers' emotional responses toward a sculpture. Nevertheless, designers must be alerted what kind of public art should they design, select, and place in urban environment. The designers should pay more attention on what works of art provide pleasing and displeasing responses of people. Increasing the awareness of public art designers on the public demands in relation to the urban sculptures is very important. Therefore, designers should consider seeking knowledge on the public demands for high design quality of urban sculptures. The enhancement of the public satisfaction is the main aim for the designers of public art, while are going to increase the quality of urban public spaces. More research needs to measure the responses of designers and non-designers in related to the structure of urban sculptures.

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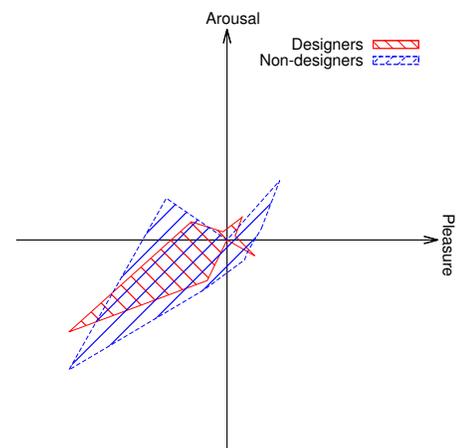
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(a) Spider diagram of the four most preferred urban sculptures for both designers and non-designers



(b) Spider diagram of the four least preferred urban sculptures for both designers and non-designers

Figure 4: Spider Diagram of the Four Most/Least Preferred Urban Sculptures for Both Designers and Non-designers

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