Factors Influencing Preferences of Garden Iconographies

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ABSTRACT

Gardens are natural and cultural artifacts presenting both natural and man-made beauty through their natural images. The collection of these representative images or iconography forms the particular identity of a garden. Hence, different gardens present a variety of iconographies, which could affect people preferences for them. For the purpose of this study, four well-established gardens in the world were selected as case studiesand their images were used to represent their iconographies. A photo-questionnaire survey was employed to elicit preferences for garden iconographies and to determine factors influencing their preferences. Factor analysis was used to reveal preference dimensions and stimuli in each category or groups of garden scenes based on preference ratings. Dimensions were qualitatively analyzed and were discussed in terms of their contents and spatial organizations. The study found that garden elements, axes, direction, focal points, and their particular arrangements influence preferences of garden iconographies. The findings from this study will help to inform Landscape Architects the choice of iconographies in the development of new garden identities.

Keywords: Garden iconography, garden identity, landscape preferences

INTRODUCTION

Well-established gardens are different from each other and display different images that people can identify with. These images are known as garden iconographies. These visual differences are contributed to the people who created these gardens since people create gardens based on their tastes and preferences. Furthermore, they are

also active users of gardens. Nevertheless, no studies to date have sought to identify preferred iconographies of new gardens. This knowledge gap has led to this study on new garden iconography. Previous studies by Kaplan (1985), Kaplan and Kaplan (1989), Van den Berg and Koole (2006), Rogge, Nevens, and Gulinck, (2007), Ode *et al.* (2009), have reported people preferences and factors affecting preferences of landscapes in general but not on garden iconographies. Therefore, this study is aimed to elicit people preferences for iconographies of selected established gardens (Persian, English, Japanese and Chinese) and factors that affect their preferences in suggesting guidelines for designers to develop new gardens acceptable by local population. It is expected that the findings from this study assist in developing new garden iconographies acceptable by the public. The findings could also benefit existing gardens by highlighting images that are preferred by the public and this could contribute to improving tourism marketing.

LITERATURE REVIEW

Gardens incorporated nature and human artifacts into artworks. They are artistic-natural phenomenon to bring aesthetic beauty to people's living environment (Connell, 2005; Turner, 2005; McIntosh, 2005; Clayton, 2007; Gross & Lane, 2007). This has led Albers (1991), Ross (1998) and Waymark (2003) to suggest that gardens should be studied as a work of art like painting and sculpture.

Iconography is an art historical approach for studying artistic works. As stated above, gardens are artistic works with specific and unique cultural values. On this, Daniels and Cosgrove (2007) considered gardens as cultural images and pictorial way of representing, structuring or symbolizing the environment. Therefore, iconography as a method can be employed in studying gardens (Kaboudarahangi *et al.*, 2011).

Defining Garden Iconography

An iconography expresses particular idea in images and could be defined as a visual expression of an idea (Wages, 1999). Princeton University (2006) defines iconography as images and symbolic representations that are traditionally associated with a person or a subject. In fact, iconography is seeking to understand the underlying meaning of a work of art by studying its historical context (Daniels & Cosgrove, 2007). Straten (1994) argued that the concept of iconography or "image reading," is a practice and a creative method of historical analysis of a work of art. He defined three stages for an iconographic practice. The first stage looks at artistic work as a whole, then identifies the components of the work and finally interprets the artistic work in terms of history and philosophy. According to Wages (1999), iconographies expressed the variety of ideas associated with gardens in historical paintings or images.

Garden Preferences and Factors Affecting Preferences

According to Carroll (2003), gardens shaped through the history by people based on their needs and preferences. Gardens have been designed based on people preferences, needs, purposes and activities (King, 1979; Hunt, 2000; Hobhouse, 2002; McIntosh, 2005; Clayton, 2007). For newly developing gardens, they have to be accepted, valued and appreciated by people who are active users of the gardens. (Kaboudarahangi *et al.*, 2011). Kaplan (1985) identified the landform, color patterns, vegetation and water as factors that affect landscape preferences. Then, Moreover, Rogge, Nevens, and Gulinck (2007) explained that aesthetics, pleasure, uniqueness and harmony of landscapes are highly preferred and cultural modifications have negative effects on landscape preferences. Based on findings from literatures, factors affecting preferences of landscapes (including gardens) can be categorize in five main elements as follows:

Natural features

Degree of naturalness seems to be one of the most important positive predictors for landscape preference (Kaplan, 1985; Kaplan & Kaplan, 1982; Herzog &; Bosley, 1992; Rogge, Nevens, & Gulinck, 2007; Ivarssona & Hagerhall, 2008). According to Yang and Kaplan (1990), the landscapes with more natural forms are more preferred than those with formal or linear forms. Moreover, people prefer natural scenes higher in comparison to urban scenes (Kaplan &

Talbot, 1988; Kaplan & Kaplan, 1989; Strumse, 1996; Kaplan, Kaplan, & Ryan, 1998; Suhardi, 2006) . Thus, the degree of "naturalness" is one of the most important positive predictors for landscape preferences (Rogge, Nevens, & Gulinck, 2007).

Natural features are also found to be significantly affecting people preferences for landscape even though in a time when people have negative feelings (Regan & Horn, 2005). It is because natural landscapes are perceived to be more identifiable, impressive, soothing and scenic. Several researchers have argued that naturalness contributes to landscape preference in a positive way (Herbert, Kaplan, & Crooks, 2000; Austin & Kaplan, 2004; Van den Berg & Koole, 2006; Ivarssona & Hagerhall, 2008; Hanely, Ready, Colombo, Watson, Stewart, & Bergmann, 2009).

Landscape Elements and their Visual Qualities

Other studies on landscape preferences have generally focused on landscape elements in the scene. For instance, Austin and Kaplan (2004) pointed out that certain features in natural environments engage the sense of belonging to a place. According to Zube (1981), man-made structures are associated with variability in perceived scenic quality. They have a strong affect on landscape preference, because of providing visual values. Nevertheless, natural landscape and wilderness are found to be more preferred than landscape with man-made structures (Zube, 1981; Kaplan, 1985; Yu, 1995). On the other hand, Kohsaka and Flitner

(2004) found that scenes with artistic icons, recreation, and leisure are highly preferred. Recreation and aesthetic values are strong predictors of landscape, which recognized by Browna and Raymond (2007).

Presence of Water

Yu (1995) found water is an effective factor in increasing landscape preference level. The positive effect of water on preference has been proven in many studies. Accordingly, Dramstad, Tveit, & Fjellstad (2006) in their study reported that images with water are considerably more preferred than the images without water. Moreover, Kaplan and Kaplan (1989) have pointed to the positive affect of water and water bodies such as lakes in people preferences of landscapes. According to the Information-processing Theory (Kaplan and Kaplan, 1989), people "read the landscape and interpret cues of the presence of water".

Content and Spatial Organizations of the Scenes

The visual concept of naturalness is linked to other visual concepts such as disturbance, stewardship and coherence (Ode *et al.*, 2009). Consequently, the content of the scenes, including water, rock and vegetation strongly affect environmental experiences (Kaplan & Kaplan, 1989; Yang & Kaplan, 1990). According to Dramstad *et al.*, (2006), there is a positive correlation between landscape preferences and landscape spatial qualities. If one of the spatial qualities is present in a scene then viewers will highly prefer the said scene over another. The spatial quality of the landscape, with regard to nature, has a stronger influence on people's preference than their backgrounds (Kaplan, Kaplan, & Ryan, 1998; Ode .*et al.*, 2009). Spatial qualities could be simplified as coherence, complexity, mystery and legibility (Kaplan & Kaplan, 1989).

Influence of People's Background on Preference

Yu (1995) pointed to the strong influence of living environment (urban vs. rural) on people's preferences. A study by Zube (1981) has shown that people prefer the landscapes that are most similar to their living environments. In addition, education in environmental subjects can be an effective predictor for landscape preferences (Dramstad, Tveit, & Fjellstad, 2006). Kaplan and Herbert (1986) have found that greater knowledge and concern for the types of plants species is clear in the preference differences (Kaplan & Herbert, 1986). The effects of people's education levels in terms of their landscape preferences have been proven by researchers (Hanely, Ready, Colombo, Watson, Stewart, & Bergmann, 2009). Indeed, people with different experiences may have different environmental preferences (Kaplan & Kaplan, 1989).

According to the literature, it is concluded that content, spatial organizations of the scenes in addition to people's backgrounds affect preferences. The content is including landform, vegetation, color patterns, aesthetic qualities, garden elements

and their harmony. Furthermore, natural forms, man-made features, structures, water and waterways were recognized as affecting factors that could be classified in terms of content. Accordingly, spatial organizations of a scene including mystery, legibility, complexity and coherence in addition to people's background and culture affect preferences.

As discussed, garden iconographies should present garden images with uniqueness and specific identity. On the other hand, the review of preference studies revealed that content and spatial organizations of the scenes affect people preferences of landscapes, hence gardens. In addition, the effect of natural features, landscape elements and water were reported by previous studies. Therefore, garden iconographies, which were employed in this study, displayed both garden contents and their spatial organizations. They were included unique and distinctive water features, plants, architectural features, pathways, rocks, stones, sand and decorative features of each garden, which can be commonly called as garden elements.

METHODOLOGY

A preference photo survey was selected as a method to seek preferences for garden iconographies. This method was frequently utilized to obtain information about preference of landscapes including built landscapes. For example, Kaplan and Herbert (1986), Kaplan and Talbot (1988), Yang and Kaplan (1990), Yu (1995) and Rogge *et al.*, (2007), employed preference photo surveys in their studies. The method has generally been used because images are surrogates of actual scenes to the respondents. In this method, respondents were asked to rate scenes of gardens presented and respond to questions related to their preferences. The data was then analyzed to reveal people preferences for gardens and factors that affect the preferences. The following outlines the procedure:

Preference Photo Survey Procedure

Content Identifying Method (CIM) developed by Kaplan *et al.* (1972), and further improved by Kaplan and Kaplan (1989). The method is based on preference ratings for scenes. In this study, the scenes were selected of Persian, English, Japanese and Chinese gardens. The method elicits both quantitative and qualitative visual responses and judgments of the preferred environment (Kaplan & Kaplan, 1989). Photographs were used because they act as surrogates of real environments (Kaplan & Kaplan, 1989; Hull & Revel, 1989). The uses of photographs have been validated in numerous preferences studies and are found to be more economical than bringing participants to the actual locations (Kaplan & Kaplan, 1989).

In this study, photographs of selected gardens were collected from websites and garden books such as Christopher Thacker's History of Gardens. The selected photographs normally represent popular images (iconographies) of the gardens. The selection of garden images to represent

garden iconographies was conducted in several stages. First, a pool of 360 images of Persian, English, Japanese, and Chinese gardens were shown to the 20 volunteers from various fields of study such as landscape architecture, architecture, horticulture, etc. These volunteers were selected randomly among students in Universiti Putra Malaysia. The volunteers were asked to categorize the photographs according to four gardens types – Persian, English, Japanese and Chinese landscape/images/gardens. This was done by employing13 cm x 18 cm colored photographs of the scenes mounted on 15 cm x 20 cm boards.

120 images were selected by the volunteers according to the four categories. These were then shown to three landscape architecture academicians in the Faculty of Design and Architecture, Universiti Putra Malaysia. They were asked to select 10 images that represented each category of gardens based on their specific elements and spatial organizations.

In next stage, five images from each garden category were randomly selected to represent their iconographies. Therefore 20 images represent the four types of gardens. An additional 8 scenes were added as fillers to allow respondents to be familiar with the procedure before the actual stimuli. These images were not analyzed. According to Rogge *et al.*, (2007), the first few images could affect preferences when respondents are not yet familiar with the procedure. Respondents were asked to rate the images based on the question "How much do you prefer the presented scene?" on a 5 point

Likert-like scale where 1was denoted as "least preferred" to 5 which was ranked as the " most preferred".

Sampling

This study involved 400 undergraduate students enrolled in landscape architecture, architecture, industrial design, forestry, agriculture, and environmental studies programs. The selection of respondents was based on Kaplan and Herbert (1986) that identified level and field of study, familiarity with nature, age and influence of living environment as affecting factors on preferences. Consequently, 12 sessions were conducted to collect preferences for garden iconographies. They were performed under similar conditions and using the same procedure.

RESULTS

The following sections discusses the results of the participants' feedback to the images concerned.

Preference Dimension Analysis

Factor analysis grouped the scenes based on preference ratings. These groupings are based on the pattern of reaction to the stimuli inside the scenes (Suhardi, 2006). According to Kaplan and Kaplan (1989), this is not related to the extent of preferences but can reveal the underlying factors affecting preferences . Add a sentence to relate to table 1.

A factor analysis of preference ratings resulted in 4 dimensions. These were labeled Plant and Water, Plant and Architecture,

TABLE 1
Preference Dimensions of Garden Scenes

Dimension (factors)	
Plant & Water Mean=4.0 Std. Dev.=1.01	5 7 11
Plant & Architecture Mean=3.9 Std. Dev.=1.0	6 8 9
Gateway & Axes Mean=3.7 Std. Dev.=1.14	17 21 20 27 19 22 14
Fearful & unclear Mean=3.4 Std. Dev.=1.14	16 15 12

Gateway and Axes, and Fearful and Unclear. Based on mean preferences, these dimensions were ranked as shown in Table 1 with Plant and Water being highest (Mean=4.0) and Fearful and Unclear (Mean=3.4) lowest.

Content Analysis of the Preference Dimensions

Preference dimensions were analyzed in terms of their contents and spatial organizations. This is to determine the content factors found in each dimension. The summary of the content analysis is presented in Table 2.

As shown in Table 2, respondents have greater preferences for scenes with presence of clear and clean water as well as vegetation in combination with some architectural features. Furthermore, garden scenes with clear focal points, strong visual axes, and views with defined terminus are preferable. This could be due to the greater sense of curiosity and less fear of getting (legibility) in these scenes. On the other hand, scenes

with undefined focal points and undefined terminus are rather complex, create a sense of fear, and are thus not preferred. In terms of spatial organizations, scenes with high mystery and legibility are more preferred than those with coherence. Scenes with high complexity are the least preferred.

Information Processing Theory (Kaplan & Kaplan, 1982) and the Attention Restorative Theory by the Kaplans (1989) support the findings in this study. Kaplan and Kaplan (1982) in their Information Processing Model suggested that scenes, which lead to certain places (Mystery) and high Legibility (less fear of getting lost) are more preferred than scenes that are more complex. Since they are less understood (Complexity), create a sense of fear and do not provide enough information for people. Furthermore, their Attention Restorative Theory (Kaplan & Kaplan, 1989) suggested that scenes with more natural elements such as water and vegetations have higher restorative values and are more preferred than environments with more architectural

TABLE 2
Summary of Preference Dimension Analysis

Dimensions	Content Factor	Spatial Configuration
Plant & Water (Mean=4.0)	Water, water reflection, vegetation, views leading to a defined terminus, clear focal points, elements of curiosity, architectural features combined with nature	Mystery, Legibility, tranquility
Plant & Architecture (Mean=3.9)	Clear water, architectural features combined with nature, vegetation.	Mystery
Gateway & Axes (Mean=3.7)	Pathway, gates, opening, framing by plants, garden elements, and strong visual axis.	Coherence, Mystery
Fearful & Unclear (Mean=3.4)	Views directed to undefined terminus, sense of perceived fear, geometrical, murky water, dominant man-made elements, and geometrical design.	Mystery, Complexity

features. Ivarsson and Hagerhall (2008) have studied the relationship between preferences and restorative value of gardens. They have considered gardens as settings with strong feeling of being away but they should be close to work and living places.

DISCUSSION

The results of this study found four garden elements and 4 spatial layouts to influence garden image preferences. It seems that garden elements (water, plants and architectural features), and spatial layout (axes, direction, focal points, and the arrangements of the garden features), influence preferences for the images of the selected gardens. However, the mean preference scores for each garden elements and their spatial layout have positive and negative contribution to preference. These are further discussed as follows:

Influence of Garden Elements

Garden elements are recognized as the one of the most influential factors affecting environmental preferences. The effects of elements such as water, plants, as well as natural and man-made structures on preference were already confirmed through the literatures (Kaplan, 1985; Kaplan and Kaplan, 1989; Yu, 1995; Dramstad *et al*., 2006; Ode *et al.*, 2009). This study found that water features positively influence preferences for garden iconographies. In addition, clean and clear water, soft and irregular water edges, and water in reflective geometrical basins were highly preferred.

These findings were supported by previous studies such as by Yu (1995) who found water to be a positive element in increasing landscape preference level. In addition, Suhardi (2006) in his study on preferences of wetlands also found the positive affect of clear and clean water on preferences.

Vegetation was also found to influence preferences of garden images. Plants in combination with few architectural features seem to be the preferred images. It seems that nurtured nature in combination with water features and light green color are preferred, whereas messy plants with dark colors or in shadows are not much preferred. This finding is similar to Regan & Horn (2005) who found that trees and other plants were among the most preferred items. Similarly, Hanely *et al*., (2009) also demonstrated vegetation is the most preferred elements in the landscape scenes.

Garden architectural features such as pathways and gates have received lower scores in preference ratings. On the other hand, other architectural features have both positive and negative effects on the preferences of garden iconographies. Architectural features such as basins and gates in combination with plants and water have positive effects. However, architectural features alone or combined with hard elements such as rocks and stones negatively influence preference. The importance of man-made structures and their effects on preferences has already confirmed by Zube (1981) and Yu (1995).

Influence of Axes, Direction and Focal Points

The presence of strong axes seems to contribute to a positive influence on preferences of garden iconographies. This is perhaps due to their contributions towards locating the observer in space, place orientation, a sense of orderliness and less fear of getting lost. Connectors such as footpaths and tracks that provide a sense of direction seem to convey both positive and negative effects on preference. Garden scenes that provide clear direction leading to some definite destination appear to be preferred. This could be due to them creating a sense of mystery and curiosity but with less fear of getting lost. On the other hand, scenes with connectivity elements leading to uncertain location seems less preferred. Perhaps these induce a sense of fear more than curiosity and thus lower preferences. Focal points that are clear and provide depth and vista are preferred but indistinguishable focal points seem to affect preferences negatively. This could be explained by clear vista and focal points that create prospects where the observer has the opportunity to see without being seen (Appleton 1975 as cited in Kylea *et al.*, 2004).

Influence of Spatial Configurations

Kaplan and Kaplan (1982) Information Processing Theory described Coherence and Legibility as representing understanding of an environment and Complexity and Mystery representing exploration. Results from this study seem to agree that Mystery (the promise of more information if one is to explore further) has the greatest effect on preferences of garden iconographies. However, this effect appears in both positive and negative. When mystery is combined with a clear direction leading to some definite destination, they appear to contribute positively to preference. However, mystery with unclear destination has a negative contribution on preference. This could be due to the role of fear of uncertainty when destinations are vague. This notion is further supported as legibility (the ability to find one's way in the environment) seems to have positive effects on preferences of garden iconographies. Likewise, coherence (the organization and structure of the scene, in terms of their harmony and connection) scenes are better preferred. Coherence provides the mind with more manageable information to be understood and thus contribute to a sense of at ease, tranquility, and relaxation. This is on contrary to complexity (the amount of diversity in the scene when it contains different elements). Garden scenes where there are too many varieties of different elements and no clear order of spatial arrangement are less preferred.

CONCLUSION

This paper focused on the preferences for selected images or iconographies of Persian, English, Japanese and Chinese gardens. These gardens were selected as they are well established gardens but no studies have been done to explore their preferred iconographies. The study employed preference photo survey to

test factors affecting preferences for the garden iconographies and the results were analyzed for mean preference and preference dimensional categories. The study concluded that garden elements, axes, direction, focal points, and their particular arrangements affect preferences of garden iconographies. Among garden elements, water, plant and architectural features have the most influence on preferences. They are more preferred when they are combined providing a setting that contribute to tranquility and relaxation. Moreover, directions, axes and focal points positively affect preference for garden iconographies when directing to a certain place and have negative effect when leading to an unclear destinations. In terms of spatial organization, mystery, legibility, coherence, and complexity affect preferences of garden iconographies. Legibility affects positively, mystery has both positive and negative effects and complexity has negative effect on preference. These findings have implications in the development of new garden where garden iconographies play important roles in their identities. Selected iconographies to be introduced in these new gardens should be those that are preferred by the general public.

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APPENDIX

Factor analysis of the preferred scenes

	Dimensions					
	1	2	3	4	5	6
sc17	.790	.129	.114	.065	-.028	.114
sc21	.771	.090	-.088	.186	.102	.237
sc20	.770	.113	.233	.106	.141	-.174
sc27	.748	.121	.059	.166	.269	-.070
sc19	.693	.240	-.029	.063	.154	.033
sc22	.657	.249	.039	.109	.207	.339
sc14	.639	.030	.349	.292	.107	.027
sc24	.587	.339	-.070	.150	.083	.313
sc13	.550	.104	.158	.302	.039	.282
sc26	.526	.483	.222	-.071	.338	-.072
sc23	.143	.847	.024	.041	.146	.019
sc25	.385	.732	-.073	.161	.064	.104
sc28	.462	.493	.296	-.142	.221	-.271
sc6	.054	.066	.765	.245	.009	.142
sc8	-.037	.035	.740	.154	.176	.180
sc9	.200	-.235	.546	.435	.100	.158
sc18	.370	.115	.459	-.022	.160	-.213
sc5	.154	.078	.272	.756	-.146	-.186
sc7	.208	.016	.082	.688	.239	.005
sc11	.186	.248	.237	.458	.057	.222
sc16	.117	.095	.052	.194	.833	-.032
sc15	.441	.119	.262	-.001	.602	-.013
sc12	.204	.341	.131	.007	.507	.145
sc4	.183	.068	.254	-.099	-.066	.701
sc10	.073	-.088	.084	.441	.284	.465

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.