



## Preference to home landscape: wildness or neatness?

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### ABSTRACT

This study explores students' preferences toward natural and wild versus clean and neat residential landscapes using preference survey data. Based on the rating scores of four housing landscape designs, multinomial logit models were used to explore the potential influential factors on people's preferences, especially the wildness or neatness of the home landscape. The results suggest that students in agricultural economics, horticulture, and social sciences are more inclined to choose a neat, well-kept environment around their homes. In contrast, wildlife science students prefer more natural landscapes. This study also found that senior students and students from large cities also prefer well-maintained and artificial landscapes. Also, students who are members of an environmental group, and those whose parents have a better education, are more likely to choose a more natural landscape. The results would provide additional information for planners, developers, engineers, architects and foresters in building more livable communities which are aesthetically appealing but also ecologically sound.

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### 1. Introduction

Landscape, which includes topography, vegetation and associated plants and soil, water bodies, and their spatial configuration, is one of the most visual needs by people. Human–nature interactions lead human beings to have contrasting preference on the surrounding landscape and environment because a pleasing landscape can bring mental and physical benefits to people (e.g., Kaplan et al., 1998; Kaplan and Kaplan, 1989; Ode and Fry, 2002). Consequently, a landscape is constantly modified due to people's preferences (Erickson et al., 2002; Luzar and Diagne, 1999; Schroeder, 1988), causing further complex feedbacks with policy making and planning processes (Kaiser et al., 1999). Clearly, understanding people's preferences for their surrounding landscapes and how the preferences shaped the environment is not only an academic challenge but also critical for policy making and implementation. For example, knowledge of the preferred landscape would enable planners and developers to construct more appealing neighborhoods while enhancing ecological services.

Scientific investigation of the preference to landscape is challenging due to the complexity of land mosaics, its design and change over time. There are many attributes (e.g., vegetation and associated plants, spatial configuration of landscape elements, the topography, bodies of water, etc.) that determine the quality of a visual landscape. Additionally, the role of each attribute

is dependent of the context and its interaction with the other attributes (Chen et al., 2006; Lindenmayer and Franklin, 2002). Another challenge arises from the heterogeneous and dynamics nature of people's preferences for the landscape (i.e., preference is temporally, spatially and personally specific), suggesting that cultural background needs to be included in sound analysis of people–landscape interactions (Nassauer, 1995). In urban landscapes, for example, landscape architects often struggle with the balance between wildness and neatness in designing a neighborhood in the context of broader urban landscape. In general, neatness seems more appealing, but often has lowered ecological services (Gobster et al., 2007; Martin, 2001; McPherson et al., 1989). This suggests that pleasing alone might not be a good design from an ecological perspective (Gobster et al., 2007). Incorporating urban forestry and greenness into the planning, designing and implementing of public policy pertaining to suburbs (or edge cities) is increasingly challenged to promote not only aesthetically appealing but also ecologically sound communities.

Investigation of people's preferences on landscape has been broadly conducted in recent years (Carlson, 1999, 2006; Wessels, 1997), including studies of individual preference. Individuals' tastes on environmental appreciation are often shown to be linked to a person's training, their previous experiences and personal characteristics such as age, personal emotional experience, social status and education (Buttel, 1987; Brunson and Reiter, 1996; Lindhagen, 1996; Ma and Bateson, 1999; Silvennoinen et al., 2002; Van den Berg and Koole, 2006). More than two decades ago, Dearden (1984) found that familiarity with general landscape types appeared to have a positive correlation with landscape preferences, but none

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of the socio-economic variables – gender, age, income, education and occupation – were significant. Rauwald and Moore (2002) reported that country and gender differences existed in environmental attitudes, while Brody et al. (2004) further indicated that environmental perceptions differed by location because of the information gaps between any two sites. From people's preferences perspective, Abello and Bernaldez (1986) found that certain aspects of personality had significant correlation with landscape preference. Recently, Nassauer et al. (2009) concluded that cultural norms for landscape appearance may affect preferences for and adoption of ecological design of residential landscape.

Education has been shown to be the most consistent predictor for environmental concern (Wall, 1995). Much of the work indicates that individuals with high levels of education tend to care more about the environment (Ewert and Baker, 2001). Most of the differences in perception with various academic disciplines are also ascribed to the "lack of information." Each academic major is corresponding to some specific "knowledge" and this "knowledge" may act as a mediating variable (Baron and Kenny, 1986) in the preference-shaping process, suggesting that schooling in different majors may serve as a mechanism to "transmit" the beliefs or attitudes of that cultural domain. Assessment of the effect of academic disciplines can be found in a wide array of literature. For example, Smith (1995) found that students majoring in business or economics were less likely to take action to protect the environment. Brown and Harris (1998) also found that professional foresters had a different environmental concept from their colleagues in ecology, wildlife, fishery, geology or recreation. Finally, it seems that different educational backgrounds refer to not only the level of education but also the type of education.

One of important features of landscape in the context the residential landscape is wildness versus neatness. Previous studies support a general conclusion that people in general prefer a neat environment. Nassauer (1988) claimed that neatness is one of the most important factors for an attractive landscape although trimmed bushes are not usually good for biological diversity (Nassauer, 1995). An over-emphasis of the "garden" aspect of the garden city has resulted in the excessive planting of trees (Tuan, 1990). Perfect green lawns may not be ecologically healthy (Steinberg, 2006). Additionally, it is argued that people have different perceptions about wilderness: "One man's wilderness may be another's roadside picnic ground" (Nash, 2001). Clearly, the bias in preference of our surrounding world might be ascribed to many factors. While the ability to know the world is limited by our knowledge and experience, public preferences are deeply embedded in class position and the relative economic, cultural and social capital (Bourdieu, 1984; Fraser and Kenney, 2000; Grusky and Wheedon, 2001).

To resolve the conflict needs for aesthetically appealing and ecological services, we studied people's preferences to natural/wild mosaics and the clean and well-maintained landscapes using both approaches. To explore the potential influential factors, hypothetical landscapes with different green space, designs and policy were generated using multinomial logit models based on our preference survey. We hypothesized that individuals with different educational backgrounds and level have different preferences to their housing landscapes.

## 2. Methods

### 2.1. Preference survey

Two approaches are broadly used to investigate individual preference. Surveys using a questionnaire are the conventional method (e.g., Getz et al., 1982; Zhang et al., 2007). The visualization method

has also been widely applied to landscape design and investigations of attributes influencing people's landscape preferences. For example, Tyrväinen et al. (2006) used computer-based visualization and landscape laboratory methods to help the public better perceive the surrounding environment. Ode et al. (2008) established links between landscape aesthetic theory and visual indicators. A computer-generated visualization survey was further conducted and the perceived indicators of naturalness were found to be the more important drivers of preference than demographic factors (Ode et al., 2009). The two methods have their own weaknesses and strengths. Using verbal questions may not effectively illustrate the real landscape preference, while using a visual survey might lead to misinterpretation of the information of the visual appearance.

In this study, the primary data was obtained from both visual and verbal preference surveys, which include preference rating on visually designed landscapes (i.e., pictures) and providing verbal answers regarding their preferences to the landscapes and their socio-demographic characteristics. We created fourteen designs for single-housed landscapes. The photographic materials used for the designs were taken from Alabama and Georgia, indicating that the house style and surrounding environment in these designs is representative of the residential landscape common to the Southern U.S. We modified the picture with Adobe Photoshop 7.0 software to obtain a consistent house style, sky, front lawn and pathway. The landscape designs were shown slide by slide using Powerpoint 2007 in a time controlled manor (30 s/slide). For comparison purposes, six designs were presented in the same slide at one time. Three designs in the previous slide were replaced by three new designs in the following slide, creating various combinations of scenes. Altogether, we had ten slides, ensuring that each design was compared with other at least four times. The survey was conducted in various classrooms where students were asked to rate the different landscape designs according to a Likert scale from 1 to 5 (1 = least preferred; 5 = most preferred).

Four out of the fourteen designs were selected to present the variety of tree presence, with a particular focus on cleanliness of the environment and, such as wild vs. natural-looking landscape (Fig. 1). H1 demonstrated no tree; H2 for a clean, neat and well-maintained landscape; H3 for a natural, ecological, wild-looking; and H4 for a messy, wild-looking landscape. The four landscapes were assumed to be independent in our analysis. Based on the average rating of these four designs, we ranked them to create a variable ( $Y^1$ ) to identify the most favorable design. For example, if the first design received the highest average rating,  $Y^1$  was given a value of 1. If the third design received the highest average rating,  $Y^1$  was given a value of 3.

Respondents were also asked to answer verbal questions to elicit information on people's preferences to tree size, species, amount and the level of open space, and wildness/nature. Additionally, participants were asked to rate the importance of some characteristics of trees such as seasonal color, shape, and growth. Each individual's demographic information was also collected to examine the variation due to people's background. The following question was asked:

In your opinion, which is the most important factor in the following kinds of urban trees and landscaping?

- (1) To increase tree canopy by planting more trees.
- (2) To keep trees pruned and well-maintained.
- (3) To plant flowering shrubs, perennials and annuals using more artificial landscape.
- (4) To keep a more natural and wild-looking landscape.

The dependent variable  $Y^2$  is equal to the most favored alternatives, coding from 1 to 4. For example, if the fourth alternative was chosen,  $Y^2$  was set as 4.

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