

# THE ROLE OF FAMILIARITY IN PRAIRIE LANDSCAPE AESTHETICS

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*Abstract.* The study reported here focused on the prairie—a type of landscape that seems to be differentially appreciated by people in general and which fails to achieve high ranking given the assessment approaches currently in use. In particular, the study examined the relationship between the level of familiarity one has with the prairie and the level of appreciation one feels for it. Familiarity was divided into four aspects: Knowledge, Experience, Background, and Predisposition. Nearly 400 participants were measured for their levels of these aspects and for their preferences of 41 prairie scenes. The four familiarity aspects proved to be influential in the preference ratings in the majority of cases. Thus, it is clear from this work that familiarity with prairie landscapes affected the preference of those landscapes. It appears that those who find beauty in these landscapes possess knowledge or experience others do not share.

## INTRODUCTION

To some people tallgrass prairie represents a rare and fascinating landscape—complex, subtle, and incredibly beautiful. Yet many people find little interest or visual pleasure in these grassy plains. In fact, this type of landscape would fail to achieve high rankings given the visual assessment approaches currently in use (Grden 1979). It is this difference in landscape appreciation that inspired this study and spurred the following questions: Why do we find more beauty in one landscape than in another? Why do some prefer mountains while others prefer forests, savannas, or prairies? Could it be that the landscapes we find most aesthetically pleasing are those we are most familiar with?

In trying to answer these questions, one is drawn to an examination of the relationship between familiarity and preference. There seem to be different categories of landscapes when considering this relationship. There are landscapes that will be highly preferred or not preferred regardless of the experience or knowledge one may have of them. There are also landscapes that may be preferred much more or less by a person who is knowledgeable about and experienced with (familiar) those landscapes than by a person who is not. The landscapes of the prairie, and perhaps of other open lands such as tundra and desert, appear to fit this second category. Thus, this work sought to study the relationship between familiarity with tallgrass prairie landscapes and preference for those landscapes.

That environmental familiarity should affect perception and possibly aesthetic appreciation of a landscape is not a new concept. This idea was expressed by Aldo Leopold in what Callicott (1983) calls Leopold's land aesthetic. The basic tenet of the land aesthetic is that as one develops "biological literacy," one is able to recognize the beauty of overlooked natural environments or those common landscapes close to home. Leopold felt that as our environmental understanding of a landscape increases, our perception of that landscape changes, a change that can increase our aesthetic harvest from that landscape.

The major question examined in this work was drawn from Leopold's concept: Is there a discernible relationship between environmental familiarity of prairie landscapes and aesthetic reaction or preference for those landscapes? Environmental familiarity was viewed as having several interrelated aspects—knowledge, experience, background, predisposition.

### Knowledge

As used here, Knowledge refers to information one might gain

from indirect landscape study, such as from books, lectures, articles, classes, landscape painting, or photography, which deal with prairie landscapes. The information may deal with biophysical components and/or cultural components of these landscapes. The main distinction here is that knowledge comes from sources other than the landscape itself, namely, the writings, words, or interpretations of others.

### Experience

Experience refers to information gained from direct landscape study. One might gain this type of information from exploration of prairie landscapes on foot or from a vehicle. The type of information gained would depend upon the individual, but it would be the result of a direct correspondence between observer and landscape.

### Background

This aspect of familiarity includes such issues as where one has resided. If a person were born and raised in a prairie landscape, one would assume that person would have a better understanding of prairies than would a person born and raised in a forest environment.

### Predisposition

This aspect of familiarity refers to one's inclination or bias towards a particular environment. Predisposition may be related to knowledge, experience, and background. For instance, if one is inclined to favor forest environments, it is reasonable to expect knowledge and experience of these landscapes to be greater than for landscapes one is less inclined towards.

These aspects of familiarity are highly interrelated. Each of these sources was measured in this study with the belief that working together they form the foundation of environmental familiarity of prairie landscapes.

### Preference

Preference quite simply is the level of appreciation one feels for a given landscape—how much one likes a landscape. This may sound trivial, but preferences are important in our ability to function. Kaplan and Kaplan (1982) feel preference "can be viewed as an expression of the evaluation of one's possibilities. It is an extension of the perceptual process; like prediction, it enhances one's readiness to act even though no action may be called for at that particular moment."

To summarize, this work is about prairie preference and the role of knowledge, experience, background, and predisposition in coloring this preference. The following section presents the methods used in a pair of studies which explored various aspects of familiarity.

## METHODS

There were two separate studies in this work. Both studies assessed familiarity through self-reported measures of: Experience, Background, and Predisposition. Knowledge, an additional aspect of familiarity was assessed in the first study (Study I) and manipulated in Study II. The manipulation involved a lecture focusing either on the ecological or the cultural/historical aspects of prairies; a control group received no instruction.

### Study I

There were 197 participants in Study I. All participants were students at Kansas State University. Three instruments were employed in this study: the familiarity questionnaire, the Environmental Preference Questionnaire (EPQ), and the preference rating of 41 prairie landscape scenes. All instruments used in this work can be found in Keane (1990).

#### *Familiarity questionnaire.*

This was a brief questionnaire containing items intended to measure the participant's background, experience, and knowledge of prairie landscapes.

#### *Environmental Preference Questionnaire (EPQ).*

This instrument was employed to measure the participant's predisposition for a range of settings. The EPQ is a 70 item questionnaire devised by Stephen and Rachel Kaplan at the University of Michigan in 1970. The purpose of the EPQ "was to identify sources of satisfaction and patterns of preference pertaining to environmental settings. The focus was not so much on past experience as on current outlook" (Kaplan 1977). For this study, a slightly revised version of the EPQ was used. This revision entailed dropping some items from the Kaplans' EPQ and replacing them with items dealing with grassland and savanna settings.

#### *Preference rating of 41 prairie landscape scenes.*

The 41 scenes (selected from a pool of approximately 300) used in this work were selected to portray prairie landscapes in a typical rather than a dramatic fashion. All landscapes portrayed can be found within 20 miles of Manhattan, Kansas. Participants were asked to view 35 mm color transparencies (slides) depicting prairie landscape scenes and to record their level of preference for each scene. The preference responses were given on a five-point scale where one equalled very low preference, and five equalled very high preference.

### Study II

While Study II included a similar set of familiarity and preference measures, it differed substantially from Study I in its effort to provide educational information about prairies. There were 204 participants in Study II. Again, these participants were Kansas State University students, but they were a completely different group of students than employed in Study I.

#### *Educational treatments.*

Educational treatments were administered as a way to enhance Knowledge about prairies. Treatments were administered to the participants in the form of one-hour lectures supplemented with color slides. One treatment dealt with *ecological factors* of prairie landscapes. Topics discussed in this treatment included origins of prairie; prairie landforms, soils, vegetation, and animals; prairie climate; and the importance of fire. A second treatment dealt with *cultural and historical factors* of prairie landscapes. Areas covered in this treatment included landscape evolution or natural history; human use history, beginning with European discovery of the prairies by the Spanish; and prairie literature—the writings of those who experienced the prairie in the past and in recent times. A third treatment was a control group in which no lecture or information of any kind was received by participants.

Three instruments were used in Study II: a familiarity questionnaire, the EPQ, and the prairie landscape slide preference rating. The EPQ and the preference rating were the same as discussed for Study I.

The familiarity questionnaire, used to measure knowledge, experience, and background, differed in some respects from the Study I version. Study II employed a greater number of knowledge items with a wider content range than Study I.

#### *Testing of participants.*

Administration of the familiarity questionnaire, EPQ, and the rating of prairie slides occurred during the first 20 minutes of the lab sessions that students in the course supplying participants attended. There were nine different sections with 15-25 students each. The testing of participants occurred over a two-week period following the lectures, with each participant being tested once.

The staggering of test times was intentional. If the treatments were successful in increasing landscape knowledge, it was felt that this increase would likely be short-lived; thus, if knowledge was affected by the treatments, there should be a decrease in knowledge scores over the course of the testing period.

#### *Landscape and Predisposition Categories*

Because of the large number of items in the preference rating (41 slides) and the EPQ (70 items), both were subjected to Category Identifying Methodology (CIM) (Kaplan and Kaplan 1989). The CIM used involved two different analyses. The primary technique was Smallest Space Analysis III, a non-metric factor analysis procedure developed by Lingoes (1972). The second technique was a hierarchical cluster analysis procedure called ICLUST (Kulik et al. 1970). This methodology uses the participant ratings to produce categories of scenes or questionnaire items that are similarly perceived or experienced. These analyses produced five Landscape Categories (from the 41 slides) and six Predisposition Categories (from the 70 EPQ items). I then examined these categories and named each for the dominant characteristic or theme common to the category. The Landscape Categories are listed and briefly discussed below; the Predisposition Categories will be addressed in the discussion of results.

## RESULTS

CIM produced the following five Landscape Categories:

#### *Distant hills.*

Scenes in this category had flat-topped hills in the background and some detail in the foreground provided by shrubs or flowering forbs. Visually, the scenes have a sense of depth and vastness.

#### *Foreground grass.*

The landform in the scenes of this category is gently rolling and all scenes are dominated by grasses from foreground to background. Again, these scenes appear vast, and one feels that nothing is hidden from view.

#### *Warm-hued color.*

Color is the common characteristic of this category, particularly various shades of brown, red, yellow, and orange. This category also shows more diversity in vegetation and landform than the previous categories.

#### *Foreground texture.*

The scenes here have a rough texture in the foreground that appears to impede movement into or through the scenes. These scenes also show a greater occurrence of woody vegetation than do the scenes in the previous categories.

#### *Wooded draws.*

The common characteristic of wooded draws is landscape pattern, in particular, the pattern created by streams. There appears to be a balance and order to the woody and grass vegetation.

The mean preference scores for the Landscape Categories had the same pattern for both Study I and Study II. This order of preference is the same order in which they were presented above, with Distant Hills being the least preferred and Wooded Draws the most preferred in both studies.

## Familiarity Variables

Analysis of the familiarity questionnaires led to the following breakdown of the familiarity variables.

*Background.*

Background was divided into two categories, participants from rural background and those from non-rural background.

*Experience.*

The experience measure was divided into three levels (Low, Medium, and High) based on the overall distribution of the sample.

*Knowledge.*

This measure was also divided into three levels (Low, Medium, and High) based on sample distribution.

## DISCUSSION

## Study I

The relationship between the familiarity variables and preference for the Landscape Categories for Study I is shown in Table 1. As Table 1 shows, Study I participants from rural backgrounds had significantly higher preference for three of the five Landscape Categories. Participants with higher levels of prairie Experience had significantly higher preference for four of the five Landscape Categories. Those with higher prairie Knowledge had higher preference for all five Landscape Categories.

**Table 1. Occurrence of significant differences in mean Preference of Prairie Landscape Categories as a result of the Familiarity Variables.**

Familiarity variables	Significant difference in mean preference				
	DH	FG	W-hC	FT	WD
Background	.001	.001	NS	NS	.05
Experience	.001	.001	NS	.001	.001
Knowledge	.05	.001	.05	.01	.05
Predisposition:					
Grassland	.001	.001	.001	.001	.001
Nature	.001	.001	.001	.001	.005
Urban	.01	.005	NS	NS	.01
Passive Stress-Release	NS	NS	NS	NS	NS
Social-Nature	NS	NS	NS	NS	NS
Social-Concern	.005	.001	.001	.001	.001

Notes: Prairie Landscape Categories: DH = Distant Hills; FG = Foreground Grass; W-hC = Warm-hued Color; FT = Foreground Texture; WD = Wooded Draws. Significance Level = .05.

In terms of Predisposition, three categories merit attention. Participants with high Predisposition for Grassland settings and natural (Nature) settings had significantly higher preference for all Landscape Categories. Those people with high Predisposition for Urban settings had significantly lower preference for three of the five Landscape Categories. The Passive Stress-Release Category (those who enjoy sleeping, watching TV, just sitting around, etc.) and the Social Nature Category (those who enjoy partying, conversation, beachcombing, etc.) had no effect on preference. The final Predisposition Category, Social-Concern (those with greater concern for social and environmental problems), was influential on preference for all Landscape Categories.

## Study II

Study II involved a manipulation meant to influence Knowledge, with the possibility that increased Knowledge might influ-

ence preference. Tables 2-5 display the effects of the educational treatments on mean Knowledge levels. Tables 2 and 3 show a significant difference in mean Knowledge for the ecological and cultural/historical treatments, respectively. As anticipated, the treatment effects dissipate toward the latter part of the two-week testing period. Also as anticipated, there were no significant effects on Knowledge for the control treatment (Table 4). Table 5 shows the effect of all three treatments with test times combined.

**Table 2. Effects of test time on mean Knowledge for ecological treatment.**

Treatment: ecological				
Test time	N	Mean Knowledge	F-Stat.	Sig.
1 day	43	5.98	2.57	.05
2 days	20	6.30		
7 days	13	5.23		
10 days	23	4.00		
14 days	12	4.50		

**Table 3. Effects of test time on mean Knowledge for cultural/historical treatment.**

Treatment: cultural/historical				
Test time	N	Mean Knowledge	F-Stat.	Sig.
1 day	19	7.89	3.36	.05
2 days	4	7.25		
7 days	21	6.86		
10 days	5	3.20		
14 days	4	5.25		

**Table 4. Effects of test time on mean Knowledge for control treatment.**

Treatment: control				
Test time	N	Mean Knowledge	F-Stat.	Sig.
1 day	10	3.50	.98	NS
2 days	4	5.50		
7 days	4	5.50		
10 days	13	4.92		
14 days	8	3.75		

**Table 5. Effects of treatments, with test times combined, with mean Knowledge.**

Treatment	N	Mean Knowledge	F-Stat.	Sig.
Ecological	111	5.38	8.06	.001
Cultural/historical	53	6.79		
Control	39	4.44		

Tables 2-5 show that the educational treatments had a limited impact on increasing prairie Knowledge level. Analyses of these treatment groups on preference, however, revealed no effects of the treatments on preference for the Landscape Categories. This result is not really surprising given the mild manipulations and given the functional importance of landscape preferences. Preferences are not trivial; if they were easily changed, our world would be a less stable one.

An important point to note is that even the control group showed some Knowledge of prairies (Tables 4 and 5). Because this Knowledge did not come from the educational treatments (control group received no treatment), it might be called previous Knowl-

edge. The next step examined the effects of this previous Knowledge for all Study II participants, along with the other familiarity aspects on preference for the Landscape Categories. In this respect, Study II replicates Study I.

The relationship of the familiarity variables to preference for the Landscape Categories for Study II is shown in Table 6. As in Study I, a rural Background accounted for significantly higher preference, this time for four of the five Landscape Categories. There were two composite measures of Experience and both proved influential in preference for all Landscape Categories. Experience-Setting was a general measure of Experience with prairie, savanna, and farmland settings. Experience-Identify, a more stringent measure, asked participants to identify plants and animals common to prairies. As Table 6 shows, the more stringent Experience measure had a greater influence on preference levels. Participants with high prairie Knowledge had higher preference for all Landscape Categories. The Predisposition Categories' influence on preference was much the same as seen in Study I.

**Table 6. Occurrence of significant differences in mean Preference of Prairie Landscape Categories as a result of the Familiarity Variables.**

<i>Study II</i>					
<i>Familiarity variables</i>	<i>Significant difference in mean preference</i>				
	<i>DH</i>	<i>FG</i>	<i>W-hC</i>	<i>FT</i>	<i>WD</i>
Background	.054	.01	.05	.05	NS
Experience - Setting	.05	.05	.001	.001	.05
Experience - Identify	.001	.001	.001	.001	.005
Knowledge	.001	.005	.05	.001	NS
Predisposition:					
Grassland	.001	.001	.001	.001	.001
Nature	.001	.001	.001	.001	.001
Urban	.01	.005	NS	NS	NS
Passive stress-Release	NS	NS	NS	NS	NS
Social-nature	NS	NS	NS	NS	NS
Social-concern	NS	NS	NS	NS	NS

Prairie Landscape Categories: DH = Distant Hills; FG = Foreground Grass; W-hC = Warm-hued Color; FT = Foreground Texture; WD = Wooded Draws. Significance Level = .05

A comparison of Tables 1 and 6 shows that the results from both studies are quite similar and supportive of each other. A significant point is that the results for both studies for the first two Landscape Categories Distant Hills and Foreground Grass, are virtually identical. These were the two least preferred categories; thus, they clearly show the impact of the familiarity variables on preference. Together, the results of the two studies support the conclusion that the various aspects of familiarity are significant and important factors in the preference of prairie landscapes.

### CONCLUSIONS

Two conclusions that can be drawn as a result of this work are 1) Familiarity is positively related to preference for the prairie landscapes studied and 2) Familiarity level deserves consideration in the aesthetic assessment, management, and design of prairie landscapes.

Familiarity was clearly and positively related to preference in the current work. This positive relationship may appear obvious to some readers yet the opposite relationship would also make sense; remember the adage, "familiarity breeds contempt." A positive relationship between familiarity and preference does not occur for every landscape and should not be taken for granted when it does

occur. This conclusion holds exciting possibilities for prairie conservation and restoration.

Familiarity level matters in how much people like or dislike prairie. Thus, if we are to attempt to understand peoples' preferences for prairie lands, to assess these preferences, and even predict these preferences, we cannot disregard familiarity. Many of the aesthetic assessment techniques now in use derive from those developed in the western United States by the federal land management agencies. These techniques make use of artistic principles and expert judgement (Brown et al. 1986, Kaplan 1979, Miller, 1984). Generally, they do not measure observer attributes, and when applied to open landscapes, they find little of aesthetic value. One of the premises of this study has been that preference for certain landscapes may be greatly influenced by the observer's familiarity with that landscape. The current work shows evidence that this is indeed the case for prairie landscapes. Therefore, if we are to develop aesthetic assessment techniques that seek to measure the aesthetic value of prairie landscapes, it would appear that these techniques must take observer familiarity level into account.

It is critical that aesthetic assessment procedures be developed for prairie and other open lands with similar visual characteristics. For if we cannot measure their aesthetic value, we cannot hope to protect this value from loss. The dangers are real, whether they be suburban sprawl, agribusiness, mining of resources, disposal of dangerous wastes, or whatever else may come along in the coming decades. As our population continues to grow and to shift location, the open lands will come under increasing pressure. While few would argue for complete preservation of all open lands, doesn't it make sense to try to find ways of measuring or predicting the scenic value of these lands? This would insure that when land-use decisions need to be made, there is something to discuss besides economic expediency.

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