

The Perception of Landscape Visual Quality by Environmental Professionals and Local Citizens

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Abstract: One of the most lively debates surrounding the assessment of landscape visual quality concerns who is the legitimate evaluator: professionals or citizens. The basic positions are outlined and the results of a case study are presented, comparing citizen responses from a local visual resource planning survey to the responses of professional who could reasonably be expected to influence the visual quality of their local environment. Both similarities and differences in their evaluations are found and the implications of these findings are discussed.

Keywords: Landscape perception, expert and lay assessments, coastal zone

1 Introduction

A revolution in how to evaluate landscape visual quality occurred in the U.S. during the 1970s. The Congress established as a national policy that “it is the continuing responsibility of the Federal Government to use all practicable means, [...] (to) assure for all Americans [...] aesthetically and culturally pleasing surroundings” (NEPA, Sec. 101(b)). ZUBE (1986) presents a historical account of the nation's shift in landscape values. As a result, those responsible for environmental planning, design and management are now accountable to the public in a way they never were before. Of particular importance are requirements in Federal and state legislation to systematically consider aesthetic values and to incorporate the public's participation in preparing for any action that would affect the environment. SMARDON et al. (1986) describe a decision-making model synthesizing the experience in visual resource management and project review that is still applies to contemporary concerns.

This new emphasis in landscape management instigated a lively debate concerning “the possibility of quantifying scenic beauty” (e. g. CARLSON 1977, 1984; RIBE 1982). One of the major points of contention revolves around the public's appropriate role in determining landscape visual quality. On the one hand are those who stand for public determination of landscape visual quality:

I will argue not only that there is validity in the egalitarian and formalist assumptions, but it is not even necessary to make these assumptions, as Carlson supposes. Furthermore, there is value in using quantification to relate empirical environmental measures to aesthetic perceptions in furthering more knowledgeable and more defensible aesthetic assessments with which to manage the landscape. (RIBE 1982, 62)

On the other hand, are those who think that the public is incapable of establishing a standard of aesthetic quality and that this responsibility is appropriately exercised by professionals:

I question the use of public preferences as the indicator of the aesthetic quality of our environment. ... I suggest instead a central role in environmental aesthetic quality research for the assessments of what I call environmental critics, individuals with environmental knowledge and sensitivity [...]. (CARLSON 1984, 50)

It should be clear that the role of the environmental critic calls for a rather unique combination of attributes: on the one hand, specialized knowledge and understanding of the kind possessed by ecologists and naturalists, geographers and geologists and, on the other hand, developed emotional and perceptual sensibilities of the kind typically associated with the artist and the art critic, but here directed toward nature rather than art. (CARLSON 1977, 153)

Various studies have compared landscape perceptions of professionals with the public they are tasked to represent. For instance, DANDY & VAN DER WAL (2011) found “substantial shared appreciation of woodland landscapes [...] challenging several previous studies”. On the other hand, CONRAD et al. (2019) found that expert-base decisions may not adequately represent the public’s views. The crux of the matter may be that experts and lay people think about landscape differently. BUIJS & ELANDS (2013) found that experts are more likely to think about landscape management in *normative* (i. e., value) terms, while the public’s approach is more *experiential*, focusing on scenic quality and individual elements like trees or wildlife. A variety of comparative approaches have been used. For instance, respondents may be asked to rate the importance of particular features for overall attractiveness (ROGGE 2007) or rate cognitive attributes (GUO 2021). Other studies have compared lay perceptions with the results of the formal assessment methods used by experts (CHIEN et al. 2021). While there are studies that use measurements taken from photographs to predict landscape perceptions (TIAN et al. 2021) this approach has not been used to compare professionals and the public.

This paper uses photo-based metrics and narrative comments to compare scenic quality ratings from local citizens and environmental professionals.

2 Methods

In 1978, Dennis, MA on Cape Cod was named that year's All-American City by the National Municipal League of Cities and Towns. The League was particularly impressed by the example Dennis provided other towns for (1) citizen participation, (2) comprehensive planning, and (3) conservation acquisition and historic preservation. A citizen-based visual resource survey figured prominently in each of these areas (PALMER 1983). Follow-up investigations 10 and 20 years later revealed that perceptions of scenic quality were stable in the face of substantial population growth and accompanying landscape change (PALMER 1997, 2004).

An opportunity arose in 1983 and 1985 to compare the landscape visual perceptions of Dennis' citizens to the single most important group of coastal area environmental professionals: landscape architects and planners with the U.S. Army Corps of Engineers.

2.1 Respondents

A total of 69 citizens participated as the result of invitations sent to a random sample of registered voters in Dennis. They were interviewed and completed the scenic quality evaluation by appointment at the Town Hall. Environmental Professionals (n = 67) with the Corps were identified for participation through District Commander's offices as part of the pre-registration for a Corps sponsored training course, Aesthetic Resources: Identification, Analysis and Evaluation (FELLEMAN et al. 1983). They each were provided a set of Dennis images and instructions to complete the ratings, which were discussed during the training course.

2.2 Landscape Simulations

A sample of 56 scenes were identified by a local citizens' Visual Resources Committee to represent the range of landscape qualities found in Dennis. These scenes were portrayed as color 5-by-7 in (12.7-by-17.8 cm) prints to the participating residents. The environmental professionals used black-and-white prints of the same size. At first glance the use of color and black-and-white media raises a concern, but research has found that scenic evaluations are highly correlated ($r = 0.70$ when color was seen first and 0.72 when it was seen second) (DANIEL & MEITNER 2001). In their multiple studies of landscape perception, KAPLAN and KAPLAN (1989) found that the use of printed black-and-white images “poses no problems.”

2.3 Response Format

Both groups of participants evaluated the landscape's scenic quality using a forced Q-sort (PALMER 1983). In addition, they were asked to describe, in their own words, the attributes that characterized the highest and the lowest quality landscapes.

2.4 View Measurements

The content and composition of each view was summarized using view measurements originally developed by SHAFER and his colleagues (1969). These measurements are taken directly from the photographs, as illustrated in Figure 1. Each scene is divided into three distance

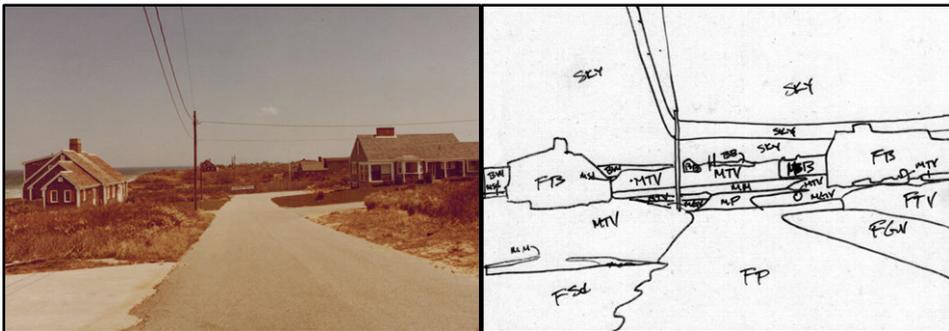


Fig. 1: An example of a Dennis photo and the outline used for measurements

zones: foreground (FOR), midground (MID) and background (BAK). Within each zone, content areas are outlined for: tree vegetation (TREE), herbaceous vegetation (HERB), sand or bare earth (DIRT), water (WET), buildings (BLDG), and pavement (PAVE). A planimeter is used to measure the area (A), and a map measurement tool for the perimeter (P) of each of these outlined content areas. In addition, the length of wires (WIRE L), number of tree trunks (BOLE N), and number of street objects (MISC N) are recorded.

3 Results

Overall, the mean scenic quality ratings of the environmental professionals are very similar to that of the local citizens (Pearson $r = .96$).

3.1 Attributes of Scenic Quality

The open ended characterizations of those scenes of highest and lowest scenic quality were content analyzed. The general organization of the analysis follows principles arrived at from comparisons of open ended descriptions to physical landscape dimensions (PALMER & ZUBE 1976) and environmental rating scales (PALMER 1980).

As shown in Table 1, individual citizens who completed the open ended questions tended to offer more attributes than did professionals. It was evident during the citizen survey that most participants were familiar with most of the scenes. Therefore, it can be presumed that this difference is due, in part, to the increased knowledge and effectiveness of the simulations attributable to familiarity. It is also interesting that both groups tended to name more attributes for high quality than low quality scenes.

Table 1: Mean number of attributes used per respondent

Respondent	Scenic Quality	
	Highest	Lowest
Citizens	3.1	2.5
Professionals	2.1	2.0

Table 2: Frequency of mentioned scenic quality attributes

Attributes	Percent Mentioned			
	Highest Quality		Lowest Quality	
	Citizens	Prof.	Citizens	Prof.
1. Land use & Human Influence	23	27	51	53
A. Naturalness	13	22	9	24
B. Development	10	5	42	29
2. Land form & Cover types	12	12	13	11
A. Land	4	4	3	3
B. Vegetation	8	8	10	8
3. Presence of Water	14	9	0	0
A. General	8	8	0	0
B. Salt Water	4	1	0	0
C. Fresh Water	2	0	0	0
4. View & Composition	27	28	17	16
A. Spaciousness	8	11	0	1
B. Distance zones	2	1	0	0
C. Composition	17	16	17	15
5. Evaluation	26	25	20	19
A. Positive	16	19	0	0
B. Negative	0	0	10	15
C. Local Character	10	6	10	4

The relative distribution of attribute types used to characterize highest and lowest scenic quality is summarized in Table 2. There is substantial similarity between the characterization patterns of both groups. The only meaningful difference appears to be a tendency by professionals to emphasize nature (or the lack of it) and local citizens to emphasize aspects of development. However, there are substantial differences in the pattern of attributes used to describe the level of quality. The lowest quality scenes are predominantly characterized by land use and human influence attributes. In contrast, the presence (or possible absence) of water is used to characterize the highest quality scenes but is not mentioned in relation to the lowest quality scenes. Highest quality scenes are also characterized by spaciousness and background character, which are missing from the lowest-quality scenes.

3.2 View Measurements

A regression analysis was used to investigate the relationship of view measurements to mean scenic quality for each scene. For both groups, the power of the model was very high ($R^2 = .82$) after entering 10 variables.¹ There are relatively small differences in the resulting regression coefficients. However, the pattern of included variables summarized in Figure 2 is instructive. As suggested by the attribute characterizations, the evaluation of environmental professionals is characterized by an emphasis on natural characteristics such as vegetation, earth and water. In contrast, the local citizens seem to focus equally between natural and human aspects of the scenes. In addition; the professionals seem sensitive to the content in all three distance zones while the background measures do not seem to be relevant to the citizens' evaluations.

4 Discussion and Conclusions

These results indicate that, overall, there is substantial agreement between local citizens' and environmental professionals' evaluations of landscape visual quality. This is fortunate since these professionals are empowered through our government to effect major changes in the landscape. It is the crux of RIBE's (1982) argument that in a democratic society, those responsible for the care of the landscape's visual quality ought to reflect the values of its citizens, at least in large measure.

On the other hand, CARLSON's argument is quite persuasive and merits attention by those interested in landscape visual quality research and assessment. The study reported here per se. Also, the photographic prints used in this study have an advantage over images on a screen in that they can be looked at very closely and returned to for a closer second look. It is thought that both the reliability and validity of simulations is increased when they are used with knowledgeable respondents such as local citizens and environmental professionals familiar with coastal environments. The issue of over-emphasizing the formal aspects of aesthetics is

¹ The regression model for the citizen scenic quality evaluation is: $1.0 * TREEBAKA - .04 * HERBMIDP + .2 * DIRTFORA - .5 * DIRTMIDA + .05 * DIRTMIDP + .2 * BLDGFORA + .09 * PAVEMIDP - .6 * MISCFORA + 1.2 * MISCMIDA - .05 * WIREFORL + 2.91$. The corresponding model for the environmental professionals is: $-.1 * TREEFORA - .2 * TREEMIDA + .7 * TREEBAKA - .02 * HERBFORP - .3 * HERBMIDA - .4 * DIRTMIDA + .04 * DIRTMIDP - .2 * WETFORA - .14 * WETBAKP + .02 * BLDG MIDP + 5.2$

View Measure	Foreground			Midground			Background		
	Area	Perimeter	Length or Number	Area	Perimeter	Length or Number	Area	Perimeter	Length or Number
Sky									
Tree trunk									
Tree vegetation	Horizontal			Horizontal			Vertical		
Herbaceous vegetation		Horizontal		Horizontal	Vertical				
Sand/Dirt	Vertical			Vertical	Vertical				
Water	Vertical							Vertical	
Building	Vertical							Vertical	
Pavement					Vertical				
Miscellaneous	Vertical			Vertical					
Wire			Vertical						

Fig. 2: View measures used to predict scenic quality evaluations of environmental professionals are indicated with horizontal lines and local citizens have vertical lines. Gray cells were not measured.

addressed in two ways. First of all, open ended comments were used to better understand scenic quality ratings. Second, the professional groups used were by and large not trained as designers in the formalist fine arts tradition but were environmental specialists employed by the U.S. Army Corps of Engineers. It is expected that this group better reflects the qualities of the environmental critic sought by CARLSON (1977, 171). In such a situation, CARLSON (1977, 157) indicates, “it is worth considering the possibility of using a methodology such as Schafer's to quantify the preferences of environmental critics, rather than public preferences”.

The comparison of local citizens and environmental professionals is instructive. In contrast to the citizens, professionals exhibit the critical “appreciation of the natural environment” expected by CARLSON (1977, 151). On the other hand, citizens seem more attuned to the cultural meaning of their local built environment. In particular, they identify specific qualities that they think capture the local sense of place, while professionals only identify attributes that could apply to Any town, U.S.A.

Even though CARLSON (1977, 141) finds the view measures to be rather impoverished descriptors of landscape scene content, their use in the regression analysis corroborates these results. While the scenic quality evaluations of local citizens is balanced between natural and built content, the professionals rely on natural attributes. In addition, professionals tend to give equal weight to natural attributes in all three distance zones while local citizens are much less sensitive to background attributes.

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