

Technology Available to Solve Landscape Problems—Session C: Psychometric and Social Science Approaches

Visual Resources and the Public: An Empirical Approach¹

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Abstract: Visual resource management systems incorporate many assumptions about how people see the landscape. While these assumptions are not articulated, they nonetheless affect the decision process. Problems inherent in some of these assumptions are examined.

Extensive research based on people's preference ratings of different settings provides insight into people's experience of the environment. The procedure described here has several advantages: (1) It provides a means to evaluate the assumptions underlying alternative visual analysis models; (2) it provides some insights into the dilemma of agency/public mismatch; and (3) it provides a relatively straightforward mechanism whereby public input could be incorporated in visual management decisions.

INTRODUCTION

Any number of resource managers have come to the conclusion by now that one of the biggest obstacles they confront is not money, nor technical capability, nor well-trained staff. The big headaches come from people -- citizens, interest groups, locals, vocals. There are all too many examples of citizens upset by management decisions and upsetting well-laid plans which were arrived at by long, arduous, carefully developed procedures. The frustrations these situations reflect are matched on both sides. The managers feel unappreciated and resent being cast as evil-intentioned, power-hungry, insensitive bureaucrats. The citizens are deeply resentful that their needs and values are ignored and trespassed.

While the requirement for citizen input in decision making is an important step in the right direction, it has created problems that have made many doubt the wisdom of the requirement. In the area of visual resource

management the problems are particularly apparent since designations like "scenic value" and "aesthetics" are inherently nebulous and subjective. Given how important the visual environment is to all of us, it is hardly surprising that the management of the visual resources should be particularly vulnerable to citizen outcry.

Part of the misunderstanding on the part of the public regarding the agencies' efforts stem from the public's lack of comprehension of the process by which decisions are reached. On the other hand, it may be that some of the negative reaction may be due to the fact that what people actually care about in the landscape is not adequately reflected in many management decisions. It is my feeling that this is an area of serious concern, deserving careful study. From the long list of potentially pertinent issues, I would like to address two specific areas: (1) The basic assumptions underlying many current visual management procedures; and (2) ways to incorporate public input about the visual environment into the decision-making process.

A LOOK AT SOME OF THE ASSUMPTIONS

The most widely adopted visual management procedures have in common that they are lengthy and complex. They include a large number of

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separate evaluations that almost magically culminate in a decision rule. One would certainly not be tempted to fault these agencies for a lack of thoroughness! When the public is informed of the many-step process leading to a decision, the response must be one of "Wow, they really did a lot of work!" But the audience must also leave the public session totally bewildered about most of these steps. Further, the apparent precision of the process obscures the question of whether what is being measured constitutes in fact the issues of greatest concern to these citizens.

The procedures underlying the visual resource management tools that agencies such as the U.S. Forest Service and Bureau of Land Management have adopted incorporate many issues that are clearly important. In examining the assumptions underlying these procedures it is not my purpose to be critical of the intentions. But it is important to recognize that any process is, in the final analysis, seriously affected by the assumptions built into it. When the final decision is the consequence of a series of assumptions that may be problematic, it is prudent to understand the relationship between these assumptions and consequences.

There are a number of ways in which a set of assumptions can be analyzed. They can be looked at empirically; that is, they can be evaluated in the light of research results. They can be considered in terms of pertinent theoretical conceptions. And finally they can be considered in terms of whether there is any basis for preferring them over alternative conceptions that might be offered in their place. Assumptions that are not obviously better or worse than alternatives are not necessarily false, but their apparent arbitrariness calls for further effort to clarify their status.

VARIETY CLASSIFICATION

The issue of whether the landscape is distinctive plays a key role in some visual resource management systems. "The classification is based on the premise that all landscapes have some value, but those with the most variety or diversity have the greatest potential for high scenic value" (Stone 1978). There is no question that certain distinctive patterns deserve such description, but is the issue of diversity the best factor to single out as prominent in potential scenic value? And is it the case that the most variety -- all other things being equal, if that were possible -- is likely to lead to the greatest scenic quality?

It is easy enough to imagine a scene of considerable variety and diversity that would be lacking in pleasantness or beauty. A tree farm might be rich in different species and quite low in scenic attributes. By contrast, a tranquil setting might well be less diverse -- perhaps even 'common' in terms of this designation -- yet a scene worthy of an overlook.

A study (R. Kaplan 1977) comparing visual preferences of local residents and tourists, carried out in the context of a scenic route designation project, suggests that among the scenes preferred by the locals are some rather "common" ones. At the same time they seem to be more sensitive than are the passing-through tourists to the kinds of landscapes that give the region its "flavor," its characteristic quality. This suggests that with time, as one becomes familiar with an area and considers it "home," one differentiates features that had previously blended into the background. A subtler form of variety and distinctiveness develops with familiarity -- perhaps one that the professional who lacks familiarity with the area fails to discern.

In much of our research we have also found that diversity, or variety, or complexity (different labels for essentially the same factor) is important to preference, but only in a limited sense. A lack of variety is not appreciated. Across numerous studies we have found that the wide, open, undifferentiated views are consistently rated lower in preference (S. Kaplan 1979). But in natural environments we have not found that increased complexity was related to increased preference.

REGIONAL CHARACTERISTICS

Federal agencies responsible for vast stretches of land are necessarily faced with problems at a regional scale. It is therefore important to find ways to characterize a region in terms of common physiographic and vegetative patterns.

At the same time one must not lose sight of the fact that such regional characteristics may be apparent in only some parts of the region. This is no doubt more of a problem for some character types than for others. In regions dominated by mountains and valleys these patterns are consistently prominent. But for many other landform patterns the regional characteristics may be more evasive.

It may be useful to choose several regions that are similarly designated on topographic

maps in terms of particular land form and land use combinations and to then take some number of photographs in each region. It is quite likely that from a scenic quality viewpoint these photographs would fare quite differently. In fact even from a land form and land use perspective such scenes are likely to bring surprises.

In one study where we attempted this it was certainly clear that the correspondence between map designation and the view from the road was poor at best (R. Kaplan 1977). Viewing videotapes taken along river corridors which are presumably similar in terms of regional characteristics also gives one the sense of significant scenic variation despite the common physiographic label.

SENSITIVITY DESIGNATIONS

Now that we can fly we too have a bird's eye view of everywhere. As such no landscape escapes visibility. But, of course, some views are much more frequently seen than others. The visual sensitivity codes that several of the visual resource systems have adopted are based on the assumption that those scenes that are more regularly viewed by more people are the more sensitive. In other words, people are more sensitive about those scenes that they encounter most readily. Or, at least, the manager is most vulnerable when altering landscapes that have the greatest likelihood of being seen.

The assumption of sensitivity based on volume of visibility is an interesting one. When the decision rule is to expose the highest sensitivity areas to least change there are some consequences that may not be desirable in the long run. Perhaps the public would be better educated about necessary environmental changes if these were not hidden from view. Perhaps the areas that are most heavily traveled are the ones that are least worthy of protection as they have already been heavily changed.

This is not to say that the view from the campground or from the visitor center is the ideal choice for maximum modification. But these places can serve as proper settings for increasing citizen awareness for the visual impact on environmental decisions. Rather than protect the public from the realization that clearcutting is going on a few thousand feet away, it may be more appropriate to point out where it is and that efforts are made to reduce the visual impact of such interventions.

The other side of the sensitivity zone philosophy is that it is less damaging to alter the view that the locals may have as they travel the tertiary roads, than the view the visitor has traveling the major routes. For the local group one is thus altering the everyday, familiar environment including areas that have, with time, acquired particular affections. It is hardly surprising that the displeasure of local groups is becoming more frequently heard.

THE ELEMENTS OF CONTRAST

Among the many attributes that landscape architects are trained to discern four have been identified as particularly important. The "dominance elements" of form, line, color, and texture (U.S. Forest Service 1973) have played key roles in the various visual resource systems. There is no reason to question that these are important elements, nor that alterations to the landscape can be viewed in terms of changes with respect to these elements.

The assumption to be examined with respect to the elements stems from the assignment of numeric weights to each of them. The Bureau of Land Management (1975) system, for example, assigns a weight of '4' to form, '3' to line, '2' to color, and '1' to texture. Thus, what might be considered a "strong" proposed change to the landscape would be four times as significant in its effect if the form were altered than if it entailed textural changes. The problem here involves both the assumptions of the relative importance of these four elements, and the magnitude of the differences. If different numeric weight were applied to the same four elements strikingly different consequences might ensue. Is the precision of these weights commensurate with our knowledge of the relative importance of these factors?

It would seem that a worthwhile project would involve exploring the properties of these numbers. Take a scene and radically change its form (a 12-point change), or take the same scene and alter it radically with respect to line and texture (also a 12-point change) but leave the other elements alone. Would these lead to equal judgments of change? The difference between a primeval forest and a second growth forest involves considerable textural change; our research suggests that the differences in texture weigh heavily in people's preference judgments (S. Kaplan 1979). Color, by contrast, is more difficult to evaluate. Cloud patterns lead to color changes

much of the time, as do seasonal variations. The fact that black and white and color photographs do not lead to important differences in judgments, suggests that perhaps color does not play as important a role as this weighting system would suggest.

THEREFORE

Embedded in the various visual resources systems are assumptions about how people see the landscape, about the factors that are most important in affecting how they see it, and about the trade-offs to be made in considering environmental changes. A different set of assumptions might lead to significantly different decisions.

This is not an area where we know the answers and where any set of assumptions can be assured of widespread agreement. Perhaps the one statement that can be made with some confidence is that our knowledge of environmental perception, of factors affecting environmental preference, and of trade-offs between different options, is far from complete.

Given that decisions must be made and that they must be based on incomplete knowledge what options are available? Certainly, one option is to proceed as best one can, acknowledging the situation, but without becoming mired in the ramifications of our ignorance. But there are other options, too.

It would seem reasonable to encourage research that tests the underlying assumptions. There are many testable implications that could be checked in a variety of contexts. Empirical support might strengthen our confidence in the system that has been adopted.

At the same time, until such confidence is earned, it may be reasonable to adopt a system that makes apparent the consequences of any one set of assumptions. For example, a management system that requires two different alternative weightings of different key variables might facilitate the realization that decisions are closely linked to the assumptions. When the different versions lead to similar conclusions one can have greater confidence in one's decisions. When the different versions lead to less agreement, one must confront the differences rather than be blind to their existence.

Another modification of procedure would not only aid in comparing alternative assumptions, it might aid in the quality of the resulting decisions as well. It is character-

istic of the methodology in this area to come up, finally, with a single number which incorporates all judgments, all weightings and all variables. Quite apart from the problem of combining incommensurates by a formula, such aggregating procedures oversimplify and under-stimulate. They fail to take advantage of the tremendous integrative capacity of the human mind. Humans excel in integrating patterns -- their ability in this area far exceeds what is currently possible using computer and/or formula. Providing the manager with four or five or six components to deal with is likely to lead to far more sensitive and insightful decisions than providing only the mechanically combined composite of these components.

Another option which could be achieved right along with the others would incorporate input from the citizenry in the visual resource assessment. The purpose of the next section is to describe a methodology for obtaining such input in a way that makes sense to participants and that yields informative results. The methodology leads to information not only about people's preferences, but about the perceptual categories they are using as well.

While these are probably enough justifications, there are certain other advantages of the methodology that might be judged as fringe benefits. It is also a means of informing people, of sharing information, perhaps even of helping the public understand the manager's dilemmas. There is thus a far greater likelihood of avoiding the unpleasantness, the frustration that all too often characterizes the manager/citizen interface.

AN APPROACH TO PUBLIC INPUT

It is easy to come to the conclusion that the public is unenlightened. Even after a thorough presentation of the procedures followed in arriving at a management decision, someone in the audience might ask a question revealing that little of the presentation was understood. Judging by the expressions of many others in the audience one can wonder if they followed much of the presentation. And the majority seem to be too disinterested to even come. Sure there is usually some individual or group that is outspoken and articulate, but they express their extreme self-interest rather than comprehending the complexity of the situation at hand. Were one to try to simply ask people for their recommendations -- for the management plan they think would be useful -- chances are they could not come up with anything useful.

But the public can also be portrayed in contrasting terms. People are highly capable; they process enormous amounts of information all the time, and with considerable facility. They can be frustrated, hostile and difficult when their ability to understand is stymied. People are concerned about their immediate surroundings, about things they know something about and that impinge on them directly. They care to understand and to be involved. Even if good things are done on their behalf, they would often rather have a piece of the action than to have things done for them. The key to useful exchange with the general public is the provision of information in a way that is comprehensible (Kaplan and Kaplan 1978).

One can find any number of examples of information programs that do no good; there are even examples where providing information can be confusing and damaging. The conclusion to be drawn is not that people do not care about information after all. Rather, one has to examine the way in which the information is provided and what the public was to get from it. With some understanding of the way people come to make sense of something and of ways to facilitate their involvement, public input can become much more enlightened.

Public involvement entails two quite different purposes. One is to inform -- that is to provide information -- and the other is to give the opportunity for reaction. Most public participation situations are carried out in a public context, where providing information to a large group can be achieved efficiently. The opportunity for reaction in such contexts is not achieved with as much facility, however. The fact that it is a public event, or in any case a group event, also leads to some dynamics which may or may not be useful to the process. While such opportunities are needed (and even legislated in some cases), they may not be the best way to achieve the desires of public involvement. The procedures discussed here are intended to supplement the public arena and to precede it in decision-making.

The approach to public input that we and our students have used in a wide range of situations stems from a theoretical framework of how humans experience the environment. The approach can be described as 'just another survey' but there are some noteworthy differences. Surveys, interviews and questionnaires have in common that they ask people to respond to questions. That is also one of the purposes of public input. But the format that we have adopted is intended to serve the function of providing information as well as collecting

reactions, and it is intended to be a positive experience for the participants (R. Kaplan 1979).

A PICTURE

Not all pictures are worth a thousand words. It is striking, however, what the presence of pictures does to participation. People are generally receptive to photographs and want to see them. A page of text is rarely met with the same enthusiasm. And these reactions are characteristic not only of the lazy, uneducated, disenfranchised, or otherwise excluded groups. It's true of all of us. Chances are you have looked at the photographs in these proceedings before you read a single article from beginning to end. Why is that?

Humans are visual animals. The significance of that statement is not only that we are sensitive to visual information and that we are likely to take in visual information around us. We also experience much information that is not directly visual through the visual mode. Visual cues can communicate smells and sounds and tactile differences. Advertising relies on this. You can "see" the wind, and "smell" the picnic in a picture without words, and seeing a couple holding hands conjures nonvisual modalities as well. Our language is rich in visual expressions for nonvisual experiences: "Let me see" and "as I see it" are common examples.

Two areas of information are particularly important to human functioning and both of these are readily communicated through visual modes, and quite difficult to grasp without the visual. One of these is space. The environment is a spatial experience and the location of things in space is vital to our understanding. In fact, there are many examples of imputing spatial characteristics to events that are not necessarily spatial to help in comprehending the information (S. Kaplan 1976). "Where is this discussion going" is a case in point. The other category of information that is readily provided visually is locomotion -- or changes in space. Pictures make it readily apparent if an environment is one where locomotion is facilitated or impeded, whether it is safe to venture forth or of uncertain consequences (S. Kaplan 1979).

In fact it might be argued that this is much of what people mean when they refer to an "experience" in a landscape. People experience the space, and they experience the process of entering and locomoting within the space. The picture is not a substitute for these experi-

ences, but it is in an efficient code that allows people to assess it from these various perspectives. The assessment is, of course, very rapid and not conscious. The power of visual imagery is that it brings with it so much other information as well.

The format that we have been using includes visual material in the survey procedure. The pictures may be photographs or slides of existing places or of simulations. Generally, they have been black and white rather than color, and often they have been of remarkably poor resolution. But people are so adept at processing visual information that these factors create no problems. In fact, in many cases the lack of polish in the photography has advantages (cf. R. Kaplan 1979). It lends authenticity to the participatory activity. It communicates the sense that the input is in fact early in the process, before all the decisions have been reached.

CHOICES

When presented with a solution to a problem it is very difficult to ascertain what modifications are feasible. If the solution is satisfactory all is well, of course. But many times the solution does not seem quite right and yet it is difficult for the public to judge what possibilities are available. While this may be quite intentional, and the purpose of presenting a solution in glossy form may be to create the impression of finality, it is also the case that the espoused purpose of participation is to get meaningful input.

When presented with two feasible alternative solutions the possibility for meaningful participation is enhanced manifold. Not only do participants thus recognize that the "right" solution is not yet established, they also get a sense of the range of what is possible. Perhaps some elements from one solution and some elements from the other solution might be combined to yield yet another alternative.

A photoquestionnaire lends itself particularly well to the presentation of alternative solutions, or to different views of such alternatives. Using somewhere, let us say, between 20 and 50 slides or photographs it is not difficult to provide a great deal of information about the realm of the possible.

WHAT ARE THE QUESTIONS

The purpose of this format is both to

provide information -- easily accomplished with pictures -- and also to obtain information about how the public reacts to the proposed alternatives or modifications to the environment (R. Kaplan 1979). A procedure we have found to be particularly effective for obtaining such reactions involves having participants rate each of the scenes in terms of how much they like it, or their preference. That is not to say that other questions cannot also be included and there are times when verbal analogues to the pictures provide useful checks on the responses to each. But the basic format of all these studies has involved preference ratings.

The purposes of these ratings are twofold. On the one hand, knowledge about people's reactions to each of the scenes is important. If the reactions are as idiosyncratic as some would expect, that is important to know. If, as we have found in many studies, the responses are much more predictable, that too provides useful information. While knowing the preferences does not necessarily mean that one heeds them unquestionably, it suggests that it would be wise to be prepared to explain decisions that are contrary to widespread consensus.

The preference ratings serve another purpose as well. They provide information not only about the participants' likes and dislikes, but also about their patterns of perceiving the environment. Through statistical procedures it is possible to ascertain the various themes or groupings or clusters or domains or dimensions that are salient from the public's point of view. Such categories more often than not are distinctly different from the categories that the expert manager is trained to utilize. By becoming acquainted with the important dimensions from the public's point of view, the decision-maker is provided with another way to "see" the landscape (S. Kaplan 1979).

In the case of the visual resource, such a clustering procedure can be useful as a check on the assumed categories and classifications that the agency's system assumed to be pertinent. If physiographic features are of dominant significance, one would assume that the grouping would show this to be true. If the organization of the visual environment is perceived in other terms, the groupings will reflect this too.

The point here is not that one grouping is right and the other is wrong, but rather that the different groups of people perceive the environment differently. The differences

are informative. They can be useful in planning interpretive programs to help the public understand why certain decisions are made. They can also be useful in helping the expert see that there is another side to be considered. We have found that this process has on several occasions helped the landscape architect redesign a project.

FLEXIBILITY

Although this methodology arose in an academic context, it has proved itself to be highly practical and useful in a wide variety of settings. While there is no space here to describe each of them, it may be useful to mention a few to highlight their diversity.

Hammitt's (1978) study of a bog environment in a national forest (included in these proceedings) focused on the role of familiarity with that environment in people's preferences. Anderson (1978) studied preferences for different forest practices in a national forest and compared the categories as determined by participants' preferences with those generated by professional resource managers. Gallagher's (1977) study was concerned with naturalized landscapes; here again, people's knowledge about prairie restoration was related to preferences. The study of scenes along a storm drain in both residential and more rural areas related preference to people's familiarity with the particular settings (R. Kaplan 1977). Here it was interesting to discover that water is not always to be considered an amenity. Finally, citizen input was obtained before a vest-pocket park was built in a central business district. Here the visual material was based on a simulation (R. Kaplan 1978).

My proposal, then, is that a procedure like the one described here be used in conjunction with other visual management procedures. This promises to have at least three notable benefits:

(1) It provides a check on assumptions and on alternate perspectives to consider. This not only has research potential in the formal sense of the word; it is also highly educational. It is difficult to look over results obtained in this way without learning a good deal in the process.

(2) It provides a realistic means of obtaining public input, while it can still be useful and without the unpleasantness that so often accompanies dealing with the public.

(3) It is likely to make the public feel more favorable toward visual management activities -- and rightly so, since they will have been given the opportunity for informed and meaningful participation in the process.

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