VISUAL QUALITY PERCEPTIONS IN THE FLINT HILLS: ASSESSING THE EFFECTS OF CULTURAL MODIFICATIONS

by

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CHAPTER I
INTRODUCTION

The quality of American life has become a highly publicized issue. Escalating increases in technology, competition and stress have deeply influenced our environment, society and culture. We rarely have time to adjust to one change before it is time to readjust. In the midst of this daily living, Americans have evolved an almost universal need to develop a strong link to the stability and familiarity of the past, and to pursue a renewing of the human bonds with nature (Naisbitt 1984).

SCENIC QUALITY

The scenic quality of the American landscape is an important consideration in this renewed bond between people and nature. Scenic quality is defined as "the degree of harmony, contrast and variety within a landscape" (adapted from U.S.D.I. Bureau of Land Management 1984, p.5). Scenic quality has been granted a status comparable to many other factors included in nation-wide planning issues, such as economic stability, projected land uses and natural resources allocation (U.S.D.A. Forest Service 1974). A mandate established through many of the environmental acts of the 1960's and 1970's has required inclusion of scenic quality in the multiple-use management of federal lands, and defined it as an important natural resource deserving conservation and management (see Appendix A for a listing and annotation of pertinent environmental legislation).

VISUAL RESOURCE MANAGEMENT AND THE COUNTRYSIDE LANDSCAPE

The countryside landscape encompasses a wide portion of the American landscape spectrum. The countryside represents a diverse continuum of natural, cultural and social elements. In its purest sense, the countryside is "a recognizeable unit [of land area] containing a predominance of agricultural patterns and activities, and defined by both cultural interpretations and the physical setting" (Schauman and Pfender 1982, p.1).

In reality, however, the countryside can be very complex and difficult to define. Growth in many areas of the countryside has placed housing subdivisions into the midst of large tracts of agricultural land, while productive wheat fields and functioning farmsteads may be totally encompassed by subdivisions.

In contrast to wilderness and urban areas, the countryside has received little attention in legislated visual inventory and analysis mandates. The countryside is often just beyond the influence of metropolitan land-use plans and zoning ordinances. Yet, it is also just within the fences and agricultural/cultural patterns that legally and visually segregate the countryside from intensely managed public forest, rangeland and parks.

There is an urgent need for inventory and analysis of countryside visual quality (Schauman and Pfender 1982, Nassauer 1979). Forecasted trends in population migration, housing needs, and energy and resource consumption between now and the end of the century (as suggested by Marshall 1984 and Naisbitt 1984) will collectively have a profound effect on future attempts to integrate the built and natural countryside environment. These trends will deeply effect the visual character of the countryside as well. The ensuing landscape modifications resulting from this growth and

development will have a direct bearing on the enhancement or degredation of countryside scenic quality.

RESEARCH SCOPE AND OBJECTIVES

This research responds to the need for increased countryside understanding through the study of the effects of human-made additions and activities on countryside viewer landscape preferences. These additions and activities, or cultural modifications, represent the presence of dominant human-made changes in (or addition to) landform or vegetation which create a visual contrast to the natural character of a viewed scene (U.S.D.I. Bureau of Land Management 1976). The countryside landscape under consideration in the study is the Flint Hills region of northeast Kansas. Twelve cultural modifications such as powerlines, farmsteads, windmills and stone fences were included in the research. The landscape preferences of 202 individuals in twelve groups of public school teachers, resource managers, church members, Grange members and landscape architecture students were obtained for study analysis. The groups were selected from rural and urban settings within the Flint Hills, and from several locations in Colorado (Figure 1.1).

The purpose of the study, in addition to furthering the information base now being compiled on the countryside, is to help develop an understanding and appreciation for countryside scenic quality in the following areas:

1. Testing the value of countryside scenic quality as a natural and cultural resource. An important consideration in visual resource management is whether people really do care about

the scenic quality of their surroundings (Lahti 1984). In-depth research and strong legislation aimed at understanding and managing this resource will have no real value if the affected user groups show more apathy than interest towards the quality of their surroundings.

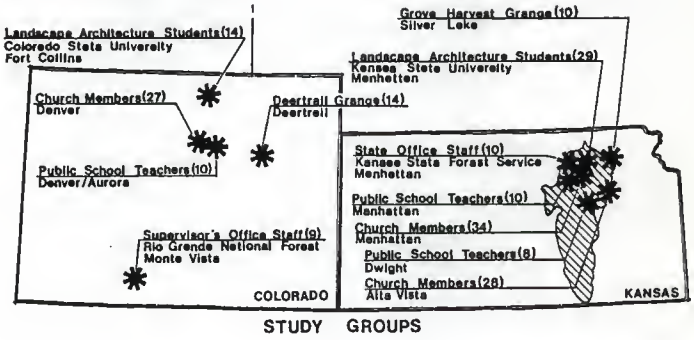


Figure 1.1 Regional Area of Participant Residence (Number in parentheses indicates study group sample size).

2. Develop an understanding of whether residents in rural areas of the Flint Hills have acquired a different appreciation of their surrounding landscapes than that of urban Flint Hills dwellers or non-regional visitors. This may help determine the real "viewers" in terms of aesthetic appreciation of the countryside.

3. Provide a basis of comparison with previous studies which have suggested that the distance between a landscape modification and its viewer is inversely related to the effect of that

modification upon the landscape preference of the viewer (U.S.D.A. Forest Service 1974).

4. Analyze the overall visual effects of certain modifications to determine if those modifications have a negative or positive impact regardless of their location and context in the landscape. A planner who is able to rank modifications according to their overall landscape influence can make better decisions concerning conservation and/or management of those landscape elements.

5. Develop a set of guidelines that define the implications of landscape modification within the countryside. These generalizations will be intended to aid in the understanding of proposed future modifications in the Flint Hills as they relate to regional and non-regional viewers.

RESEARCH FORMAT

Chapter II provides the background information for the study. Included are historical perspectives, present trends and studies in landscape preference research and an overview of the Flint Hills regional landscape. Chapter III will present the research intent, define the variables, and discuss the methodology and procedures. Chapter IV will summarize the data and the statistical treatments used in their analysis. Chapter V will include an evaluation of the study, and an interpretation of results as they relate to hypothesized correlations. Future research needs as brought forth through the study will also be discussed in this section.

CHAPTER II
BACKGROUND

The systematic inventory and analysis of visual quality in the countryside landscapes of the United States is only now beginning to receive the attention that other American landscapes began receiving fifteen to twenty years ago. Countryside visual quality research and assessment has evolved through the input of a wide range of disciplines (Table 2.1). Due to this interdisciplinary approach, many research methodologies have been suggested and applied in the search for new knowledge. This approach, however, has often resulted in little or no integration of ideas or conclusions (Zube et al. 1982).

TABLE 2.1 Disciplines Involved in Countryside Visual Assessment Research

Discipline	Areas of Theory and Research
Planners	visual esthetics and landscape design
Landscape Architects	ecological theory
Natural Resource Managers	biological resource management concepts
Behavioral Scientists	signal detection
	stimulus-response
	arousal
	adaptation level
	information processing
Humanists	sense of place
Cultural Geographers	transactionalism
	historicism
	phenomenology

Note: Adapted from Zube (1984).

Chapter Two will provide a cross-section of information aimed at correlating the important aspects of countryside landscape assessment. An overview of landscape preference, including its application and measurement, will first be explored. The chapter concludes with a summarization of the major implications of landscape modification within the Flint Hills.

HISTORICAL OVERVIEW

ESTABLISHING THE IMPORTANCE OF SCENIC QUALITY. Visual analysis, in its most basic human context, has been around for thousands of years. We are visual animals--87% of human perception is based on sight (Tuan 1974; USDA Forest Service 1973). People have always depended on their visual perception to gather information, to get along in the world, to make sense out of their environment, and to survive (Kaplan and Kaplan 1982). It was always assumed, however, that the perception of beauty was not universal among observers. Beauty was "in the eye of the beholder," and because of its subjectivity, was destined to remain that way (Wohlwill 1976).

It wasn't until very recently that scientific studies involved in analyzing and quantifying visual landscape preference began to identify and address common perceptions among wide ranges of viewers (for a comprehensive listing, see Zube et al. 1982). The environmental conservation-preservation movement in the late 1960's and early 1970's has played a key role the development of a theoretical basis providing research into the identification of these shared visual perceptions. The National Environmental Policy Act of 1969, a representative example of the concern that Congress voiced for environmental issues during those decades, states in Section 102(2)(b) that the federal government is to assume responsibility to "identify and

develop methods and procedures...which will insure that presently unquantified environmental amenities and values [such as visual quality] may be given appropriate consideration in decision making along with economic and technical consideration."

SCENIC QUALITY AND LANDSCAPE PREFERENCE. An important dimension in many landscape/visual assessment studies is the relationship between landscape preference and scenic quality or beauty. There have been several studies over the past fifteen years which suggest that high scenic quality is directly correlated to high landscape preference (Buhyoff et al 1982, Hull et al. 1984, Rabinowitz and Coughlin 1970, and Zube et al. 1974).

Even though correlated, there is a distinct difference between the two factors. Scenic quality ratings infer that an esthetic judgement must be made about a particular landscape in terms of its value to the viewer and other viewers. Preference is a more personal directive and involves a viewer's agreeableness, appreciation and use of the landscape (Zube et al. 1974). Price (1978), R. Kaplan (1979) and Daniel et al. (1979) have also found that preference is more easily understood by the general public than is scenic quality or beauty.

The close correlation of scenic quality to landscape preference will be utilized in this study in order to enhance the reliability of participant input. Scenic quality will constitute the main dependent variable of this study. Since landscape preference is more easily understood by the public, however, and because it is a reliable indicator of scenic beauty, landscape preference will be used in the gathering of data for the study (see Figure 2.1).

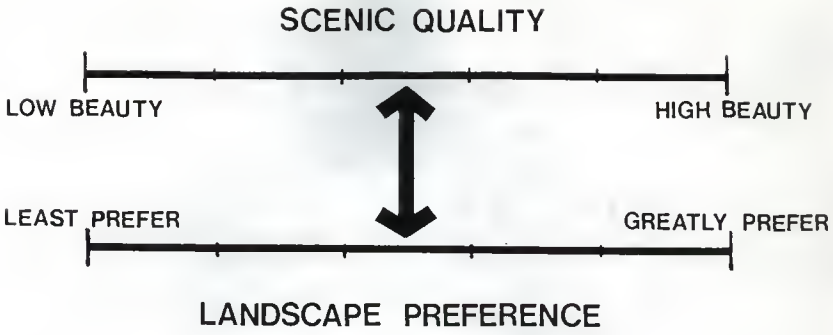


Figure 2.1 Equating Viewer Input on Scenic Quality and Landscape Preference Measurement Scales

HISTORICAL EMPHASIS. Historically, three major arguements or methods have been used by those supportive of visual quality to "sell" its importance (Zube 1983):

1. Economics -- landscapes were preserved that had NO economic value (Yosemite, Yellowstone); recently landscapes have been preserved because of their value to the local or state economy (Vermont).

2. Human well-being -- this arguement was widely expressed and demonstrated by Frederick Law Olmstead, who (among others) believed that scenery was important to mental and physical well-being.

3. "Coat-tailing" -- the attachment of esthetics protection to other resource protection efforts; most acts since the National Environmental Policy Act of 1969 have included protection of scenic quality in this manner.

Although many of the gains in visual resource inventory and management can be attributed to the "coat-tail" arguement, the fact that the importance of visual quality has been acknowledged is a gain in itself (Zube 1983).

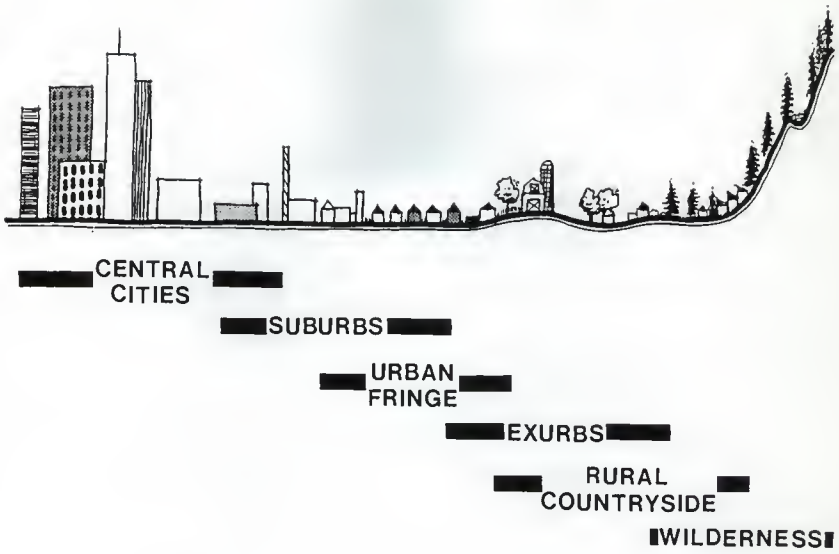
COMPARISONS OF AMERICAN LANDSCAPES. The American landscape has always been a diverse continuum of landscapes -- densely populated urban areas, rural agricultural areas and wildland or wilderness. Present-day development has compounded the integration of particular landscape types, so that their definition is becoming increasingly unclear. As an illustration, Schauman and Pfender (1982) cite a study by Healy and Short (1981) in which landscape development is divided into six categories (Figure 2.2). The obvious overlap of the visual character described in each category, emphasizes the lack of clarity in landscape boundary definition.

In order to develop a broad understanding of the American landscape, and to define the importance of the countryside within it, a brief summarization of the American landscape continuum will be presented. An important cultural consideration in landscape understanding is that

> "...landscape [is] defined not by what is in it, but by the meaning and interpretations we give to it. Our attitudes toward ... landscape are culturally biased and are a result of our collective evolution as a human species and our experience as individuals" (Schauman and Pfender 1982).

When studying landscapes, one must always remember the inherent change in the landscape due to its very nature:

> "It is an error to say that esthetics is largely a matter of what you see; this shows our intense visual bias. Nature is essentially a biological process that goes much beyond what we can see. An appreciation of natural processes is part of a changing esthetic attitude" (Callicott 1983, p.30).



LEGEND:

CENTRAL CITIES -- is marked by manufacturing, offices, large stores, and entertainment facilities.

SUBURBS -- contains former central-city activities such as multi-story office towers and huge shopping malls.

URBAN FRINGE -- is outside the city and suburbs and, in the minds of the owners, is committed to future urban use; may still appear rural with some farming or grazing, but only as an interim circumstance.

EXURBS -- appears diverse; contains a significant amount of agriculture with smaller farms producing primarily vegetables, dairy products and specialty crops; often contains "suburban-type" housing.

COUNTRYSIDE -- lies beyond the exurbs; often with towns or small cities which do not exert large-scale influence over the surrounding region.

WILDERNESS -- federally designated areas; contains no human habitation.

Figure 2.2 American Landscape Continuum (source: Schauman and Pfender 1982)

For the purpose of summarization, the continuum will be divided into the wilderness landscape, the urban landscape and the countryside landscape.

Wilderness. There has been considerable management activity relating to the American wilderness landscape. Wilderness preservation has been advocated as a benefit to both physical and mental health. Depending upon one's perspective, preservation has also been suggested as a way to save either nature or natural resources for future generations. Studies have noted that the concept of wilderness is important to Americans, and suggests that the existence of wilderness, over and above the use of wilderness, is a source of personal satisfaction to people (Hendee and Stankey 1973, as cited by Schauman and Pfender 1982; Price 1978). The concept of wilderness has changed drastically in the last two hundred years. Feelings of fear towards wilderness and a yearning for dominance of it have changed to feelings of endearment and an emphasis on conservation to the point of absolute preservation (Nash 1982).

Within this context is a continual reference to esthetics. Robert Marshall, a preservationist of the early 1900's, and an originator of the wilderness movement, described wild scenery as a series of great works of art, able to "furnish... perhaps the best opportunity for...pure esthetic rapture" (Nash 1982, p. 203). Scenic quality is in itself a criteria for the establishment of wilderness areas. Public Law 88-577, The Widerness Act of 1964, requires that wilderness "...generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable".

Urban. At the other end of the landscape spectrum, the urban landscape is experiencing tremendous restructuring and change. A renewed interest in the vitality of downtown core areas has led to major renovation

aimed at promoting an environment conducive to work and residence. According to a recent poll, most Americans (56%), if given the choice, would now prefer a rural life; 25% would opt for the suburbs, and only 19% for an urban living environment (Simonds 1983). This negative attitude towards the urban environment has impacted not only the city landscape, but has had an obvious influence on the outward migration of people to the countryside and wilderness landscapes for residence and recreation.

Historically, most urban landscapes have been looked upon as landscapes lacking many of the amenties associated with quality-of-life issues:

> "...in cities there is no longer a blend of the enthusiasm and energy of the young, the experience of their parents, the wisdom of grandparents, all focused into a goal of realizing an 'American Dream'. Urban life has dispersed this interlinking between these basic assets that all societies -- whether primitive hunters or modern industrial -- have shared" (Kaplan and Kaplan 1982, p. 46).

Esthetic improvement of the American urban landscape has long been of major importance as cities have tried to improve living conditions, and more recently slow outward migration and declining economic bases. Central Park in New York City in the 1860's, and the City Beautiful Movement originating at the World's Fair in Chicago in 1893, are representative of the emphasis that has been placed on the positive effects of scenic beauty in urban environments (Newton 1981).

Increasing numbers of people are making urban centers a place of both work and residence, and as renovation and rebuilding of urban areas are undertaken to meet the rising demand, esthetics are being given prime consideration. Urban scenic quality, as in the wildlands/wilderness landscape, is a high-priority planning issue of the present and future.

Countryside. The countryside, extensive though it may be within the American landscape continuum, is a landscape that is taken for granted.

Rarely is the countryside afforded the attention of wilderness or urban land, yet it forms the backdrop for the lives of many Americans: "It addresses the places that people come home to, where you get up and where you go to bed, where you live and where you die" (Coughlin 1983, p. 27).

Three value systems, including agrarian, rural and pastoral, closely relate to the physical and psychological dimensions of the countryside (Schauman and Pfender 1982). Agrarianism, which typlifies independence, self-sufficiency, family farms and the occupation of farming, is one value system which is closely tied to and in essense helps define the countryside. Ruralism is an anti-urban viewpoint which denotes the preference of non-farming rural residents to live in the countryside. Pastoralism is a romantic vision of urban origin which identifies the countryside as a important context in American culture, capable of providing happiness, order and meaning to life.

The importance of scenic quality in the countryside landscape is evident in the agrarianism, rural and pastoral value systems, and yet efforts to evaluate and plan for countryside scenic quality as a conserved, managed resource have been slow in developing. The American land ethic--the notion of ownership above stewardship as a right without responsibility--faces increased questioning as to its moral and social implications. As Sara Ebenreck states,

> "...if we could begin to sense more clearly our connections with the land, we might begin to move to some kind of ethical position which would respect the land as a value in itself, not simply in its usefulness to us. That would affect the whole way we treat it...Like the native American Indians, we should be willing to give something to the land for what we take from it" (Ebenreck 1983, p. 25).

The countryside displays our attempts to come to grips with the allocation and management of land, water and productive soil-- resources that seemed infinite in supply such a short time ago. The visual impacts of development decisions are in most cases as irreversible as the ensuing environmental impacts, and as planning efforts continue to increase in our efforts to make wise use of the countryside, scenic quality should be considered an important attribute in the planning process (Simonds 1983).

LANDSCAPE PREFERENCE STUDIES

Many researchers have examined landscape preference to determine how and why humans prefer one landscape over another. Most of these studies can be placed within one of three assessment classifications: professional, behavioral and humanistic (Zube 1984).

PROFESSIONAL ASSESSMENT. Professional assessment denotes expert judgement based upon the use of well-established criteria by design and resource professionals in categorizing and studying landscape values and characteristics. There is varied support for this type of assessment. Professional judgement has been criticized by Dearden (1981) as not representative of the public involved in the judgement decision. Zube (1984) suggests that the descriptive aspects of professional assessment may be a negative consideration. Descriptive information, when placed in its qualitative context, resists integration with other quantified resource factors.

Conversely, Buhyoff *et al.* (1978) feel that professional judgement may not differ significantly from public sentiment. They note that a lack of true esthetic preference theory prohibits a realistic comparison of the two attitudes. They argue that even with a minimum of public input, profes-

sional judgement can be representative of the whole. Laurie (1975) notes that although experts are able to draw finer distinctions among landscape elements, their value orientation towards those landscapes does not seem to differ from that of the public. In a third viewpoint, Carlson (1977) argues that the public lacks the knowledge required for true understanding of esthetic quality, and therefore needs a trained professional to interpret landscape value for them.

BEHAVIORAL ASSESSMENT. Behavioral assessment addresses evolutionary adaptation and biological need as the two major factors influencing landscape preference. The following are but several of the many theories presently advanced regarding behavioral assessment of preference:

1)Habitat theory - suggests that our environment and physical surroundings are preferred in a survival context, and that our biological needs have shaped our preferences and adaptations (Appleton 1975; Tuan 1974; Balling and Falk 1982).

2)Prospect-refuge - a specialized aspect of habitat theory, states that there are certain habitat needs more critical that others. Prospect-refuge suggests that humans prefer landscapes in which a person can see (prospect) without being seen (refuge). In the past, these would have been ideal landscapes for the human as a hunter in search of food. Today, refuge landscapes have taken the forms of intimate gardens and private patios, and prospect landscapes are represented by the ever-popular scenic overlook (Appleton 1975). Care should be exercised in the application of this theory, however. Limited studies of this theory have shown correlations unlike those hypothesized (Nasar et al. 1983).

3)Sexual symbolism - advanced as a biological factor in landscape preference. Several researchers have expanded the Freudian concept of explaining human actions in sexual terms, and suggest that our preferences for landscapes are directly related to the presence of sexual connotations (symbolic and otherwise) within those preferred landscapes (Shepard 1961, as cited in Appleton 1975).

HUMANISTIC ASSESSMENT. Humanistic approaches, which are not as widely pursued as the first two classifications, stress the involvement of the observer as a participant in the landscape. An environment that involves the viewer will provide a greater sense of understanding, and is therefore more preferred by the viewer (Kaplan and Kaplan 1982).

Cultural influences are an additional factor in both behavioral and humanistic assessment, and play a role in influencing landscape preference. Many of our feelings towards particular landscapes are learned (Zube 1983). As an example, wilderness appreciation as a landscape type "is nothing less than revolutionary," and far removes present society from the fear and dislike historically associated with wild lands (Nash 1982, p.xi).

In a similar example within a different context, research indicates that preferred views in urban environments typically include large expanses of high-cost, high-maintenance turfgrass. Many urban dwellers would gladly live without the expense associated with this landscape element, but have grown to "like" it too much to feel comfortable without it(Kaplan and Kaplan 1982).

INVENTORY METHODS

Within the professional, behavioral and humanistic assessment classifications are found two basic inventory methods: descriptive inventories and perceptual studies. Ellsworth (1980) describes descriptive inventory as the objective inventory and measurement of the biophysical and cultural aspects of a landscape. The perceptual preference approach goes beyond measurement of the physical landscape, and involves a study of the relationship between the landscape and the landscape observer. Descriptive inventories are found almost universally within the professional assessment classification, while perceptual studies are used in behavioral and humanistic assessments.

DESCRIPTIVE INVENTORY. The descriptive inventory consists of two types of measurement:

1. quantitative - biological and cultural features are simply inventoried and described (Leopold 1969 and Smardon 1975, as cited in Ellsworth 1980).

2. qualitative - landscapes are grouped into character types based on similarities and consistencies, and then analyzed in terms of esthetic or design principles (USDI BLM 1977, USDA Forest Service 1974, Litton and Tetlow 1978, Litton 1968).

PERCEPTUAL APPROACHES. Perceptual studies are grouped into three categories:

1. expert-generated -- certain landscape features are given priority ratings, and then specific landscapes are compared to those ratings (Sargent 1966, and Shafer and Mietz 1970, as cited by Ellsworth 1980).

2. empirical -- similar to expert-generated, except that preferences are determined by statistical analysis, not predetermined priorities (Zube, Pitt and Anderson 1974; Daniel and Boster 1976).

3. theoretically-based empirical -- empirical studies involving the ways in which people receive and integrate information about the environment and how this information affects their behavior (R. Kaplan 1977; Lee 1979). The work of Rachel and Stephen Kaplan and their colleagues, where the perceptual predictor variables of coherence, complexity, mystery and legibility are applied to landscape preference, is an example of this approach.

These assessment classifications and inventory methods involving landscape preference have been briefly summarized in order to provide a frame of reference for this study. This study is an example of a behavioral assessment, and uses the empirical perceptual approach as described above. For a further discussion of assessment techniques and inventory methods, see Ellsworth (1980).

VISUAL RESOURCE MANAGEMENT

The decades of the 1960's and 1970's were witness to a heightened awareness regarding environmental policy and planning, and increasing emphasis on visual quality as a managed natural resource. With this awareness followed a corresponding increase in environmental legislation and legal mediation.

The National Environmental Policy Act of 1969, in addressing the importance of visual quality, states that "...it is the continuing responsibility of the Federal Government to ... assure for all Americans safe, healthful, productive and esthetically and culturally pleasing surroundings" (Section 101(b)). The Federal Land Policy and Management Act of 1976, and the Forest and Rangeland Renewable Resources Planning Act (1974), among many other legislative acts, stipulate to one degree or another the consideration of the visual resource as a primary value that must be managed on public lands. (See Appendix A for a listing of pertinent legislative acts).

Several court cases preceding this flurry of environmental legislation were used as precedence for the value of the visual resource. In the U.S. Supreme Court case of Berman vs. Parker (1954), it was determined that

> "The concept of the public welfare is broad and inclusive. The values it [the visual resource] represents are spiritual as well as physical, esthetic as well as monetary. It is within the power of the legislature to determine that the community should be beautiful as well as healthy... " (Cutler 1979, p.13).

Esthetics are becoming incorporated with rights guaranteed to all Americans (such as health, safety and welfare). The inclusion of esthetics in quality-of-life issues is thought by some to suggest inclusion of esthetics under these same guarantees (Zube 1983).

VISUAL RESOURCE MANAGEMENT SYSTEMS. Based on the mandate provided by statutory and case law, many systems were developed to characterize and inventory the visual resource. Many were developed for generalized applications (see for instance those by Shafer et al. 1969; Daniel and Boster 1976), while others were specific to a certain location or project (Zube et al. 1974). Some were developed for use by public agencies (USDA Soil Con-

servation Service 1982; American Society of Landscape Architects 1979; USDA Forest Service 1973; USDI Bureau of Land Management 1976) , while several studies addressed the problems of visual impacts on private lands and within private industry (Jones et al. 1975, Carruth 1977, Miller et al. 1979). A third differentiation of studies occurred in their initial approaches. Most were undertaken independent of the landscape user (Litton and Tetlow 1978), while others were dependent on the user for input and participation (Dearden 1981). In many cases this was prescribed through a difference in measurement techniques (physical measurements versus psychological measurements) (Calvin et al. 1973).

Overall, many of these systems have proven effective in the measurement of the visual resource, and have cumulatively established a base upon which future research can be established. There are, however, certain problems associated with these systems and their application which deserve attention and which should be better resolved before a full-scale survey of the countryside visual resource is initiated.

PRESENT CRITICISMS. Several criticisms have been directed at the present state of visual resource analysis and managment (Zube et al. 1982):

1) Visual resource analysis has involved such a wide variety of professional disciplines that a standardization of theory or method has not occurred. This lack of standardization has resulted in fragmented research with a "...hit-or-miss quality to it..." that is difficult to combine or compare in the pursuit of landscape perception understanding. Forestry, geography, landscape architecture, psychology, environmental studies and recreation have all brought their own expertise and research methods to the analytical process, thereby accentuating the differences in re-

search goals or objectives (Zube et al. 1982). To highlight these differences, the following listing is made relating the differences in terminology used between different preference-testing methods and landscape studies:

-- "natural scenic beauty," "natural force" (Calvin et al. 1972)
-- "spaciousness," "order," "familiarity" (Kaplan 1977)
-- "coherence," "complexity," "mystery," "legibility" (Kaplan & Kaplan 1982)
-- "vividness," "intactness," "unity" (Jones et al. 1975)
-- "landform," "naturalism," "diversity" (Zube 1973)
-- "landscape obscurity," "historic lumpiness," "cultural unity and landscape equality" (Lewis 1979)

2) There has been a tendency to focus on the physical qualities of cultural landscape elements, rather than on how those elements effect the perceptions of the landscape viewer.

3) It is felt that as important as the inventory process has been, the application of the information, and the analysis of the actual perception of the environment should now be undertaken:

> "...understanding interactions will contribute to answering questions of why landscapes are perceived as they are, what they mean to individuals or groups, and how they contribute to one's sense of well-being or quality of life" (Zube 1984, p.22).

To take this idea one step further, Zube maintains that

> "for scenic quality to maintain an important position in land management decisions, it must be shown to be as significant a contribution to improving the human condition as [improving] economic or social factors."

4) Land managers must be cognizant of which types of landscape preference factors are present in the conflicts they are involved in, and how these preference factors may influence the resolution of these conflicts. Land managers must know which publics they are dealing with in their particular regions, and they must know not only what the visual preferences of these

publics are, but their visual dislikes as well. Much of our inventory approach to visual management has shown us the preferences and not the dislikes (or more importantly, the tolerances of particular groups--what will they accept, and how much do they really care?) (Lahti 1984).

5) The environmental movement came quickly, and as soon as each piece of legislation was passed, it had to be implemented and followed. Some researchers argue that this rush for implementation left little time for research to establish a theoretical base for visual management systems. Land and resource managers were left with a situation in which they had to "learn-by-doing", and it is now time to evaluate their progress and weed out those methods and initial processes which have not successfully met the test of time (Zube et al. 1982).

One such example can be found in the latest revised version of the U.S.D.I. Bureau of Land Management Visual Management System (BLM Draft 1984). Whereas the four design elements of form, line, color and texture were previously weighted according to a set scale of importance, the new version asks that the factors be evaluated more evenly, without weighting, suggesting that changes to the original system are being processed in order to improve the overall effectiveness of the system (BLM Draft 1984). This change would seem to coincide with recent criticism by several authors (such as Grden 1979) who have pointed out the importance of underlying landscape character in determining the relative importance of preference factors. As an example, the horizontal context of a prairie landscape suggests "line" as a more important design element than "form".

COUNTRYSIDE LANDSCAPE

LANDSCAPE DEFINITION. The countryside landscape, as defined earlier in Chapter One, is a complex landscape intimately affected by both human-made diversity and natural diversity. The countryside may be the landscape that most influences our present perceptions and psychological ties with nature (Schauman and Pfender 1982). We spend a great deal of time in the countryside landscape, and it is apparent that we need to better evaluate its characteristics and influences upon us, and our understanding of it.

EVALUATION. As noted earlier, the evaluation of the countryside landscape is in its initial stages. The following discussion will examine why it is still a relatively new area, what particular studies have been done, and what attributes of the countryside landscape make it unique.

Historical Context. Although the application of analytical procedures within the study of the countryside is a recent development, scenic quality in the countryside landscape was recognized long before the 20th century environmental movement. The eighteenth century English "Landscape Gardening School" played a major role in the development of scenic countryside appreciation. The use of open "natural" landscape as a design element by Humphry Repton, Capability Brown and others "...gave England the basis for a gentle, universally admired countryside of ineffable charm" (Newton 1981, p.220).

The early American countryside also received its share of admiration. Thomas Jefferson gained widespread acclaim for his deep sensitivity to site planning within countryside landscapes, with Monticello and the University of Virginia representing prime examples of his work. Andrew Jackson Downing, the first American writer on landscape architecture topics, developed a strong following for his writing on the countryside and on the interrelationship of environment to bahavior (Newton 1981).

Landscape painters such as Claude Lorrain and Nicholas Poussin also contributed to the public sensitization and awareness of countryside scenic quality (Tobey 1973).

General Overview. Perhaps the most important single reason for the general oversight of the American countryside as a visual resource relates to our "grass is always greener..." attitude. Americans lack the intense feelings of attachment to home and place that other cultures have felt, and instead feel an attachment to Nature as a whole, allowing continual movement to "better" places without a feeling of deep uprooting (Tuan 1976). A German visitor in the 1830's observed that

> "the Americans love their country, not, indeed, as it is, but as it will be. They do not love the land of their fathers, but are sincerely attached to that which their children are destined to inherit. They live in the future and make their country as they go on" (Lowenthal 1976, p. 96).

Americans are notorious for looking past what they already have to what they think they want, and always being in a hurry to get to whereever they're not. We have looked past the countryside on our trips to and from our cities and wilderness areas. The encroachment of subdivisions and parking lots on the countryside landscape has occurred rapidly, and is partially responsible for the "fuzzy" definition of countryside landscape (Schauman and Pfender 1982).

The people who reside in the countryside do have a sensitivity to the common landscape. They are more sensitive to the character and qualities of the landscape that give it its flavor and familiarity (R. Kaplan 1979). The relationship of the farmer in an agricultural setting is especially unique:

> "Muscles and scars bear witness to the physical intimacy of the contact. The farmer's topophilia [love of place] is compounded of this physical intimacy, of material dependence and the fact that the land is a repository of memory and sustained hope. Aesthetic appreciation is present but seldom articulated" (Tuan 1974, p.94).

Rarely do we take notice of these residents, their landscape and the topophilia that binds them to the countryside.

The environmental movement (and subsequent federal legislation) had a much smaller affect on countryside landscapes than on wildland and wilderness landscapes due to fact that a high percentage of lands are privately owned (over 90% in many states) in countryside areas. Although the Soil Conservation Service and other state agencies have been involved in conservation and preservation practices on private lands for many years, the factor of esthetics remained a low management priority.

Where public lands were located in countryside landscapes, visual management systems developed for high contrast, prime scenic areas were at times difficult to adjust and apply to these less diverse areas. And as applications were attempted in areas of increased cultural modification, the systems were not designed to effectively handle the impacts of the modifications (Schauman 1979).

Important Elements of the Countryside Landscape. There are several important features in the countryside landscape which complicate our perceptions and analysis of the landscape.

The first is the element of change in the landscape. The agricultural landscape is in a constant state of change--change of color, textures, patterns and uses. These all have an affect on the visual perception of the landscape. For anyone who is familiar with the yearly cycles of a rural countryside, these changes are very evident.

Agricultural landscapes are landscapes of patterns. Roads, conservation terraces, fields, windbreaks, contour lines, and irrigation circles all form intricate interrelated patterns. Future modifications such as coal slurry pipelines will also impact our landscape perceptions. The collective influence of these human patterns may be greater than any one element of those patterns alone (Schauman 1979).

The influence of cultural factors and attitudes is perhaps the most important element of the countryside landscape that must be incorporated into any analysis of the landscape (Schauman and Pfender 1982). There have been many attempts over the years by geographers, historians and sociologists to explain our physical, mental and emotional relationships with the countryside landscape. We prefer naturalness in our landscapes (Nassauer 1978) and yet we also prefer landscapes that show some sign of human presence in comparison to landscapes that are totally without human touch (R. Kaplan 1979 and Wohlwill 1976). Human presence is expected one moment, and overlooked the next. It is this complexity of perceptions that complicates what the countryside landscape really is, and how it should be studied and managed. The Connecticut River Valley Study (Zube et al. 1974) points out two important considerations in predicting scenic quality in the countryside: 1) landscapes that combine natural and human-made dimensions are more difficult to analyze and 2) those areas where land-use change is most evident are also difficult to study.

By 1990, over one-third of all Americans will live in a non-metropolitan area of the country -- an increase of over 14% from 1980 (Figure 2.3). This tremendous influx of people is having significant effects upon not only the visual aspects of the countryside, but upon the economic and social aspects as well. The ability of the countryside to absorb this

change is quickly becoming a key factor in the organization of planning criteria developed to deal with this growth.

Landscape Visual Studies. Several studies have been completed which apply directly to countryside landscapes. Litton and Tetlow(1978) assembled a landscape inventory system for the northern great plains which was designed to act as an initial step in the inventory and classification of particular landscapes.

A study of the Iowa countryside landscape by Nassauer(1978) was designed to describe the visual resource within distinctive regions of Iowa as related to various criteria. It identified particular land uses and naturalness among other variables as positive factors in the perception of the landscape.

Zube, Pitt and Anderson (1974) undertook a small-scale study of the southern Connecticut River Valley to determine what factors were related to scenic resource value, and to analyze differences among diverse groups of people in their perceptions of the landscape. Their findings suggest many important corollaries, including the positive aspects of presence of water, topography, vegetative cover, agricultural elements, pastures, tilled and abandoned fields, and farm buildings. Another commonly-cited conclusion is that there are some similarities among groups of people with diverse backgrounds, and that whatever differences do exist may occur in a somewhat regular pattern. Schauman and Pfender (1982) point out, however, that Zube didn't attempt to generalize his findings on a large scale, nor did he claim that the findings could have been generalized.

Psychological studies have addressed certain areas and aspects of the countryside, including response and preference to landscape, the importance of spatial configuration, and the similarities of response among different

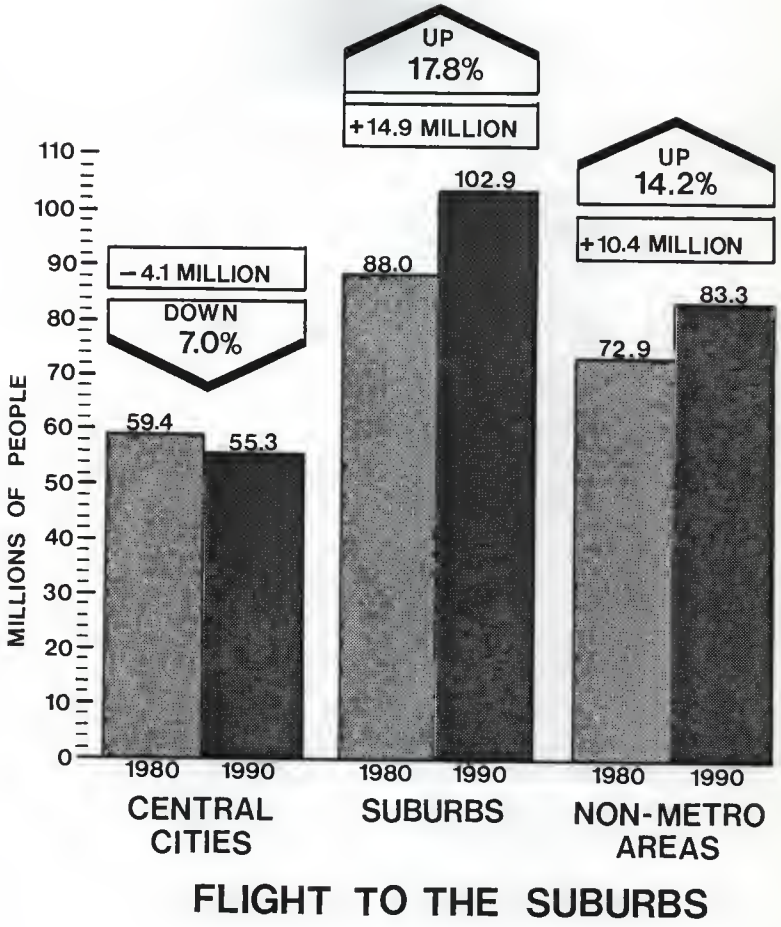


Figure 2.3 Flight to the Suburbs (source: Marshall 1983)

people to a particular landscape (R. Kaplan 1977; Herzog, Kaplan and Kaplan 1976; Hammit 1978; and Gallagher 1977, as summarized by Schauman and Pfender 1982). These studies have addressed an important parameter of visual analysis in that they have identified visual and environmental preferences and analyzed landscape on the basis of preference rather than site character.

Schauman and Pfender (1982) also discuss other studies by Brown, Hami and King (1979) and studies in other countries by Linton (1968) and Fines (1968) that have dealt with the countryside landscape to varying degrees.

Kansas and Flint Hills Studies. Kansas and the Flint Hills region have had several studies done involving their visual resources. None of these studies, however, has specificially addressed visual quality. Fridirici (1983) studied the overall landscape preferences of Kansas State University students, while the Kansas Park and Resources Authority completed a "Landscape Resource Evaluation" in 1972. This particular evaluation is heavily biased towards recreational uses, and has not been applied to any studies (Kansas Park and Resources Authority 1975).

Summary of Countryside Research. As a summarization of countryside research, Schauman and Pfender (1982) have compiled the following list of related conclusions:

1) No reliable, complete method for assessing countryside, primarily agricultural landscapes, emerges from any work done to date.

2) To date, the work done toward identifying the important visual factors of agricultural landscapes has been meager. Conclusions have been too general to be useful (people prefer "naturalness") or not substantiated by perceptual research ("focal attractions" should be inventoried).

3) No studies relate visual quality of the countryside to individual or collective decisions concerning the land use of those landscapes.

4) No studies relate particular farm content, cultural artifacts or farm activity of countryside landscapes to visual quality.

5) No studies identify perceptual units in countryside landscapes.

6) To date, the work done has not been replicated consistently (with the exception of Kaplan's results) to provide a firm methodological base for countryside assessments.

7) Land form may not be the most important visual indicator in agricultural landscapes--it may be only one part of a more comprehensive perceptual dimension, spatial configuration.

8) Visual variables, chosen by methods which vary from preference tests to subjective judgement, can be grouped into two categories--one relating to the organization of the landscape, the context, and the other relating to the meaning of things in the landscape, the contents.

THE FLINT HILLS: A REPRESENTATIVE LANDSCAPE

CHARACTER. The Kansas Flint Hills Region is a unique and diverse area of the midwestern United States (Figure 2.4). The region contains largest expanses of uncultivated tallgrass prairie left in the United States, and remains in many ways, much as it was 100 years ago. The buffalo are gone, and the fence lines of domestic cattle production have been added,

but the character of the rocky, uncultivated rolling hills and limestone outcrops is still present. It is an area rich in culture and history, and even today is heavily influenced by the integration of settlers with diverse religious, economic and social backgrounds who made Kansas their home. Noble L. Prentis, a journalist traveling through the region in 1889, wrote that "there has always been something very interesting in the coming of different people to Kansas, and the blending of all of them into a community of interest and language"(Lyle and Fisher 1972).

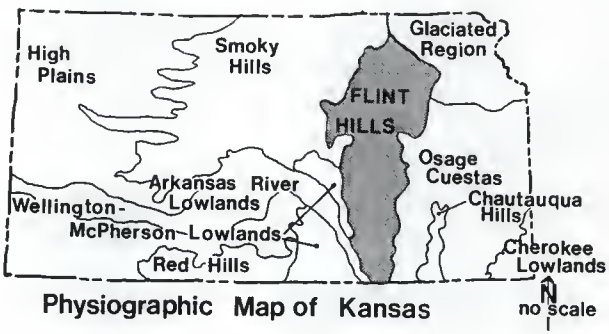


Figure 2.4 The Flint Hills Region

The Flint Hills is also a subtle area. Changes in topography and vegetation occur more gradually than in mountainous areas of the country. Prairie wildflowers grow in absolute abundance, but are only obvious to those who leave the highways and their cars to walk among them. The regional character and setting promote a scenic beauty based on vastness and solitude, repetition and stability. Until recently, natural and cultural change have remained subtle, allowing us to experience places and views still representative of the prairie landscape that greeted early pioneers on their westward journeys (Figure 2.5).

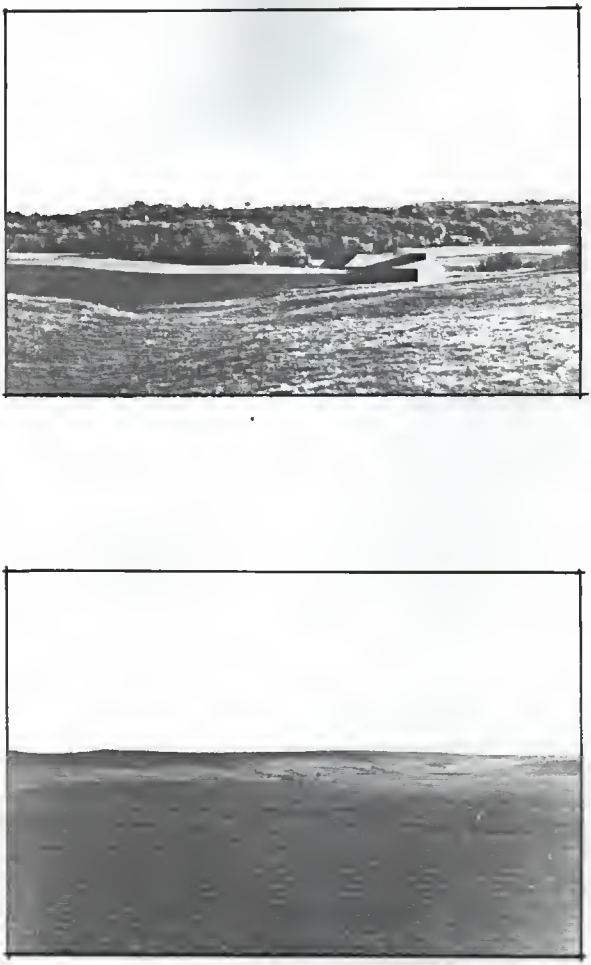


Figure 2.5 Representative Photos of the Flint Hills Study Area

LANDSCAPE MODIFICATIONS AND IMPLICATIONS. Human use of the Flint Hills had occurred long before European and recent Asian immigration to this continent. The Osage and Kansa Indians quarried flint in the region for arrows, and they systematically burned large areas of prairie for grass-renewal and hunting purposes (Kansas State Historical Society 1973). The homesteading pioneers left windbreaks, limestone houses and acres of cultivated wheat fields. Until recently these cultural additions and modifications of the landscape could be added to the landscape, and because of their overall minor nature (relative to the size, scale and sheer numbers of many of the modifications of today), they did not negatively affect the appearance of the landscape. Within the last twenty years, however, human presence has become much more dominant. Our growing needs for energy, recreation and transportation have increased the human presence in modification of the landscape.

The importance and severity of these modifications are a unique problem in the Flint Hills for several reasons:

1) Throughout the last century, many people from other parts of the country have seen the Great Plains as an area of desolation, and of "drought, hot winds, clouds of grasshoppers, sandstorms, and rodents..., ...spring floods, searing waves of heat, blasts from hell..." (Bowden 1976, p. 135). J.R. Bartlett, a United States Commissioner, crossed the plains in 1851 and noted that they were an area "barren and uninteresting in the extreme," where "one became sickened and disgusted with the ever-occurring sameness of plain and hill, plant and living thing" (Tuan 1974, p.67). This connotation, along with the high percentage of privately-owned land within the plains region, has not allowed

visual quality to receive the formal attention in the Flint Hills that it has in more "scenic" and/or public areas of the country.

2) The location of the Flint Hills in the central plains makes them the crossroads of many transportation and energy networks. As our need for these vital systems continues to grow in the future, so also will their impact upon the landscape increase.

3) The open, vast character that defines so much of the Flint Hills scenic beauty is also a major factor in the degree of visibility of present and future landscape modification, and the ability of the landscape to absorb modification in a positive way. Dense forests and hilly terrain can help conceal powerlines, roads and buildings in other parts of the country, but even small-scale modifications, in many instances, can be seen for miles in a countryside landscape setting (U.S.D.A. Forest Service 1974).

4) The subtleness of the scenic beauty of the region leaves the interpretation of its visual quality more open to question than in other regions in the country where more dramatic, varied scenery is present. It is therefore important to ascertain the landscape viewer, and what factors add or detract from the perception of its visual quality.

CHAPTER III
METHODOLOGY AND PROCEDURES

RESEARCH INTENT

This study is designed to determine the scenic quality perceptions of selected groups of people relative to the Flint Hills countryside landscape. It uses an analytical survey approach, in which quantitative data is gathered and analyzed to test hypotheses using probability theory. Three hypotheses have been developed for testing in this study:

VIEWER-ORIENTED HYPOTHESES. The regional rural viewers will give the survey scenes the highest scenic quality ratings, followed by the urban regional viewers. The non-regional viewers will give the lowest overall scenic quality ratings. These correlations of scenic quality and landscape sensitivity for local observers have been shown in previous studies (Kaplan, R. 1979; Aoki 1983). Statistical differences between groups are an important consideration in the justification of countryside land uses. A lack of difference would suggest that viewer sensitivities transend regional boundaries, and that the esthetic effects of proposed land uses may impact a much wider range of people than planners might expect. A difference, however, suggests that ethnocentrism is an important concept to consider in landscape assessment.

The rural regional viewers will show the greatest sensitivity to the presence of cultural modifications. The urban regional viewers will be ranked second, followed by the non-regional viewers. Viewer sensitivity

will be defined as the average difference in scenic quality ratings between modified and unmodified scenes within a particular viewer group.

MODIFICATION-ORIENTED HYPOTHESIS. The farther away a modification occurs from the viewer, the less that modification (regardless of what type of modification) will influence viewer scenic quality ratings. Most visual management systems include this corollary in their analysis (USDA Forest Service 1974, USDI BLM 1976, Jones et al. 1975). This study will test the relationship using various modifications.

DEFINITIONS

SUBJECTS--MAIN CATEGORIES. Twelve groups of viewers totalling 202 people participated in the preference ratings. The groups were divided into three main categories--rural regional, urban regional and non-regional.

Rural Regional. The rural regional viewers are viewers that live and work in a rural context within the Flint Hills region of northcentral Kansas. Rural context is defined as living and/or working on a farm or in a town of not more than 2,000 people.

Urban Regional. Urban regional viewers live and work in a city of more than 35,000 people within the Flint Hills region (in this study, all urban regional participants were from Manhattan, Kansas).

Non-Regional. Non-regional viewers do not live and/or work within the Flint Hills, and would generally be exposed to the Flint Hills only as temporary visitors.

There were no set criteria for length of residency for any of the viewers within each of the categories. It was assumed that all viewers had

lived at their present location for a minimum of one year, and conversations with many of the viewers would tend to confirm this assumption.

SUBJECTS--SUBCATEGORIES. Within these three groupings, five specific group types were solicited--public school teachers, landscape architecture students, natural resource managers, church members and grange members. These group types represent a wide cross-section of the general public, but also allow focus on specific groups that have unique relationships to, or interests in, scenic quality. The groups, constituting the first of three independent variables included in the study, are summarized in Table 3.1.

TABLE 3.1 Summary of Viewer Groups

	Regional Groups	
Non-Regional	Urban	Rural
Church Members(27) Denver, CO	Church Members(37) Manhattan, KS	Church Members (25) Alta Vista, KS
Public School Teachers(10) Denver/Aurora, CO	Public School Teachers(10) Manhattan, KS	Public School Teachers(8) Dwight, KS
Landscape Arch. Students - Colorado State University(14)	Landscape Arch. Students - Kansas State University(34)	
Deertrail Grange(14) Deertrail, CO		Grove Harvest Grange(15) Silver Lake, KS
U.S. Forest Service Rio Grande Natl. Forest(9) Monte Vista, CO		Kansas State Forest Service(9) Manhattan, KS

Note. Number of viewers in each group is in ( ).

An attempt was made to coordinate group sizes so that total group numbers would be somewhat similar. No attempt was made to define any special group characteristics, other than what might be assumed in relation to their membership within the group. A wide range of ages (estimated at 18-80 years) was included; the male-female ratio was about even. Through informal question and answer periods after each preference testing session, it appeared that in most cases viewers did match the generalized characteristics of the groups they were members of.

CULTURAL MODIFICATIONS. Cultural modifications, the second set of independent variables, were selected subject to their ability to represent common features of the Flint Hills countryside landscape. Both agriculturally-oriented and technologically-oriented features were included. A cultural modification is defined as the presence of a dominant human-made change in (or addition to) landform or vegetation which creates a visual contrast to the natural character of the viewed scene (based on USDI BLM 1976). These modifications are summarized in Table 3.2.

VIEWING DISTANCE. Viewing distance, the third independent variable, is defined as the distance (in yards) between the viewer of a scene and the cultural modification viewed in the scene. Distance categories used in other visual management assessment (U.S.D.A. Forest Service 1974, U.S.D.I. BLM 1976) were not applicable to this research due to the smaller scale at which a majority of the cultural modifications appeared in the landscape scenes.

TABLE 3.2 SUMMARY - Scene Pairs Denoting Cultural Modifications

Pair#	Description	Scene Number: Modified	Scene Number: Non-modified	Distance Criteria: yds/viewer	Distance Criteria: Class[a]
		Paired Scenes			
1	Stone Church	23	1	100	M
2	Farmhouse	17	36	100	M
3	House	35	39	100	M
4	Red Barn	6	44	75	M
5	Stone Barn	25	47	75	M
6	Pole Barn	50	53	100	M
7	Cemetery #1	32	4	10	F
8	Cemetery #2	28	30	10	F
9	Windmill	11	16	75	M
10	Radio Tower	12	20	1500	B
11	Stone Fence	3	27	50	F
12	Stone Fence	31	46	10	F
13	Stone Fence	14	56	75	M
14	Oil Tanks	18	2	50	F
15	Oil Tanks	9	51	75	M
16	Oil Tanks	48	29	125	M
17	Powerline	5	40	150	M
18	Powerline	10	19	75	F
19	Powerline	33	52	1500	B
20	Powerline	42	49	150	M
21	Powerline	26	24	1500	B
22	Pond	55	43	100	M
23	Pond	37	22	10	F
24	Pond	7	45	50	M
25	Barbwire Fence	8	13	10	F
		Non-Paired Scenes[b]			
	Stone Shed	15			
	Hay Field	21			
	New Corn	38			
	Farmstead	41			
	Rock Barn	54			
	Junk Cars/Creek	34			

[a] Variables: F=Foreground; M=Middleground; B=Background.

[b] Non-paired scenes were used to increase the randomness of the scene sequence.

The three distance categories used in this study represent average distances at which all modifications were photographed. The distances are defined as follows:

foreground: 0-50 yards

middleground: 50-150 yards

background: over 150 yards

SCENIC QUALITY. There will be one dependent variable. It will be called scenic quality, and will be defined as the mean landscape preference rating of 202 viewers for each of fifty-six landscape views presented in the study. The views were rated on a 1-5 continuous scale (1 represents a low preference for the scene, 5 represents a high preference for the scene).

PROCEDURE

The procedure is based on a combination of landscape preference and scenic quality rating procedures in several other studies (Nassauer 1978, Zube et al. 1974, Daniel and Boster 1976). Several aspects of the study, however, including the side-by-side scene photography used to compare modifications, were developed by the author specifically for use in this research.

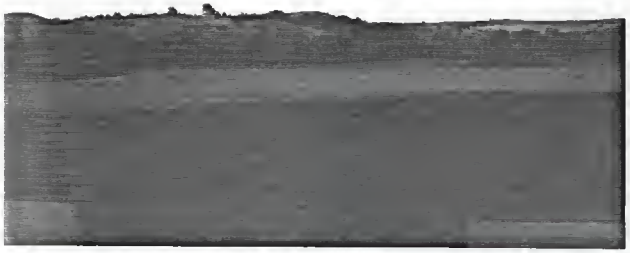
The study presentation was divided into two parts: 1) the landscape survey, in which viewers participated in rating the scenes, and 2) a post-survey presentation describing the mechanics and purpose of the study, the importance of participant input, and several implications of countryside scenery as a natural resource. This presentation framework not only provided participants food-for-thought in return for their time and effort, but

it also prompted some important study input outside of the structured slide preference testing. For example, several specific reasons for preference (trees, lack of trees, weeds along fence rows) were offered that would not have been apparent from the scaled preference responses.

MATERIALS. Color photography was used as a surrogate for the actual landscape viewing. It has been shown to be an acceptable method for representation of landscapes in preference studies (Shafer and Richards 1974, Zube et al. 1974, and R. Kaplan 1977 as cited by Miller 1984; Daniel and Boster 1976). Color transparencies were chosen over color prints to facilitate a presentation format easily viewed in a group context.

Approximately 200 35mm color slides were taken for the study. One hundred sixty were taken Memorial Day weekend, 1984, and forty slides were taken in mid-October, 1984. Since comparisons of modifications were made within slide pairs rather than between pairs, seasonal variation was not a factor that needed to be strictly controlled. A wide angle format was considered for use (as recommended by Nassauer 1983), but due to the possibility of distortion which might hinder a clear representation of modifications at all distances in the scenes, standard 50mm lens format was chosen. Panoramic photographs were also investigated as a more representational format for a landscape with a strong horizontal context (Nassauer 1983), but were rejected due to the difficulty of combining such a landscape representation in a slide presentation format.

Photographs were taken in pairs, with one photograph in each pair containing a modification (see Figure 3.1 for a representative scene pairing; all pairs are included in Appendix B).



Non-modified Scene

Modified Scene

Figure 3.1 Representative Paired Scene Photos (Pair #18)

The photos were taken side-by-side within as short a time frame as possible to control for any changes in atmospheric or lighting conditions. Modifications to be photographed were chosen according to three criteria:

1. their ability to represent one of the cultural modifications under study.

2. the ability to photograph a corresponding non-modified scene on either side of the modified scene with only a horizontal panning movement of the camera (the term "non-modified" in the context of this study refers to the absence of the modification photographed within an adjacent scene, and does not describe the relative condition of the entire landscape included within the photographic pairing).

3. the ability to photograph a corresponding non-modified scene on either side of the modified scene, so that the modified and non-modified scenes each contained a landscape similar enough in form, line, texture and color to be generalized as having the same underlying landscape scenic value.

In most slide pairs, a similar underlying scenic value was not a difficult factor to incorporate. The only difficulty occurred when large foreground "framing" elements were present in one photo and not the other. Zube and Law (1983), however, found that framing elements in photographs do not necessarily affect photo preference. In those pairs where foreground elements do vary, this study will make that assumption.

Once a modification was chosen to be photographed, it was photographed twice--slightly off-center for the first slide, and towards the edge of the photograph for the second slide. The photo that seemed least "composed", in the judgement of the author, was then used as the study slide. This step

was intended to lessen the probability of the viewer placing a lower or higher preference on a scene solely because of its photographic composition.

Certain modifications were photographed with the above procedure at several representative distances in order to facilitate a comparison of landscape preference between different viewing distances. Distances were estimated on-site or from USGS 7.5 minute quad maps, and are approximate. Due to certain method restrictions (all photographs were taken from public right-of-way), distances representing foreground, middleground and background views were taken of separate examples of the same modification, rather than having one modification photographed at several different distances.

The slide pool was narrowed to a representative sample of twenty-five pairs plus six photos of various scenes that were added to increase the randomness of the presentation sequence. Slides were randomized according to an assigned random number sequence, and loaded into a slide tray. Their order was reversed in alternate showings to decrease the influence of surrounding scenes on the preference rating of any particular scene.

PREFERENCE PRESENTATIONS

Each group of raters was read a standardized set of instructions (see Appendix C). No mention was made as to the location of landscape scenes, other than that they represented a countryside landscape.

Ten preview slides were used to acquaint the groups with the rating process. Each group mentally rated the first five scenes, which represented the range of scenes they were about to see. They each then practiced rating

the second five preview slides in order to become familiar with the time frame interval sequence.

The study slides were shown at eight second intervals. Participants marked a five point scale according to their preference for each scene, and were allowed to place their mark anywhere on the scale (see Appendix C).

The rating sheet contained fifty-nine response scales, of which fifty-six were used for the preference study. This mismatch was intended to lessen any rating "end-effect" caused by tired viewers (Miller 1984). The last three scales were used by viewers to react (strongly disagree, disagree, no opinion, agree strongly agree) to three statements shown as part of the slide survey. The three statements were as follows:

#1. I think scenic quality in the countryside landscape is an important contributing factor to the American quality of life.

#2. I think that when changes in countryside land use are proposed, the scenic quality of the countryside should be considered an important issue.

#3. I think scenic quality in the countryside landscape is as important as scenic quality in all other landscapes.

A pre-test of this particular procedure was performed prior to final slide selection. Thirteen viewers participated, representing a mixture of landscape architecture students and faculty, and geography students and faculty. Suggestions from those present were used to simplify the rating process, and to help make it more conducive to the validity of the testing.

STATISTICAL ANALYSES. Several statistical analyses were used to analyze the data. One-way analysis of variance (ANOVA) was used to analyze the significance of differences in the following ratings:

1) The ratings of the three major groups as they relate to overall landscape preference. The independent variable is viewer category, and the dependent variable is the mean rating of all non-modified landscape scenes for each subject group.

2) The ratings of the three major groups as they relate to an overall sensitivity towards the presence of landscape modifications. The independent variable is again viewer category, and the dependent variable is the average difference of ratings between paired modified and non-modified scenes for each subject group.

3) The ratings of the five subgroups as they relate to overall landscape preference of non-modified scenes. The independent variable is viewer category, and the dependent variable is the average preference rating for each scene for each subgroup.

A factorial (two-way) ANOVA was used to determine differences in preferences as a result of modification differences. Independent variables are 1) modification distances from viewer and 2) viewer category. The dependent variable is the mean preference ratings for each scene by each of the three subject groups.

All significant F-ratios were tested using the Tukey HSD test to evaluate the significance of group relationships. The Tukey test was chosen because of its power in limiting Type I statistical errors.

VALIDITY. The following steps were applied in the design of the research in order to limit threats to validity:

1) All independent variables have been specifically defined to enable future replication of the experiment in an equal context.

2) Raters were presented a complete standardized set of instructions prior to beginning the preference testing. This was an important consideration in light of the wide variety of participants, many of which were not familiar with this type of testing procedure.

3) All viewers were asked to rate ten practice scenes in order to become familiar with the procedure, and to develop a sense of value for the five-point scale used to rate all scenes.

4) Viewers were seated within a range of fifteen to twenty-five feet from the screen whenever possible. This was intended to maximize recognition of all modifications within scenes, especially those at background distances. Room darkness was also kept as even as possible throughout all showings. Rooms were darkened to assure the visibility of all slide details, but not so as to interfere with the viewer's ability to read the preference rating sheet.

5) Slide order was reversed for alternate preference tests to lessen any effect of positive or negative context for each slide caused by neighboring slides.

CHAPTER IV
RESULTS

The results of the study have been organized into three sections. The first section contains an overview of the descriptive results, including means and standard deviations of preference for 1) all viewed scenes, 2) responses to the three statements concerning countryside landscape (see Chapter 3 for a review of these statements), and 3) differences within scene pairings. The second section contains the results of inferential analyses related to the three hypotheses as defined in Chapter Three. Inferential analyses related to but not directly defined by statistical hypotheses are presented in the final section.

OVERVIEW OF DESCRIPTIVE RESULTS

LANDSCAPE PREFERENCE SCORES. Preference scores were based on a continuous numerical scale of 1 to 5. Low preference was equated to 1, while high preference was equated to 5. The scores were converted to a relative 9-point scale to facilitate computer evaluation. Mean preference ratings for the 202 study participants ranged from a high of 7.35 to a low of 3.34 on the 9-point scale. Standard deviation means ranged from a high of 2.88 to a low of 1.52. Within the regional groups, the rural regional viewers had the highest countryside landscape preference mean (5.32), followed by the urban regional viewers (5.24) and the non-regional viewers (5.06). At the same time, the rural regional viewers experienced the lowest consensus among viewer preference ratings, indicating a mean standard devia-

tion of 1.97. The urban regional group (1.77) again followed the rural regional group, and the non-regional viewers (1.72) exhibited the strongest viewer agreement (Table 4.1, p. 50).

Among the viewer subgroups, the three "public" groups had the highest mean preference ratings. The teachers had an average rating of 5.44, the church members averaged 5.30, and the Grange members had a mean preference rating of 5.09. The "specialized" observers (to the extent that the landscape architecture students and resource managers possess skills in design and/or resource analysis beyond the scope of the general public) appeared to be the most critical of the five groups (the student mean rating was 5.06, and the resource managers averaged 4.77). The public viewers experienced a relatively wide range of preference ratings -- mean standard deviations ranged from 2.03 for the grange to 1.67 for the teachers. The mean standard deviations for the students (1.54) and resource managers (1.37) showed relatively high levels of agreement within their respective groups (Table 4.2, p. 51).

TABLE 4.1 MEANS - Averaged Preference Ratings for All Scenes Regional Groups

Viewer Group	Mean	Preference Ratings Low 1---2---3---4---5---6---7---8---9 Medium High	SD	Standard Deviation Low 0.5--1.0--1.5--2.0--2.5--3.0 Medium High
Rural Regional	5.32	++++++++++++++++++	1.97	++++++++++++++++
Urban Regional	5.24	++++++++++++++++++	1.77	++++++++++++++
Non-Regional	5.06	++++++++++++++++++	1.72	++++++++++++++

TABLE 4.2 MEANS - Averaged Preference Ratings for All Scenes
Viewer Subgroups

Viewer Group	Mean	Preference Ratings Low Medium High 1---2---3---4---5---6---7---8---9	SD	Standard Deviation Low Medium High 0.5--1.0--1.5--2.0--2.5--3.0
Church Members	5.30	++++++++++++++++++	1.91	++++++++++++++++
Teachers	5.44	+++++++++++++++++++	1.67	+++++++++++++++
Grange Members	5.09	++++++++++++++++++	2.03	+++++++++++++++++
Students	5.06	++++++++++++++++++	1.54	++++++++++++
Resource Mgrs.	4.77	+++++++++++++++++	1.37	++++++++++++

Means and standard deviations for the landscape preference scores of each of the fifty-six scenes are found in Appendix D, pp. 133-146. The ratings for all viewers are presented in Table D.1; a summarization of the study scores for the three regional groups is found in Table D.2; and the preference scores for the five viewer subgroups are summarized in Table D.3.

STATEMENT RESPONSES. Means and standard deviations for the group responses to the three statements included in the preference study are summarized in Table 4.3, p. 52 (all viewers). The results appear to suggest a trend among all viewers which denotes agreement with the three statements presented in the preference testing. Mean responses varied from 7.73 for Statement #1 to 7.67 for Statement #2 to 7.48 for Statement #3. "Agreement" was defined on the response scale for values of from 6.0 to 8.0 on the 9-point rating scale; a response of 8.0 or above was considered "strong agreement."

TABLE 4.3 MEANS - Responses/Countryside Scenic Quality Statements
All Viewers

Description	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Statement #1	7.73	++++++++++++++++++++++++++++	1.35	++++++++++++
Statement #2	7.67	++++++++++++++++++++++++++	1.57	++++++++++++++
Statement #3	7.48	++++++++++++++++++++++++	1.67	++++++++++++++++

Note: Statements are defined as follows:

No. 1: I think scenic quality in the countryside landscape is an important contributing contributing factor to American quality-of-life.

No. 2: I think scenic quality in the countryside landscape should receive appropriate attention when land-use planning issues are involved.

No. 3: I think scenic quality in the countryside is as important as scenic quality in all other landscapes.

Regional Groups. All regional groups exhibited "agreement" to "strong agreement" for all three scenic quality statements (Table 4.4, p.53). The rural regional group indicated the highest overall average response, and experienced the lowest overall standard deviation. The average mean standard deviation for each statement was inversely related to the average response mean. The statement most strongly agreed upon (#1) also experienced the lowest mean standard deviation, while the least agreed upon statement (#3) experienced the highest mean standard deviation.

Subgroups. The teachers, students and resource managers all indicated strong agreement towards one or more of the three statements; no group had a mean response less than 7.16. Mean standard deviations varied widely, with the lowest standard deviation means being indicated by the groups with the highest response means (Table 4.5, p. 53). This was particularly true of the student group for Questions #1 and #2.

TABLE 4.4 MEANS - Responses/Countryside Scenic Quality Statements
Regional Viewers

Description	Groups*	Mean	Preference Ratino Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Statement #1	Urban R	7.8	+++++++++++++++++++++++++++	1.43	+++++++++++
	Rural R	7.9	+++++++++++++++++++++++++++	1.21	+++++++++
	Non-R	7.62	++++++++++++++++++++++++++	1.37	+++++++++++
Statement #2	Urban R	7.52	++++++++++++++++++++++++	1.71	++++++++++++++
	Rural R	7.78	+++++++++++++++++++++++++++	1.65	++++++++++++
	Non-R	7.74	+++++++++++++++++++++++++++	1.37	+++++++++++
Statement #3	Urban R	7.12	++++++++++++++++++++++	1.72	++++++++++++++
	Rural R	8.03	++++++++++++++++++++++++++++	1.3	++++++++++
	Non-R	7.43	+++++++++++++++++++++++++	1.77	++++++++++++++

Note. Statements are defined as follows:

No. 1: I think scenic quality in the countryside landscape is an important contributing contributino factor to American quality-of-life.
No. 2: I think scenic quality in the countryside landscape should receive appropriate attention when land-use planning issues are involved.
No. 3: I think that scenic quality in the countryside landscape is as important as scenic qulaity in all other landscapes.

* Urban R = Urban residents within the region
Rural R = Rural residents within the region
Non-R = Non-residents (those living outside the region)

TABLE 4.5 MEANS - Responses/Countryside Scenic Quality Statements
Viewer Subgroups

Description	Group*	Mean	Strongly Disagree 1---2---3---4---5---6---7---8---9 Neutral Opinion Agree	SD	Standard Deviation Low Medium High 0.5--1.0--1.5--2.0--2.5--3.0
Statement #1	CH	7.36	++++++++++++++++++++++++++	1.44	++++++++++++
	TE	8.14	+++++++++++++++++++++++++++++	0.93	++++++++
	GR	7.20	++++++++++++++++++++++++	1.38	++++++++++++
	ST	8.30	++++++++++++++++++++++++++++++	0.91	++++++++
	RM	8.26	++++++++++++++++++++++++++++	1.44	++++++++++++
Statement #2	CH	7.28	++++++++++++++++++++++++	1.70	+++++++++++++++
	TE	7.92	+++++++++++++++++++++++++++	1.63	+++++++++++++++
	GR	7.16	++++++++++++++++++++++++	1.60	+++++++++++++++
	ST	8.41	+++++++++++++++++++++++++++++++	1.00	+++++++++
	RM	8.05	++++++++++++++++++++++++++++	1.17	++++++++++
Statement #3	CH	7.39	+++++++++++++++++++++++++	1.57	++++++++++++++
	TE	8.35	++++++++++++++++++++++++++++++	0.95	++++++++
	GR	7.25	++++++++++++++++++++++++	2.13	++++++++++++++++++++
	ST	7.27	++++++++++++++++++++++++	1.77	+++++++++++++++++
	RM	7.36	++++++++++++++++++++++++	1.77	+++++++++++++++++

Note. Statements are defined as follows:

No. 1: I think scenic quality in the countryside landscape is an important contributing contributino factor to American quality-of-life.

No. 2: I think scenic quality in the countryside landscape should receive appropriate attention when land-use planning issues are involved.

No. 3: I think scenic quality in the countryside is as important as scenic quality in all other landscapes.

* CH = Church members
TE = Teachers
GR = Grange members
ST = L.A. students
RM = Resource managers

RATING DIFFERENCES IN SCENE PAIRS. The rating differences found within scene pairs are summarized in Table 4.6, p. 55 (all groups), Table 4.7, p. 56 (regional groups) and Table 4.8, p. 59 (viewer subgroups).

The mean preference difference (within all twenty-five scene pairs) for all viewers ranged from 2.28 to -1.50. Rural regional viewers exhibited an overall positive response towards modifications, and experienced a very high within-group standard deviation in their responses. Differences in urban regional viewer preferences averaged between 2.36 and -1.94, while non-regional viewers showed less difference within the modification-influenced preference responses (1.96 to -1.4).

The viewer subgroup results indicated two trends. The public groups (teachers, Grange and church members) shared an overall neutral to slightly positive response to modification (indicated by a range of 2.68 to -1.60) with a very high within-group standard deviation (many over 2.5). The resource managers and students rated overall modification influences as relatively negative (the scene pair differences ranged from 1.8 to -2.2), and exhibited very strong within-group agreement on ratings (the highest mean standard deviation was 2.17).

Differences in preference between scene pairs were also calculated for each pair individually, and as an average for all positively-valued modifications and negatively-valued modifications. A modification was classified as positive or negative dependent upon the net value of the scene pair preference ratings as given by all viewers. Trends similar to the ones discussed above were evident for these calculations as well.

TABLE 4.6 MEANS - Rating Differences/SD Within Scene Pairs
All Viewers

Pair#	Description	Mean	Standard Deviation
1	Stone Church	0.68	1.90
2	Farmhouse	0.26	1.99
3	House	0.06	1.72
4	Red Barn	1.09	2.25
5	Stone Barn	0.65	1.96
6	Pole Barn	-0.13	1.70
7	Cemetery #1	0.16	2.45
8	Cemetery #2	0.25	2.41
9	Windmill	1.25	2.10
10	Radio Tower	-0.12	1.70
11	Stone Fence	1.21	2.25
12	Stone Fence	1.53	2.38
13	Stone Fence	-0.14	2.15
14	Oil Tanks	-0.98	2.40
15	Oil Tanks	-0.14	2.11
16	Oil Tanks	0.01	1.83
17	Powerline	-0.20	2.17
18	Powerline	-1.21	2.51
19	Powerline	-0.37	2.05
20	Powerline	-1.50	2.31
21	Powerline	-0.09	1.77
22	Pond	0.78	2.17
23	Pond	2.27	2.11
24	Pond	0.65	1.83
25	Barbwire Fence	-1.16	2.11

TABLE 4.7 MEANS - Rating Differences/SD Within Scene Pairs
Regional Viewers

Pair #	Description	Group	Mean	Standard Deviation
1	Stone Church	N	0.75	1.76
		U	0.24	1.89
		R	1.18	1.99
2	Farmhouse	N	0.55	2.13
		U	-0.10	1.86
		R	0.38	1.92
3	House	N	0.05	1.71
		U	0.05	1.66
		R	0.09	1.84
4	Red Barn	N	0.65	1.87
		U	0.79	2.28
		R	2.05	2.42
5	Stone Barn	N	0.56	1.97
		U	0.68	2.07
		R	0.74	1.83
6	Pole Barn	N	0.13	1.26
		U	-0.47	1.60
		R	-0.03	2.23
7	Cemetery #1	N	-0.22	2.03
		U	0.17	2.54
		R	0.69	2.79
8	Cemetery #2	N	-0.32	2.14
		U	0.42	2.27
		R	0.80	2.79
9	Windmill	N	0.82	2.14
		U	1.19	2.07
		R	1.92	1.96
10	Radio Tower	N	-0.13	1.45
		U	-0.28	1.87
		R	0.09	1.77
11	Stone Fence	N	1.35	2.37
		U	0.84	2.35
		R	1.52	1.90
12	Stone Fence	N	0.64	1.69
		U	1.61	2.23
		R	2.61	2.89

TABLE 4.7 Continued.

Pair #	Description	Group	Mean	Standard Deviation
13	Stone Fence	N	-0.56	1.91
		U	0.00	1.95
		R	0.20	2.60
14	Oil Tanks	N	-0.97	2.45
		U	-1.41	2.33
		R	-0.43	2.34
15	Oil Tanks	N	0.18	1.96
		U	-0.38	2.06
		R	-0.29	2.35
16	Oil Tanks	N	0.08	1.62
		U	-0.02	1.86
		R	-0.01	2.05
17	Powerline	N	-0.06	2.04
		U	-0.23	2.30
		R	-0.36	2.18
18	Powerline	N	-0.56	2.12
		U	-1.94	2.46
		R	-1.12	2.83
19	Powerline	N	-0.54	1.82
		U	-0.58	1.82
		R	0.12	2.54
20	Powerline	N	-1.47	1.91
		U	-1.78	2.47
		R	-1.16	2.58
21	Powerline	N	-0.40	1.24
		U	-0.27	1.79
		R	0.56	2.15
22	Pond	N	0.75	1.71
		U	1.16	2.33
		R	0.32	2.42
23	Pond	N	1.95	1.90
		U	2.35	1.85
		R	2.60	2.63
24	Pond	N	0.74	1.67
		U	0.61	1.83
		R	0.60	2.05

TABLE 4.7 Continued.

Pair #	Description	Group	Mean	Standard Deviation
25	Barbwire Fence	N	-0.66	1.81
		U	-1.71	2.27
		R	-1.09	2.13

Note: Variables: N=Non-Regional; U=Urban Regional; Rural Regional

TABLE 4.8 MEANS - Rating Differences Within Scene Pairs
Viewer Subgroups

Pair #	Description		Mean	Standard Deviation
1	Stone Church	CH	0.52	2.16
		TE	0.57	1.79
		GR	0.91	2.06
		ST	0.62	1.44
		RM	1.47	1.34
2	Farmhouse	CH	0.67	2.00
		TE	0.92	2.10
		GR	0.45	2.28
		ST	-0.83	1.34
		RM	-0.31	1.60
3	House	CH	0.44	1.66
		TE	-0.46	1.59
		GR	0.58	2.28
		ST	-0.60	1.41
		RM	-0.05	1.43
4	Red Barn	CH	1.55	2.25
		TE	1.01	2.06
		GR	1.16	2.47
		ST	-0.13	2.01
		RM	1.66	1.90
5	Stone Barn	CH	0.37	2.19
		TE	0.75	1.55
		GR	0.12	1.59
		ST	1.27	2.01
		RM	1.10	1.24
6	Pole Barn	CH	-0.22	1.84
		TE	-0.10	1.70
		GR	0.60	2.01
		ST	-0.26	1.41
		RM	-0.31	1.05
7	Cemetery #1	CH	0.54	2.86
		TE	-0.82	2.32
		GR	0.66	1.99
		ST	-0.02	1.85
		RM	-0.31	1.91
8	Cemetery #2	CH	0.93	2.42
		TE	-0.96	2.20
		GR	-0.04	3.14
		ST	0.06	1.75
		RM	-0.31	2.13

TABLE 4.8 Continued.

Pair #	Description		Mean	Standard Deviation
9	Windmill	CH	1.57	2.30
		TE	1.39	1.87
		GR	1.08	2.01
		ST	0.45	1.71
		RM	1.57	2.06
10	Radio Tower	CH	-0.25	1.88
		TE	-0.25	1.22
		GR	0.37	1.88
		ST	-0.18	1.57
		RM	0.15	1.38
11	Stone Fence	CH	1.45	2.75
		TE	1.82	1.86
		GR	1.12	1.91
		ST	0.61	1.56
		RM	0.68	1.56
12	Stone Fence	CH	1.95	2.71
		TE	1.82	2.19
		GR	1.25	2.30
		ST	0.90	2.02
		RM	0.94	1.43
13	Stone Fence	CH	-0.11	2.44
		TE	0.07	2.23
		GR	-0.25	2.25
		ST	-0.27	1.68
		RM	-0.21	1.43
14	Oil Tanks	CH	-0.18	2.62
		TE	-2.10	1.59
		GR	-0.58	2.65
		ST	-1.83	1.77
		RM	-1.68	1.79
15	Oil Tanks	CH	-0.01	2.46
		TE	0.03	1.50
		GR	-0.04	2.07
		ST	-0.60	1.86
		RM	-0.15	1.70
16	Oil Tanks	CH	0.44	2.05
		TE	-0.17	1.46
		GR	0.25	1.64
		ST	-0.78	1.50
		RM	-0.21	1.54

TABLE 4.8 Continued.

Pair #	Description		Mean	Standard Deviation
17	Powerline	CH	0.43	2.20
		TE	-0.67	2.01
		GR	-0.16	2.09
		ST	-0.95	2.17
		RM	-0.88	1.49
18	Powerline	CH	-1.00	2.80
		TE	-1.17	2.21
		GR	-0.45	2.66
		ST	-2.00	1.96
		RM	-1.47	2.11
19	Powerline	CH	-0.04	2.27
		TE	-0.39	2.00
		GR	0.04	1.85
		ST	-1.04	1.57
		RM	-0.89	1.96
20	Powerline	CH	-1.45	2.47
		TE	-1.67	2.01
		GR	-0.34	2.97
		ST	-1.79	1.85
		RM	-2.21	1.61
21	Powerline	CH	0.17	1.95
		TE	-0.57	1.06
		GR	0.37	2.33
		ST	-0.41	1.46
		RM	-0.47	1.21
22	Pond	CH	1.14	2.40
		TE	1.00	1.39
		GR	0.00	2.43
		ST	0.20	2.13
		RM	1.10	1.14
23	Pond	CH	2.68	2.10
		TE	2.42	2.00
		GR	2.41	3.00
		ST	1.88	1.41
		RM	0.89	1.72
24	Pond	CH	0.55	2.09
		TE	1.17	1.63
		GR	0.62	1.52
		ST	0.62	1.73
		RM	0.47	1.34

TABLE 4.8 Continued.

Pair #	Description		Mean	Standard Deviation
25	Barbwire Fence	CH	-0.94	2.11
		TE	-1.35	1.49
		GR	-0.87	3.31
		ST	-1.64	1.67
		RM	-1.21	1.87

Note: Variables: CH=Church Members; TE=Teachers; GR=Grange Members; ST=Student RM=Resource Managers

INFERENTIAL ANALYSES RELATED TO HYPOTHESES-TESTING

One-way analysis of variance (ANOVA) was used to determine significant differences between various group results (see Chapter Three for a summarization of testing methodology).

OVERALL LANDSCAPE PREFERENCE. There was no significant difference in the countryside landscape preferences of the three regional viewer groups when preference was calculated as an average rating for all scenes (Table 4.9, p. 63). There was also no significant difference when groups were compared over averaged ratings for all non-modified scenes (Table 4.10, p. 63).

TABLE 4.9 ANOVA - Averaged Scene Ratings
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.32
Between-groups	2.24	2	1.12	1.82	b-URBAN	73	5.24
Within-groups	122.89	199	0.61		c-NON	74	5.06
Total	125.13	201					
					Sig.@ none		

TABLE 4.10 ANOVA - Averaged Non-Modified Scene Ratings
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.08
Between-groups	1.47	2	0.73	1.02	b-URBAN	73	5.19
Within-groups	144.12	199	0.72		c-NON	74	4.99
Total	145.59	201					
					Sig.@ none		

The rural regional viewers, however, did express a significantly greater landscape preference than the non-regional participants when averaged ratings for all modified scenes were compared (Table 4.11). This last comparison is the only one of the three which shows a significant difference, it is important for two reasons. It shows a significant difference which supports a major hypothesis of the study, and significant differences occuring within modified scenes suggests that modifications are an important countryside preference influence.

TABLE 4.11 ANOVA - Averaged Modified Scene Ratings
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.51
Between-groups	5.25	2	2.62	3.50*	b-URBAN	73	5.25
Within-groups	149.47	199	0.75		c-NON	74	5.10
Total	154.72	201					
					Sig.@ a-c		

* p <.05

In support of this last comparison, there are trends in the other measurement criteria which, although not statistically significant, also point to the hypothesized ranking of preference ratings. In the non-modified scene ratings, both the rural and urban regional groups had higher mean preference ratings than the non-regional groups (5.10 and 5.20, as compared to 5.00). Average preference ratings for each of the groups also showed a trend in agreement with the hypothesis (the rural regional viewers were the high group at 5.32, followed by the urban regional viewers at 5.24 and the non-regional viewers at 5.06.

Another finding supportive of this trend was that within the comparison of all individual scene differences, more significant differences occurred within the non-regional--rural regional relationship (six modified scenes and four non-modified scenes) than the non-regional--urban regional relationship (four modified scenes and three non-modified scenes) or rural regional--urban regional relatinship (four modified scenes and two non-modified scenes).

An analysis of variance (ANOVA) was calculated for the three groups for each scene individually (see Appendix E, pp. 147-168); Tables E.1 - E.56). Significant differences occurred in ten modified scenes (6,7,11,18,25,28,31, 32,33,42) and six non-modified scenes (13,16,19,21,22,27), and are summarized in Table 4.12.

TABLE 4.12 SUMMARY - Scenes w/Sig. Rating Differences Between Groups Regional Groups

	Scene Number	
Group Interaction	Modified	Non-modified
Non-regional/Urban regional	7	16
	31	13
	32	27
	11	
Non-regional/Rural regional	25	13
	28	19
	31	21
	32	22
	33	
	11	
Rural regional/Urban regional	33	21
	6	22
	18	
	42	

SENSITIVITY TO CULTURAL MODIFICATION. The difference in preference within each of the twenty-five slide pairs was evaluated over the three regional groups in three ways. The first looked at net differences within each of the twenty-five slide pairs. All slide pair differences were averaged in the second comparison. The third evaluation divided all pairs into one of two types--those that witnessed a positive change in landscape preference with the added modification, and those that experienced a negative change in landscape preference with the addition of the modification. The average differences occurring within all slide pairs as rated by all study viewers were used to designate positive and negative net change (Figure 4.1, p. 67).

Significant relationships occurred between the rural-urban comparison and the rural--non-regional comparison when differences were averaged (Table 4.13, p. 69). The rural regional viewers perceived a significantly smaller relative difference within pairs than the urban regional viewers when all pairs having a negative net change were compared (Table 4.14, p. 69).

Rural regional viewers perceived a significantly higher change than urban regional and non-regional viewers when pairs denoting a positive net change were addressed (Table 4.15, p. 69). When individual slide pairings were analyzed (refer to Figure 4.2, p. 68 and Appendix E, pp. 162-168; Tables D.57 to D.82), nine pairings showed a significant difference between the two slides. A summary of these pairings is found in Table 4.16, p. 70.

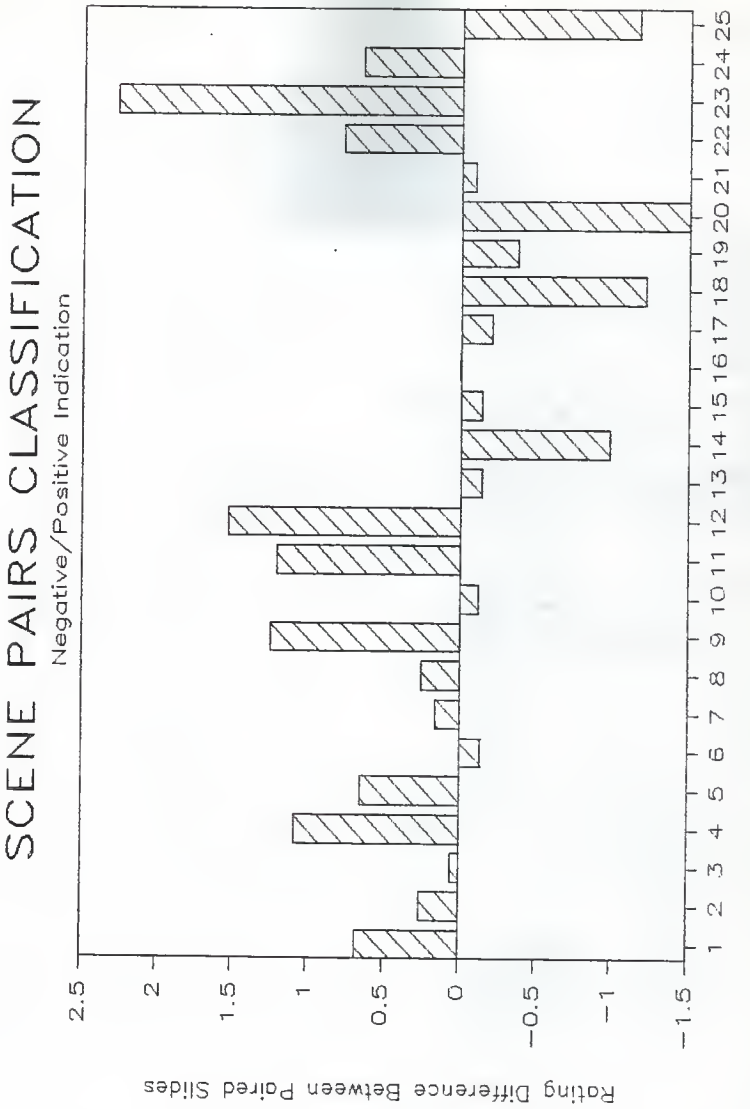


Figure 4.1 Scene Pairs Classification by All Groups

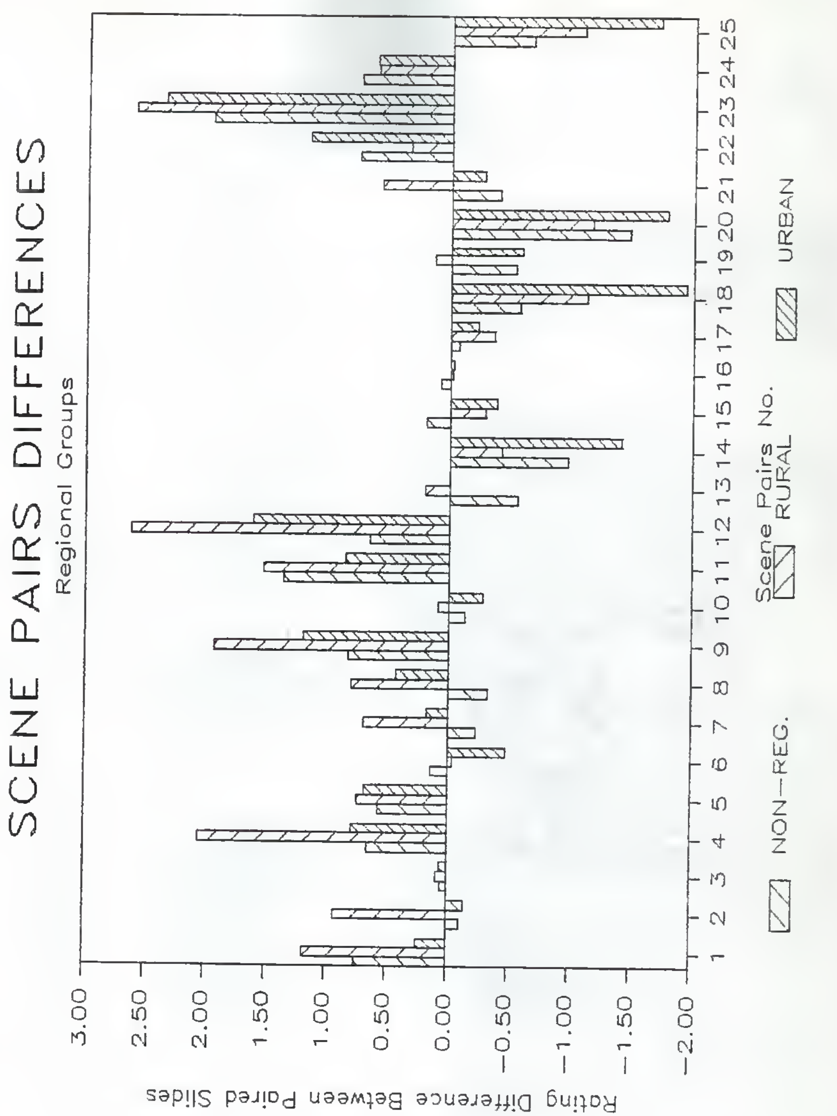


Figure 4.2 Scene Pairs Differences: Regional Groups

TABLE 4.13 ANOVA - Averaged Rating Change Within Scene Pairs (All Scenes) Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.48
Between-groups	6.53	2	3.26	6.97*	b-URBAN	73	0.13
Within-groups	93.30	199	0.46		c-NON	74	0.03
Total	99.83	201					
					Sig.@ a-b, a-c		

* p <.05

TABLE 4.14 ANOVA - Averaged Rating Change Within Scene Pairs (Neg Scenes) Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-0.31
Between-groups	9.00	2	4.50	5.01*	b-URBAN	73	-0.82
Within-groups	178.87	199	0.89		c-NON	74	-0.45
Total	187.88	201					
					Sig.@ a-b		

* p <.05

TABLE 4.15 ANOVA - Averaged Rating Change Within Scene Pairs (Pos Scenes) Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	1.10
Between-groups	8.65	2	4.32	6.62*	b-URBAN	73	0.71
Within-groups	130.10	199	0.65		c-NON	74	0.59
Total	138.75	201					
					Sig.@ a-b, a-c		

* p <.05

TABLE 4.16 SUMMARY - Scene Pairs w/Sig. Rating Differences Between Regional Groups

Group Interaction	Scene Pairings	
	Number	Description
Non-regional/Urban regional	12	Stone Fence (F)[a]
	18	Powerline (F)
	25	Barbwire Fence (F)
Non-regional/Rural regional	2	Farmhouse (M)
	8	Cemetery #2 (F)
	12	Stone Fence (F)
	21	Powerline (B)
	4	Red Barn (M)
	9	Windmill (M)
Rural regional/Urban regional	1	Stone Church (M)
	2	Farmhouse (M)
	12	Stone Fence (F)
	21	Powerline (B)
	4	Red Barn (M)

[a] (F)=Foreground, (M)=Middleground, (B)=Background

DISTANCE. Throughout all of the analyses comparing preference ratings with distances from observer to modification, no significant differences were found (Tables 4.17 - 4.20, p. 71). Rating means for each of the regional groups did not appear to have any correlation with any other group. As an example, scenes where modifications occurred as a background element rated high for urban regional participants, average for rural regional viewers, and lowest for non-regional viewers.

Although findings were statistically inconclusive, trends supportive of the hypothesis became apparent when differences within scene pairs were analyzed and graphed (Figure 4.3, p. 72). Each of the four modifications showed a strong pattern suggesting that the closer the modification was to the viewer, the higher the net effect on the viewers' preference.

TABLE 4.17 ANOVA - Average Rating Relative to Modification Distance All Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-FORE	4	5.09
Between-groups	0.10	2	0.05	0.04	b-MID	5	4.88
Within-groups	14.62	11	1.32		c-BACK	5	4.96
Total	14.72	13					
					Sig.@ none		

TABLE 4.18 ANOVA - Average Rating Relative to Modification Distance Rural Regional Viewers

Source of Variation	SS	df	MS	F		N	Mean
					a-FORE	4	5.48
Between-groups	0.54	2	0.27	0.25	b-MID	5	4.98
Within-groups	11.89	11	1.08		c-BACK	5	5.18
Total	12.44	13					
					Sig.@ none		

TABLE 4.19 ANOVA - Average Rating Relative to Modification Distance Urban Regional Viewers

Source of Variation	SS	df	MS	F		N	Mean
					a-FORE	4	4.92
Between-groups	0.13	2	0.06	0.05	b-MID	5	4.94
Within-groups	14.18	11	1.28		c-BACK	5	4.73
Total	14.31	13					
					Sig.@ none		

TABLE 4.20 ANOVA - Average Rating Relative to Modification Distance Non-Regional Viewers

Source of Variation	SS	df	MS	F		N	Mean
					a-FORE	4	4.98
Between-groups	0.22	2	0.11	0.06	b-MID	5	4.75
Within-groups	22.47	11	2.04		c-BACK	5	5.04
Total	22.70	13					
					Sig.@ none		

Figure 4.3 Scene Pair Ratings: Distance * Modification

INFERENTIAL ANALYSES OF NON-HYPOTHESIZED RELATIONSHIPS

Data not subject to formal statistical hypotheses in this study includes preference ratings and distance relationships for the viewer subgroups, statement responses for all groups, and the sequencing of the scenes in the viewer presentations.

VIEWER SUBGROUPS. Several important relationships became evident as the preference ratings and responses were analyzed.

Landscape Preference. The teachers had a significantly greater preference rating than the resource managers when averaged scene ratings were compared (Table 4.21). There was no difference obtained when averaged non-modified scenes were compared (Table 4.22, p. 74). When averaged modified scenes were compared, however, the resource managers had a significantly lower preference mean than the teachers or church members (Table 4.23, p. 74).

TABLE 4.21 ANOVA - Averaged Scene Ratings
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.30
Between-groups	6.99	4	1.74	2.92*	b-TEACHERS	28	5.40
Within-groups	118.14	197	0.59		c-GRANGE	24	5.06
Total	125.13	201			d-STUDENTS	43	5.05
					e-RES_MGRS	19	4.76
					Sig.@ b-e		

* p <.05

TABLE 4.22 ANOVA - Averaged Non-Modified Scene Ratings
Viewer Subgroups

Source of Variation	SS	df	MS	F
Between-groups	4.89	4	1.22	1.71
Within-groups	140.69	197	0.71	
Total	145.59	201		

	N	Mean
a-CHURCH	88	5.07
b-TEACHERS	28	5.37
c-GRANGE	24	4.90
d-STUDENTS	43	5.17
e-RES_MGRS	19	4.80

Sig.@ none

TABLE 4.23 ANOVA - Averaged Modified Scene Ratings
Viewer Subgroups

Source of Variation	SS	df	MS	F
Between-groups	16.18	4	4.04	5.75*
Within-groups	138.54	197	0.70	
Total	154.72	201		

	N	Mean
a-CHURCH	88	5.50
b-TEACHERS	28	5.43
c-GRANGE	24	5.21
d-STUDENTS	43	4.93
e-RES_MGRS	19	4.72

Sig.@ a-e, b-e

* $p < .05$

Twenty eight scenes experienced a significant difference between groups when all scenes were analyzed (refer to Appendix F, pp. 170-188; Tables F.1-F.56). The differences are summarized in Table 4.24.

TABLE 4.24 SUMMARY - Scenes w/Sig. Rating Differences Between Groups Viewer Subgroups

Group Interaction	Modified Scene	Non-modified Scene
Church/Student[a]	9	22
	10	--
	17	--
	19	--
	18	--
	21	--
	33	--
Church/Grange[b]	3	--
Church/Resource Manager[a]	18	22
	28	--
Church/Teacher[b]	--	--
Student/Grange[a]	10	27
	17	38
	18	--
	33	--
	37	--
	42	--
Student/Resource Manager[c]	37	16
	--	39
	--	44
Student/Teacher[a]	10	38
	17	47
	3	--
Grange/Resource Manager[a]	18	22
	33	27
	42	38
	14	56
Grange/Teacher[b]	55	1
Resource Manager/Teacher[a]	55	2
	--	4
	--	38
	--	43
	--	44

[a] Interactions between "public" viewers and "trained" viewers

[b] Interactions between "public" viewers

[c] Interactions between "trained" viewers

Landscape Sensitivity. The students showed significantly lower preference means than did the church members or Grange members when average differences within all scene pairs were analyzed (Table 4.25). Differences within scene pairs were also analyzed as averaged negative pairs and averaged positive pairs (Tables 4.26, and 4.27, p. 77). For the negative pairs, the Grange group preferences were significantly higher than the resource manager or students, and the church group was significantly higher than the students. In the comparison of pairs where modification increased the rating, the church mean preference was significantly higher than the mean preference for the students. When individual differences within pairings were analyzed (see Figure 4.4, p. 78 and Appendix F, pp. 189-197; Tables F.57 - F.82). Seven pairings were found to have significant differences (as summarized in Table 4.28, p. 79).

TABLE 4.25 ANOVA - Averaged Difference Within Scene Pairs (All Slides) Viewer Subgroups

Source of Variation	SS	df	MS	F
Between-groups	16.77	4	4.19	9.95*
Within-groups	83.05	197	0.42	
Total	99.83	201		

	N	Mean
a-CHURCH	88	0.44
b-TEACHERS	28	0.09
c-GRANGE	24	0.37
d-STUDENTS	43	-0.26
e-RES_MGRS	19	-0.02

Sig.@ a-d, a-e, c-d

* p <.05

TABLE 4.26 ANOVA - Averaged Difference W/Scene Pairs (Negative Change) Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-0.32
Between-groups	19.95	4	4.98	5.85*	b-TEACHERS	28	-0.74
Within-groups	167.93	197	0.85		c-GRANGE	24	-0.12
Total	187.88	201			d-STUDENTS	43	-0.99
					e-RES_MGRS	19	-0.84

Sig.@ a-d, c-d, c-e

* p <.05

TABLE 4.27 ANOVA - Averaged Difference Within Scene Pairs (Pos. Change) Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	1.06
Between-groups	17.11	4	4.27	6.93*	b-TEACHERS	28	0.75
Within-groups	121.64	197	0.61		c-GRANGE	24	0.75
Total	138.75	201			d-STUDENTS	43	0.30
					e-RES_MGRS	19	0.61

Sig.@ a-d

* p <.05

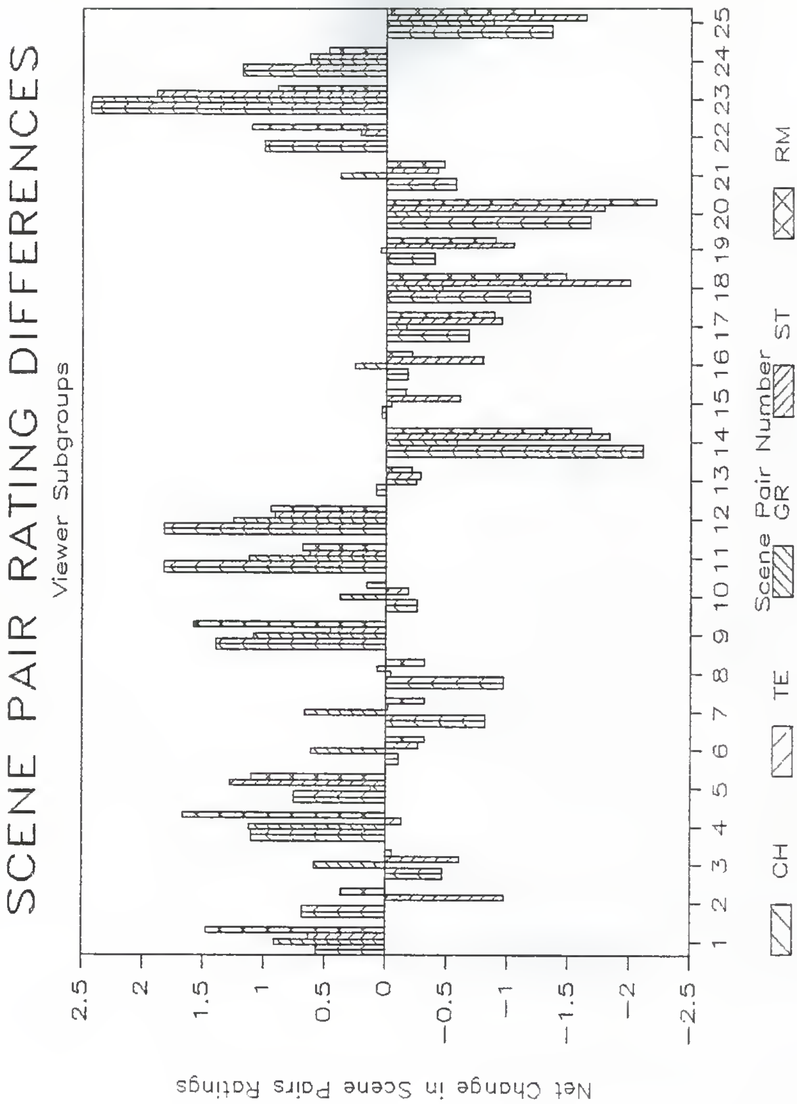


Figure 4.4   Scene Pairs Differences: Viewer Subgroups

TABLE 4.28 SUMMARY - Scene Pairs w/Sig. Rating Differences Between Viewer Subgroups

Group Interaction	Scene Pairings	
	Number	Description
Church/Student	2	Farmhouse (M)[a]
	4	Red Barn (M)
	14	Oil Tanks (F)
Church/Grange	--	
Church/Resource Manager	23	Pond (F)
Church/Teacher	8	Cemetery #2 (F)
	14	Oil Tanks (F)
Student/Grange	3	House (M)
Student/Resource Manager	4	Red Barn (M)
Student/Teacher	2	Farmhouse (M)
Grange/Resource Manager	20	Powerline (M)
	23	Pond (F)
Grange/Teacher	--	
Resource Manager/Teacher	23	Pond (F)

[a] (F)=Foreground, (M)=Middleground, (B)=Background

Distance. No significant differences among groups occurred in analyzing the effects of viewer-to-modification distances (Tables 4.29, p. 80). As was the case in the regional group analyses, however, trends were evident within comparisons of scene pair differences that suggest a distance-to-modification/preference rating relationship (Figure 4.3, p. 72).

TABLE 4.29 ANOVA - Avg. Pref. Ratings as Related to Modification Distance Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-FORE	4	5.41
Between-groups	17.61	11	1.60	3.43	b-MID	5	5.43
Within-groups	0.93	2	0.46		c-BACK	5	5.55
Total	18.54	13					

Sig.@ none

STATEMENT RESPONSES.

Regional groups. There was no significant difference between the three regional groups in response to Statements #1 and #2 (Tables 4.30 and 4.31). The rural regional viewers responded to Statement #3 with significantly greater agreement than did the urban regional viewers (Table 4.32, p. 81).

TABLE 4.30 ANOVA - Mean Response for Scenic Quality Statement #1 Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	7.80
Between-groups	1.81	2	0.90	0.50	b-URBAN	73	7.80
Within-groups	363.75	199	1.82		c-NON	74	7.60
Total	365.56	201					

Sig.@ none

TABLE 4.31 ANOVA - Mean Response for Scenic Quality Statement #2 Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	7.78
Between-groups	2.58	2	1.29	0.52	b-URBAN	73	7.52
Within-groups	494.19	199	2.48		c-NON	74	7.72
Total	496.77	201					

Sig.@ none

TABLE 4.32 ANOVA - Mean Response for Scenic Quality Statement #3 Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	8.03
Between-groups	26.58	2	13.29	4.97*	b-URBAN	73	7.12
Within-groups	531.83	199	2.67		c-NON	74	7.41
Total	558.42	201					
					Sig.@ a-b		

* p <.05

Viewer Subgroups. Statement #1 received a significantly stronger agreement from the teachers, resource managers and students when compared to the Grange, and from the students when compared to the church members (Table 4.33) . The students reacted to Statement #2 with significantly greater agreement than did the church members or grange (Table 4.34, p. 82). There was no significant difference in response to Statement #3 (Table 4.35, p. 82).

Slide Sequence. The sequencing of slides was analyzed to determine if there was a significant difference in preference for any of the scenes as related to their order of presentation. Significant differences were found in twelve scenes, and are summarized in Table 4.36, p. 83).

TABLE 4.33 ANOVA - Mean Response for Scenic Quality Statement #1 Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	7.36
Between-groups	41.58	4	10.39	6.32*	b-TEACHERS	28	8.14
Within-groups	323.97	197	1.64		c-GRANGE	24	7.20
Total	365.56	201			d-STUDENTS	43	8.30
					e-RES_MGRS	19	8.21
					Sig.@ a-d, b-c, c-d, c-e		

* p <.05

TABLE 4.34 ANOVA - Mean Response for Scenic Quality Statement #2
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	7.28
Between-groups	47.22	4	11.80	5.17*	b-TEACHERS	28	7.92
Within-groups	449.55	197	2.28		c-GRANGE	24	7.16
Total	496.77	201			d-STUDENTS	43	8.41
					e-RES_MGRS	19	8.00
					Sig.@	a-d, c-d	

* $p < .05$

TABLE 4.35 ANOVA - Mean Response for Scenic Quality Statement #3
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	7.39
Between-groups	25.65	4	6.41	2.37	b-TEACHERS	28	8.35
Within-groups	532.76	197			c-GRANGE	24	7.25
Total	558.42	201			d-STUDENTS	43	7.27
					e-RES_MGRS	19	7.31
					Sig.@	none	

TABLE 4.36 SUMMARY - Scene Ratings w/Sig. Difference Between Presentation Sequences for All Viewers

Description	Content	Scene No.	Mean Scene Ratings	
			Seq.1(Scene 1-56)	Seq.2(Scene 56-1)
Oil Tanks	M	9	5.75	4.96
Powerline	M	10	4.59	3.85
Windmill	N	16	4.71	5.52
Barn	M	25	5.89	6.34
Cemetery #1	M	28	4.66	5.60
Oil Tanks	N	29	3.87	4.35
Stone Fence	M	31	4.79	5.89
Cemetery #2	M	32	3.96	4.82
Modern House	N	39	4.81	5.35
Pond	N	43	5.04	5.88
Powerline	M	5	5.35	4.70
Barbwire Fence	N	13	4.73	5.47

Note. Seven groups viewed the scenes in Sequence #1; Five groups viewed the scenes in Sequence #2.
Variables: M=modified; N=non-modified

CHAPTER V
CONCLUSIONS AND OBSERVATIONS

The purpose of this research was aimed at addressing five major issues:

1) the valuation of the countryside landscape as a natural and cultural resource.

2) the analysis of the presence and scope of countryside appreciation when comparing rural Flint Hills residents, urban Flint Hills residents, and non-regional residents.

3) testing for the presence and degree of correlation between the viewer preference for a particular countryside landscape and the distance in the scene at which landscape modifications occur.

4) the analysis of the relative influence of cultural modifications (as measured by viewer landscape preference) to determine the overall impact of the modifications.

5) developing a set of guidelines to define the implications of cultural landscape modifications within the Flint Hills countryside landscape.

Chapter Five will first focus on the evaluation of the study methodology in terms of its successes and limitations. The five major issues as denoted above will then be used as a fremework for analyzing the hypotheses and discussing the research results.

APPLICATION. The theoretical definition for this study was based on the work of several authors (Nassauer 1978 and Zube et al. 1974, Schauman and Pfender 1982)) who have addressed numerous countryside landscape issues. The pairing of landscape scenes to study the effects of cultural modifications was developed in this research in an attempt to obtain valid, reliable results within a reasonable economic and time framework. Overall, the method worked smoothly, and although no test for reliability or validity have been applied, it appears to have generated acceptable results. Many of those who participated voiced the comment that they thought they were being "tested" by observing what they thought were duplicate slides throughout the presentation. These comments emphasize the apparant success of the deliberate randomness of the scenes in their presentation.

Presenting the slides in many different locations posed several problems which had been anticipated (room lighting, distance from viewer to screen, variable screen sizes). Every attempt was made to minimize uncontrolled variables in the presentations, and the benefits of having "captive" audiences with defineable characteristics far outweighed any variations that the differences in facilities may have caused.

LIMITATIONS. Location and composition of scene photographs, as well as selection of modifications ultimately chosen for inclusion, were highly dependent upon the locations of representative modifications. This method is also limited to modifications which already exist, and to views obtainable from the most part from public right-of-ways.

Modification Distances. The hypothesis correlating landscape preference to modification distance in a landscape scene turned out to be a

difficult relationship to study in the present research format. The comparison required that two totally different variable types--viewers and distance--be cross-referenced in order to analyze data relationships. In order to be able to provide more reliable, valid results, the research format would need to be reworked to 1) draw from a larger sampling of scenes, 2) require a more rigorous standardization of actual distances, and 3) use the same modifications at different distances rather than different representations of the same modifications at different distances. This last point may be difficult if not impossible to perform within the side-by-side photo format used in the study due to the wide variability that would occur in scene context.

The findings of this study were intended to serve as guidelines for landscape preferences among various generalized viewer groups, and as a result should be applied over large groups with caution. A more in-depth definition of viewers as to their backgrounds and places of residence would prove valuable in the search for further information through this type of research format.

Specialized Analyses. This study incorporated standard statistical analysis of variance procedures in calculating significant differences between groups. The wide differences between certain viewers in the study (the students and resource managers as compared to the "public" groups, to name the most prominent example), may not signify the true relationships between groups when only standard analysis procedures are used. Daniel and Boster (1976) have found that viewers who might inherently use different ends and/or ranges of a preference rating scale may experience the same overall preferences and just attach different values to them. This research would greatly benefit from an analysis of data using a method such as the

Scenic Beauty Estimation Method (Daniel and Boster 1976). By doing so, the differences found among viewer groups might be better understood and evaluated.

Content Evaluation. Re-evaluation of the data in terms of the specific content within each scene and scene pair would provide valuable insight into some of the more detailed aspects of how countryside landscapes are perceived. There are many other factors found in the scenes (other than the specific modifications for which the photographs were chosen) which warrant careful study. Examples might include vegetation color and type, sky features, cultivated soil, and the angle at which a modification is viewed in a scene.

VALUATION OF THE COUNTRYSIDE LANDSCAPE

Responses to the three statements concerning countryside landscape scenic quality indicate a near unanimous agreement on these three issues: 1) the scenic quality of the countryside is an important aspect of the American quality of life, 2) scenic quality should be considered an important issue in land use decisions, and 3) scenic quality in the countryside is as important as scenic quality in all other American landscapes.

The rural regional viewers showed the most consistency in this agreement upon the importance of countryside scenic quality. Mean responses from the five viewer subgroups also indicated a rather strong agreement, although it was not as well-defined as agreement between regional groups. An interesting finding relative to countryside valuation concerns the responses from the Grange members. Because of their close association to the countryside, they had been expected to have a strong concurrence on all

of the above countryside issues. Even though their overall landscape preference ratings were high, they indicated the lowest responses to the three scenic quality statements when compared to all other viewer subgroups. This finding points to the possibility of a viewer having a high sensitivity and preference for a landscape without having a strong feeling towards management and planning issues aimed at enhancing or preserving attributes of that landscape.

If this is true, it suggests that an awareness of factors which influence land use decisions and scenic quality may not presently be commonplace among those groups which stand to experience the greatest impacts. Several study viewers expressed enthusiasm in becoming involved with local planning and environmental issues, but that idea seemed the exception rather than the rule.

Although the statement responses might be considered biased because they were presented to each group immediately after the sequence of landscape scenes, the overall indication of a "strong" agreement suggests that agreement at some level would have occurred regardless of presentation sequence.

PREFERENCE DIFFERENCES AMONG VIEWERS

A statistical difference comparing landscape preference among the three regional groups was not strongly evident. In the one instance where a significant difference did occur, the rural regional group (as hypothesized) preferred the modified landscape scenes significantly more so than did the non-regional group. There was a strong tendency for the modified scene ratings to experience a higher standard deviation than the non-modified

scene ratings, suggesting that cultural modifications should be considered an important (if not the most important) factor in evaluating countryside landscape. This finding supports other research (Zube et. al 1974) which showed that viewer agreement decreased as the naturalness (i.e. lack of human-made modifications) in the landscape decreased.

Although not statistically significant, strong trends in the data do point to a rural regional--urban regional--non-regional hierarchy of preference values. This ranking of values conflicts with several other studies (Fines 1968, Craik 1972 and Zube 1973) which found fairly consistent preference agreement across population groups.

The most consistent variability in landscape preference among viewer subgroups occurred between the "public groups" (church members, Grange and teachers) and the resource/design groups (students and resource managers). According to preference ratings for averaged scenes and individual scenes, the students and resource managers showed a much more critical response to the countryside landscape than did the public groups. An interesting contrast to their lower ratings, however, is that the students and resource managers showed the highest overall agreement towards the importance of countryside scenic quality. These seemingly contradictory views, opposite those of the Grange members discussed earlier, may point out an awareness and sense of importance towards scenic quality planning and management that can and does exist independent of personal landscape preferences.

EFFECTS OF MODIFICATION-TO-VIEWER DISTANCE

The distance from viewer-to-modification appears to be an important determinant of landscape preference in the countryside. These findings coincide with similar ideologies used in visual management systems applied

to federal forests and rangelands (U.S.D.A. Forest Service 1974; U.S.D.I. Bureau of Land Management 1976). Further analysis of the data (and a probable restructuring of the study) would be necessary to determine the statistical significance of the relationships.

SENSITIVITY TO LANDSCAPE MODIFICATIONS

The study revealed a wide range of significant differences in the attitudes of viewer groups towards the presence of modifications. The relative differences in preference ratings within the twenty-five slide pairs were analyzed in several ways, all of which showed strong relationships.

The rural regional viewers had been expected to show the greatest sensitivity to landscape modifications, and in fact showed a significantly higher average mean difference for all slide pairs than either of the other regional groups. This seems to indicates that in general the rural viewer perceives cultural modifications as a more positive influence on the scenic quality of the landscape.

The students and resource managers were again highly critical, and both groups placed a relative negative value on the effect of the averaged landscape modifications towards scenic quality and preference. The three public groups all indicated a relative positive value to landscape modifications, with the church and grange viewers showing a particulary strong positive preference for landscapes with cultural modifications.

When modifications were grouped according to their net positive or negative value within each scene pair, these strong relationships were still evident. The rural regional viewers had the highest preference ratings for added positive modifications, and showed the least amount of reduced pref-

erence for added negative modifications. Church members, teachers and grange members again placed a higher preference on positive landscape modifications, and showed only slight reductions in preference when negative elements were added. The students and resource managers indicated slightly higher preferences for positive landscape modifications, and greatly reduced preferences for negatively-valued landscape elements.

These observations point to an important generalization. If the people living closest to a modified landscape do not place an exceptionally negative value on the modification, the condemnation of those same modifications by outside viewers tends to lose its significance and clought.

Landscape preference is heavily influenced by personal expectations. Study participants cited a wide variety of factors that influenced their preferences: the presence or absence of animals, the presence of weeds along fencerows, and the presence or absence of trees, to name but a few factors. The study scene with the highest disagreement among viewers consisted of a series of junk cars aligned vertically along a stream bank. The preference ratings varied from 1 to 9 -- the full possible scale. Some viewers overlooked the beauty of the water and vegetation and saw only the autos; others obviously overlooked the cars, or even saw them as an ugly but creative attempt at erosion control.

If the viewer who lives in the countryside has expectations which already include negative elements such as powerlines or oil tanks (much as the urban inhabitant overlooks the continual overhead maze of utility lines), then countryside scenic quality may not be as critical (in theory) to the inhabitants of the countryside as it is to non-regional observers who view the landscape from a different perspective.

GUIDELINES IN UNDERSTANDING COUNTRYSIDE MODIFICATION IMPLICATIONS

The following guidelines were developed from the results of the study to define, highlight and summarize the implications of landscape modification in the Flint Hills countryside landscape.

1) A viewer's personal background and place of residence are important factors in defining and shaping that viewer's landscape preferences and perceptions of countryside scenic quality.

2) The scenic quality of the countryside landscape is thought by many to be a quality-of-life issue, deserving consideration in land-use planning issues and needful of the attention given other American landscapes in recent years.

3) The closer a person lives to a particular area or region, the more sensitivity they will feel towards cultural modifications in that region. This sensitivity can take on several meanings. Regional viewers not only experience a greater sense of change in landscape quality (as measured by preference) with the addition of modifications, but they see modifications in a more positive (or less negative) frame of reference.

4) Viewer sensitivity towards the countryside landscape does not necessarily foster a sense of urgency or importance related to the management of the scenic quality of that landscape; conversely, strong interest in the quality and management of the scenic resources of a landscape does not necessarily correlate to a strong personal preference for that landscape.

5) Landscape preference is based on an unlimited range of personal biases, perceptions and experiences (especially when cultural modifications are involved), and cannot accurately be widely averaged or categorized.

6) All cultural modifications, no matter how seemingly insignificant, can effect viewer landscape preference and the perception of scenic quality.

7) The general public experiences significantly more disagreement in preference for landscape scenes than do viewers trained in design or natural resource disciplines, and is less critical in rating their preferences than are the specialists.

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APPENDIX A

FEDERAL LEGISLATION IMPINGING ON VISUAL MANAGEMENT

National Environmental Protection Act (1969, as amended)
42 U.S.C. 4331 et seq.

The effects of NEPA are far-reaching, and deal with a wide variety of environmental issues. It is the nation's foremost environmental statute, and stresses the "continuing responsibility of the Federal Government to ... assure for all Americans safe, healthy, productive and aesthetically and culturally pleasing surroundings ..."

Coastal Zone Management Act (1972)
16 U.S.C. 1451 et seq.

Development and resource degredation are addressed in this act, which states that the "coastal zone is rich in variety of natural, commercial, recreational, industrial and esthetic resources of immediate and potential value ... special natural and scenic characteristics are being damaged by ill-planned development ..."

National Wilderness Act (1964, as amended)
16 U.S.C. 1131 et seq.

Wilderness is defined through this act as land that "...may contain ecological, geological, or other features of scientific, educational, scenic or historical value."

Wild and Scenic Rivers Act (1968, as amended)
16 U.S.C. 1271 et seq.

Rivers across the nation are analyzed "...with a primary emphasis given to protecting their esthetic, scenic, historic, archeologic and scientific features ..."

National Trails Act (1968)
16 U.S.C. 1241 et seq.

A system of national trails was established to provide "... enjoyment of the naturally significant scenic, historic, natural or cultural qualities of an area."

Department of Transportation Act (1966)
49 U.S.C. 1651 et seq.

"...special effort should be made to preserve the natural beauty of the countryside and public parks and recreation lands that are traversed."

Forest and Rangeland Renewable Resources Policy Act (1974)
16 U.S.C. 1600 et seq.

Development of applied policy and regulation to encourage long-term planning in terms of resource consumption and conservation. Theme is echoed in the Forest Management Act of 1976, which states that "...the lands serve the public by providing, among other things, timber resources, scenic areas, wildlife and fish habitats, and watershed areas."

APPENDIX B

STUDY SCENE PAIRINGS

(PAIRS 1 - 25, SIX NON-PAIRED SCENES)

Non-modified Scene

Modified Scene

SCENE PAIR #1 - Stone Church

Non-modified Scene

Modified Scene

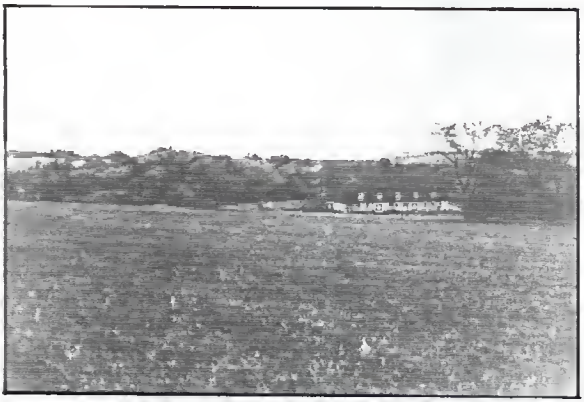
SCENE PAIR #2 - Farmhouse

Non-modified Scene

Modified Scene

SCENE PAIR #3 - House

Non-modified Scene



Modified Scene

SCENE PAIR #4 - Red Barn

Non-modified Scene

Modified Scene

SCENE PAIR #5 - Stone Barn

Non-modified Scene

Modified Scene

SCENE PAIR #6 - Pole Barn

Non-modified Scene

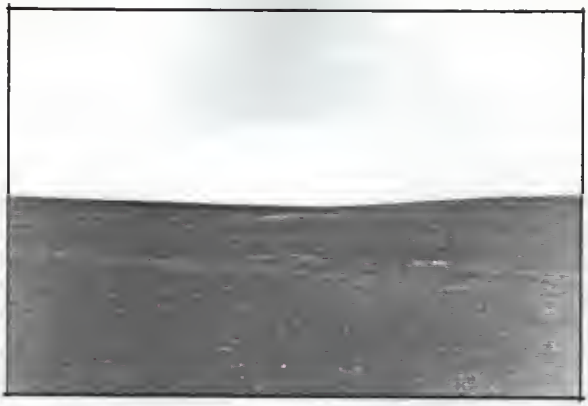
Modified Scene

SCENE PAIR #7 - Cemetery #1

Non-modified Scene

Modified Scene

SCENE PAIR #8 - Cemetery #2



Non-modified Scene

Modified Scene

SCENE PAIR #9 - Windmill

Non-modified Scene

Modified Scene

SCENE PAIR #10 - Radio Tower

Non-modified Scene

Modified Scene

SCENE PAIR #11 - Stone Fence

Non-modified Scene

Modified Scene

SCENE PAIR #12 - Stone Fence

Non-modified Scene

Modified Scene

SCENE PAIR #13 - Stone Fence

Non-modified Scene

Modified Scene

SCENE PAIR #14 - Oil Tanks

Non-modified Scene

Modified Scene

SCENE PAIR #15 - Oil Tanks

Non-modified Scene

Modified Scene

SCENE PAIR #16 - Oil Tanks

Non-modified Scene

Modified Scene

SCENE PAIR #17 - Powerline

Non-modified Scene

Modified Scene

SCENE PAIR #18 - Powerline

Non-modified Scene

Modified Scene

SCENE PAIR #19 - Powerline

Non-modified Scene

Modified Scene

SCENE PAIR #20 - Powerline

Non-modified Scene

Modified Scene

SCENE PAIR #21 - Powerline

Non-modified Scene

Modified Scene

SCENE PAIR #22 - Pond

Non-modified Scene

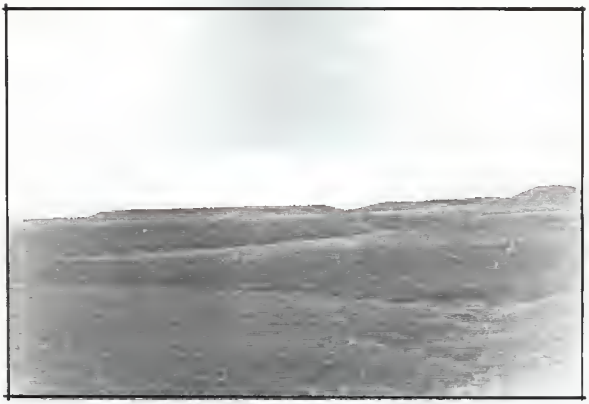
Modified Scene

SCENE PAIR #23 - Pond

Non-modified Scene

Modified Scene

SCENE PAIR #24 - Pond



Non-modified Scene

Modified Scene

SCENE PAIR #25 - Barbwire Fence

Non-paired Scene #1 - Stone Shed

Non-paired Scene #2 - Hay Field

Non-paired Scene #3 - New Corn

Non-paired Scene #4 - Farmstead

Non-paired Scene #5 - Rock Barn

Non-paired Scene #6 - Junk Cars/Creek

APPENDIX C

STANDARDIZED RATING INSTRUCTIONS

RATING SCORE SHEET

RATING INSTRUCTIONS

I am going to read some standardized instructions.

The scenes you are about to see depict a countryside landscape--a landscape containing prairie, cultivated farmland, forest and human-made patterns and activities. Some experts feel that this type of landscape is the type that may most influence our present perceptions and psychological ties with nature. A great deal of present-day development is occurring in the countryside, and it is apparent that we need to better evaluate this development and change in terms of its characteristics and influences upon us. In asking for your preference to these countryside landscape scenes, I hope to further that understanding, and I greatly appreciate your time in this effort. Your participation is entirely voluntary, and you may freely withdraw at any time. All survey sheets will be kept confidential, and all participants will remain anonymous.

The scenes will be shown one at a time. Each scene represents a view of a larger area. I ask that you think about the larger area depicted by each view, rather than about the individual scene itself.

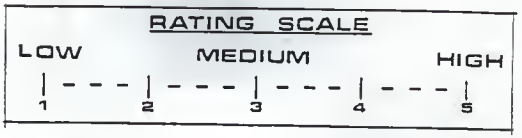
We are going to use the first ten scenes to aquaint you with the rating procedure. The first five views are intended to help you develop a feel for the range of scenes you will be judging. Try to imagine how you would rate these scenes, using the "rating scale" on the top of your scoring sheet as a guide. Note that the scale ranges from one(1), meaning you have a low preference for the scene, to five(5), meaning that you greatly prefer the scene. You need not write anything down for these five scenes, which will now be shown.

The second five scenes (P1 through P5) will be used as practice scenes to aquaint you with the actual rating process. You are to rate these scenes using the area of your rating sheet as shown on the screen. You will be given ten seconds to mark your preference rating as you view each scene. The number of each practice scene will be called out as it is projected onto the screen. You should mark one scale for each scene, and you should put one mark on each scale. Your rating should indicate how much you prefer the area depicted by the scene. Please use the full range of numbers if you possibly can. Before we begin to rate the practice scenes, I want to show you what your rating sheet should begin to look like after you have begun the rating procedure. Notice that each scale has been marked once, and that each scale can be marked anywhere along its length. Are there any questions? If not, we will begin rating the practice scenes.

I will now begin showing the study scenes that you are to rate. You will use the area of your rating sheet as shown on the screen for your responses. Again, you will have ten seconds to view, rate and mark your sheet for each scene. I will call out the number of every scene in order to help you keep oriented on your rating sheet.

Are there any questions before we begin?

LANDSCAPE PREFERENCE RATINGS



practice scenes

p1 p2 p3 p4 p5

study scenes

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59

APPENDIX D

MEAN PREFERENCE RATINGS: SCENES 1-56

ALL VIEWERS (TABLE D.1)

REGIONAL VIEWERS (TABLE D.2)

SUBGROUP VIEWERS (TABLE D.3)

TABLE D.1 MEANS - Preference Ratings and Standard Deviations
All Viewers

Description	Scene #	Mean	Landscape Preference Low Medium High 1---2---3---4---5---6---7---8---9	SD	Standard Deviation Low Medium High 0.5--1.0--1.5--2.0--2.5--3.0
Limestone Church non-modified	1	5.92	++++++++++++++++++++	1.73	++++++++++++++++
Oil Tank non-modified	2	4.42	++++++++++++++++	1.52	++++++++++++++
Stone Fence modified	3	5.63	++++++++++++++++++++	1.98	++++++++++++++++++
Cemetery #1 non-modified	4	4.16	++++++++++++++	1.81	++++++++++++++++
Powerline modified	5	5.02	++++++++++++++++++	1.97	++++++++++++++++++
Red Barn modified	6	6.96	++++++++++++++++++++++++++	1.67	++++++++++++++++
Pond modified	7	3.97	++++++++++++++	1.65	++++++++++++++++
Barbwire Fence modified	8	3.87	++++++++++++++	1.76	++++++++++++++++
Oil Tank modified	9	5.36	++++++++++++++++++++	2.00	++++++++++++++++++
Powerline modified	10	4.22	++++++++++++++	2.38	++++++++++++++++++++++++
Windmill modified	11	6.30	++++++++++++++++++++++++	2.10	++++++++++++++++++
Radio Tower modified	12	5.39	++++++++++++++++++	1.53	++++++++++++++
Barbwire Fence non-modified	13	5.05	++++++++++++++++++	2.19	++++++++++++++++++++
Stone Fence modified	14	4.37	++++++++++++++++	2.00	++++++++++++++++++
Limestone Shed extra	15	6.02	++++++++++++++++++++++	1.88	++++++++++++++++++
Windmill non-modified	16	5.06	++++++++++++++++++	2.14	++++++++++++++++++++
Farmhouse w/barn modified	17	6.04	++++++++++++++++++++++	1.85	++++++++++++++++++
Oil tank modified	18	3.41	++++++++++	2.04	++++++++++++++++++
Powerline non-modified	19	5.48	++++++++++++++++++++	1.65	++++++++++++++++
Radio Tower non-modified	20	5.50	++++++++++++++++++++	1.70	++++++++++++++++
Hay Field extra	21	6.31	++++++++++++++++++++++++	1.94	++++++++++++++++++
Pond non-modified	22	5.15	++++++++++++++++++	1.97	++++++++++++++++++
Limestone Church modified	23	6.61	++++++++++++++++++++++++	1.66	++++++++++++++++

TABLE 0.1 Continued

Description	Scene #	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Powerline modified	24	5.87	++++++++++++++++++++	1.62	++++++++++++++++
Limestone Barn modified	25	6.08	+++++++++++++++++++++	1.59	++++++++++++++
Powerline modified	26	5.73	++++++++++++++++++++	1.68	++++++++++++++++
Stone Fence non-modified	27	4.47	++++++++++++++++	1.98	+++++++++++++++++++
Cemetery #2 modified	28	5.06	++++++++++++++++++	2.10	++++++++++++++++++++
Oil Tank non-modified	29	4.07	++++++++++++++	1.65	++++++++++++++++
Cemetery #2 non-modified	30	4.81	+++++++++++++++++	1.52	++++++++++++++
Stone Fence modified	31	5.20	++++++++++++++++++	2.30	++++++++++++++++++++++
Cemetery #1 modified	32	4.33	++++++++++++++++	1.97	++++++++++++++++++
Powerline modified	33	4.41	++++++++++++++++	1.78	+++++++++++++++++
Junk Cars extra	34	3.95	++++++++++++++	2.88	++++++++++++++++++++++++++
Modern Residence modified	35	5.10	++++++++++++++++++	1.55	++++++++++++++
Farmhouse w/barn non-modified	36	5.88	+++++++++++++++++++++	1.67	++++++++++++++++
Pond modified	37	7.35	++++++++++++++++++++++++++	1.84	++++++++++++++++++
New Corn extra	38	4.75	+++++++++++++++++	1.99	+++++++++++++++++++
Modern Residence non-modified	39	5.04	++++++++++++++++++	1.60	++++++++++++++
Powerline non-modified	40	5.28	++++++++++++++++++	1.69	++++++++++++++++
Farm extra	41	6.23	+++++++++++++++++++++	1.70	++++++++++++++++
Powerline modified	42	4.29	++++++++++++++++	1.98	+++++++++++++++++++
Pond modified	43	5.40	++++++++++++++++++	1.86	++++++++++++++++++
Red Barn non-modified	44	5.88	+++++++++++++++++++++	1.79	+++++++++++++++++
Pond non-modified	45	3.33	++++++++++	1.73	+++++++++++++++++
Stone Fence non-modified	46	3.73	++++++++++++	1.84	++++++++++++++++++

TABLE D.1 Continued

Description	Scene #	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Limestone Barn non-modified	47	5.43	++++++++++++++++++	1.83	++++++++++++++++++
Oil Tank modified	48	4.05	+++++++++++++++	1.74	++++++++++++++++
Powerline non-modified	49	5.82	+++++++++++++++++++++	1.55	+++++++++++++++
Pole Barn modified	50	5.78	+++++++++++++++++++++	1.69	++++++++++++++++
Oil Tank non-modified	51	5.55	++++++++++++++++++++	1.74	++++++++++++++++
Powerline non-modified	52	4.81	++++++++++++++++	1.79	++++++++++++++++
Pole Barn non-modified	53	5.91	+++++++++++++++++++++	1.80	++++++++++++++++
Limestone Barn extra	54	5.58	++++++++++++++++++++	1.76	++++++++++++++++
Pond modified	55	6.14	++++++++++++++++++++++	1.64	+++++++++++++++
Stone Fence non-modified	56	4.53	++++++++++++++++	1.79	++++++++++++++++

TABLE D.2 MEANS - Preference Ratings and Standard Deviations
Regional Groups

Description	Scene # Group		Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Limestone Church non-modified	1	N	6.01	++++++++++++++++++++	1.85	+++++++++++++++++
		R	5.51	++++++++++++++++++	1.71	++++++++++++++++
		U	6.14	+++++++++++++++++++++	1.6	++++++++++++++
Oil Tank non-modified	2	N	4.59	++++++++++++++++	1.52	++++++++++++++
		R	4.40	++++++++++++++++	1.57	++++++++++++++
		U	4.27	+++++++++++++++	1.49	++++++++++++++
Stone Fence modified	3	N	5.32	+++++++++++++++++++	2.01	++++++++++++++++++++
		R	6.00	++++++++++++++++++++++	1.99	++++++++++++++++++++
		U	5.83	++++++++++++++++++++	1.78	+++++++++++++++++
Cemetery #1 non-modified	4	N	3.97	++++++++++++++	1.59	++++++++++++++
		R	3.98	++++++++++++++	1.91	+++++++++++++++++
		U	4.51	++++++++++++++++	1.94	++++++++++++++++++
Powerline modified	5	N	5.15	+++++++++++++++++++	1.79	+++++++++++++++++
		R	4.64	++++++++++++++++	2.07	++++++++++++++++++++
		U	5.30	+++++++++++++++++++	2.01	++++++++++++++++++++
Red Barn modified	6	N	6.81	++++++++++++++++++++++++	1.83	+++++++++++++++++
		R	7.47	+++++++++++++++++++++++++++	1.48	++++++++++++++
		U	6.74	++++++++++++++++++++++++	1.60	++++++++++++++
Pond modified	7	N	4.37	++++++++++++++++	1.51	++++++++++++++
		R	4.00	++++++++++++++	1.94	++++++++++++++++++
		U	3.60	++++++++++++	1.48	++++++++++++++
Barbwire Fence modified	8	N	3.47	++++++++++++	1.55	++++++++++++++
		R	4.18	++++++++++++++	1.83	+++++++++++++++++
		U	4.04	++++++++++++++	1.86	+++++++++++++++++
Oil Tank modified	9	N	5.74	++++++++++++++++++++	1.96	++++++++++++++++++
		R	5.45	++++++++++++++++++++	1.83	+++++++++++++++++
		U	5.04	++++++++++++++++++	2.06	++++++++++++++++++++
Powerline modified	10	N	4.54	++++++++++++++++	2.13	+++++++++++++++++++
		R	4.65	+++++++++++++++++	2.55	++++++++++++++++++++++++
		U	3.70	++++++++++++	2.41	++++++++++++++++++++++
Windmill modified	11	N	5.43	+++++++++++++++++++	2.16	+++++++++++++++++++++
		R	7.04	++++++++++++++++++++++++++	1.90	++++++++++++++++++
		U	6.64	++++++++++++++++++++++++	1.89	+++++++++++++++++
Radio Tower modified	12	N	5.12	++++++++++++++++++	1.63	+++++++++++++++++
		R	5.71	+++++++++++++++++++++	1.49	++++++++++++++
		U	5.43	++++++++++++++++++++	1.45	++++++++++++++
Barbwire Fence non-modified	13	N	4.17	+++++++++++++++	1.93	+++++++++++++++++
		R	5.27	++++++++++++++++++	2.27	++++++++++++++++++++++
		U	5.75	+++++++++++++++++++++	2.10	+++++++++++++++++++
Stone Fence modified	14	N	3.93	++++++++++++++	1.90	+++++++++++++++++
		R	4.64	++++++++++++++++	2.21	++++++++++++++++++++
		U	4.70	++++++++++++++++	1.87	+++++++++++++++++
Limestone Shed extra	15	N	5.69	+++++++++++++++++++	1.81	+++++++++++++++++
		R	6.25	++++++++++++++++++++++	1.95	++++++++++++++++++
		U	6.19	+++++++++++++++++++++	1.88	+++++++++++++++++
Windmill non-modified	16	N	4.61	++++++++++++++++	1.87	+++++++++++++++++
		R	5.11	++++++++++++++++++	2.19	++++++++++++++++++++
		U	5.49	++++++++++++++++++++	2.29	+++++++++++++++++++++
Farmhouse w/barn modified	17	N	6.04	++++++++++++++++++++	1.82	+++++++++++++++++
		R	6.42	++++++++++++++++++++++	2.02	++++++++++++++++++
		U	5.77	+++++++++++++++++++	1.74	+++++++++++++++++

Note. Variables: N=Non-Regional Viewers; R=Rural Regional Viewers; U=Urban Regional Viewers

TABLE 0.2 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Oil tank	18 N	3.62	++++++++++++	1.83	++++++++++++++++++
modified	R	3.96	++++++++++++++	2.38	++++++++++++++++++++++
	U	2.88	++++++++++	1.85	++++++++++++++++++
Powerline	19 N	5.11	++++++++++++++++++	1.41	++++++++++++++
non-modified	R	5.78	++++++++++++++++++++++	1.78	++++++++++++++++
	U	5.64	+++++++++++++++++++	1.73	++++++++++++++++
Radio Towar	20 N	5.26	++++++++++++++++++	1.46	++++++++++++++
non-modified	R	5.62	+++++++++++++++++++	1.98	++++++++++++++++++
	U	5.67	+++++++++++++++++++	1.72	++++++++++++++++
Hay Field	21 N	6.01	++++++++++++++++++++++	1.91	++++++++++++++++++
extra	R	7.00	++++++++++++++++++++++++++	1.48	++++++++++++++
	U	6.11	++++++++++++++++++++	2.18	++++++++++++++++++++
Pond	22 N	5.51	+++++++++++++++++++	1.53	+++++++++++++++
non-modified	R	4.44	++++++++++++++	2.26	++++++++++++++++++++
	U	5.33	++++++++++++++++++	2.03	++++++++++++++++++
Limestone Church	23 N	6.77	++++++++++++++++++++++++	1.45	++++++++++++++
modified	R	6.72	++++++++++++++++++++++++	1.96	++++++++++++++++++
	U	6.38	++++++++++++++++++++++++	1.65	++++++++++++++++
Powerline	24 N	5.89	+++++++++++++++++++++	1.53	+++++++++++++++
modified	R	5.47	++++++++++++++++++	1.90	++++++++++++++++++
	U	6.15	++++++++++++++++++++	1.44	++++++++++++++
Limestone Barn	25 N	5.77	++++++++++++++++++++	1.46	++++++++++++++
modified	R	6.64	++++++++++++++++++++++++	1.60	+++++++++++++++
	U	6.00	++++++++++++++++++++	1.62	++++++++++++++++
Powerline	26 N	5.49	++++++++++++++++++	1.75	++++++++++++++++
modified	R	6.04	++++++++++++++++++++	1.80	++++++++++++++++
	U	5.88	++++++++++++++++++++	1.43	++++++++++++++
Stone Fence	27 N	3.97	++++++++++++++	1.82	++++++++++++++++
non-modified	R	4.48	++++++++++++++++	2.00	++++++++++++++++++
	U	4.99	+++++++++++++++++	2.02	++++++++++++++++++
Cemetery #2	28 N	4.50	++++++++++++++++	1.89	++++++++++++++++
modified	R	5.82	++++++++++++++++++++	2.38	++++++++++++++++++++++
	U	5.08	++++++++++++++++++	1.93	++++++++++++++++++
Oil Tank	29 N	4.18	++++++++++++++++	1.59	++++++++++++++++
non-modified	R	3.91	++++++++++++++	1.73	++++++++++++++++
	U	4.10	++++++++++++++++	1.67	++++++++++++++++
Cemetery #2	30 N	4.82	++++++++++++++++++	1.46	++++++++++++++
non-modified	R	5.02	+++++++++++++++++	1.82	++++++++++++++++
	U	4.66	++++++++++++++++	1.34	++++++++++++++
Stone Fence	31 N	4.07	++++++++++++++	1.84	++++++++++++++++
modified	R	6.27	++++++++++++++++++++++	2.34	++++++++++++++++++++
	U	5.72	++++++++++++++++++++	2.08	++++++++++++++++++
Cemetery #1	32 N	3.74	++++++++++++++	1.57	++++++++++++++
modofied	R	4.68	++++++++++++++++	2.10	++++++++++++++++++
	U	4.68	++++++++++++++++	2.13	++++++++++++++++++
Powerline	33 N	4.08	++++++++++++++	1.67	++++++++++++++++
modified	R	5.29	++++++++++++++++++	1.82	++++++++++++++++
	U	4.15	++++++++++++++	1.68	++++++++++++++++
Junk Cars	34 N	3.88	++++++++++++	2.77	++++++++++++++++++++++++
extra	R	4.22	++++++++++++++	3.15	++++++++++++++++++++++++++++
	U	3.84	++++++++++++	2.81	++++++++++++++++++++++++

TABLE D.2 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Modern Residence modified	35 N	5.20	++++++++++++++++++	1.66	+++++++++++++++
	R	4.91	++++++++++++++++++	1.72	+++++++++++++++
	U	5.16	++++++++++++++++++	1.30	++++++++++++
Farmhouse w/barn non-modified	36 N	6.15	++++++++++++++++++++++	1.77	++++++++++++++++
	R	5.49	++++++++++++++++++++	1.78	++++++++++++++++
	U	5.90	++++++++++++++++++++	1.42	++++++++++++++
Pond modified	37 N	7.51	++++++++++++++++++++++++++	1.63	++++++++++++++++
	R	7.04	++++++++++++++++++++++++	1.95	++++++++++++++++++
	U	7.68	++++++++++++++++++++++++++	1.51	++++++++++++++
New Corn extra	38 N	4.64	++++++++++++++++	1.72	+++++++++++++++
	R	5.18	++++++++++++++++++	2.29	++++++++++++++++++++
	U	4.55	++++++++++++++	2.01	++++++++++++++++++
Modern Residence non-modified	39 N	5.12	++++++++++++++++	1.72	+++++++++++++++
	R	4.82	++++++++++++++++	1.73	++++++++++++++++
	U	5.11	++++++++++++++++	1.44	++++++++++++++
Powerline non-modified	40 N	5.24	++++++++++++++++++	1.74	++++++++++++++++
	R	5.00	++++++++++++++++	1.83	+++++++++++++++++
	U	5.53	++++++++++++++++++	1.52	++++++++++++++
Farm extra	41 N	6.12	++++++++++++++++++++	1.86	+++++++++++++++++
	R	6.33	+++++++++++++++++++++	1.87	+++++++++++++++++
	U	6.27	++++++++++++++++++++	1.41	++++++++++++++
Powerline modified	42 N	4.20	+++++++++++++	1.67	+++++++++++++++
	R	4.93	++++++++++++++++	2.49	++++++++++++++++++++++
	U	3.99	++++++++++++	1.76	++++++++++++++++
Pond modified	43 N	5.20	++++++++++++++++++	1.70	++++++++++++++++
	R	5.75	++++++++++++++++++++	2.12	++++++++++++++++++++
	U	5.34	++++++++++++++++++	1.80	+++++++++++++++++
Red Barn non-modified	44 N	6.21	+++++++++++++++++++++	1.71	++++++++++++++++
	R	5.42	++++++++++++++++++	2.08	++++++++++++++++++++
	U	5.92	++++++++++++++++++++	1.61	++++++++++++++++
Pond non-modified	45 N	3.64	++++++++++++	1.62	++++++++++++++++
	R	3.40	++++++++++++	1.88	++++++++++++++++++
	U	2.99	++++++++++	1.70	++++++++++++++++
Stone Fence non-modified	46 N	3.42	++++++++++	1.65	++++++++++++++++
	R	3.65	++++++++++++	2.07	++++++++++++++++++++
	U	4.11	++++++++++++++	1.81	+++++++++++++++++
Limestone Barn non-modified	47 N	5.20	++++++++++++++++++	1.70	++++++++++++++++
	R	5.89	+++++++++++++++++++++	1.99	+++++++++++++++++++
	U	5.31	++++++++++++++++++	1.80	+++++++++++++++++
Oil Tank modified	48 N	4.27	++++++++++++++	1.59	++++++++++++++
	R	3.89	++++++++++++++	2.04	++++++++++++++++++
	U	4.03	++++++++++++++	1.65	++++++++++++++++
Powerline non-modified	49 N	5.68	++++++++++++++++++++	1.41	++++++++++++
	R	6.09	+++++++++++++++++++++	1.70	++++++++++++++++
	U	5.77	++++++++++++++++++++	1.58	++++++++++++++
Pole Barn modified	50 N	5.99	+++++++++++++++++++++	1.74	+++++++++++++++++
	R	5.56	++++++++++++++++++	1.63	++++++++++++++++
	U	5.75	++++++++++++++++++++	1.69	++++++++++++++++
Oil Tank non-modified	51 N	5.55	++++++++++++++++++++	1.66	++++++++++++++++
	R	5.74	++++++++++++++++++++	1.74	++++++++++++++++
	U	5.42	++++++++++++++++++	1.84	++++++++++++++++++

TABLE D.2 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Powerline non-modified	52 N	4.62	++++++++++++++++	1.56	+++++++++++++++
	R	5.16	++++++++++++++++++	2.09	++++++++++++++++++++
	U	4.74	++++++++++++++++	1.76	++++++++++++++++
Pole Barn non-modified	53 N	5.85	++++++++++++++++++++	1.57	+++++++++++++++
	R	5.59	++++++++++++++++++	2.32	++++++++++++++++++++++
	U	6.21	++++++++++++++++++++++	1.55	+++++++++++++++
Limestone Barn extra	54 N	5.51	++++++++++++++++++	1.66	++++++++++++++++
	R	5.44	++++++++++++++++++	1.85	++++++++++++++++++
	U	5.77	++++++++++++++++++++	1.81	++++++++++++++++++
Pond modified	55 N	5.96	++++++++++++++++++++	1.66	++++++++++++++++
	R	6.07	++++++++++++++++++++	1.74	+++++++++++++++++
	U	6.51	++++++++++++++++++++++	1.43	++++++++++++++
Stone Fence non-modified	56 N	4.45	++++++++++++++++	1.67	++++++++++++++++
	R	4.44	++++++++++++++++	1.84	+++++++++++++++++
	U	4.70	++++++++++++++++	1.90	+++++++++++++++++

TABLE D.3 MEANS - Preference Ratings and Standard Deviations
Viewer Subgroups

Description	Scene #	Group	Mean	Preference Rating Means 1--2---3---4---5---6--7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Limestone Church non-modified	1	CH	5.93	++++++++++++++++++	1.87	++++++++++++++++
		TE	6.46	+++++++++++++++++++++	1.45	+++++++++++++
		GR	5.25	++++++++++++++++	2.03	++++++++++++++++++
		ST	6.19	++++++++++++++++++++	1.37	++++++++++++
		RM	5.26	++++++++++++++++	1.52	+++++++++++++
Oil Tank non-modified	2	CH	4.32	+++++++++++++	1.60	++++++++++++
		TE	5.21	++++++++++++++++	1.37	++++++++++++
		GR	4.67	++++++++++++++	1.55	++++++++++++++
		ST	4.16	+++++++++++++	1.27	++++++++++
		RM	4.05	++++++++++++	1.54	++++++++++++
Stone Fence modified	3	CH	6.01	+++++++++++++++++++	2.04	++++++++++++++++++
		TE	5.79	++++++++++++++++++	1.83	++++++++++++++++
		GR	4.54	++++++++++++++	2.36	+++++++++++++++++++++
		ST	5.58	++++++++++++++++++	1.58	++++++++++++++
		RM	5.79	++++++++++++++++++	1.18	++++++++++
Cemetery #1 non-modified	4	CH	4.03	+++++++++++++	1.87	++++++++++++++++
		TE	4.86	++++++++++++++++	1.67	++++++++++++++
		GR	3.71	++++++++++	2.07	++++++++++++++++++
		ST	4.51	++++++++++++++	1.67	++++++++++++++
		RM	3.58	++++++++++	1.43	++++++++++++
Powerline modified	5	CH	5.59	++++++++++++++++++	2.07	++++++++++++++++++
		TE	5.21	++++++++++++++++	1.95	++++++++++++++++
		GR	5.04	++++++++++++++++	2.11	++++++++++++++++++
		ST	4.51	++++++++++++++	1.42	++++++++++++
		RM	3.61	++++++++++	1.29	++++++++++
Red Barn modified	6	CH	7.28	++++++++++++++++++++++++	1.63	++++++++++++++
		TE	7.39	++++++++++++++++++++++++	1.42	++++++++++++
		GR	6.75	++++++++++++++++++++	2.19	++++++++++++++++++++
		ST	6.42	++++++++++++++++++++	1.48	++++++++++++
		RM	6.39	++++++++++++++++++++	1.58	++++++++++++
Pond modified	7	CH	4.11	++++++++++++	1.72	++++++++++++++
		TE	4.32	++++++++++++++	1.70	++++++++++++++
		GR	4.42	++++++++++++++	1.89	++++++++++++++++
		ST	3.55	++++++++++	1.30	++++++++++
		RM	3.42	++++++++++	1.43	++++++++++++
Barbwire Fence modified	8	CH	3.51	++++++++++	1.91	+++++++++++++++++
		TE	4.18	++++++++++++++	1.72	++++++++++++++
		GR	4.21	++++++++++++++	1.64	++++++++++++++
		ST	4.14	++++++++++++++	1.61	++++++++++++++
		RM	4.05	++++++++++++	1.39	++++++++++++
Oil Tank modified	9	CH	5.98	+++++++++++++++++++	2.03	++++++++++++++++++
		TE	5.64	++++++++++++++++++	1.64	++++++++++++++
		GR	5.21	++++++++++++++++	1.96	+++++++++++++++++
		ST	4.35	++++++++++++++	1.85	++++++++++++++++
		RM	5.11	++++++++++++++++	1.52	++++++++++++++
Powerline modified	10	CH	5.02	++++++++++++++++	2.52	++++++++++++++++++++++++
		TE	4.39	++++++++++++++	2.15	++++++++++++++++++
		GR	4.75	++++++++++++++++	2.43	++++++++++++++++++++++
		ST	2.70	+++++++++	1.63	++++++++++++++
		RM	3.53	++++++++++	1.47	++++++++++++
Windmill modified	11	CH	6.07	+++++++++++++++++++	2.26	+++++++++++++++++++
		TE	7.18	++++++++++++++++++++++++	1.59	++++++++++++++
		GR	6.50	++++++++++++++++++++	2.23	++++++++++++++++++
		ST	6.20	++++++++++++++++++++	2.16	++++++++++++++++++
		RM	6.05	++++++++++++++++++++	1.54	++++++++++++++

Note. Variables: CH=Church Members; TE=Teachers; GR=Grange Members; ST=Students; RM=Res. Mgrs.

TABLE D.3 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Radio Tower modified	12 CH	5.52	++++++++++++++++++++	1.76	++++++++++++++++
	TE	5.59	++++++++++++++++++++	1.37	++++++++++++
	GR	5.75	++++++++++++++++++++	1.73	++++++++++++++++
	ST	4.95	++++++++++++++++++	1.17	++++++++++
	RM	5.05	++++++++++++++++++	1.22	++++++++++++
Barbwire Fence non-modified	13 CH	4.45	++++++++++++++++	2.12	++++++++++++++++++++
	TE	5.54	++++++++++++++++++++	2.05	++++++++++++++++++++
	GR	5.08	++++++++++++++++++	2.69	++++++++++++++++++++++++++++
	ST	5.86	++++++++++++++++++++	1.98	++++++++++++++++++
	RM	5.26	++++++++++++++++++++	1.85	++++++++++++++++++
Stone Fence modified	14 CH	4.45	++++++++++++++++	2.12	++++++++++++++++++++
	TE	4.59	++++++++++++++++	2.24	++++++++++++++++++++
	GR	3.42	++++++++++	2.04	++++++++++++++++++
	ST	4.35	++++++++++++++++	1.57	++++++++++++++
	RM	5.26	++++++++++++++++++++	1.48	++++++++++++++
Limestone Shed extra	15 CH	6.00	++++++++++++++++++++++	2.05	++++++++++++++++++++
	TE	6.68	++++++++++++++++++++++++	1.76	++++++++++++++++
	GR	5.46	++++++++++++++++++++	1.72	++++++++++++++++
	ST	5.88	++++++++++++++++++++	1.77	++++++++++++++++
	RM	6.21	++++++++++++++++++++++	1.47	++++++++++++++
Windmill non-modified	16 CH	4.50	++++++++++++++++	2.26	++++++++++++++++++++++
	TE	5.78	++++++++++++++++++++	1.79	++++++++++++++++
	GR	5.42	++++++++++++++++++	2.04	++++++++++++++++++
	ST	5.81	++++++++++++++++++++	2.10	++++++++++++++++++++
	RM	4.47	++++++++++++++++	1.39	++++++++++++
Farmhouse w/barn modified	17 CH	6.54	++++++++++++++++++++++	1.81	++++++++++++++++
	TE	6.46	++++++++++++++++++++++	1.67	++++++++++++++++
	GR	6.29	++++++++++++++++++++++	2.39	++++++++++++++++++++++
	ST	4.93	++++++++++++++++++	1.37	++++++++++++
	RM	5.31	++++++++++++++++++	1.29	++++++++++
Oil tank modified	18 CH	4.14	++++++++++++++	2.29	++++++++++++++++++++
	TE	3.11	++++++++++	1.62	++++++++++++++++
	GR	4.08	++++++++++++++	1.87	++++++++++++++++++
	ST	2.36	++++++++	1.23	++++++++++++
	RM	2.37	++++++++	1.42	++++++++++++
Powerline non-modified	19 CH	6.02	++++++++++++++++++++	1.77	++++++++++++++++
	TE	5.57	++++++++++++++++++++	1.32	++++++++++++
	GR	5.21	++++++++++++++++++	1.74	++++++++++++++++++
	ST	4.70	++++++++++++++++	1.30	++++++++++++
	RM	5.00	++++++++++++++++++	1.25	++++++++++++
Radio Tower non-modified	20 CH	5.76	++++++++++++++++++++	1.92	++++++++++++++++++
	TE	5.79	++++++++++++++++++++	1.50	++++++++++++++
	GR	5.38	++++++++++++++++++	1.79	++++++++++++++++++
	ST	5.14	++++++++++++++++++	1.41	++++++++++++++
	RM	4.89	++++++++++++++++++	1.29	++++++++++++
Hay Field extra	21 CH	6.85	++++++++++++++++++++++++	1.90	++++++++++++++++++
	TE	6.46	++++++++++++++++++++++	1.67	++++++++++++++++
	GR	5.79	++++++++++++++++++++	2.00	++++++++++++++++++++
	ST	5.42	++++++++++++++++++	2.06	++++++++++++++++++++
	RM	6.32	++++++++++++++++++++++++	1.38	++++++++++++
Pond non-modified	22 CH	4.81	++++++++++++++++++	2.07	++++++++++++++++++++
	TE	5.07	++++++++++++++++++	1.92	++++++++++++++++++
	GR	4.08	++++++++++++++	1.87	++++++++++++++++++
	ST	6.30	++++++++++++++++++++++	1.32	++++++++++++
	RM	5.63	++++++++++++++++++++	1.77	++++++++++++++++++

TABLE D.3 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Limestone Church modified	23 CH	6.47	++++++++++++++++++++++	1.86	++++++++++++++++++
	TE	7.04	++++++++++++++++++++++++	1.29	++++++++++
	GR	6.22	++++++++++++++++++++	2.00	++++++++++++++++++
	ST	6.81	++++++++++++++++++++++	1.35	++++++++++++
	RM	6.74	++++++++++++++++++++++	1.41	++++++++++++
Powerline modified	24 CH	5.70	++++++++++++++++++	1.75	++++++++++++++++
	TE	6.11	++++++++++++++++++++	1.60	++++++++++++++
	GR	5.46	++++++++++++++++++	1.74	++++++++++++++++
	ST	6.19	++++++++++++++++++++	1.29	++++++++++
	RM	6.11	++++++++++++++++++++	1.45	++++++++++++
Limestone Barn modified	25 CH	6.02	++++++++++++++++++++	1.67	++++++++++++++
	TE	6.75	++++++++++++++++++++++	1.27	++++++++++
	GR	5.88	++++++++++++++++++	1.87	++++++++++++++++
	ST	5.93	++++++++++++++++++	1.52	++++++++++++++
	RM	6.03	++++++++++++++++++++	1.31	++++++++++++
Powerline modified	26 CH	5.88	++++++++++++++++++	1.77	++++++++++++++++
	TE	5.54	++++++++++++++++++	1.67	++++++++++++++
	GR	5.83	++++++++++++++++++	2.06	++++++++++++++++++
	ST	5.77	++++++++++++++++++	1.29	++++++++++
	RM	5.63	++++++++++++++++++	1.46	++++++++++++
Stone Fence non-modified	27 CH	4.56	++++++++++++++	2.04	++++++++++++++++++
	TE	3.96	++++++++++++	2.13	++++++++++++++++++
	GR	3.42	++++++++++	2.12	++++++++++++++++++
	ST	4.98	++++++++++++++++++	1.67	++++++++++++++
	RM	5.10	++++++++++++++++++	1.29	++++++++++
Cemetery #2 modified	28 CH	5.61	++++++++++++++++++++	2.04	++++++++++++++++++
	TE	4.46	++++++++++++++	2.03	++++++++++++++++++
	GR	5.00	++++++++++++++++	2.60	++++++++++++++++++++++++
	ST	4.81	++++++++++++++++	1.75	++++++++++++++
	RM	4.10	++++++++++++++	2.08	++++++++++++++++++
Oil Tank non-modified	29 CH	3.83	++++++++++++	1.81	++++++++++++++
	TE	4.04	++++++++++++++	1.53	++++++++++++
	GR	4.17	++++++++++++++	1.93	++++++++++++++++
	ST	4.74	++++++++++++++++	1.31	++++++++++
	RM	3.68	++++++++++	0.94	++++++++
Cemetery #2 non-modified	30 CH	4.68	++++++++++++++++	1.68	++++++++++++++
	TE	5.43	++++++++++++++++++	1.62	++++++++++++++
	GR	5.04	++++++++++++++++	1.52	++++++++++++
	ST	4.74	++++++++++++++++	1.27	++++++++++
	RM	4.42	++++++++++++++++	0.90	++++++++
Stone Fence modified	31 CH	5.59	++++++++++++++++++++	2.35	++++++++++++++++++++
	TE	5.11	++++++++++++++++++	2.39	++++++++++++++++++++
	GR	4.63	++++++++++++++++	2.62	++++++++++++++++++++++
	ST	5.23	++++++++++++++++++	2.07	++++++++++++++++++
	RM	4.89	++++++++++++++++++	1.37	++++++++++
Cemetery #1 modified	32 CH	4.58	++++++++++++++++	2.06	++++++++++++++++++
	TE	4.04	++++++++++++++	1.86	++++++++++++++++
	GR	4.38	++++++++++++++++	1.66	++++++++++++++
	ST	4.49	++++++++++++++++	2.14	++++++++++++++++++
	RM	3.26	++++++++++	1.45	++++++++++++
Powerline modified	33 CH	4.72	++++++++++++++++	1.77	++++++++++++++++
	TE	4.79	++++++++++++++++	1.89	++++++++++++++++
	GR	5.29	++++++++++++++++++	1.71	++++++++++++++
	ST	3.33	++++++++++	1.48	++++++++++++
	RM	4.00	++++++++++++++	1.29	++++++++++

TABLE 0.3 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Junk Cars extra	34 CH	5.10	++++++++++++++++	3.01	++++++++++++++++++++++++++++
	TE	3.00	++++++++++	2.45	++++++++++++++++++++++
	GR	4.92	++++++++++++++++	2.83	++++++++++++++++++++++++++
	ST	2.67	+++++++++	2.17	++++++++++++++++++++
	RM	1.79	++++++	1.03	+++++++++
Modern Residence modified	35 CH	5.20	+++++++++++++++++	1.63	+++++++++++++++
	TE	5.18	+++++++++++++++++	1.72	++++++++++++++++
	GR	5.42	++++++++++++++++++	1.61	+++++++++++++++
	ST	5.12	++++++++++++++++++	1.22	++++++++++
	RM	4.16	++++++++++++++	1.38	++++++++++++
Farmhouse w/barn non-modified	36 CH	5.99	+++++++++++++++++++++	1.85	++++++++++++++++++
	TE	5.78	++++++++++++++++++++	1.64	+++++++++++++++
	GR	6.29	+++++++++++++++++++++++	1.76	++++++++++++++++
	ST	5.91	++++++++++++++++++++	1.34	++++++++++++
	RM	4.95	++++++++++++++++	1.08	++++++++++
Pond modified	37 CH	7.49	++++++++++++++++++++++++++	1.74	++++++++++++++++
	TE	7.50	++++++++++++++++++++++++++	1.17	++++++++++
	GR	6.63	++++++++++++++++++++++	2.26	+++++++++++++++++++++
	ST	8.19	++++++++++++++++++++++++++++	1.12	++++++++++
	RM	6.53	++++++++++++++++++++++	1.71	++++++++++++++++
New Corn extra	38 CH	4.92	++++++++++++++++	2.01	++++++++++++++++++
	TE	5.54	++++++++++++++++++	1.93	++++++++++++++++++
	GR	5.42	++++++++++++++++++	2.43	++++++++++++++++++++++
	ST	3.98	++++++++++++	1.57	++++++++++++++
	RM	3.74	++++++++++++	1.41	++++++++++++
Modern Residence non-modified	39 CH	4.76	++++++++++++++++	1.44	++++++++++++
	TE	5.64	++++++++++++++++++	1.81	++++++++++++++++
	GR	4.75	++++++++++++++++	1.85	++++++++++++++++
	ST	5.72	++++++++++++++++++	1.59	+++++++++++++++
	RM	4.21	+++++++++++++++	1.18	++++++++++
Powerline non-modified	40 CH	5.16	++++++++++++++++++	1.67	+++++++++++++++
	TE	5.89	+++++++++++++++++++	1.75	++++++++++++++++
	GR	5.21	++++++++++++++++++	2.19	++++++++++++++++++++
	ST	5.47	+++++++++++++++++++	1.48	++++++++++++++
	RM	4.63	++++++++++++++++	1.21	++++++++++++
Farm extra	41 CH	6.64	++++++++++++++++++++++++	1.42	++++++++++++
	TE	6.46	++++++++++++++++++++++++	1.77	++++++++++++++++
	GR	5.91	++++++++++++++++++++	2.48	++++++++++++++++++++++++
	ST	6.09	+++++++++++++++++++++++	1.49	++++++++++++++
	RM	4.74	++++++++++++++++	1.37	++++++++++++
Powerline modified	42 CH	4.66	++++++++++++++++	2.09	+++++++++++++++++++
	TE	4.36	+++++++++++++++	1.64	++++++++++++++++
	GR	5.04	++++++++++++++++	2.77	++++++++++++++++++++++++++
	ST	3.65	++++++++++++	1.39	++++++++++++
	RM	3.31	++++++++++	1.06	+++++++++
Pond modified	43 CH	5.09	++++++++++++++++	1.96	++++++++++++++++++
	TE	5.96	++++++++++++++++++++	1.75	++++++++++++++++
	GR	5.83	++++++++++++++++++++	2.20	+++++++++++++++++++++
	ST	5.77	++++++++++++++++++++	1.64	++++++++++++++++
	RM	4.63	++++++++++++++++	0.96	++++++++
Red Barn non-modified	44 CH	5.70	++++++++++++++++++	1.95	++++++++++++++++++
	TE	6.29	+++++++++++++++++++++	1.59	+++++++++++++++
	GR	5.58	++++++++++++++++++	2.14	++++++++++++++++++
	ST	6.60	++++++++++++++++++++++	1.20	++++++++++
	RM	4.95	++++++++++++++++	1.47	++++++++++++

TABLE D.3 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Pond non-modified	45 CH	3.56	++++++++++++	2.03	++++++++++++++++++
	TE	3.14	++++++++++	1.11	++++++++++
	GR	3.79	++++++++++++++	1.64	++++++++++++++++
	ST	2.93	++++++++++	1.64	++++++++++++++++
	RM	2.95	++++++++++	1.02	+++++++++
Stone Fence non-modified	46 CH	3.64	++++++++++++	1.95	++++++++++++++++++
	TE	3.29	++++++++++	1.30	++++++++++++
	GR	3.38	++++++++++	2.20	++++++++++++++++++++
	ST	4.32	++++++++++++++	1.77	++++++++++++++++
	RM	3.95	++++++++++++++	1.35	++++++++++++
Limestone Barn non-modified	47 CH	5.65	++++++++++++++++++++	1.88	++++++++++++++++++
	TE	6.00	++++++++++++++++++++++	1.51	++++++++++++++
	GR	5.75	++++++++++++++++++++	2.15	++++++++++++++++++++
	ST	4.65	++++++++++++++++	1.64	++++++++++++++++
	RM	4.95	++++++++++++++++++	1.47	++++++++++++++
Oil Tank modified	48 CH	4.27	+++++++++++++++	1.91	++++++++++++++++++
	TE	3.86	++++++++++++++	1.76	++++++++++++++++
	GR	4.42	+++++++++++++++++	1.86	++++++++++++++++++
	ST	3.90	++++++++++++++	1.44	++++++++++++++
	RM	3.47	++++++++++++	1.22	++++++++++++
Powerline non-modified	49 CH	6.11	++++++++++++++++++++++	1.71	+++++++++++++++++
	TE	6.04	++++++++++++++++++++++	1.40	++++++++++++++
	GR	5.42	++++++++++++++++++	1.53	+++++++++++++++
	ST	5.44	++++++++++++++++++++	1.38	++++++++++++
	RM	5.53	++++++++++++++++++++	1.12	++++++++++
Pole Barn modified	50 CH	5.67	++++++++++++++++++++	1.76	++++++++++++++++++
	TE	6.00	++++++++++++++++++++++	1.41	++++++++++++++
	GR	5.26	++++++++++++++++++	2.03	++++++++++++++++++++
	ST	6.26	++++++++++++++++++++++	1.59	+++++++++++++++++
	RM	5.58	++++++++++++++++++++	1.39	++++++++++++
Oil Tank non-modified	51 CH	5.99	++++++++++++++++++++	1.90	++++++++++++++++++
	TE	5.61	++++++++++++++++++++	1.29	++++++++++++
	GR	5.22	++++++++++++++++++	1.65	++++++++++++++++
	ST	4.95	++++++++++++++++++	1.65	++++++++++++++++
	RM	5.26	++++++++++++++++++	1.52	+++++++++++++++
Powerline non-modified	52 CH	4.78	++++++++++++++++	1.92	++++++++++++++++++
	TE	5.18	++++++++++++++++++	1.39	++++++++++++
	GR	5.25	++++++++++++++++++	2.40	++++++++++++++++++++
	ST	4.37	+++++++++++++++	1.50	++++++++++++++
	RM	4.89	++++++++++++++++	1.29	++++++++++++
Pole Barn non-modified	53 CH	5.90	++++++++++++++++++++	1.98	++++++++++++++++++
	TE	6.11	++++++++++++++++++++++	1.57	++++++++++++++
	GR	4.65	++++++++++++++++	1.97	++++++++++++++++++
	ST	6.49	++++++++++++++++++++++	1.26	++++++++++++
	RM	5.89	++++++++++++++++++++	1.45	++++++++++++++
Limestone Barn extra	54 CH	5.49	++++++++++++++++++++	1.85	++++++++++++++++++
	TE	6.36	++++++++++++++++++++++	1.62	+++++++++++++++
	GR	5.38	++++++++++++++++++	1.93	++++++++++++++++++
	ST	5.47	++++++++++++++++++++	1.47	++++++++++++++
	RM	5.42	++++++++++++++++++++	1.84	++++++++++++++++++
Pond modified	55 CH	6.24	++++++++++++++++++++++	1.45	++++++++++++++
	TE	6.96	+++++++++++++++++++++++++	1.40	++++++++++++++
	GR	5.83	++++++++++++++++++++	2.30	++++++++++++++++++++++
	ST	5.98	++++++++++++++++++++	1.55	+++++++++++++++
	RM	5.74	++++++++++++++++++++	1.52	+++++++++++++++

TABLE D.3 Continued.

Description	Scene # Group	Mean	Preference Rating Means 1---2---3---4---5---6---7---8---9	SD	Standard Deviation 0.5--1.0--1.5--2.0--2.5--3.0
Stone Fence non-modified	56 CH	4.57	++++++++++++++++	1.99	++++++++++++++++++
	TE	4.39	++++++++++++++++	1.95	++++++++++++++++++
	GR	3.67	++++++++++++	1.58	++++++++++++++
	ST	4.63	++++++++++++++++	1.46	++++++++++++
	RM	5.47	++++++++++++++++++++	1.02	+++++++++

APPENDIX E

ANALYSIS OF VARIANCE: REGIONAL GROUPS

SCENES 1-56 (TABLES E.1 TO E.56)

SCENE PAIRS 1-25 (TABLES E.57 TO E.81)

TABLE E.1 ANOVA - Scene #1
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.50
Between-groups	13.37	2	6.68	2.25	b-URBAN	73	6.13
Within-groups	591.36	199	2.97		c-NON	74	6.01
Total	604.73	201					
					Sig.@ none		

TABLE E.2 ANOVA - Scene #2
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.40
Between-groups	3.82	2	1.91	0.83	b-URBAN	73	4.27
Within-groups	461.55	199	2.31		c-NON	74	4.59
Total	465.38	201					
					Sig.@ none		

TABLE E.3 ANOVA - Scene #3
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.00
Between-groups	16.72	2	8.36	2.26	b-URBAN	73	5.83
Within-groups	736.24	199	3.69		c-NON	74	5.32
Total	752.97	201					
					Sig.@ none		

TABLE E.4 ANOVA - Scene #4
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	3.98
Between-groups	13.10	2	6.55	2.00	b-URBAN	73	4.50
Within-groups	651.17	199	3.27		c-NON	74	3.97
Total	664.27	201					
					Sig.@ none		

TABLE E.5 ANOVA - Scene #5
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.63
Between-groups	14.71	2	7.35	1.93	b-URBAN	73	5.30
Within-groups	753.43	198	3.80		c-NON	73	5.15
Total	768.15	200					
					Sig.@ none		

TABLE E.6 ANOVA - Scene #6
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	7.47
Between-groups	19.74	2	9.87	3.59*	b-URBAN	72	6.73
Within-groups	541.01	197	2.74		c-NON	73	6.80
Total	560.75	199					
					Sig.@ a-b		

* p <.05

TABLE E.7 ANOVA - Scene #7
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.00
Between-groups	22.11	2	11.05	4.18*	b-URBAN	73	3.60
Within-groups	526.88	199	2.64		c-NON	74	4.37
Total	548.99	201					
					Sig.@ b-c		

* p <.05

TABLE E.8 ANOVA - Scene #8
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.18
Between-groups	19.14	2	9.57	3.15	b-URBAN	73	4.04
Within-groups	605.50	199	3.04		c-NON	74	3.47
Total	624.65	201					
					Sig.@ none		

TABLE E.9 ANOVA - Scene #9
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.45
Between-groups	18.26	2	9.13	2.36	b-URBAN	73	5.04
Within-groups	768.63	199	3.86		c-NON	74	5.74
Total	786.89	201					
					Sig.@ none		

TABLE E.10 ANOVA - Scene #10
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.65
Between-groups	37.37	2	18.68	3.38	b-URBAN	73	3.69
Within-groups	1100.18	199	5.52		c-NON	74	4.54
Total	1137.56	201					
					Sig.@ none		

TABLE E.11 ANOVA - Scene #11
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	7.03
Between-groups	93.78	2	46.89	11.71*	b-URBAN	72	6.63
Within-groups	792.70	198	4.00		c-NON	74	5.43
Total	886.48	200					
					Sig.@ a-c, b-c		

* $p < .05$

TABLE E.12 ANOVA - Scene #12
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.70
Between-groups	11.04	2	5.52	2.36	b-URBAN	72	5.43
Within-groups	462.90	198	2.33		c-NON	74	5.12
Total	473.95	200					
					Sig.@ none		

TABLE E.13 ANOVA - Scene #13
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.27
Between-groups	95.02	2	47.51	10.88*	b-URBAN	73	5.75
Within-groups	860.47	197	4.36		c-NON	72	4.16
Total	955.50	199					
					Sig.@ a-c, b-c		

* p <.05

TABLE E.14 ANOVA - Scene #14
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.63
Between-groups	25.60	2	12.80	3.27	b-URBAN	73	4.69
Within-groups	774.75	198	3.91		c-NON	73	3.93
Total	800.35	200					
					Sig.@ none		

TABLE E.15 ANOVA - Scene #15
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.25
Between-groups	13.27	2	6.63	1.89	b-URBAN	73	6.19
Within-groups	697.60	199	3.50		c-NON	74	5.68
Total	710.87	201					
					Sig.@ none		

TABLE E.16 ANOVA - Scene #16
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.10
Between-groups	28.93	2	14.46	3.22*	b-URBAN	73	5.40
Within-groups	893.22	199	4.48		c-NON	74	4.60
Total	922.16	201					
					Sig.@ b-c		

* p <.05

TABLE E.17 ANOVA - Scene #17
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.41
Between-groups	13.29	2	6.64	1.95	b-URBAN	73	5.76
Within-groups	679.30	199	3.41		c-NON	74	6.04
Total	692.59	201					
					Sig.@ none		

TABLE E.18 ANOVA - Scene #18
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	3.96
Between-groups	40.49	2	20.24	5.05*	b-URBAN	72	2.87
Within-groups	793.20	198	4.00		c-NON	74	3.62
Total	833.70	200					
					Sig.@ a-b		

* p <.05

TABLE E.19 ANOVA - Scene #19
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.78
Between-groups	17.19	2	8.59	3.22*	b-URBAN	73	5.64
Within-groups	531.25	199	2.66		c-NON	74	5.10
Total	548.45	201					
					Sig.@ a-c		

* p <.05

TABLE E.20 ANOVA - Scene #20
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.61
Between-groups	7.14	2	3.57	1.23	b-URBAN	72	5.66
Within-groups	577.10	198	2.91		c-NON	74	5.25
Total	584.24	200					
					Sig.@ none		

TABLE E.21 ANOVA - Scene #21
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	7.00
Between-groups	35.61	2	17.80	4.89*	b-URBAN	73	6.10
Within-groups	724.10	199	3.63		c-NON	74	6.01
Total	759.72	201					
					Sig.@ a-b, a-c		

* p <.05

TABLE E.22 ANOVA - Scene #22
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.43
Between-groups	40.11	2	20.05	5.38*	b-URBAN	73	5.32
Within-groups	742.12	199	3.72		c-NON	74	5.51
Total	782.24	201					
					Sig.@ a-b, a-c		

* p <.05

TABLE E.23 ANOVA - Scene #23
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	54	6.72
Between-groups	6.31	2	3.15	1.13	b-URBAN	73	6.38
Within-groups	551.18	198	2.78		c-NON	74	6.77
Total	557.50	200					
					Sig.@ none		

TABLE E.24 ANOVA - Scene #24
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.47
Between-groups	14.46	2	7.23	2.79	b-URBAN	73	6.15
Within-groups	516.18	199	2.59		c-NON	74	5.89
Total	530.65	201					
					Sig.@ a-b		

* p <.05

TABLE E.25 ANOVA - Scene #25
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.63
Between-groups	24.57	2	12.28	5.05*	b-URBAN	73	6.00
Within-groups	483.82	199	2.43		c-NON	74	5.77
Total	508.39	201					
					Sig.@ a-c		

* p <.05

TABLE E.26 ANOVA - Scene #26
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.03
Between-groups	10.67	2	5.33	1.94	b-URBAN	73	5.87
Within-groups	546.30	199	2.74		c-NON	74	5.48
Total	556.97	201					
					Sig.@ none		

TABLE E.27 ANOVA - Scene #27
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.47
Between-groups	37.50	2	18.75	4.95*	b-URBAN	73	4.98
Within-groups	750.64	198	3.79		c-NON	73	3.97
Total	788.14	200					
					Sig.@ b-c		

* p <.05

TABLE E.28 ANOVA - Scene #28
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.81
Between-groups	54.84	2	27.42	6.53*	b-URBAN	73	5.08
Within-groups	836.18	199	4.20		c-NON	74	4.50
Total	891.02	201					
					Sig.@ a-c		

* p <.05

TABLE E.29 ANOVA - Scene #29
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	3.90
Between-groups	2.50	2	1.25	0.04	b-URBAN	73	4.09
Within-groups	548.22	199	2.75		c-NON	74	4.18
Total	550.73	201					
					Sig.@ none		

TABLE E.30 ANOVA - Scene #30
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.01
Between-groups	4.08	2	2.04	0.88	b-URBAN	73	4.65
Within-groups	464.13	199	2.33		c-NON	74	4.82
Total	468.22	201					
					Sig.@ none		

TABLE E.31 ANOVA - Scene #31
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.27
Between-groups	177.47	2	88.73	20.68*	b-URBAN	73	5.72
Within-groups	854.09	199	4.29		c-NON	74	4.06
Total	1031.56	201					
					Sig.@ a-c, b-c		

* p <.05

TABLE E.32 ANOVA - Scene #32
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.67
Between-groups	41.12	2	20.56	5.49*	b-URBAN	73	4.68
Within-groups	745.98	199	3.74		c-NON	74	3.74
Total	787.10	201					
					Sig.@ a-c, b-c		

* p <.05

TABLE E.33 ANOVA - Scene #33
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.29
Between-groups	55.46	2	27.73	9.41*	b-URBAN	73	4.15
Within-groups	586.20	199	2.94		c-NON	74	4.08
Total	641.66	201					
					Sig.@ a-b, a-c		

* p <.05

TABLE E.34 ANOVA - Scene #34
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.21
Between-groups	5.29	2	2.64	0.32	b-URBAN	73	3.83
Within-groups	1657.29	198	8.37		c-NON	73	3.87
Total	1662.59	200					
					Sig.@ none		

TABLE E.35 ANOVA - Scene #35
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.90
Between-groups	3.07	2	1.53	0.63	b-URBAN	73	5.16
Within-groups	484.53	199	2.43		c-NON	74	5.20
Total	487.60	201					
					Sig.@ none		

TABLE E.36 ANOVA - Scene #36
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.49
Between-groups	13.70	2	6.85	2.49	b-URBAN	73	5.90
Within-groups	547.43	199	2.75		c-NON	74	6.14
Total	561.14	201					
					Sig.@ none		

TABLE E.37 ANOVA - Scene #37
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	7.03
Between-groups	13.40	2	6.70	2.27	b-URBAN	73	7.68
Within-groups	588.12	199	2.95		c-NON	74	7.47
Total	601.52	201					

Sig.@ none

TABLE E.38 ANOVA - Scene #38
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.18
Between-groups	14.21	2	7.10	1.79	b-URBAN	73	4.54
Within-groups	789.41	199	3.96		c-NON	74	4.63
Total	803.62	201					

Sig.@ none

TABLE E.39 ANOVA - Scene #39
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.81
Between-groups	3.92	2	1.96	0.76	b-URBAN	73	5.10
Within-groups	514.66	199	2.58		c-NON	74	5.14
Total	518.59	201					

Sig.@ none

TABLE E.40 ANOVA - Scene #40
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.00
Between-groups	9.12	2	4.56	1.60	b-URBAN	73	5.53
Within-groups	567.78	199	2.85		c-NON	74	5.24
Total	576.91	201					

Sig.@ none

TABLE E.41 ANOVA - Scene #41
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	54	6.33
Between-groups	1.58	2	0.79	0.27	b-URBAN	73	6.27
Within-groups	582.42	199	2.94		c-NON	74	6.12
Total	584.00	201					
					Sig.@ none		

TABLE E.42 ANOVA - Scene #42
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	54	4.92
Between-groups	28.97	2	14.48	3.79*	b-URBAN	73	3.98
Within-groups	756.64	199	3.82		c-NON	74	4.20
Total	785.62	201					
					Sig.@ a-b		

* p <.05

TABLE E.43 ANOVA - Scene #43
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.74
Between-groups	9.68	2	4.84	1.40	b-URBAN	73	5.34
Within-groups	688.83	199	3.46		c-NON	74	5.20
Total	698.51	201					
					Sig.@ none		

TABLE E.44 ANOVA - Scene #44
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.41
Between-groups	18.90	2	9.45	2.99	b-URBAN	73	5.91
Within-groups	630.24	199	3.16		c-NON	74	6.18
Total	649.14	201					
					Sig.@ a-c		

* p <.05

TABLE E.45 ANOVA - Scene #45
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	3.40
Between-groups	15.77	2	7.88	2.66	b-URBAN	73	2.98
Within-groups	589.33	199	2.96		c-NON	74	3.63
Total	605.10	201					
					Sig.@ none		

TABLE E.46 ANOVA - Scene #46
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	3.65
Between-groups	17.99	2	8.99	2.70	b-URBAN	73	4.10
Within-groups	633.57	199	3.33		c-NON	74	3.41
Total	681.56	201					
					Sig.@ none		

TABLE E.47 ANOVA - Scene #47
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.89
Between-groups	16.47	2	8.23	2.49	b-URBAN	73	5.31
Within-groups	659.05	199	3.31		c-NON	74	5.20
Total	675.52	201					
					Sig.@ none		

TABLE E.48 ANOVA - Scene #48
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	3.89
Between-groups	4.84	2	2.42	0.79	b-URBAN	72	4.02
Within-groups	603.88	198	3.04		c-NON	74	4.20
Total	608.72	200					
					Sig.@ none		

TABLE E.49 ANOVA - Scene #49
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.09
Between-groups	5.78	2	2.89	1.20	b-URBAN	73	5.76
Within-groups	479.80	199	2.41		c-NON	74	5.67
Total	485.58	201					
					Sig.@ none		

TABLE E.50 ANOVA - Scene #50
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	54	5.55
Between-groups	5.93	2	2.96	1.03	b-URBAN	72	5.75
Within-groups	565.81	197	2.87		c-NON	74	5.98
Total	571.75	199					
					Sig.@ none		

TABLE E.51 ANOVA - Scene #51
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	54	5.74
Between-groups	3.10	2	1.55	0.51	b-URBAN	73	5.42
Within-groups	606.48	199	3.06		c-NON	74	5.55
Total	609.59	201					
					Sig.@ none		

TABLE E.52 ANOVA - Scene #52
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.16
Between-groups	9.86	2	4.93	1.55	b-URBAN	73	4.73
Within-groups	634.98	199	3.19		c-NON	74	4.62
Total	644.85	201					
					Sig.@ none		

TABLE E.53 ANOVA - Scene #53
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	54	5.59
Between-groups	12.06	2	6.03	1.87	b-URBAN	73	6.20
Within-groups	638.31	199	3.22		c-NON	74	5.85
Total	650.38	201					
					Sig.@ none		

TABLE E.54 ANOVA - Scene #54
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	5.43
Between-groups	4.01	2	2.00	0.64	b-URBAN	73	5.76
Within-groups	621.05	199	3.12		c-NON	74	5.51
Total	625.06	201					
					Sig.@ none		

TABLE E.55 ANOVA - Scene #55
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	6.07
Between-groups	12.01	2	6.00	2.33	b-URBAN	73	6.50
Within-groups	512.83	199	2.57		c-NON	74	5.95
Total	524.85	201					
					Sig.@ none		

TABLE E.56 ANOVA - Scene #5
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	4.43
Between-groups	3.07	2	1.53	0.47	b-URBAN	73	4.69
Within-groups	647.18	199	3.25		c-NON	74	4.44
Total	650.25	201					
					Sig.@ none		

TABLE E.57 ANOVA - Rating Difference--Scene Pair #1
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	1.18
Between-groups	27.92	2	13.96	3.96*	b-URBAN	73	0.25
Within-groups	697.33	198	3.52		c-NON	74	0.76
Total	725.25	200					
					Sig.@ a-b		

* p <.05

TABLE E.58 ANOVA - Rating Difference--Scene Pair #2
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.38
Between-groups	17.17	2	8.59	2.18	b-URBAN	73	-0.10
Within-groups	782.39	199	3.93		c-NON	74	0.55
Total	799.56	201					
					Sig.@ none		

TABLE E.59 ANOVA - Rating Difference--Scene Pair #3
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.09
Between-groups	0.05	2	0.03	0.01	b-URBAN	73	0.05
Within-groups	598.11	199	3.00		c-NON	74	0.05
Total	598.16	201					
					Sig.@ none		

TABLE E.60 ANOVA - Rating Difference--Scene Pair #4
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	2.05
Between-groups	71.23	2	35.16	7.44	b-URBAN	73	0.79
Within-groups	943.15	197	4.78		c-NON	74	0.65
Total	1014.38	199					
					Sig.@ none		

TABLE E.61 ANOVA - Rating Difference--Scene Pair #5
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.74
Between-groups	1.08	2	0.54	0.14	b-URBAN	73	0.68
Within-groups	776.35	199	3.90		c-NON	74	0.56
Total	777.43	201					
					Sig.@ none		

TABLE E.62 ANOVA - Rating Difference--Scene Pair #6
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-0.04
Between-groups	14.10	2	7.05	2.45	b-URBAN	73	-0.47
Within-groups	566.52	197	2.87		c-NON	74	0.13
Total	580.62	199					
					Sig.@ none		

TABLE E.63 ANOVA - Rating Difference--Scene Pair #7
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.69
Between-groups	26.75	2	13.37	2.24	b-URBAN	73	0.17
Within-groups	1189.52	199	5.98		c-NON	74	-0.22
Total	1216.28	201					
					Sig.@ none		

TABLE E.64 ANOVA - Rating Difference--Scene Pair #8
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.80
Between-groups	43.27	2	21.63	3.81*	b-URBAN	73	0.40
Within-groups	1130.85	199	5.68		c-NON	74	-0.32
Total	1174.12	201					
					Sig.@ a-c		

* $p < .05$

TABLE E.65 ANOVA - Rating Difference--Scene Pair #9
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	1.93
Between-groups	38.84	2	19.42	4.53*	b-URBAN	73	1.19
Within-groups	849.70	198	4.29		c-NON	74	0.82
Total	888.55	200					
					Sig.@ a-c		

* p <.05

TABLE E.66 ANOVA - Rating Difference--Scene Pair #10
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.09
Between-groups	4.31	2	2.15	0.74	b-URBAN	73	-0.28
Within-groups	571.56	197	2.90		c-NON	74	-0.13
Total	575.87	199					
					Sig.@ none		

TABLE E.67 ANOVA - Rating Difference--Scene Pair #11
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	1.52
Between-groups	16.57	2	8.28	1.64	b-URBAN	73	0.84
Within-groups	1001.79	198	5.05		c-NON	74	1.35
Total	1018.36	200					
					Sig.@ none		

TABLE E.68 ANOVA - Rating Difference--Scene Pair #12
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	2.62
Between-groups	123.15	2	61.57	11.98*	b-URBAN	73	1.61
Within-groups	1023.10	199	5.14		c-NON	74	0.64
Total	1146.25	201					
					Sig.@ a-b, a-c, b-c		

* p <.05

TABLE E.69 ANOVA - Rating Difference--Scene Pair #13
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.20
Between-groups	20.74	2	10.37	2.27	b-URBAN	73	0.00
Within-groups	904.77	198	4.56		c-NON	74	-0.56
Total	925.52	200					
					Sig.@ none		

TABLE E.70 ANOVA - Rating Difference--Scene Pair #14
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-0.43
Between-groups	29.98	2	14.99	2.64	b-URBAN	73	-1.41
Within-groups	1124.97	198	5.68		c-NON	74	-0.97
Total	1154.95	200					
					Sig.@ none		

TABLE E.71 ANOVA - Rating Difference--Scene Pair #15
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-0.29
Between-groups	13.65	2	6.82	1.53	b-URBAN	73	-0.38
Within-groups	881.87	198	4.45		c-NON	74	0.18
Total	895.52	200					
					Sig.@ none		

TABLE E.72 ANOVA - Rating Difference--Scene Pair #16
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-0.01
Between-groups	0.51	2	0.25	0.08	b-URBAN	73	-0.02
Within-groups	670.43	198	3.38		c-NON	74	0.08
Total	670.95	200					
					Sig.@ none		

TABLE E.73 ANOVA - Rating Difference--Scene Pair #17
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-0.36
Between-groups	2.79	2	1.39	0.29	b-URBAN	73	-0.23
Within-groups	942.42	198	4.75		c-NON	74	-0.06
Total	945.22	200					
					Sig.@ none		

TABLE E.74 ANOVA - Rating Difference--Scene Pair #18
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-1.12
Between-groups	70.36	2	35.18	5.83*	b-URBAN	73	-1.94
Within-groups	1200.05	199	6.03		c-NON	74	-0.56
Total	1270.41	201					
					Sig.@ b-c		

* p <.05

TABLE E.75 ANOVA - Rating Difference--Scene Pair #19
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.12
Between-groups	19.24	2	9.62	2.30	b-URBAN	73	-0.58
Within-groups	832.15	199	4.18		c-NON	74	-0.54
Total	851.40	201					
					Sig.@ none		

TABLE E.76 ANOVA - Rating Difference--Scene Pair #20
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-1.16
Between-groups	11.80	2	5.90	1.10	b-URBAN	73	-1.78
Within-groups	1062.43	198	5.36		c-NON	74	-1.47
Total	1074.24	200					
					Sig.@ none		

TABLE E.77 ANOVA - Rating Difference--Scene Pair #21
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.56
Between-groups	33.32	2	16.66	5.55*	b-URBAN	73	-0.27
Within-groups	597.88	199	3.00		c-NON	74	-0.40
Total	631.21	201					
					Sig.@ a-b, a-c		

* p <.05

TABLE E.78 ANOVA - Rating Difference--Scene Pair #22
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.32
Between-groups	22.08	2	11.04	2.37	b-URBAN	73	1.16
Within-groups	925.75	199	4.65		c-NON	74	0.75
Total	947.84	201					
					Sig.@ none		

TABLE E.79 ANOVA - Rating Difference--Scene Pair #23
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	2.60
Between-groups	13.65	2	6.82	1.53	b-URBAN	73	2.35
Within-groups	886.81	199	4.45		c-NON	74	1.95
Total	900.47	201					
					Sig.@ none		

TABLE E.80 ANOVA - Rating Difference--Scene Pair #24
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	0.60
Between-groups	0.84	2	0.42	0.13	b-URBAN	73	0.61
Within-groups	674.58	199	3.38		c-NON	74	0.74
Total	675.43	201					
					Sig.@ none		

TABLE E.81 ANOVA - Rating Difference--Scene Pair #25
Regional Groups

Source of Variation	SS	df	MS	F		N	Mean
					a-RURAL	55	-1.09
Between-groups	40.05	2	20.02	4.62*	b-URBAN	73	-1.71
Within-groups	853.50	197	4.33		c-NON	74	-0.60
Total	893.55	199					
					Sig.@ b-c		

* p <.05

APPENDIX F

ANALYSIS OF VARIANCE: VIEWER SUBGROUPS

SCENES 1-56 (TABLES F.1 TO F.56)

SCENE PAIRS 1-25 (TABLES F.57 TO F.81)

Table F.1 ANOVA - Scene#1
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.94
Between-groups	30.35	4	7.58	2.60*	b-TEACHERS	28	6.46
Within-groups	574.37	197	2.91		c-GRANGE	24	5.25
Total	604.73	201			d-STUDENTS	43	6.18
					e-RES_MGRS	19	5.26

Sig.@ b-c

* p <.05

Table F.2 ANOVA - Scene#2
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.31
Between-groups	25.43	4	6.35	2.85*	b-TEACHERS	28	5.21
Within-groups	439.94	197	2.23		c-GRANGE	24	4.66
Total	465.38	201			d-STUDENTS	43	4.16
					e-RES_MGRS	19	4.05

Sig.@ b-e

* p <.05

Table F.3 ANOVA - Scene#3
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.04
Between-groups	41.68	4	10.42	2.89*	b-TEACHERS	28	5.78
Within-groups	711.28	197	3.61		c-GRANGE	24	4.54
Total	752.97	201			d-STUDENTS	43	5.58
					e-RES_MGRS	19	5.78

Sig.@ a-c

* p <.05

Table F.4 ANOVA - Scene#4
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.03
Between-groups	31.61	4	7.90	2.46*	b-TEACHERS	28	4.85
Within-groups	632.66	197	3.21		c-GRANGE	24	3.70
Total	664.27	201			d-STUDENTS	43	4.51
					e-RES_MGRS	19	3.57

Sig.@ b-e

* p <.05

Table F.5 ANOVA - Scene#5
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.59
Between-groups	76.19	4	19.04	5.40*	b-TEACHERS	28	5.21
Within-groups	691.96	196	3.53		c-GRANGE	24	5.04
Total	768.15	200			d-STUDENTS	43	4.51
					e-RES_MGRS	18	3.61

Sig.@ a-e, b-e, c-e

* p <.05

Table F.6 ANOVA - Scene#6
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	87	7.27
Between-groups	33.45	4	8.36	3.09	b-TEACHERS	28	7.39
Within-groups	527.30	195	2.70		c-GRANGE	24	6.75
Total	560.75	199			d-STUDENTS	43	6.41
					e-RES_MGRS	18	6.38

Sig.@ none

Table F.7 ANOVA - Scene#7
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.11
Between-groups	22.95	4	5.73	2.15	b-TEACHERS	28	4.32
Within-groups	526.04	197	2.67		c-GRANGE	24	4.41
Total	548.99	201			d-STUDENTS	43	3.55
					e-RES_MGRS	19	3.42
					Sig.@ none		

Table F.8 ANOVA - Scene#8
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	3.51
Between-groups	20.48	4	5.12	1.67	b-TEACHERS	28	4.17
Within-groups	604.16	197	3.06		c-GRANGE	24	4.20
Total	624.65	201			d-STUDENTS	43	4.13
					e-RES_MGRS	19	4.05
					Sig.@ none		

Table F.9 ANOVA - Scene#9
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.97
Between-groups	80.99	4	20.24	5.65*	b-TEACHERS	28	5.64
Within-groups	705.89	197	3.58		c-GRANGE	24	5.20
Total	786.89	201			d-STUDENTS	43	4.34
					e-RES_MGRS	19	5.10
					Sig.@ a-d		

* $p < .05$

Table F.10 ANOVA - Scene#10
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.02
Between-groups	172.62	4	43.15	8.81*	b-TEACHERS	28	4.39
Within-groups	964.93	197	4.89		c-GRANGE	24	4.75
Total	1137.56	201			d-STUDENTS	43	2.69
					e-RES_MGRS	19	3.52

Sig.@ a-d, b-d, c-d

* p <.05

Table F.11 ANOVA - Scene#11
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.07
Between-groups	28.51	4	7.12	1.63	b-TEACHERS	28	7.17
Within-groups	857.97	196	4.37		c-GRANGE	24	6.50
Total	886.48	200			d-STUDENTS	42	6.19
					e-RES_MGRS	19	6.05

Sig.@ none

Table F.12 ANOVA - Scene#12
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.52
Between-groups	16.12	4	4.03	1.73	b-TEACHERS	27	5.59
Within-groups	457.82	196	2.33		c-GRANGE	24	5.75
Total	473.95	200			d-STUDENTS	43	4.95
					e-RES_MGRS	19	5.05

Sig.@ none

Table F.13 ANOVA - Scene#13
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	87	4.40
Between-groups	66.35	4	16.58	3.64*	b-TEACHERS	28	5.53
Within-groups	889.14	195	4.55		c-GRANGE	24	5.08
Total	955.50	199			d-STUDENTS	42	5.85
					e-RES_MGRS	19	5.26

Sig.@ a-d

* p <.05

Table F.14 ANOVA - Scene#14
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.45
Between-groups	38.73	4	9.68	2.49*	b-TEACHERS	27	4.59
Within-groups	761.62	196	3.88		c-GRANGE	24	3.41
Total	800.35	200			d-STUDENTS	43	4.34
					e-RES_MGRS	19	5.26

Sig.@ c-e

* p <.05

Table F.15 ANOVA - Scene#15
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.00
Between-groups	21.23	4	5.30	1.52	b-TEACHERS	28	6.67
Within-groups	689.64	197	3.50		c-GRANGE	24	5.45
Total	710.87	201			d-STUDENTS	43	5.88
					e-RES_MGRS	19	6.21

Sig.@ none

Table F.16 ANOVA - Scene#16
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.50
Between-groups	76.36	4	19.09	4.45	b-TEACHERS	28	5.78
Within-groups	845.79	197	4.29		c-GRANGE	24	5.41
Total	922.16	201			d-STUDENTS	43	5.81
					e-RES_MGRS	19	4.47

Sig.@ none

Table F.17 ANOVA - Scene#17
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.54
Between-groups	91.96	4	22.99	7.54*	b-TEACHERS	28	6.46
Within-groups	600.63	197	3.04		c-GRANGE	24	6.29
Total	692.59	201			d-STUDENTS	43	4.93
					e-RES_MGRS	19	5.31

Sig.@ a-d, b-d, c-d

* p <.05

Table F.18 ANOVA - Scene#18
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.13
Between-groups	126.76	4	31.69	8.79*	b-TEACHERS	28	3.10
Within-groups	706.93	196	3.60		c-GRANGE	24	4.08
Total	833.70	200			d-STUDENTS	42	2.35
					e-RES_MGRS	19	2.36

Sig.@ a-d, a-e, c-d, c-e

* p <.05

Table F.19 ANOVA - Scene#19
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.02
Between-groups	58.61	4	14.65	5.89*	b-TEACHERS	28	5.57
Within-groups	489.83	197	2.48		c-GRANGE	24	5.20
Total	548.45	201			d-STUDENTS	43	4.69
					e-RES_MGRS	19	5.00

Sig.@ a-d

* p <.05

Table F.20 ANOVA - Scene#20
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	87	5.75
Between-groups	21.02	4	5.25	1.83	b-TEACHERS	28	5.78
Within-groups	563.22	196	2.87		c-GRANGE	24	5.37
Total	584.24	200			d-STUDENTS	43	5.13
					e-RES_MGRS	19	4.89

Sig.@ none

Table F.21 ANOVA - Scene#21
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.85
Between-groups	67.15	4	16.78	4.78*	b-TEACHERS	28	6.46
Within-groups	692.57	197	3.51		c-GRANGE	24	5.79
Total	759.72	201			d-STUDENTS	43	5.41
					e-RES_MGRS	19	6.31

Sig.@ a-d

* p <.05

Table F.22 ANOVA - Scene#22
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.80
Between-groups	99.34	4	24.83	7.16*	b-TEACHERS	28	5.07
Within-groups	682.89	197	3.46		c-GRANGE	24	4.08
Total	782.24	201			d-STUDENTS	43	6.30
					e-RES_MGRS	19	5.63

Sig.@ a-d, c-d, c-e,

* p <.05

Table F.23 ANOVA - Scene#23
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.46
Between-groups	12.53	4	3.13	1.13	b-TEACHERS	28	7.03
Within-groups	544.97	196	2.78		c-GRANGE	23	6.21
Total	557.50	200			d-STUDENTS	43	6.81
					e-RES_MGRS	19	6.73

Sig.@ none

Table F.24 ANOVA - Scene#24
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.70
Between-groups	13.39	4	3.34	1.28	b-TEACHERS	28	6.10
Within-groups	517.25	197	2.62		c-GRANGE	24	5.45
Total	530.65	201			d-STUDENTS	43	6.18
					e-RES_MGRS	19	6.10

Sig.@ none

Table F.25 ANOVA - Scene#25
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.02
Between-groups	14.82	4	3.70	1.48	b-TEACHERS	28	6.75
Within-groups	493.56	197	2.50		c-GRANGE	24	5.87
Total	508.39	201			d-STUDENTS	43	5.93
					e-RES_MGRS	19	6.05

Sig.@ none

Table F.26 ANOVA - Scene#26
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.87
Between-groups	2.95	4	0.73	0.26	b-TEACHERS	28	5.53
Within-groups	554.01	197	2.81		c-GRANGE	24	5.83
Total	556.97	201			d-STUDENTS	43	5.76
					e-RES_MGRS	19	5.63

Sig.@ none

Table F.27 ANOVA - Scene#27
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.55
Between-groups	52.87	4	13.21	3.52*	b-TEACHERS	28	3.96
Within-groups	735.27	196	3.75		c-GRANGE	24	3.41
Total	788.14	200			d-STUDENTS	42	4.97
					e-RES_MGRS	19	5.10

Sig.@ c-d, c-e

* $p < .05$

Table F.28 ANOVA - Scene#28
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.61
Between-groups	56.90	4	14.22	3.36*	b-TEACHERS	28	4.46
Within-groups	834.12	197	4.23		c-GRANGE	24	5.00
Total	891.02	201			d-STUDENTS	43	4.81
					e-RES_MGRS	19	4.10

Sig.@ a-e

* p <.05

Table F.29 ANOVA - Scene#29
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	3.82
Between-groups	27.70	4	6.92	2.61	b-TEACHERS	28	4.03
Within-groups	523.03	197	2.65		c-GRANGE	24	4.16
Total	550.73	201			d-STUDENTS	43	4.74
					e-RES_MGRS	19	3.68

Sig.@ none

Table F.30 ANOVA - Scene#30
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.68
Between-groups	16.49	4	4.12	1.80	b-TEACHERS	28	5.42
Within-groups	451.72	197	2.29		c-GRANGE	24	5.04
Total	468.22	201			d-STUDENTS	43	4.74
					e-RES_MGRS	19	4.42

Sig.@ none

Table F.31 ANOVA - Scene#31
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.59
Between-groups	22.52	4	5.63	1.10	b-TEACHERS	28	5.10
Within-groups	1009.04	197	5.12		c-GRANGE	24	4.62
Total	1031.56	201			d-STUDENTS	43	5.23
					e-RES_MGRS	19	4.89

Sig.@ none

Table F.32 ANOVA - Scene#32
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.57
Between-groups	30.64	4	7.66	2.00	b-TEACHERS	28	4.03
Within-groups	756.46	197	3.83		c-GRANGE	24	4.37
Total	787.10	201			d-STUDENTS	43	4.48
					e-RES_MGRS	19	3.26

Sig.@ none

Table F.33 ANOVA - Scene#33
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.72
Between-groups	85.09	4	21.27	7.53*	b-TEACHERS	28	4.78
Within-groups	556.56	197	2.82		c-GRANGE	24	5.29
Total	641.66	201			d-STUDENTS	43	3.32
					e-RES_MGRS	19	4.00

Sig.@ c-e, a-d, b-d, c-d

* p <.05

Table F.34 ANOVA - Scene#34
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	87	5.10
Between-groups	322.09	4	80.52	11.77*	b-TEACHERS	28	3.00
Within-groups	1340.50	196	6.83		c-GRANGE	24	4.91
Total	1662.59	200			d-STUDENTS	43	2.67
					e-RES_MGRS	19	1.78
				Sig.@	a-b,a-d,a-e,c-b,c-d, c-e		

* p <.05

Table F.35 ANOVA - Scene#35
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.20
Between-groups	20.40	4	5.10	2.15*	b-TEACHERS	28	5.17
Within-groups	467.20	197	2.37		c-GRANGE	24	5.41
Total	487.60	201			d-STUDENTS	43	5.11
					e-RES_MGRS	19	4.15
				Sig.@	c-e		

* p <.05

Table F.36 ANOVA - Scene#36
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.98
Between-groups	21.91	4	5.47	2.00*	b-TEACHERS	28	5.78
Within-groups	539.23	197	2.73		c-GRANGE	24	6.29
Total	561.14	201			d-STUDENTS	43	5.90
					e-RES_MGRS	19	4.94
				Sig.@	c-e		

* p <.05

Table F.37 ANOVA - Scene#37
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	7.48
Between-groups	61.29	4	15.32	5.59*	b-TEACHERS	28	7.50
Within-groups	540.23	197	2.74		c-GRANGE	24	6.50
Total	601.52	201			d-STUDENTS	43	8.18
					e-RES_MGRS	19	6.52
					Sig.@	c-d, d-e	

* p <.05

Table F.38 ANOVA - Scene#38
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.92
Between-groups	75.72	4	18.93	5.12*	b-TEACHERS	28	5.53
Within-groups	727.90	197	3.69		c-GRANGE	24	5.41
Total	803.62	201			d-STUDENTS	43	3.97
					e-RES_MGRS	19	3.73
					Sig.@	b-d,b-e,c-d,c-e	

* p <.05

Table F.39 ANOVA - Scene#39
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.76
Between-groups	51.03	4	12.75	5.38*	b-TEACHERS	28	5.64
Within-groups	467.55	197	2.37		c-GRANGE	24	4.83
Total	518.59	201			d-STUDENTS	43	5.72
					e-RES_MGRS	19	4.21
					Sig.@	b-e, d-e	

* p <.05

Table F.40 ANOVA - Scene#40
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.15
Between-groups	21.38	4	5.34	1.90	b-TEACHERS	28	5.89
Within-groups	555.52	197	2.81		c-GRANGE	24	5.20
Total	576.91	201			d-STUDENTS	43	5.46
					e-RES_MGRS	19	4.63
					Sig.@	none	

Table F.41 ANOVA - Scene#41
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.63
Between-groups	61.54	4	15.38	5.77*	b-TEACHERS	28	6.46
Within-groups	522.46	196	2.66		c-GRANGE	23	5.91
Total	584.00	200			d-STUDENTS	43	6.09
					e-RES_MGRS	19	4.73
					Sig.@	a-e,b-e,c-e,d-e	

* p <.05

Table F.42 ANOVA - Scene#42
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.65
Between-groups	60.59	4	15.14	4.09*	b-TEACHERS	28	4.35
Within-groups	725.03	196	3.69		c-GRANGE	23	5.04
Total	785.62	200			d-STUDENTS	43	3.65
					e-RES_MGRS	19	3.31
					Sig.@	c-d, c-e	

* p <.05

Table F.43 ANOVA - Scene#43
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.09
Between-groups	38.85	4	9.71	2.90*	b-TEACHERS	28	5.96
Within-groups	659.66	197	3.34		c-GRANGE	24	5.83
Total	698.51	201			d-STUDENTS	43	5.76
					e-RES_MGRS	19	4.63

Sig.@ b-e

* p <.05

Table F.44 ANOVA - Scene#44
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.70
Between-groups	45.73	4	11.43	3.73*	b-TEACHERS	28	6.28
Within-groups	603.41	197	3.06		c-GRANGE	24	5.58
Total	649.14	201			d-STUDENTS	43	6.55
					e-RES_MGRS	19	4.94

Sig.@ b-e, d-e

* p <.05

Table F.45 ANOVA - Scene#45
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	3.55
Between-groups	20.26	4	5.06	1.71	b-TEACHERS	28	3.14
Within-groups	584.84	197	2.96		c-GRANGE	24	3.79
Total	605.10	201			d-STUDENTS	43	2.93
					e-RES_MGRS	19	2.94

Sig.@ none

Table F.46 ANOVA - Scene#46
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	3.63
Between-groups	25.47	4	6.36	1.91	b-TEACHERS	28	3.28
Within-groups	656.09	197	3.33		c-GRANGE	24	3.37
Total	681.56	201			d-STUDENTS	43	4.32
					e-RES_MGRS	19	3.94

Sig.@ none

Table F.47 ANOVA - Scene#47
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.64
Between-groups	46.23	4	11.55	3.62*	b-TEACHERS	28	6.00
Within-groups	629.29	197	3.19		c-GRANGE	24	5.75
Total	675.52	201			d-STUDENTS	43	4.65
					e-RES_MGRS	19	4.94

Sig.@ b-d

* p <.05

Table F.48 ANOVA - Scene#48
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.27
Between-groups	15.65	4	3.91	1.29	b-TEACHERS	28	3.85
Within-groups	593.07	196	3.02		c-GRANGE	24	4.41
Total	608.72	200			d-STUDENTS	42	3.90
					e-RES_MGRS	19	3.47

Sig.@ none

Table F.49 ANOVA - Scene#49
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.11
Between-groups	20.58	4	5.14	2.18	b-TEACHERS	28	6.03
Within-groups	465.00	197	2.36		c-GRANGE	24	5.41
Total	485.58	201			d-STUDENTS	43	5.44
					e-RES_MGRS	19	5.52

Sig.@ none

Table F.50 ANOVA - Scene#50
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.67
Between-groups	19.12	4	4.78	1.69	b-TEACHERS	28	6.00
Within-groups	552.62	195	2.83		c-GRANGE	23	5.26
Total	571.75	199			d-STUDENTS	42	6.26
					e-RES_MGRS	19	5.57

Sig.@ none

Table F.51 ANOVA - Scene#51
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.98
Between-groups	36.42	4	9.10	3.11	b-TEACHERS	28	5.60
Within-groups	573.17	196	2.92		c-GRANGE	23	5.21
Total	609.59	200			d-STUDENTS	43	4.95
					e-RES_MGRS	19	5.26

Sig.@ none

Table F.52 ANOVA - Scene#52
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.77
Between-groups	16.95	4	4.23	1.33	b-TEACHERS	28	5.17
Within-groups	627.89	197	3.18		c-GRANGE	24	5.25
Total	644.85	201			d-STUDENTS	43	4.37
					e-RES_MGRS	19	4.89

Sig.@ none

Table F.53 ANOVA - Scene#53
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.89
Between-groups	51.87	4	12.96	4.25*	b-TEACHERS	28	6.10
Within-groups	598.50	196	3.05		c-GRANGE	23	4.65
Total	650.38	200			d-STUDENTS	43	6.48
					e-RES_MGRS	19	5.89

Sig.@ a-c,b-c,d-c,e-c

* p <.05

Table F.54 ANOVA - Scene#54
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	5.48
Between-groups	19.69	4	4.92	1.60	b-TEACHERS	28	6.35
Within-groups	605.37	197	3.07		c-GRANGE	24	5.37
Total	625.06	201			d-STUDENTS	43	5.46
					e-RES_MGRS	19	5.42

Sig.@ none

Table F.55 ANOVA - Scene#55
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	6.23
Between-groups	25.90	4	6.47	2.56*	b-TEACHERS	28	6.96
Within-groups	498.94	197	2.53		c-GRANGE	24	5.83
Total	524.85	201			d-STUDENTS	43	5.97
					e-RES_MGRS	19	5.73

Sig.@ b-c, b-e

* p <.05

Table F.56 ANOVA - Scene#56
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	4.56
Between-groups	35.87	4	8.96	2.88*	b-TEACHERS	28	4.39
Within-groups	614.38	197	3.11		c-GRANGE	24	3.66
Total	650.25	201			d-STUDENTS	43	4.62
					e-RES_MGRS	19	5.47

Sig.@ c-e

* p <.05

Table F.57 ANOVA - Rating Difference--Scene Pair #1
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.52
Between-groups	15.83	4	3.96	1.09	b-TEACHERS	28	0.57
Within-groups	709.42	196	3.62		c-GRANGE	23	0.91
Total	725.25	200			d-STUDENTS	43	0.63
					e-RES_MGRS	19	1.47
					Sig.@ none		

Table F.58 ANOVA - Rating Difference--Scene Pair #2
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.67
Between-groups	86.34	4	21.58	5.96	b-TEACHERS	28	0.93
Within-groups	713.22	197	3.62		c-GRANGE	24	0.46
Total	799.56	201			d-STUDENTS	43	-0.83
					e-RES_MGRS	19	-0.31
					Sig.@ a-d, b-d		

* p <.05

Table F.59 ANOVA - Rating Difference--Scene Pair #3
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.44
Between-groups	46.42	4	11.60	4.14	b-TEACHERS	28	-0.46
Within-groups	551.74	197	2.80		c-GRANGE	24	0.58
Total	598.16	201			d-STUDENTS	43	-0.60
					e-RES_MGRS	19	-0.05
					Sig.@ c-d		

* p <.05

Table F.60 ANOVA - Rating Difference--Scene Pair #4
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	87	1.55
Between-groups	89.69	4	22.42	4.73	b-TEACHERS	28	1.10
Within-groups	924.69	195	4.74		c-GRANGE	24	1.16
Total	1014.38	199			d-STUDENTS	43	-0.14
					e-RES_MGRS	18	1.66
					Sig.@ a-d, d-e		

* p <.05

Table F.61 ANOVA - Rating Difference--Scene Pair #5
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.37
Between-groups	34.49	4	8.62	2.29	b-TEACHERS	28	0.75
Within-groups	742.94	197	3.77		c-GRANGE	24	0.13
Total	777.43	201			d-STUDENTS	43	1.28
					e-RES_MGRS	19	1.10
					Sig.@ none		

Table F.62 ANOVA - Rating Difference--Scene Pair #6
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-0.23
Between-groups	14.78	4	3.70	1.27	b-TEACHERS	28	-0.11
Within-groups	565.84	195	2.90		c-GRANGE	23	0.61
Total	580.62	199			d-STUDENTS	42	-0.26
					e-RES_MGRS	19	-0.31
					Sig.@ none		

Table F.63 ANOVA - Rating Difference--Scene Pair #7
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.54
Between-groups	51.94	4	12.98	2.20	b-TEACHERS	28	-0.82
Within-groups	1164.34	197	5.91		c-GRANGE	24	0.66
Total	1216.27	201			d-STUDENTS	43	-0.02
					e-RES_MGRS	19	-0.31
					Sig.@	none	

Table F.64 ANOVA - Rating Difference--Scene Pair #8
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.93
Between-groups	91.71	4	22.93	4.17	b-TEACHERS	28	-0.96
Within-groups	1082.41	197	5.49		c-GRANGE	24	-0.04
Total	1174.12	201			d-STUDENTS	43	0.07
					e-RES_MGRS	19	-0.32
					Sig.@	a-b	

* p <.05

Table F.65 ANOVA - Rating Difference--Scene Pair #9
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	1.58
Between-groups	39.55	4	9.89	2.28	b-TEACHERS	28	1.39
Within-groups	848.99	196	4.33		c-GRANGE	24	1.08
Total	888.55	200			d-STUDENTS	42	0.45
					e-RES_MGRS	19	1.58
					Sig.@	none	

Table F.66 ANOVA - Rating Difference--Scene Pair #10
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	87	-0.25
Between-groups	9.59	4	2.39	0.83	b-TEACHERS	27	-0.26
Within-groups	566.28	195	2.90		c-GRANGE	24	0.37
Total	575.87	199			d-STUDENTS	43	-0.19
					e-RES_MGRS	19	0.15

Sig.@ none

Table F.67 ANOVA - Rating Difference--Scene Pair #11
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	1.45
Between-groups	35.81	4	8.95	1.79	b-TEACHERS	28	1.82
Within-groups	982.56	196	5.01		c-GRANGE	24	1.12
Total	1018.37	200			d-STUDENTS	42	0.62
					e-RES_MGRS	19	0.68

Sig.@ none

Table F.68 ANOVA - Rating Difference--Scene Pair #12
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	1.95
Between-groups	43.26	4	10.81	1.93	b-TEACHERS	28	1.82
Within-groups	1103.00	197	5.59		c-GRANGE	24	1.25
Total	1146.26	201			d-STUDENTS	43	0.91
					e-RES_MGRS	19	0.95

Sig.@ none

Table F.69 ANOVA - Rating Difference--Scene Pair #13
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-0.11
Between-groups	2.49	4	0.62	0.13	b-TEACHERS	27	0.07
Within-groups	923.02	196	4.71		c-GRANGE	24	-0.25
Total	925.52	200			d-STUDENTS	43	-0.28
					e-RES_MGRS	19	-0.21
				Sig.@	none		

Table F.70 ANOVA - Rating Difference--Scene Pair #14
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-0.18
Between-groups	135.41	4	33.85	6.51	b-TEACHERS	28	-2.12
Within-groups	1019.54	196	5.20		c-GRANGE	24	-0.58
Total	1154.95	200			d-STUDENTS	42	-1.80
					e-RES_MGRS	19	-1.60
				Sig.@	a-b, a-d		

* p <.05

Table F.71 ANOVA - Rating Difference--Scene Pair #15
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-0.01
Between-groups	11.81	4	2.95	0.65	b-TEACHERS	28	0.03
Within-groups	883.71	196	4.51		c-GRANGE	23	-0.04
Total	895.52	200			d-STUDENTS	43	-0.60
					e-RES_MGRS	19	-0.16
				Sig.@	none		

Table F.72 ANOVA - Rating Difference--Scene Pair #16
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.44
Between-groups	46.40	4	11.60	3.64	b-TEACHERS	28	-0.18
Within-groups	624.55	196	3.19		c-GRANGE	24	0.25
Total	670.95	200			d-STUDENTS	42	-0.79
					e-RES_MGRS	19	-0.21

Sig.@ none

Table F.73 ANOVA - Rating Difference--Scene Pair #17
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.43
Between-groups	74.50	4	18.63	4.19	b-TEACHERS	28	-0.67
Within-groups	870.72	196	4.44		c-GRANGE	24	-0.16
Total	945.22	200			d-STUDENTS	43	-0.95
					e-RES_MGRS	18	-0.88

Sig.@ none

Table F.74 ANOVA - Rating Difference--Scene Pair #18
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-1.00
Between-groups	45.61	4	11.40	1.83	b-TEACHERS	28	-1.18
Within-groups	1224.80	197	6.22		c-GRANGE	24	-0.46
Total	1270.41	201			d-STUDENTS	43	-2.00
					e-RES_MGRS	19	-1.47

Sig.@ none

Table F.75 ANOVA - Rating Difference--Scene Pair #19
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-0.05
Between-groups	38.25	4	9.56	2.32	b-TEACHERS	28	-0.39
Within-groups	813.15	197	4.13		c-GRANGE	24	0.04
Total	851.40	201			d-STUDENTS	43	-1.05
					e-RES_MGRS	19	-0.89

Sig.@ none

Table F.76 ANOVA - Rating Difference--Scene Pair #20
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	-1.45
Between-groups	44.83	4	11.21	2.13	b-TEACHERS	28	-1.68
Within-groups	1029.42	196	5.25		c-GRANGE	23	-0.35
Total	1074.25	200			d-STUDENTS	43	-1.79
					e-RES_MGRS	19	-2.21

Sig.@ c-e

* p <.05

Table F.77 ANOVA - Rating Difference--Scene Pair #21
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.17
Between-groups	25.08	4	6.27	2.04	b-TEACHERS	28	-0.57
Within-groups	606.13	197	3.08		c-GRANGE	24	0.37
Total	631.21	201			d-STUDENTS	43	-0.41
					e-RES_MGRS	19	-0.47

Sig.@ none

Table F.78 ANOVA - Rating Difference--Scene Pair #22
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	1.15
Between-groups	43.86	4	10.96	2.39	b-TEACHERS	28	1.00
Within-groups	903.98	197	4.59		c-GRANGE	24	0.00
Total	947.84	201			d-STUDENTS	43	0.21
					e-RES_MGRS	19	1.10
					Sig.@ none		

Table F.79 ANOVA - Rating Difference--Scene Pair #23
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	2.68
Between-groups	58.49	4	14.62	3.42	b-TEACHERS	28	2.42
Within-groups	841.99	197	4.27		c-GRANGE	24	2.41
Total	900.47	201			d-STUDENTS	43	1.88
					e-RES_MGRS	19	0.89
					Sig.@ a-e, b-e, c-e		

* $p < .05$

Table F.80 ANOVA - Rating Difference--Scene Pair #24
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	88	0.55
Between-groups	9.19	4	2.29	0.68	b-TEACHERS	28	1.18
Within-groups	666.23	197	3.38		c-GRANGE	24	0.62
Total	675.43	201			d-STUDENTS	43	0.63
					e-RES_MGRS	19	0.47
					Sig.@ none		

Table F.81 ANOVA - Rating Difference--Scene Pair #25
Viewer Subgroups

Source of Variation	SS	df	MS	F		N	Mean
					a-CHURCH	87	-0.94
Between-groups	16.99	4	4.25	0.94	b-TEACHERS	28	-1.36
Within-groups	876.57	195	4.49		c-GRANGE	24	-0.87
Total	893.55	199			d-STUDENTS	42	-1.64
					e-RES_MGRS	19	-1.21

Sig.@ none

APPENDIX G

RESEARCH SUMMARY REPORT

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VISUAL QUALITY PERCEPTIONS IN THE KANSAS FLINT HILLS: ASSESSING THE EFFECTS OF CULTURAL MODIFICATIONS

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Abstract

Visual resource management has become a standard component of landscape planning, especially in wilderness and urban landscapes. Limited research in visual assessment of countryside landscapes has made it difficult to consider visual impacts in rural landscapes. This study, involving the Flint Hills region of north-central Kansas, was conducted to evaluate the countryside preferences and sensitivities of approximately 200 Kansans and Coloradoans. Results correlated landscape preference and sensitivity to the background, profession and residence of the viewers. The study highlighted the impact of human activities and landscape modifications in affecting the personal biases of all viewers of the countryside and their perceptions of their quality-of-life.

Introduction

The character of American life has seen great change. Changes in technology, competition and stress have influenced our society, culture and physical environment. These changes have brought about an almost universal need for many Americans to stabilize their hectic lifestyles through renewed emotional and physical contact with nature. The visual quality of the landscape is an important part of personal renewal and refocusing within American society. A growing sensitivity towards the environmental consequences of human modifications of the landscape has illuminated a need for the consideration of visual quality as a quality-of-life issue in land-use planning decisions. In particular, this is a growing concern in the American countryside landscape. This landscape is defined as "a recognizable unit (of land area) containing a predominance of agricultural patterns and activities, and defined by both cultural interpretations and the physical setting" (Schauman & Pfender, 1982, p. 1).

The countryside makes up a large portion of the American landscape, incorporating a complex mixture of suburbia, farmland and rural communities. However, it has not received the attention or research effort that wilderness or urban landscapes have received. Although some researchers feel that it may be the landscape which has the most influence on our perceptions and psychological ties with nature (Schauman & Pfender 1982), the countryside is still taken for granted by many who reside, work and travel within it. Development of housing, industry, resource extraction, energy networks and recreation demand, coupled with increased efforts in farmland preservation makes visual integrity of the countryside important.

This study was directed toward developing a better understanding of peoples' perceptions and attitudes of countryside landscape as critical design and planning factors. Specific goals included: 1)testing the value of countryside visual quality as a natural and cultural resource; 2) devel-

oping an understanding of the differences in landscape preference between rural and urban Flint Hills residents, and those who live outside the region; 3) comparing the effects of landscape modification with various distances between the modification and the viewer; 4) analyzing specific modifications to determine the relative positive or negative value of the modification in relation to landscape preference; 5) developing a set of generalizations aimed at defining the implications of specific present and proposed landscape modifications as they relate to viewers residing in or out of the region. The Flint Hills, a rural region of rolling topography in north-central Kansas, was chosen as the study area. It contains many indicative countryside landscape elements and characteristics. Twelve cultural modifications (listed in Table 1), were included in the study. The landscape preferences of 202 individuals in twelve groups of viewers were obtained for analysis ; two-thirds of the viewers resided within the Flint Hills, while the remaining viewers lived outside the region (the study area and the survey groups are identified in Figure 1).

Applications of previous work

This analysis of the countryside landscape has reflected many aspects of wildland and wilderness visual assessment studies. Researchers have undertaken descriptive countryside inventories involving both quantitative and qualitative procedures (Litton & Tetlow, 1978 and Schauman & Pfender 1982). Perceptual and psychgological studies have addressed a variety of analytical approaches (Zube et al., 1974 & Nassauer, 1978). Two studies have been completed involving the visual resources of Kansas and the Flint Hills (Fridirici; 1983 & State of Kansas, 1975). Kaplan (1979) and Aoki (1983) have observed correlations between scenic quality and landscape sensitivity among local observers of a particular landscape. Zube et al. (1974) found that viewer preferences were more dependent upon the degree of naturalness in the landscape rather than on the proximity of the viewer's residence within the landscape. Schauman & Pfender (1982), also reported fairly consistent preference agreement across population groups, independent of viewer background or place of residence.

Study criteria/methodology

The following hypotheses were addressed in this study: 1) the rural regional viewers will give the survey scenes the highest scenic quality ratings, followed by the urban region viewers and the non-regional viewers; 2) the rural regional viewers will show the greatest sensitivity towards the presence of cultural modifications, followed by the urban regional viewers and the non-regional viewers (sensitivity is defined as the average difference in scenic quality ratings between modified and non-modified scenes within a particular viewer group); 3) the further away a modification occurs from the viewer, the less that modification will influence viewer scenic quality ratings. Study participants were chosen as members of one of three groups: 1) rural regional viewers (those who live and/or work on a farm or in a town of not more than 2,000 people within the Flint Hills region); 2) urban regional viewers (those who live and work in a city of more than 35,000 people within the Flint Hills region); 3) non-regional viewers. Within these three regional groups were five subgroups (Grange members, church members,teachers, resource professionals and students).

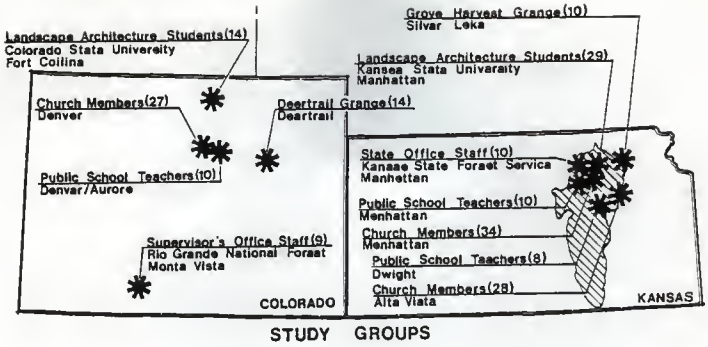

Figure 1: Geographic Distribution of Regional Subject Subgroups (Flint Hills Area Outlined).

Procedure and materials

The procedure is based on a combination of landscape preference and scenic quality rating procedures in several studies (Nassauer, 1978; Zube et al., 1974; and Daniel & Boster, 1976). We developed and used a photographic method which compares side-by-side landscape views for the study. Color photography was used as a surrogate for viewing the actual landscape. It has been shown to be an acceptable method for representing landscape in preference studies (Zube et al., 1974; Kaplan, 1977; Miller, 1984; and Daniel & Boster, 1976). Photographs were taken in pairs, with one photo in each pair containing a modification (Figure 2). Cultural modifications were selected subject to their ability to represent common features of the Flint Hills countryside landscape (Table 1). Atmospheric and lighting condition were controlled as much as possible, and specific modifications were chosen according to several criteria: 1) their ability to represent one of the cultural modifications under study, 2) the ability to photograph a corresponding non-modified scene on either side of the modified scene with only a horizontal panning movement of the camera, 3) the ability to photograph a corresponding non-modified scene so that both scenes each contained a landscape similar enough in form, color, texture and line character to be generalized as having the same underlying landscape scenic value.

Each group of subjects was read a standardized set of instruction. No mention was made as to the location of landscape scenes, other than that they represented a countryside landscape. Preview slides were used to aquaint the groups with the rating processs. Each group mentally rated the first five scenes, and then practiced rating the second five preview scenes. The study scenes were shown at eight second intervals. Participants rated the scenes using a 5-point continuous linear scale (1 represented low preference, 5 represented high preference). The scale was interpreted as a 9-point discrete scale after the data was gathered in order to facilitate analysis.

Table 1: Scene Pairs Denoting Cultural Modifications

Pair#	Description	Scene Number Modified	Scene Number Non-modified	Distance Yds/viewer	Distance Category
Paired Scenes					
1	Stone Church	23	1	100	M
2	Farmhouse	17	36	100	M
3	House	35	39	100	M
4	Red Barn	6	44	75	M
5	Stone Barn	25	47	75	M
6	Pole Barn	50	53	100	M
7	Cemetery #1	32	4	10	F
8	Cemetery #2	28	30	10	F
9	Windmill	11	16	75	M
10	Radio Tower	12	20	1500	B
11	Stone Fence	3	27	50	F
12	Stone Fence	31	46	10	F
13	Stone Fence	14	56	75	M
14	Oil Tanks	18	2	50	F
15	Oil Tanks	9	51	75	M
16	Oil Tanks	48	29	125	M
17	Powerline	5	40	150	M
18	Powerline	10	19	75	F
19	Powerline	33	52	1500	B
20	Powerline	42	49	150	M
21	Powerline	26	24	1500	B
22	Pond	55	43	100	M
23	Pond	37	22	10	F
24	Pond	7	45	50	M
25	Barbwire Fence	8	13	10	F
Non-Paired Scenes					
	Stone Shed	15			
	Hay Field	21			
	New Corn	38			
	Farmstead	41			
	Rock Barn	54			
	Junk Cars/Creek	34			

NOTES: Distance Category variables:
F = Foreground, M = Middleground
B = Background
Non-paired scenes were used to increase the randomness of the scene sequence

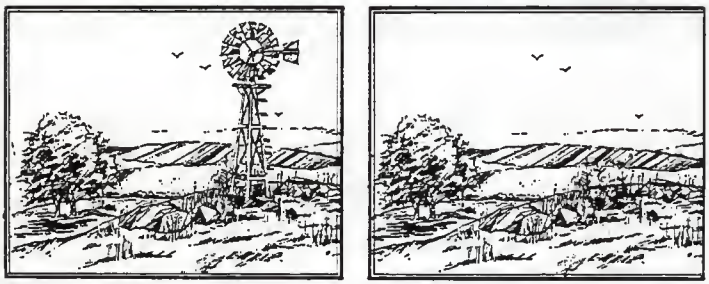

Figure 2:Representative Paired-scene With and Without Modification

In addition to rating the 56 study scenes, all viewers were asked to indicate degree of agreement with three statements. The three statements were as follows: 1) "I think scenic quality in the countryside landscape is an important contributing factor to the American quality of life," 2) "I think that when changes in countryside land use are proposed, the scenic quality of the countryside should be considered an important issue," 3) "I think scenic quality in the countryside landscape is as important as scenic quality in all other landscapes."

Results

Overall landscape preference

There was no significant difference in the countryside landscape preferences of the three regional viewer groups when preference was calculated as an average rating for all scenes ($F=1.82$, $df=2,199$), nor was there a significant difference when groups were compared over averaged ratings for all non-modified scenes ($F=1.02$, $df=2,199$). The rural regional viewers, however, did express a significantly greater preference than the non-regional participants when averaged ratings for all modified scenes were compared ($F=3.50$, $df=2,199$). There are trends in the other measurement criteria which, although not statistically significant, also point to the hypothesized ranking of preference ratings. In the mean ratings of non-modified scenes, both the rural and urban regional groups had higher mean preference ratings than the non-regional groups (5.08 and 5.19 as compared to 4.99 on the preference-rating scale). Average preference ratings for all scenes for each of the groups also showed a trend in agreement with the hypothesis (the rural regional viewers were the highest group at 5.32, followed by the urban regional viewers at 5.24 and the non-regional viewers at 5.06). Within the viewer subgroup results, the teachers had a significantly greater preference rating than the resource managers when averaged scene ratings were compared ($F=2.92$, $df=4,197$). There was no difference obtained when averaged non-modified scenes were compared ($F=1.71$, $df=4,197$). When averaged modified scenes were compared, however, the resource managers had a significantly lower preference mean than the teachers or church members ($F=5.75$, $df=4,197$).

Landscape sensitivity

Landscape sensitivity was measured as the difference in preference within slide pairs. The average differences occurring within all pairs as rated by all study viewers were used to designate positive and negative net change. Significant relationships occurred between the rural-urban comparison and rural--non-regional comparison when differences were averaged ($F=6.97$, $df=2,199$). The rural regional viewers perceived a significantly smaller relative difference within pairs than the urban regional viewers when all pairs having a negative net change were compared ($F=5.01$, $df=2,199$). Rural regional viewers perceived a significantly higher change than urban regional and non-regional viewers when pairs denoting a positive net change were addressed ($F=6.62$, $df=2,199$). When individual slide parings were anlayzed, nine pairings showed a significant difference between the two slides (slide pairs 1,2,4,8,9,12,18,21,and 25). The students showed significantly lower preference means than did the church members or Grange

members when average differences within all scene pairs were analyzed ($F=9.95, df=4.197$). For pairs with a negative net change, the Grange group preferences were significantly higher then the resource managers or students ($f=5.85$, $df=4,197$). In the comparison of pairs where modification increased the rating, the church mean preference was significantly higher than the mean preference for the students ($f=6.93$, $df=4,197$). Seven individual pairings were found to have significant differences (2,3,4,8,14,20, and 23).

Viewer-to-modification distance

No significant differences among groups occurred in analyzing the effects of viewer-to-modification distances ($f=3.34$, $df=11,2$). Trends were evident within comparison of scene pair differences that suggesting that the further away a modification is observed, the less the effect that modification will have on preference.

Responses to statements

There were no significant differences between the the three regional groups in response to Statement #1 and #2 ($f=.50$, $df=2,199$). The rural regional viewers responded to Statement #3 with significantly greater agreement than did the urban regional viewers ($f=4.97$, $df=2,199$). Statement #1 received a significantly stronger agreement from the teachers, resource managers and students when compared to the Grange, and from the students when compared to the church members ($f=6.32$, $df=4,197$). The students reacted to Statement #2 with significantly greater agreement than did the church members or Grange ($f=5.17$, $df=4.197$). There was no significant difference between the five subgroups in response to Statement #3 ($f=2.37$, $df=4,197$).

Conclusions

Valuation of the countryside landscape

Responses to the three statements concerning countryside landscape scenic quality indicate a near unanimous agreement on these three issues: 1)the scenic quality of the countryside is an important aspect of the American quality of life, 2)scenic quality should be considered an important issue in land-use decisions, and 3)scenic quality in the countryside is as important as scenic quality in all other American landscapes. The rural regional viewers showed the most consistency in this agreement upon the importance of countryside scenic quality. Mean responses from the five viewer subgroups also indicated a rather strong agreement, although it was not as well-defined as agreement between regional groups. An interesting finding relative to countryside valuation concerns the responses from the Grange members. Because of their close association to the countryside, it was expected that they would have a strong concurrence on all of the above countryside issues. Even though their overall landscape preference ratings were high, they indicated the lowest responses to the three scenic quality statements when compared to all other viewer subgroups. This finding points to the possibility of a viewer having a high sensitivity and preference for a landscape without having a strong feeling towards management and planning issues aimed at enhancing or preserving attributes of

that landscape. If this is true, it suggests that an awareness of factors which influence land-use decisions and scenic quality may not presently be commonplace among those groups which stand to experience the greatest impacts. Several study viewers expressed enthusiasm in becoming involved with local planning and environmental issues, but that idea seemed the exception rather than the rule. Although the statement responses might be considered biased because they were presented to each group immediately after the sequence of landscape scenes, the overall indication of a "strong" agreement suggests that agreement at some level would have occurred regardless of presentation sequence.

Preference differences among viewers

A statistical difference comparing landscape preference among the three regional groups was not strongly evident. In the one instance where a significant difference did occur, the rural regional group (as hypothesized) preferred the modified landscape scenes significantly more so than did the non-regional group. There was a strong tendency for the modified scene ratings to experience a higher standard deviation than the non-modified scene ratings, suggesting that cultural modifications should be considered an important (if not the most important) factor in evaluating countryside landscape. This finding supports other research (Zube et al., 1974) which showed that viewer agreement decreased as the naturalness (that is, absence of human-made modifications) in the landscape decreased. Although not statistically significant, strong trends in the data do point to a rural regional--urban regional--non-regional hierarchy of preference values. Further study is needed to determine whether or not there is preference agreement across population groups. The most consistent variability in landscape preference among viewer subgroups occurred between the "public groups" (church members, Grange and teachers) and the resource and design groups (students and resource managers). According to preference ratings for averaged scenes and individual scenes, the students and resource managers showed a much more critical response to the countryside landscape than did the public groups. An interesting contrast to their lower ratings, however, is that the students and resource managers showed the highest overall agreement towards the importance of countryside scenic quality. These seemingly contradictory views, opposite those of the Grange members discussed earlier, may point out an awareness and sense of importance towards scenic quality planning and management that can and does exist independent of personal landscape preferences.

Sensitivity to landscape modification

The rural regional viewers had been expected to show the greatest sensitivity to landscape modifications, and in fact showed a significantly higher average mean difference for all slide pairs than either of the other regional groups. This seems to indicates that in general the rural viewer perceives cultural modifications as a more positive influence on the scenic quality of the landscape. The students and resource managers were again highly critical, and both groups placed a relative negative value on the effect of the averaged landscape modifications towards scenic quality and preference. The three public groups all indicated a relative positive value to landscape modifications, with the church and Grange viewers showing a particulary strong positive preference for landscapes with cultural

modifications. When modifications were grouped according to their net positive or negative value within each scene pair, these strong relationships were still evident. The rural regional viewers had the highest preference ratings for added positive modifications, and showed the least amount of reduced preference for added negative modifications. Figure 3 shows the positive or negative effect of the modifications in the paired scenes for the three regional groups. Church members, teachers and Grange members again placed a higher preference on positive landscape modifications, and showed only slight reductions in preference when negative elements were added. The students and resource managers indicated slightly higher preferences for positive landscape modifications, and greatly reduced preferences for negatively-valued landscape elements.

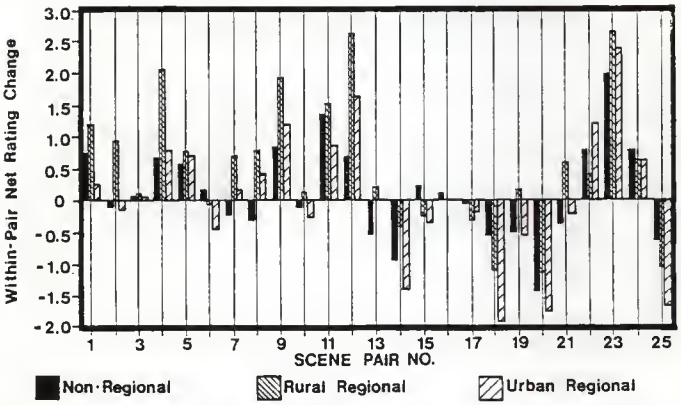

Figure 3: Paired-scene Preference Changes for Regional Viewer Groups

These observations point to an important generalization. If the people living closest to a modified landscape do not place an exceptionally negative value on the modification, the condemnation of those same modifications by outside viewers tends to lose its significance and clout. Landscape preference is heavily influenced by personal expectations. Study participants cited a wide variety of factors that influenced their preferences: the presence or absence of animals, the presence of weeds along fence rows, and the presence or absence of trees, to name but a few factors. The study scene with the highest disagreement among viewers consisted of a series of junk cars aligned vertically along a stream bank. The preference ratings varied from 1 to 9 -- the full possible scale. Some viewers overlooked the beauty of the water and vegetation and saw only the autos; others obviously overlooked the cars, or even saw them as an ugly but creative attempt at erosion control. If the rural viewer's expectations already include negative elements such as powerlines or oil tanks (much as the urban inhabitant overlooks the continual overhead maze of utility lines), then countryside scenic quality may not be as critical (in principle) to the inhabitants of the countryside as it is to non-regional observers who view the landscape from a different perspective.

Effects of modification-to-viewer distance

The distance from viewer-to-modification appears to be an important determinant of landscape preference in the countryside. Figure 4 shows the effects of distance of viewed modification on the change in preference of the viewed landscape. These findings coincide with similar principles used in visual management systems applied to federal forests and rangelands (U.S.D.A. Forest Service, 1974 & U.S.D.I. Bureau of Land Management, 1976). Further analysis of the data (and a probable restructuring of the study) would be necessary to determine the statistical significance of the relationships.

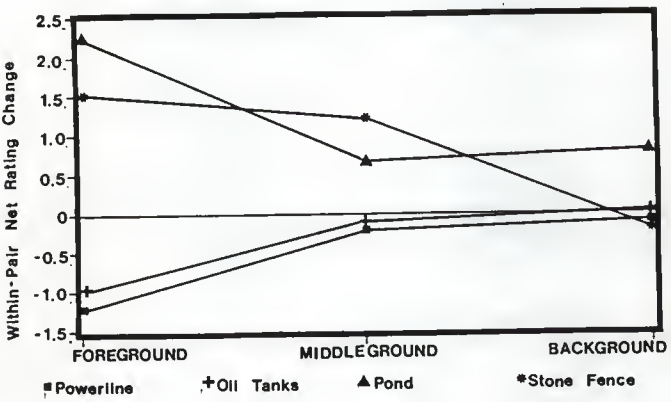

Figure 4: Distance to Modification Effects on Preference

Guidelines in understanding countryside modification implications

The following guidelines were developed from the results of the study to define, highlight and summarize the implications of landscape modification in the Flint Hills countryside landscape.

1) A viewer's personal background and place of residence are important factors in defining and shaping that viewer's landscape preferences and perceptions of countryside scenic quality.

2) The scenic quality of the countryside landscape is thought by many to be a quality-of-life issue, deserving consideration in land-use planning issues and needful of the attention given other American landscapes in recent years.

3) The closer a person lives to a particular area or region, the more sensitivity they will feel towards cultural modifications in that region. This sensitivity can take on several meanings. Regional viewers not only experience a greater sense of change in landscape quality (as measured by preference) with the addition of modifications, but they see modifications in a more positive (or less negative) frame of reference.

4) Viewer sensitivity towards the countryside landscape does not necessarily foster a sense of urgency or importance related to the management of the scenic quality of that landscape; conversely, strong interest in the quality and management of the scenic resources of a landscape does not necessarily correlate to a strong personal preference for that landscape.

5) Landscape preference is based on an unlimited range of personal biases, perceptions and experiences (especially when cultural modifications are involved), and is therefore difficult to average or categorize.

6) All cultural modifications, no matter how seemingly insignificant, can effect viewer landscape preference and the perception of scenic quality.

7) The general public experiences significantly more disagreement in preference for landscape scenes than do viewers trained in design or natural resource disciplines, and is less critical in rating their preferences than are the specialists.

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