



## Examining the product and process of scenic beauty evaluations using moment-to-moment data and GIS: The case of Savannah, GA



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### ABSTRACT

Growing out of a recent debate on aesthetics, and in particular scenic beauty, we added the term 'process' to our conceptualization of scenic beauty so it is broader and more dynamic than other traditional definitions. The purpose of this study is to evaluate the product (content of the environment such as tree characteristics) and process (spatial and temporal patterns of change perceived such as frequency, maximum, minimum, and average quality) of scenic beauty tourist evaluations to better understand what and how it is experienced in real-time. Five city street corridors in Savannah, GA, were video recorded with a roadside view during the spring, summer, and winter (2008–2009). Visitors (N = 130) were asked to evaluate the scenic beauty of a video by turning a hand-held dial (Perceptual Analyzer) and completing a questionnaire. Moment-to-moment data, post-video evaluations, and GIS tree data were used to develop a scenic beauty map, evaluation timelines for each season, and a model predicting willingness-to-pay for a trolley tour. The specific tourism product-based characteristics of the urban forest (tree groupings, height, diameter or DBH, age, condition, and species) that contribute to scenic beauty support what is reported in the literature, thus further validating the mapping of real-time data. Both quality (i.e., average scenic beauty) and quantity (i.e., positive changes in scenic beauty per minute) related measures were both significant process-based predictors of tourists' willingness-to-pay for scenic beauty. The only product-based variable that was significant was an overall measure of quantity of visitor experiences (i.e., eventful measure). The quality of scenic beauty may be only part of the story.

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### 1. Introduction: the argument for an ecological approach

Scenic beauty and aesthetics are elusive, complex, and evolving concepts (Qin et al., 2008). The origin of the term aesthetics is from Greek *aisthētikos* meaning 'relating to perception by the sense'. The sense 'concerned with beauty' was coined in 18th century Germany (Oxford Dictionary, n.d.). In recent times, the concept of scenic beauty has been understood as a *product* of the landscape according to the reactions of persons experiencing that landscape (Qin et al., 2008). This paper applies a broader definition that also includes the *process* of how scenic beauty is perceived. This expanded definition grows out of the following debate about the need for an ecological aesthetic, and some examples of the theoretical, methodological,

and managerial implications of this new definition are documented in our Savannah, GA case study.

Gobster (1999) proposed the study of aesthetics should not focus on the scenic aesthetic, based on the world of art, composition, and the European ideal, but instead should focus on the ecological aesthetic. Gobster (1999) promoted the human-environment interaction and the involvement of all senses. Most important to our study, he used terms such as 'dynamic', and 'active' to describe this interaction opposed to the scenic aesthetics' 'static' and 'passive' descriptions. Kroch and Gimblett (1992) suggest landscape preferences involves more than evaluations of a static photo, but instead preferences for landscapes is related to human's use of multi-sensory functions. On these lines, Hull et al. (1992) suggest we know very little about *how* real places are experienced. Citing the Transactionalist viewpoint, Aitken (1991) describes person-environment connections as:

"That of understanding person-in-environment contexts as a function of particular ongoing transactions between persons

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and environments. The focus is on change as an integral part of people's experience. Change is initiated by an event which creates imbalance and transformation. Events are a nexus of behavioral, environmental and temporal features, as such it is important not to fragment a person-in-environment whole artificially by studying behaviors or environments separately." (p. 107)

This suggests using photographic representation of a temporal event, such as a scenic drive, may not be the best option. By dividing a temporal event into a series of static snapshots we may lose the dynamic interactions, transitions, and changes between the person and the environment. This relationship is best studied as a whole unit, or a continuous event. Ecological psychology supports this concept. Gibson (1986) states "the deep seated notion of the retinal image as a still picture [should be] abandoned" (p. 238), indicating we do not perceive the environment as a series of snapshots but instead that humans continually pickup changes in the environment and understand them as unfolding events.

By adopting an ecological framework, Pierskalla et al. (2013) recently validated a global measure (i.e., eventful) to quantify the unfolding events that are perceived in outdoor recreation. The researchers used discriminant validity analyses to establish that 'Quality' (1 = poor to 7 = excellent) and 'Eventful' (1 = not much happened or uneventful to 7 = a lot happened or eventful) are two different constructs of a fishing experience. For example, color and health of rainbow trout is a better predictor of a quality fishing experience and catching a larger number of large fish is a better predictor of the quantity of the experience (eventful). The researchers suggest that the struggles associated with catching large fish may result in an eventful experience that consists of several unfolding event units such as casting a line in the water, pumping and lifting the fishing rod, reeling, etc. "Events are substantial, spatiotemporal things that can have or exhibit properties and that can enter into relations with other propertied things, that is other events" (Bingham, 2000; p. 30). Hull et al. (1992) described a similar unit of recreation in terms of experience patterns. "Experience patterns capture the dynamic nature of a recreation experience and thus might prove useful as units of analysis in the management and study of recreation resources" (p. 240). The eventful measure might also compliment traditional measures of quality when assessing scenic beauty of urban forests.

Scenic beauty (as well as other recreational opportunities), within an ecological framework, describes how the relationship between humans and the environment unfolds when it is conceptualized as the activity–movement–setting sequence of language (e.g., driving-along-a street) (Pierskalla et al., 2007). For example, driving (activity) along (movement/preposition) roadside trees (setting) is a style of change (quantity of events) that can afford positive or negative evaluations (quality of events). This conceptual definition recognizes that a perceptual experience is a dynamic process of changing quality, unbounded, active, and experiential and is among the key concepts in our study.

### 1.1. Purpose of study

We selected the urban forests of Savannah, Georgia as our study location to demonstrate how the ecological framework can be used to better understand what elements of an urban forest contribute to tourists' perceptions of scenic beauty, and how those elements are perceived over time. Given that one of the most popular ways for visitors to experience Savannah's scenic beauty is by riding a trolley (activity) through (movement/preposition) the urban forest (setting), it is an ideal place to better understand the spatial patterns, physical content, and temporal aspects that make up this recreational experience, but to do so, a more dynamic concept of

scenic beauty is required. In summary, scenic beauty is not simply represented by a fixed scene or experienced as a static moment in time, but rather it is both a product and process that results from the interaction between an observer and the physical features of the landscape. By adding the term 'process', our conceptualization of scenic beauty, within an ecological framework, is broader and more dynamic than other traditional definitions. The purpose of this study is to evaluate the product (content of the environment such as tree characteristics) and process (spatial and temporal patterns of change that is perceived such as frequency, maximum, minimum, and average quality) of scenic beauty evaluations to better understand what and how it is experienced in real-time. Those two general approaches to research (product and process) are described in detail in the literature review.

## 2. Literature review

Two general approaches in tourism and leisure research can be used to examine recreation opportunities such as scenic beauty (Mannell and Iso-Ahola, 1987). (1) 'Product-based' research often involves quantitative assessments of leisure after the on-site experience has been completed (i.e., post hoc). This approach is more useful when documenting 'what' experiences (e.g., enjoying forest squares, healthy trees, and an overall eventful experience) are considered important and attained by visitors. (2) 'Process-based' approaches that are quantitative in nature often involve examination of the immediate conscious experience of the actual, real-time nature of the experience itself, and it can reveal the anatomy of the experience. This approach better answers the question of how an experience (e.g., frequency of scenic beauty events and additive quality of each of those events), is attained (Patterson et al., 1998; Borrie et al., 2001). Additional differences between product-based and process-based approaches have been documented in several other papers (e.g., Mannell and Iso-Ahola, 1987; Stewart and Hull, 1992).

We categorized theories (e.g., psychophysical and ecological approaches) and methodologies (e.g., spatial mapping, post hoc assessments, and experience sampling method) used to study scenic beauty as either a product or process-based approach to help better understand them and to identify and address the gaps in the literature. Although a few studies of the general outdoor recreation experience were included, emphasis is placed on studies of urban forests, roadside trees, and scenic beauty when possible.

### 2.1. Scenic beauty as a product of the landscape

The psychophysical approach to assessment of aesthetic quality of natural environments is among the most often used by researchers (Zube et al., 1982; Daniel and Meitner, 2001), and it has been especially effective when describing the content of the environment that contributes to scenic beauty (i.e., a product-based approach). The psychophysical paradigm relies on stimulus–response theory (Daumants, 2003). The biological basis of this theory suggests that humans prefer landscapes that inform them of survival behaviors such as habitat, spatial relationships, harm avoidance, potential for movement, and location of food and water resources (Parsons and Daniel, 2002; Daumants, 2003). Specifically, people in the US and elsewhere prefer natural environments, fairly open areas with low ground cover, water, and occasional clumps of trees and shrubs (Parsons and Daniel, 2002); solitary edge trees (Fry and Herlin, 1997); canopy trees (Lamb and Purcell, 1990); street trees with large diameters (Buhyoff et al., 1984); street trees over 25 feet tall (Kalmbach and Kielbaso, 1978); environments with moderate levels of complexity (Ulrich, 1977); areas of textural homogeneity or ordered complex-

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