Title: Identifying the valued ordinary, as a step toward scenic landscape conservation
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Abstract:

The Georgia Scenic Byways program (GDOT, 2017) is a "grassroots effort … to identify, preserve, promote and protect treasured corridors throughout the state." There are fifteen such corridors designated by Georgia DOT, their only protection is a restriction on roadside billboards. Despite frequent avocation of the beauties of Georgia highways, there is no systematic articulation of the physical attributes of a scenic landscape, how such attributes would be identified and thus protected, nor the expertise or resources to devote to new discoveries. Furthermore, any state-wide initiative would likely miss features of local significance such as abandoned farms and homesites, historic burial grounds or valued historic vistas—the landscape features to which people are attached and that they might deem worthy of protection. This paper presents a model "scenic beauty detector" using social media and augmented reality mechanisms to direct interested citizens to examine road stretches with potential for identification as scenic highways and to record their support and criteria for such designation. We argue that the characteristics of valued scenic highways reside in the photographic records that people make with their geolocation-enabled cell phones that are then retrievable via tools such as Google Earth. We further argue that other, undesignated stretches bearing the same "affordances" (Gibson, 1977) would also be candidates for state designation. Citizen data collectors guided by GIS analyses that locate these affordances via their smartphones augment existing records of known visual resources with *in situ* evaluations, capturing photos and geolocation evidence for use in the Georgia Scenic Byway designation process.

Background

The state of Georgia is not recognized as one of the iconic destinations in the United States for the enjoyment of scenic beauty; that recognition falls to states like Utah, Alaska and Maine. Nevertheless, for many residents and visitors to the state, the Southern terminus of the Appalachian Trail in the North Georgia highlands and the Golden Isles of the Georgia coast do indeed represent highly valued scenic landscapes, reflected in the program of designated Georgia Scenic Byways (Figure 1.1) (GDED, 2017; GDOT, 2015).

The Scenic Byways program is promoted as a community-driven effort, reflected in the variety of foci for the individual byways. The *I-85 Byway* in western Georgia is a major highway

corridor surrounded by mixed pine forest; *Enduring Farmlands* showcases historic rural towns and their pastoral settings; *Ridge and Valley* focuses on the natural attractions of the southern tip of Appalachia; and *Altamaha* threads a mix of natural and cultural settings in coastal Georgia (GDOT, 2015). While their eclecticism of these examples seems appealing, allowing the expression of a wide range of values, they also demonstrate that other opportunities for Scenic Byway designation have been unrecognized. The map of existing Byways (Figure 1.1) indicates substantial "gaps" in the north-east, south-east and south-west corners of the state that are not reflective of Georgia's widespread natural and cultural richness (GDED, 2017).

Figure 1.1. The fifteen designated Georgia Scenic Byways
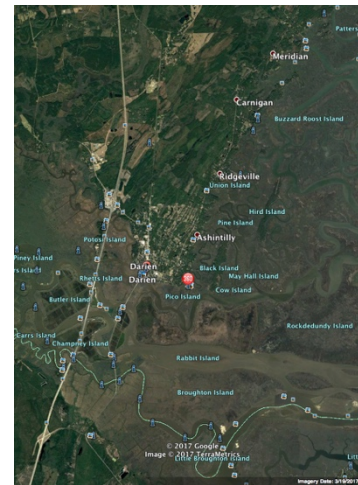

Figure 1.2. The Altamaha Scenic Byway

Figure 1.3. Google Earth image locations

The state of Georgia provides guidelines for Scenic Byway designation, "a community-driven effort, preserves these treasures in ways that appeal to Georgians and travelers alike, and ultimately enhances economic development". Information required to support any application includes comprehensive descriptions of the "intrinsic qualities" of the Byway and its surroundings. Successful applications lead to development of Corridor Management Plans focused on protection of the same noted intrinsic qualities. The intrinsic qualities considered include scenic; natural; historic; cultural; archeological and recreational. While the only protection provided by Scenic Byway designation is a restriction on billboards in the corridor, the application compilation and process constitute powerful ways to raise citizen awareness of the beauty and intrinsic values that surround them, and the applications themselves help communities articulate values and compile evidence that can be used in responses to development proposals (GDOT, 2015).

Identifying Candidate Scenic Byways

To recognize and eventually provide protection for scenic assets, scholars, and in the United States the federal land agencies, have sought to develop systematic ways of evaluating landscape scenic quality. The approaches have generally fallen into two categories. First, experts, often landscape architects, have developed systematic ways of scoring landscapes based on evaluating the extent to which they exhibit formal aesthetic principles based in analyses of the forms, lines, colors and textures of a candidate scene (Smardon & Karp, 1993; USDA-FS, 1995; USDI-BLM,

1986). Though extensively used, this method has been criticized for its failure to address the values of non-experts and to embrace the cultural values embedded in developed landscapes. Second, other experts take a social science-oriented approach systematically capturing respondents' evaluations of typical scenes and using statistical methods to identify the physical characteristics of the landscape that elicit scenic evaluations (Daniel & Boster, 1976; Parsons et al., 1998). Regression models have been developed to estimate the effects of changes in the physical landscape on preferences. These methods capture public values but when aesthetic appreciation is not the predominant use of the landscape, the utility of the approaches diminishes substantially—agricultural and cultural intrusions are often regarded as diminishing scenic value (Parsons & Daniel, 2002; Gobster et al., 2007). Despite deficiencies either approach could be an avenue toward identifying previously unrecognized scenic corridors that might be eligible for Scenic Byway consideration; however, they are not "grassroots" and community-driven as required by the program.

In the face of ever-present pressure for economic development and job creation the absence of some shared understanding about what is valuable and worthy of recognition leaves the future of as-yet-unrecognized Scenic Byways of Georgia vulnerable to unexpected and unwanted change and degradation. To address this potential loss, we need a process that captures grassroots values as they would apply across the entire network of Georgia highways yet is defensible in explicitly responding to, and demonstrating, grassroots citizen input.

"Grassroots" values in scenic assessment

Past processes to recognize scenic highways and byways have been successful, resulting in designation of corridors that are, indeed, scenic (Evans & Wood, 1980; Clay & Smidt, 2004; Muck, 2006; Rottle, 2006). Nevertheless, their recognition may have been biased toward "expert" knowledge and have under-valued the place-based knowledge of local stakeholders and citizens (Schön, 1995). Local stakeholders frequently believe that they lack the broad knowledge of the natural and cultural systems in play to fully participate in land planning processes (Orland & Murtha, 2015) although participation could lead to closer engagement with the design process, ownership of the outcomes, and future involvement in ensuring that plans are implemented (Philipson et al., 2012). As expert planners, Schön (1995) and Dzur & Olson (2004) observed that scientific and professional knowledge alone cannot solve complex design and planning issues, and called for expert scientists and planners to move away from working "for" the public towards working "with" the public using narrative place-making, participatory design and action research approaches to capture local knowledge. Other authors have suggested a hybrid approach where informed participants entrust highly structured and technocratic planning to experts, and focus on the unstructured decisions that can only be resolved through dialog and discourse (Hurlbert & Gupta, 2015). Our design and planning processes should respond to these concerns.

Inherent in the idea of a "grassroots effort" is the possibility that the identification and evaluation of resources will not be systematic. Thus, (a) the establishment of more extensive and effective protections for treasured resources will be hampered and (b) the identification of hitherto unrecognized resources must wait until their value is recognized by the "grassroots" (GDOT, 2017). A key to addressing both issues lies in raising public awareness of the "treasured", and

developing mechanisms by which the values that implies can be found in the landscape and brought to the appropriate forum for discussion and potential recognition.

Social media mechanisms

Social media such as internet-shared photographs, blog posts and Twitter tweets, volunteered independently, are potentially rich sources for evaluation of place unaffected by researcher influence which, if accompanied by geolocations, could assist in the identification of potential scenic highway corridors. In particular, authors have pointed to photo-sharing services as rich sources of Volunteered Geographic Information that could serve for route identification (Alivand & Hochmair, 2013; Dunkel, 2015) or identification of valued viewsheds or scenic regions (Berbés-Blázquez, 2012; Salmond, Tadaki & Dickson, 2017; García-Palomares,, Gutiérrez & Mínguez, 2015; Goldberg, Murtha & Orland, this volume).

Although such photos inevitably include numerous "selfies" and photos taken to record locations for reasons other than to record a visually compelling landscape, they do include a record of locations deemed important by the individual taking the photograph. The Visitor Employed Photography (e.g., Balomenou & Garrod. 2016; Chenoweth, 1984; Cherem & Traweek, 1977; Hull & Stewart, 1995) and Photovoice (e.g., Balomenou & Garrod. 2016; Beilin, 2005; Guell & Ogilvie, 2015) techniques both focus on the value of capturing photographic records of people's responses while immersed in the landscape of study. Photovoice is a qualitative method that enjoys popularity across a wide range of disciplines for capturing the respondent's physical location as well as their narratives that provide context such as the motivation for taking the photograph and other evaluative responses that the location may invoke. Nevertheless, each of these techniques involves a deliberate intervention—respondents are solicited, trained and motivated to participate in a prescribed protocol. In other words, their participation is structured and shaped in ways that help investigators to identify significant relationships between place and response but that may also structure and shape the pattern of response itself. Crowdsourced imagery from a photo-sharing service is free of the possible impediment of an experimental intervention but also generally lacks explicit information as to why the photograph was taken.

At first glance, photographs adjacent to a scenic highway accessed via Google Earth Pro® appear too eclectic to derive any generalizable insights into what constitutes valued scenery (Figure 2). However, while the existing number of available images may also be too small to derive any generalizations (Figure 1.3), their variety may be a sign that the values of a scenic byway are more varied than a traditional scenic analysis perspective would normally embrace. The scenic analysis literature supports this observation with numerous examples of highway-related studies where assessments from both expert and psychophysical perspectives fail to capture factors that are crucial to establishing viewer evaluations (Clay & Smidt, 2005; Evans & Wood, 1980; Hull & Stewart, 1995; Rottle, 2006). In contrast, however, the photovoice literature views this variety as a benefit and has used the photographs collected as means to discern a broad range of values in the landscape. Numerous researchers have explored sense of place and symbols of well-being in rural landscapes (Beilin, 2005; Berbés-Blázquez, 2012; Guell & Ogilvie, 2015; Martinez Pastur et al., 2016; and Ramírez et al., 2011). Others have explored the more explicitly cultural landscape of urban settings (Richards & Friess, 2015; Mahmood et al., 2012; and Liu et al., 2016). In each case the more explanatory approach of photovoice

(Balomenou & Garrod, 2016) integrates what an increasing number of authors are calling cultural ecosystem services into land planning by considering the variety of benefits that are revealed and by setting priorities on ecosystem and landscape characteristics which affect the presence or absence of such landscape features. The research concludes that the use of crowdsourced data allows for the identification of spatial patterns of cultural ecosystem service preferences and their association with landscape settings (Berbés-Blázquez, 2012; Martinez Pastur et al., 2016; Matthews, 2011; Muck, 2006; Nieuwoudt et al., 2016).
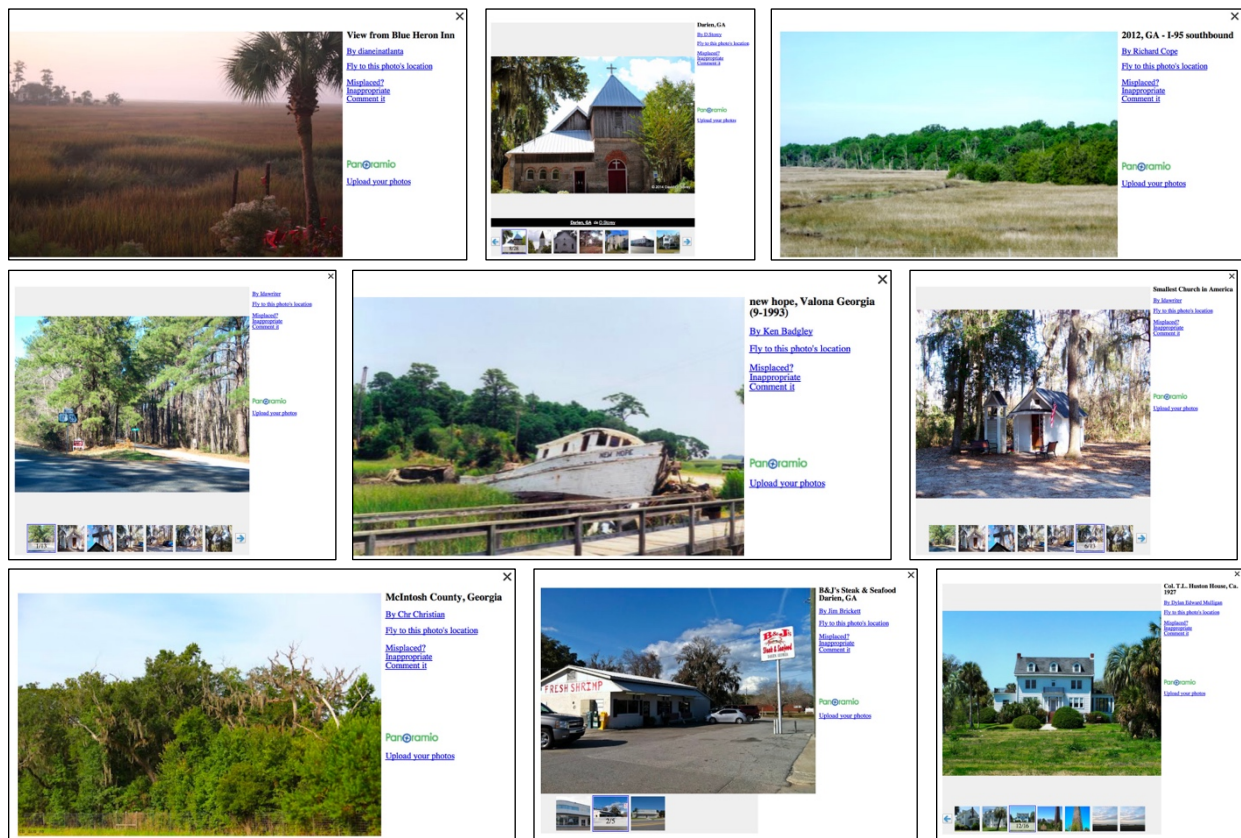

Figure 2. Google Earth images: Altamaha Historic Scenic Byway

Crowdsourced evaluation and identification of roadside scenic landscapes

There is a growing body of literature calling for greater engagement of the public in design and planning, and proposing new mechanisms for achieving that (Brown & Donovan, 2013; Griffon et al., 2011; Philipson et al., 2012). One of the key issues in developing such tools is the necessity for the public to see their own values represented in emerging plans, to be able to engage the planning process on their own terms and see their contribution expressed in the way they intended. The use of crowdsourced information, whether photographs or personal narratives, offers the opportunity to see one's own contribution appear in context as part of a developing view of the world—not only as an eventual evaluator of plans but also as a participant in establishing the evaluation criteria (Alivand & Hochmair. 2013; Dunkel, 2015; Liu et al., 2016; Martín et al., 2016; Nieuwoudt et al., 2016).

The following sections describe a process enabling the identification of candidate Scenic Byways in coastal Georgia using existing social media associated with an already established Scenic Byway. Metrics derived from known locations are used to identify potential locations and used as prompts to highway travelers via a mobile app interface enabling *in situ* evaluation and recording of data.

Identifying a candidate Scenic Byway

Our goal is a tool that prompts its user to evaluate what is around as the vehicle passes features that may afford some cultural/ecological/scenic benefit. The tool delivers narratives and images appropriate to a vehicle's location. As vehicle drivers and passengers move along a highway, the tool delivers aural cues already assembled from crowdsourced photos and narratives. The evaluation takes the form of a geolocated verbal response or a photograph taken by a vehicle passenger that can be uploaded to a publicly-accessible GDOT database of cultural, ecological and scenic resources. The evaluative script that results may form the basis for an application to the Georgia Department of Transportation for Scenic Byway status. As a prototype application, the Altamaha Historic Scenic Byway is a model to investigate other coastal Georgia highways for potential inclusion in the program.

The location
64 miles of U.S. Highway 17 from Richmond Hill, GA, to Brunswick, GA, are recognized as a scenic drive (http://www.exploregeorgia.org/), a 7-mile stretch of that highway crossing the Altamaha River from Glynn County into the City of Darien and 8 miles of GA Hwy 99 to Meridian, GA is designated the Altamaha Historic Scenic Byway (GDOT, 2015). Google Earth images sampled along the latter route range from iconic scenic views of the coastal salt marshes to damaged and abandoned boats; from prominent community churches to the smallest church in the USA, and from favorite restaurants to historic landmarks (Figure 2).

Creating a highway image log
The first step in creating a highway narrative is to assemble an image log of crowdsourced imagery collected within the viewshed of the highway. In the prototype instance of the Altamaha Historic Scenic Byway, each of the scenes in Figure 2 contributes to the overall value of the Scenic Byway, but some are discrete locations—churches, historic sites—while others are less location-specific representative landscape scenes. Candidate Scenic Byways will comprise the same component parts. For each, our evaluative system must be able to assign a score that can be used to discriminate between more and less valuable aspects of the highway landscape.

Creating geo-located narratives
In response to cues delivered by a location-sensitive mobile device, user participants will be asked to assess the beauty or cultural/historical significance of places being passed in response to descriptive narratives. Scores are geo-referenced at the time of collection so that at the end of a journey a record of evaluations can be downloaded and added to a resource database. The historical, cultural and popular destinations identified via crowdsourced imagery have discrete geographic locations and can therefore readily be made available as cues for a location-sensitive delivery system. Locating representative highway landscapes is less straight-forward as the locations are more diffused and are likely to be under-sampled by virtue of the challenge of

taking photographs while in motion—impossible for the driver and highly constrained for a passenger. A potential solution for this purpose is to use GIS-based indicators based on the characteristics of known photo-locations to develop a scenic beauty "surface" (Bishop & Hulse, 1994; García-Palomares, Gutiérrez & Mínguez, 2015; Martín at al., 2016; Ramírez at el., 2011) the high spots of which then constitute the locational cues for the evaluation system.   A similar process could be used to add non-visible features, such as locations valued for their ecological or archaeological/historical characteristics.

Creating a narrative for one of the cultural/historical/popular destinations—reasons for its selection or identification as a place of value—appears relatively easy to do based on available descriptions. Means for doing the same for landscape resources may be less obvious—absent from the records of scenic landscapes is any reference as to why the photograph was taken. A potential source of insight resides in interviews and survey responses recently collected as part of a study of post-Hurricane Matthew attitudes and behaviors principally toward climate-related migration but including questions regarding attachment and reasons for living on the Georgia coast (Orland & Welch-Devine, 2017).

Evaluating the passing landscape
Our initial conception of this evaluation approach is based in the use of locationaly-aware devices, i.e., personal smartphones, that deliver a narrative of the drive along the candidate highway. At locations determined either by prior crowdsourced knowledge of a cultural/historical/popular feature, or by prior GIS-based designation as a scenic "hotspot", the user is asked to comment on their surroundings and provide a scenic preference score. Drivers may respond vocally and their input is recorded, tagged with its geolocation. Passengers may take their own photograph, augmenting the crowdsourced photo resource and providing a more comprehensive evaluation (Figure 3). Users may also choose to provide unprompted input at any time, again with all responses geolocated.
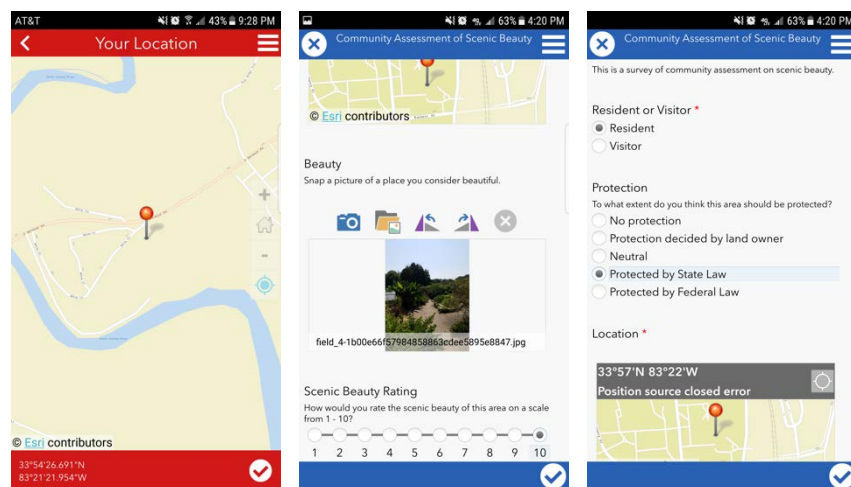

Figure 3. Cell-phone interface: Location and photo-evaluation

Conclusion: Building on Photovoice

Photovoice, a method embraced by numerous other disciplines, can trace some of its lineage back to Visitor Employed Photography introduced for the study of how people enjoy outdoor recreation by Cherem and Traweek (1977) among others. While it has a forty-year history as a tool connecting experience of the world with discrete physical places its principal use has been to evaluate the individual experiences of people in the immediacy of an environmental experience. Chenoweth (1984) used the powerful connection of place and experience as important evidence in favor of protecting important recreational landscapes, and experiences, on the Lower Wisconsin River. Here we propose that the method can be taken further, capturing not just individual experience of place but collective experience built upon the individual. We capture the richness of experience gathered by crowdsourced photography but then invite other people to consider and respond to those originating experiences with their own. In this case the goal is to enable the identification of as-yet-unidentified scenic landscapes but the general approach has application in numerous other settings where collective grassroots experience of landscape is essential for its protection and preservation.

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