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A Place Meaning Scale for Rural Communities Undergoing Landscape Change

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ABSTRACT

Sense of place provides a strategy to identify qualities of landscape change in rural areas undergoing urban development, yet a scale to assess such qualities has not been developed. Research on place meanings tends to draw from either an interpretivist or positivist approach but does not integrate them. This research integrates the two approaches with a mixed-methods design that resulted in the first scale of regional place meanings for two counties undergoing landscape change on the urban-rural fringe. We conducted interviews and focus groups with stakeholders in Jasper County, IA and Will County, IL, followed by a household survey to assess the psychometric properties of our scale. Eight regional place meanings were identified to characterize the reasons why residents developed connections with places. This paper responds to previous calls for research to merge different philosophical paradigms and it directs attention within the place scholarship to the study of rural communities.

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Introduction

Place, understood as space imbued with meaning (Vanclay 2008), is a frame people use to make sense of their embeddedness in the world and to understand changes in their environment (Gieryn 2000). Place has long been finding a home in environmental management due to its holistic approach, moving beyond instrumental values to encapsulate meanings attached to worldviews, memories, and experiences of being in the world (Kaltenborn 1998). It has been used by social scientists to situate human values, understand how people are affected by landscape change, and generally provide context for conservation decision-making (Greider and Garkovich 2010). Such research has taught us that any given locale invokes several senses of place (Raymond et al. 2021) that, in turn, affects environmental attitudes (Larson, De Freitas, and Hicks 2013) and behaviors (Halpenny 2010) that are sensitive to landscape change (Masterson, Tengö, and Spierenburg 2017).

Challenges of Regional Place Meanings

Region is an important geographic scale to address during land use and conservation planning (Snyder 1995), yet place is generally framed at a spatial scale aligning with individual perception and human action, such as home, protected site, or neighborhood (Lewicka 2011). Place meanings are geographically non-scalar, meaning they are not neatly nested, and instead take on new forms as their spatial range expands (Cash et al. 2006; Tsing 2012). Social and political forces vary across spatial scales indicating distinct influences and strategies for the production of locality, nationality, and globality (Massey 1994). The place meanings of this paper are directed at a regional level, distinct from site, national and global levels (Cresswell 2013).

Regional conservation presents challenges distinct from managing a protected area or local site. A regional set of land-uses encompasses a mixture of towns, agricultural lands, and industrial uses in ways that are beyond the boundaries of any one jurisdiction, set of perceptions, or time scale. Multi-faceted shifts in ecological regimes related to climate change, water pollution, and biodiversity engage many segments of society, and require approaches that understand a dynamic set of interrelations between humans and their environments at a regional scale distinct from scales of parcel, site, or town. Biodiversity restoration, habitat corridors, and sustainable agriculture all require a regional perspective and landscape level analysis to affect long-term change (Masterson, Tengö, and Spierenburg 2017). With regional planning becoming a stronger force within land-use decision-making (Cresswell 2013), understanding regional place meanings and their relationships to other factors support visions for landscape change (Gillette and Hurley 2018; Larson, De Freitas, and Hicks 2013; Soini, Vaarala, and Pouta 2012).

Several place-based researchers have been sensitive to geographic scale to understand variability in resident perceptions and concerns for representation across scales. Beckley questioned the nestedness of forest dependence across spatial scales. Using both objective and subjective indicators of dependence, Beckley found indicators to be both unique, as well as some nested dependencies, across differing scales. He concluded by stating that "... county level profile of forest dependence ... may tell one very little about social reality in communities within that county" (1998, 117). In a parallel vein, Flint et al. (2013) argued that advancing conservation initiatives at a regional level required the ability to integrate multiple linkages of decision-making across geographic scales—linkages that do not occur naturally and are not given to hierarchical functioning (Hall and Stern 2009). She suggested that the concept of place, with its holistic approach to understanding connections between people and their environments, is well-suited for the creation of spaces for socio-political engagement to connect across spatial scales (Cox 1998).

With the growing sensitivity to understanding place meanings at distinct spatial scales, this study is directed at two inter-related purposes that are difficult to disentangle. The first purpose is to establish a scale of regional place meanings appropriate for areas undergoing landscape change on an urban-rural gradient. With a problem of regional planning being one of making sense of the whole, adapting the concept of place at a regional scale would encourage a dialogue in which planners and stakeholders are guided by regional issues, including those of place meanings. The second purpose lays the groundwork to produce the first purpose, that is, to design and implement a methodological process to

create a quantitative scale of regional place meanings. Our process hybridizes and integrates a mixture of philosophical traditions related to place meanings, including a literature review that emphasizes the operational aspects of developing a scale of regional place meanings. The over-arching narrative of this paper is to ground the establishment of a quantitative scale for regional place meanings with an interpretive approach as the starting point.

Methodological Pluralism in Place Meaning Research

As indicated by Williams (2014), a value of place meaning research is its general critique of positivistic epistemologies that frame human-environment interaction through instrumental values and information processing frameworks. The spirit of place meaning research is to appreciate the storied history and social context of relations between humans and their environment. Rather than reducing an environment to a generic set of stimuli, place meaning research brings out the uniqueness of a locale in ways that frame the environment as a locus of meaning. Yet, measuring place is important for those who want to track how the prevalence of meanings change across time and people. Mixed-methods research holds potential to engage the strengths of both interpretivist and positivist approaches (Johnson and Onwuegbuzie 2004) for operationalizing place meanings.

Mixed-methods entail moving between epistemological assumptions which, if not undertaken carefully, may weaken the credibility of the overall study. To bridge the gap between multiple approaches, standards of rigor for interpretivist and positivist approaches are discussed. Methodological pluralism overcomes the either-or thinking of choosing a research approach, allowing for a robust picture of the subject of study from multiple angles (Creswell 2014). Unfortunately, mixed-methods in place research almost exclusively focuses on demonstrating rigor in quantitative methods while relegating qualitative methods to a step in the process to quantification, rather than as having distinct separate methods with their own standards of rigor (Creswell 2014). The methods and analyses of this paper seek to demonstrate the standards for rigor in both the interpretivist and positivist research processes as well as the relationships between the two approaches (Leech & Onwuegbuzie 2009). In providing transparency for the development of a place meaning scale for rural communities undergoing landscape change, we provide a template for the process as well as the resultant scale that holds promise for applicability in contexts elsewhere. Given the interest in the literature about relationships between place meanings and factors such as gender, age, and time spent in a place (Hay 1998; Larson, De Freitas, and Hicks 2013; Stedman 2003; Soini, Vaarala, and Pouta 2012), we conduct exploratory analyses to illustrate the potential of our resultant scales for place meanings.

Connecting Inductive to Deductive Traditions in Place Meaning Research

Interpretivist studies are generally inductive, meaning the researcher starts with observations about the surrounding world and organizes these observations in such a way to generate a situated framework for understanding. Interpretivist research is a “big tent” of philosophical approaches (Lincoln, Lynham, and Guba 2011), however such studies

generally share a standard of rigor that demonstrates the extent to which findings represent the people being studied. This can be done through practices such as triangulation, member checks, and creative strategies to engage participants in a reflexive dialogue (Denzin 1989). Another general principle of interpretivist research is that researchers actively seek ways to make their own position explicit within the text. Embracing one's subjectivities in an explicit positioning is the closest a study can be to becoming objective (Behar 1997). In these senses, interpretivist research is inherently place-centered as it establishes the extent to which the findings generated represent the inter-subjective agreements of the researchers, the participants, and the communities of study.

Our approach is that place meanings are socially shared and stem from the way in which interpretations reflect the biophysical, social, and political worlds of a region (Morse et al. 2014). An interpretivist tradition frames place meanings through contexts of history and socio-cultural life-worlds, in which place meanings reflect content relevant to a given community. By measuring the degree to which a person frames a place with a particular meaning, researchers might be able to uncover its pervasiveness among society, develop plans and policies that address the needs of various social or geographic cultural groups, and monitor change over time. At first glance, measuring place meanings seems to be a conflicted endeavor. Place meaning researchers tend to emphasize the importance of contextuality, historicity, and uniqueness—all of which complicate generalizability of findings to contribute toward hypothesis testing.

In contrast, positivist research is generally deductive, meaning it starts with theory, derives hypotheses based on a conceptualized set of relationships, and tests whether observations fit the theory. Important aspects of rigor in positivist research are the demonstration of external validity, that is whether the results of a study can be generalized to other sites and populations, and internal validity where evidence can be shown to support a claim about cause and effect (Creswell 2014). Whereas an interpretive approach takes as given that there are many understandings of the world and works to explain the influence of historical and contextual factors on them (Moon and Blackman 2014), the goals of deductive approaches are generally directed at replicability and generalizability.

Several studies have measured place meanings in terms of the way a locale fulfills a need or aligns with a particular value. Several place value typologies have been developed and assessed quantitatively for forests (Rolston and Coufal 1991), ecosystems (Reed and Brown 2003) and social landscapes (Nielsen-Pincus 2011). The value approach is an outcome/instrumental way of thinking about place meanings that tends to answer the question of *why* a place is meaningful, such as finding a place is meaningful because it provides therapeutic benefits, recreation benefits, or biodiversity. These, however, do not fully problematize exactly *what* is meaningful (Gustafson 2001) or the complexity of ways in which the same material objects are interpreted through different narratives of landscape change (Strauser et al. 2019).

Of the research that works toward quantifying place meanings, measurement items have been developed from literature and theoretical interest tied to generalizing across populations or landscape features (e.g. Brown and Raymond 2007; Soini et al. 2012; Stedman 2003). Such an approach makes assumptions about the researchers' knowledge of their study site and may under-appreciate the rigor of interpretive research used to demonstrate the trustworthiness of research processes. Integrating deductive and

inductive approaches within mixed-method processes holds promise for usefulness in land-use planning.

One challenge of measuring place meanings is reducing the whole of a place to a bundle of distinct meanings such that the findings fail to see the place (forest) through the domains (trees). With such reductionism as a constant reminder throughout our process, we purposely adhered to standards of rigor associated with interpretive research in order to remain firmly grounded in the contextual emphasis of place meaning research. Our quantification of place meanings began with inductive, qualitative processes to understand the meanings that existed for our regions. These meanings were developed into scales measuring the strength of their felt presence among research participants. The closest example of such an approach is a study by Wynveen, Kyle, and Sutton (2012) who quantified place meanings in a mixed-methods design, however their methods were focused on recreational visitors to a tropical marine park. Their context was one of understanding visitor experience in parks, and distinct from our concerns for landscape change across a set of rural communities at a regional level.

The goal is to provide researchers and land management professionals with a useful set of tools for regional land-use planning in rural areas undergoing landscape change and urbanization. The methods detail the process of scale development assessing regional place meanings, and when applied, could guide stakeholder dialogue about regional growth. By integrating approaches aligned with inductive and deductive methods, the resultant scale for regional place meanings draws on strengths connected to each tradition and holds promise for transferability beyond the study sites.

Materials and Methods

The research was implemented across two study sites within two phases. A schematic diagram of our process is highlighted in [Figure 1](#). During phase 1, place meanings for the two sites were developed from interviews and focus groups held in Jasper County, Iowa and Will County, Illinois using interpretive methods. During phase 2, a place meaning scale was developed based upon the findings and checks of phase 1. The transition from interpretive (qualitative) to positivist (quantitative) data gathering involved coding for the development of themes, pilot testing, and a convergent validity check to ensure our themes were inclusive of the main place meanings held by residents. After revisions in response to pilot testing ($n = 120$), the scale was administered in two counties. To verify that the full array of place meanings was assessed, an open-ended survey item was included in the questionnaire that asked respondents to identify reasons their county was special.

We purposely selected the two study sites because of their potential to be comparable in supporting development of a regional place meaning scale. Although in different stages of urban development, they each shared a rich history of agricultural production, were located in the U.S. Midwest, contained a large federally protected grassland, and were adjacent to large and growing metropolitan areas. At the start of the project, we were unsure if residents of the two sites held distinct perspectives of county-wide senses of place. As the interviews and focus groups evolved, transcripts analyzed, and findings emerged, we realized there were parallel social and historical contexts across the two sites.

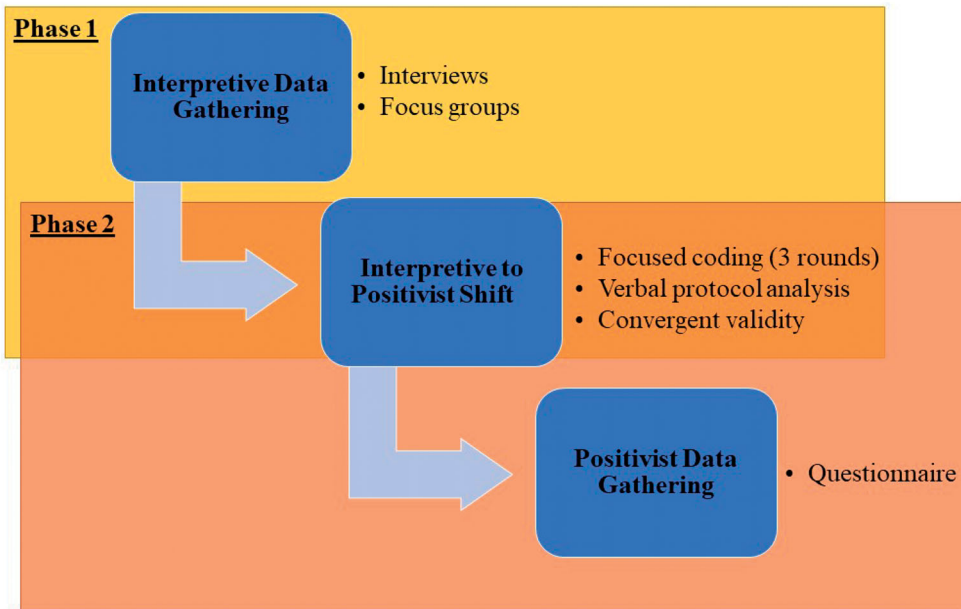


Figure 1. Outline of the two phases of the research project, with attention to connecting findings from the interpretive to positivist paradigms.

Most notably, regional senses of place were fairly weak in both sites. Stakeholders knew well the smaller scale sites of their county, yet landscape level senses of place were still forthcoming. In addition, the findings from our pilot tests reflected similar place meanings across the two sites. Because of the converging comparability of evidence from the two sites, we developed one regional place meaning scale that fit the socio-historical backgrounds of both study sites.

Study Sites

Will County, IL, USA is located south of Chicago within a matrix of rural, urban, and exurban spaces. As of 2017, the county had a population of 692,661 in a larger Chicago metropolitan area of over nine million. Forty-three percent of its land is still in agricultural production, primarily corn and soybeans, and much of the county is rural. Will County is also home to conservation areas including the 16,000-acre Midewin National Tallgrass Prairie designated in 1995, and over 21,000 acres of Will County Forest Preserves that protect prairies, forests, savannas, barrens, and wetland ecosystems with several thousand of these acres being added in the past two decades. While maintaining a high degree of agricultural and protected land, conversion of agricultural lands has also given way to suburban growth, industrial development, and freight transportation centers. Between 2000 and 2017, the population of Will County grew by 37%, making it the fastest growing county in the state and one of the fastest growing counties in the country.

Jasper County, IA, USA is located east of Des Moines with a population of about 37,000 within a larger metropolitan area of 700,000 residents. As of 2012,

Table 1. Stakeholders involved in interviews and focus groups segmented by those related to development and political positions and those related to natural and agricultural resources.

Site	Development and political (<i>n</i>)	Natural and agricultural (<i>n</i>)	Total by site (<i>n</i>)
Jasper County	7	8	15
Will County	6	11	17
Total by Group (<i>n</i>)	13	19	32

approximately 80% of its land was in agricultural production. The area boasts many distinct small towns, each with their own unique attractions and qualities. The county has developed a growing concern for recreation and conservation opportunities, including the 8,000-acre Neal Smith Wildlife Refuge designated in 1990, as well as other protected areas related to native prairies, woodlands, and wetlands, and a county-wide system of bicycle trails that connect to Des Moines developed in the past two decades. Over recent decades, Jasper County has adapted to changing economic opportunities. The home appliance company Maytag once employed over 3,000 people, but left Jasper County in 2007. However, the county is diversifying into healthcare, agricultural operations, a wind turbine industry, and exploring further opportunities related to grassland protection. Although the county population has been relatively steady since 1960 there are perceptions of landscape changes due to diversification of industry and the influence of Des Moines on rural lifestyles.

Phase 1 Data Collection

The goal of phase 1 was to interpret the array of place meanings for the two counties as they existed in the minds of participants. To accomplish this goal, 32 stakeholder interviews and two focus groups with 15 participants, all of whom had been involved in individual interviews, were conducted between March and December of 2016 (Table 1). Participants were generally community leaders who could speak to a number of trajectories of growth and change in their counties across agriculture, land use, economic development, workforce development, and conservation planning.

Participants were asked to identify those things they thought were special and made their county distinctive, to identify trends and changes occurring, and to reflect on those changes to explore an ideal vision to protect the important qualities of their county. For example, one question asked was “To what extent is growth and development desirable? What factors do you care about growing (or changing) in the county.”

Phase 1 Analysis

All meetings and focus groups were typed into transcripts and analyzed using NVIVO 10. Data were analyzed using three rounds of focused coding revolving around codes, categories and themes similar to the methods of other research in this journal (e.g., Paveglio et al. 2010; Urquhart and Acott 2014) and in line with recommendations (Auerbach and Silverstein 2003; Bazeley 2009). Codes tend to be descriptive snippets from the text itself that describe the understood intent of the statement(s) and tend to avoid abstraction. During the first round, two members of the research team analyzed the transcripts into discrete components and all text that indicated sense of place was

assigned a unique code. For this research, codes included descriptions about what the county as a place was, is, and could be. These descriptions were often tied to evaluative judgments about whether the change was desirable which were also included in the coding process.

During the second round, groups of codes were organized into a broad range of categories. We sought to identify where codes may be similar in nature or topic. The developed categories were more abstract than codes, but erred on the side of being grounded in the text used by participants. This intermediary step between concrete codes and abstracted themes allowed us to be faithful to the context and intended meanings of participants. An example of a category for our research was ‘community’ where people discussed community as it related to their counties. This category brought together a broad range of more specific codes such as ‘knowing neighbors’ and ‘tourists as disruptive to community life.’

The third round of coding consisted of moving from categories to themes, which in this case, represented prevailing place meanings. The main goal of theme building is to bring in integrating, relational concepts (Bazeley 2009). Themes are less specific than categories. They more readily depart from the immediate text and identify abstract concepts that unify and organize the data based upon theory. These themes tend to be context-driven but also theory informed. Any chunk of text can be sorted into a multitude of categories, but ultimately the themes identified depend on and relate to the research questions.

The two main analysts met multiple times through the process to share and discuss their interpretations. Interim findings were shared with the larger research team, most of whom participated in the data collection, and these findings were discussed for further refinement to enhance the reflexive nature of the inductive process (Miles, Huberman, and Saldana 2014). Overall, an inter-coder reliability between the two researchers who conducted the coding was calculated at 94% using the percentage of agreement method (O’Connor and Joffe 2020, p. 8). Once an acceptable inter-coder reliability was established, the first author conducted the subsequent analysis that identified eight distinguishable place meanings across the two study sites for use in Phase 2.

An additional analysis check on the interpretive findings were included in the process of item development. In the first round of drafting place meanings relevant to the study sites, draft scale items were pilot tested whereby residents of the study sites completed the place scale items as part of a draft questionnaire and verbalized their considerations while completing the items. As respondents were “thinking out loud,” we were able to trace their thought processes when considering the meaningful qualities of their county and the extent to which their reflections and language mapped onto the place meaning items (Kuusela and Paul 2000). The results of learning from 120 residents during pilot testing across the two research sites allowed the team to revise the place scale items to be more salient and immediately understandable.

Phase 2 Data Collection

Phase 2 aligned with a deductive approach using a mixed-mode survey technique in the two sites. The questionnaire contained several items related to preferences for growth in the county, as well as the 24 items reflecting the eight place meanings developed from Phase 1. Using address-based sampling (ABS), two surveys were conducted with a random

sample of 3,000 households in Jasper County and Will County (1,500 households in each county). The survey employed both mail-back and online return, depending on respondents' preferences. An adapted version of the Tailored Design Method (Dillman, Smyth, and Christian 2014) was employed using five points of contact including an introductory letter from a local conservation group, a questionnaire packet, a thank you/reminder post card, and second and third waves of the questionnaire for non-respondents.

Before reaching the close-ended place meaning items on the questionnaire, respondents were prompted with an open-ended question: "Why is your county special to you?" This question was seen as a tool that could prompt respondents to reflect on important place meanings, and assess the convergence of the place meaning scales from phase one with those of survey respondents in phase two. Such an assessment also served as a check against groupthink coming from the focus groups as well as our research team, misinterpretation of data, and other problems in the process of research that weaken the ability to represent residents of the two counties (Nyumba et al. 2018). For the 24 survey items reflecting the place meaning scale, respondents were prompted with the following: "Which of these statements best reflects why your county is special and distinct? Please rate how much you agree with each statement." Respondents were asked to choose the appropriate response category based on a five-point Likert scale that ranged from strongly disagree to strongly agree.

Phase 2 Analysis

Using internal consistency and discriminant validity analyses, we demonstrated the validity of the place meaning scale items (DeVellis 2012). Confirmatory factor analysis (CFA) tested the extent to which the data fit the hypothesized latent constructs, and was used for the place meaning scale items to demonstrate construct validity. Cronbach's alpha coefficients were used to evaluate the internal consistency among items for each construct. Average variance extracted (AVE) was also referenced to assess discriminant validity. An additional series of multiple OLS regression models were estimated to examine the possible effect of background experience variables (i.e., years in county, living and working in the same county) and demographic characteristics (i.e., age, gender, income, and education) on place meanings.

A final step in the analysis for phase 2 was to assess convergent validity by examining the extent to which the responses to the open-ended item in the questionnaire aligned with responses derived from phase 1. These open-ended responses were thematically analyzed to assess their fit with the eight theorized place meanings. Comments were coded such that they could represent any number of place meanings, with each text segment carrying a single meaning. In other words, a set of words could represent just one meaning. Of 967 completed questionnaires, 602 (62%) wrote responses to the open-ended question.

Results

Phase 1 Findings

Findings below state the operational definitions of the eight place meanings derived from thematic coding.

1. *Prairie conservation: Distinctiveness comes from presence of land devoted to prairie restoration and conservation of other ecosystems. There are both large tracts of natural grassland and other pieces of native landscape visible in the county.*
2. *Outdoor living: Distinctiveness comes from the rural landscapes that contrast with the city landscapes of the nearby metropolitan area. There are outdoor activities including hiking in nature, seeing wildlife, biking, walking, and generally enjoying open spaces in the county.*
3. *Agricultural pride: Distinctiveness comes from richness of the farmland in the county as some of the best in the nation. Because the soil is so fertile, the county is well known for testing new farming technology that spreads to other places in the country. The county is known internationally for the agricultural commodities it produces and sells in national and global markets.*
4. *Small-town feel: Distinctiveness comes from the unique communities in the county that have a friendly ambiance and tightly-knit social fabric. There are a manageable number of places to go and things to do and the businesses are mostly locally-owned. The towns are quiet and peaceful. Each town has a special small town feeling about it that you would not get in the big city.*
5. *Access to urban life: Distinctiveness comes from the close proximity to so many activities in the nearby large city, yet this region is not part of the city. Residents in this region can easily work or visit the city. Urbanites come to visit on a day-trip and really like our landscapes and places.*
6. *Tourism Appeal: Distinctiveness comes from the appeal of this region as a destination for people from all over to come visit our natural areas, community buildings and parks, and other places that make the region special.*
7. *Family Life: Distinctiveness comes from the many good things about the county as an ideal location to raise a young and growing family. In contrast to other places, there are a variety of employment prospects, about any social or recreational activity you'd want to do, good schools and amenities, and safe neighborhoods.*
8. *Caring Community: Distinctiveness comes from the people of the community who care about each other, take care of their own, and pull together in times of need.*

In this manuscript, we included an in-depth description of the first place meaning to demonstrate the qualitative procedures used to create our findings. For the sake of word count, the detail of the grounded contexts for each of the remaining seven place meanings are provided in the Supplemental Materials and align with the procedure for “prairie conservation”:

Prairie Conservation Place Meaning

Participants saw an increasing compatibility between conservation, agriculture, and development and increasing use of prairie strips and other conservation-oriented practices. Prairie conservation was connected to the conservation of heritage. While discussing a local prairie preserve, one participant shared:

I think that's where it gets into all of the natural resources in their most natural state of, and preserving those, and... ..there is an authenticity to it. It's not just something that we're making it look good. Right? It's that we've cherished it and preserved it in its natural state.

Prairie conservation was tied to the authentic past. It was also connected to quality of life, attracting residents to live in the county, and providing economic boosts through tourism. Prairie conservation was a controversial sense of place when discussed in relation to agriculture:

Well, an issue you're always gonna have, a lot of people don't realize that Iowa, Illinois, and Indiana, the combination of soils, climate, and access to markets, it's the most productive farmland in the world, and so, you establish more grassland areas, and you're taking that land out of agriculture. That's not gonna lay well with certain people.

This quote reflects that prairie conservation may be seen both a positive or negative place meaning depending on the individual's concerns for agricultural production in the county.

The seven other place meanings were identified using the same procedures. For detail on their grounded context and supporting quotes, see the Supplemental Materials.

Although the array of eight place meanings identified for the two counties were exhaustive, they were not mutually exclusive. Because this research sought to capture place meanings as understood and framed by those who live there, there were multiple ways of framing similar ideas, which could not be lumped together due to distinct contexts. Further study of each meaning as parts of complex life-worlds could reveal distinct values, beliefs, and cultural symbols connected to them (Urquhart and Acott 2014). For example, while the meanings with the labels of Small-Town Feel and Caring Community may both indicate similar ideas about a community that maintains strong social networks, Small-Town Feel was tied to a declensionist narrative of the loss of small-town values in the face of development, while Caring Community was connected to a progressive narrative of triumph in the face of adversity. In the interest of erring on the side of contextual fidelity based on a holistic approach to place, the above collection of eight place meanings for a regional sense of place may contain some redundancy.

Phase 2 Findings

We received a net response rate of 34% to our mixed-mode survey (3,000 surveys sent, 151 return to sender, and 967 completed questionnaires). Overall, respondents mirrored the socio-demographic profile of the U.S. census estimates. For example, 54% of respondents were female, compared to 54% in the 2016 Census, and 84% were white compared to 83% in the census. However, respondents were older and more educated compared to the census data. The median age of respondents was 59 years (19–104 years) compared to 40 in the U.S. Census. Of survey respondents, 40% reported education beyond a Bachelor's degree, compared to 33% in the Census. Such discrepancies between the U.S. Census and the respondents indicate the need to check variability in place meanings across socio-demographic characteristics.

All survey items had some missing responses ranging between 10 and 13%. Listwise deletion was chosen to handle missing data because of the random distribution of

Table 2. Goodness of fit statistics for items of the place meanings scale ($n = 778$).

	Item mean*	Factor loading	Standard error	Factor mean (standard deviation)	Cronbach's alpha (average variance explained)
Prairie Conservation				3.68 (.86)	0.93 (.83)
<i>Native prairie landscaping</i>	3.66	0.89	0.01		
<i>Natural conservation areas</i>	3.77	0.93	0.01		
<i>Protected grasslands</i>	3.63	0.90	0.01		
Outdoor Living				3.78 (.83)	0.85 (.65)
<i>Outdoor recreation opportunities</i>	3.72	0.79	0.02		
<i>Rural landscapes</i>	3.80	0.81	0.02		
<i>Opportunities to encounter wildlife</i>	3.82	0.82	0.02		
Agricultural Pride				3.66 (.90)	0.91 (.79)
<i>Farmland productivity</i>	3.80	0.96	0.01		
<i>Fertile soils for growing crops</i>	3.80	0.94	0.01		
<i>Agricultural innovation</i>	3.37	0.75	0.02		
Small Town Feel				3.71 (.84)	0.87 (.71)
<i>Local community where families know each other</i>	3.80	0.83	0.01		
<i>Special local places</i>	3.66	0.82	0.02		
<i>Close personal relationships in the community</i>	3.65	0.89	0.01		
Access to Urban Life				3.69 (.86)	0.83 (.66)
<i>Suburban lifestyle</i>	3.59	0.64	0.02		
<i>Easy access to urban activities</i>	3.75	0.92	0.01		
<i>Close proximity for visitors from the City</i>	3.69	0.84	0.01		
Tourism Appeal				3.30 (.92)	0.88 (.71)
<i>Many attractions for visitors</i>	3.18	0.84	0.01		
<i>Variety of natural areas for visitors</i>	3.51	0.82	0.02		
<i>Unique places for tourists</i>	3.19	0.86	0.01		
Family Life				3.56 (.83)	0.78 (.57)
<i>Variety of employment opportunities</i>	3.19	0.72	0.02		
<i>Lots of activities that bring balance to my life</i>	3.41	0.85	0.01		
<i>Good place to raise a family</i>	4.08	0.68	0.02		
Caring Community				3.41 (.83)	0.82 (.63)
<i>Local governments that listen to residents</i>	3.25	0.77	0.02		
<i>Communities that reflect the character of its citizens</i>	3.57	0.89	0.01		
<i>History of overcoming hardships</i>	3.40	0.71	0.02		

*Items were measured on a scale of 1-5 with the following anchor values- 1(Strongly Disagree)-2 (Disagree)-3 (Neutral)-4 (Agree)- 5-(Strongly Agree).

missing data across the survey items (Allison 2001). Confirmatory factor analysis was performed and the model fit for the data well ($X^2 = 1214.94$, $df = 225$; SRMR = 0.06; RMSEA = 0.08; CFI = 0.93) (Hu and Bentler 1999). Factor loadings ranged from .78 to .93. All of the place meaning items had acceptable internal consistency with Cronbach's $\alpha > .70$ (Cortina 1993) and average variance extracted (AVE) scores above .50 (Hair et al. 2006). Therefore, no items or factors were dropped from the analysis (Table 2).

Place meanings with the highest scores were Outdoor Living ($M = 3.78$, $SD = 0.83$), Small-Town Feel ($M = 3.71$, $SD = 0.84$) and Access to Urban Amenities ($M = 3.69$, $SD = 0.86$). All place meanings averaged between 3 (neutral) and 4 (agree). Agricultural Pride and Tourism had slightly higher standard deviations (0.90 and 0.92) than the other meanings, suggesting a slightly lower level of agreement among respondents.

All place measures were approximately normally distributed with a slight left skew (all measures were between .2 and .5 indicating fairly symmetrical data). Samples of 50 or more, regardless of spread, have approximate normality such that slight skew has only miniscule effect (a few hundredths on the alpha) on regression, which avoids compromising the interpretability of the data through data transformation (Pituch and Stevens 2016). Multiple OLS regression of place meanings on age, years in county, income, education, gender, and living and working in the same county showed that these variables accounted for very little variance of the place meanings (1–5%). No variables were consistently influential across the place meanings, though as seen in the table below years in county and gender were significant across three meanings each ($p < .1$) (Table 3).

Convergence of Place Meanings

Analysis of the open-ended item on the questionnaire largely supported the importance of the eight identified place meanings (Figure 2).

All eight place meanings arose in the open-ended answers and five of them were the top meanings reflected in the open-ended item. Written responses that indicated agricultural pride and small town-feel were less mentioned, perhaps because these place meanings are closely associated with rurality and thus reflecting the lower populations of rural parts of the counties. Tourism was mentioned by less than 1 percent of survey respondents, suggesting its importance had been overstated in the interviews and focus groups, and that our group of stakeholders may have been anticipating future development more than responding to current day conditions.

New meanings arose as well. Six percent of respondents indicated that economics made their county special. Examples include “Lower taxes. More bang for your buck!” and “The county is near a large city for job opportunities and has lower taxes.” While such comments are not usually affiliated with sense of place, it does fit the definition of place meanings as descriptive beliefs about what kind of place somewhere is (Stedman 2003). The importance of economics indicates how a large proportion of people see the space as an instrumental means to an ends. In addition, seven percent of survey respondents made negative comments that could not be framed as place meanings because of their generality such as “It’s not . . .” and “The truth is that Jasper County is just a normal Iowa-type county to me without a special meaning.” Another two percent of respondents provided single words that were not easy to frame as a place meaning, such as traffic, politics, location, or history.

Discussion

In the landscapes of the Midwestern United States, our scale for regional place meanings was comprised of the following dimensions: Agricultural Pride, Caring Community, Family Life, Outdoor Living, Prairie Conservation, Small-town Feel, Tourism, and Urban Access. These same place meanings fit the two study sites indicating parallel community-based processes of landscape change that held consequences for sharing regional senses of place.

Table 3. Summary of regression analysis for variables predicting place meanings.

Variable	Agricultural pride (n = 470)			Caring community (n = 470)			Family life (n = 470)			Outdoor living (n = 474)		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Age	.01**	<.01	.09	<.01	<.01	.03	<.01	<.01	.03	.01*	<.01	.09
Years in County	.01***	<.01	.18	<.01**	<.01	.11	<.01	<.01	.03	<.01	<.01	.05
Income	-.03	.03	-.04	-.01	.03	-.02	.06*	.03	.09	.01	.03	.02
Education	.02	.03	-.36	.03	.02	.07	.03	.02	.07	.04	.02	.08
Gender	.04	.08	.02	.11	.08	.06	<.01	.08	<.01	.09	.08	.05
Work/Live Same County	.06	.09	.04	-.10	.08	-.06	-.02	.08	-.01	.05	.08	.03
Constant	3.08	.23		3.07	.22		3.10	.22		3.14	.22	
Adj R ²	.05			.01			.01			.01		
P > F	<.01			.14			.17			.10		
Age	.01**	<.01	.14	<.01	.00	.06	<.01	<.01	.05	<.01	<.01	.06
Years in County	<.01	<.01	.02	<.01***	<.01	.14	<.01	<.01	.03	<.01	<.01	-.03
Income	.04	-.3	.06	.02	.03	.03	<.01	.04	-.00	.05	.03	.08
Education	.03	.02	.07	.02	.02	.04	.07***	.03	.14	.01	.02	.03
Gender	.14*	.08	.08	.32***	.08	.19	.10	.09	.05	.17**	.08	.10
Work/Live Same County	.07	.09	.04	-.05	.08	-.03	.08	.09	.04	.03	.09	.01
Constant	2.74	.23		3.08	.22		2.65	.24		3.13	.23	
Adj R ²	.02			.05			.02			.01		
P > F	<.01			<.01			.04			.18		

Note. *p < .1; **p < .05; ***p < .01.

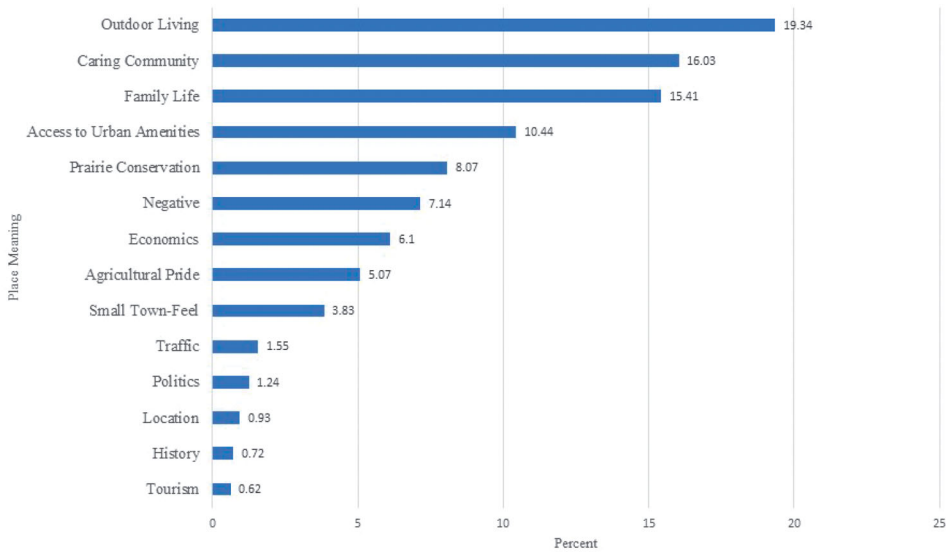


Figure 2. Percent of participants out of total questionnaires mentioning county-level place meanings in open-ended item.

Our survey scale was found to be robust across background experience (years in county, living and working in the same county) and socio-demographic characteristics (age, gender, income, and education), accounting for just 1–5% of the variance in scores. No individual characteristics were consistently influential across all place meanings. While years in county and gender were statistically significant across three meanings, they were negligible in their impact. These findings are in contrast with others who have suggested that time has an influence on place meanings, where social meanings grow stronger while physical meanings grow weaker (Hay 1998; Larson, De Freitas, and Hicks 2013; Stedman 2003; Soini, Vaarala, and Pouta 2012); the contrasting findings may be due to our regional referent for place meaning which was different than the site scale of previous studies. However, given the immersion of place meanings into life-worlds (Husserl 1954) and their embeddedness in the world of symbols, culture, and values (Devine-Wright 2009; Stewart et al. 2004), and that values tend to be few and averse to change (Vaske and Donnelly 1999), it makes sense that place meanings would be relatively averse to change in the context of background experiences. Had we sought to measure specific objects of attachment (e.g., people, natural conditions, landscape features) rather than place as a symbolic system of understanding (e.g., small-town feel, outdoor living), we may have found different results. These findings are interesting for land-use planning because it suggests a high level of resilience for many place meanings at a regional level of scale.

Whereas place meanings are championed as appreciating the idiosyncrasies of a locale, the development of a generic scale for regional place meaning may seem to contradict the essence of place. Framing place meanings as generalizable could appear as naïve to the concept of place. However unlike site specific place meanings—say related to one’s home, favorite hiking trail, or nearby park—regional place meanings

would encompass a mosaic of land-uses, features, and communities. Because of the need to encompass a larger set of human relationships with their environments, place meanings for a region are more likely tied to collective or cultural narratives compared to place meanings associated with a site or some smaller spatial scale. For this reason, the need to understand regional transformation of place from perspectives of those who live and work there, is at the heart of the contribution of this paper. With a primary problem of regional land-use planning being one of making sense of the whole, a scale that facilitates residents to “make sense of the whole” encourages land managers, planning professionals, and residents to engage in a regionally-focused dialogue about their visions for landscape change (Stewart et al. 2004). Regional place meanings serve as aspirations—or talking points—of outcomes for future growth and could help guide a region-wide process about “what should be” (Gillette and Hurley 2018). The regional spatial scale is an important consideration for the ability of this place meaning scale to be generalized to other rural communities. Our methods led people to think regionally about their place of home and work, and to frame their county as something that has a coherent and distinct meaning—different from other counties and regions of their area. For several participants, they may not have thought about a regional sense of place prior to us asking questions about it. The regional scale likely encourages residents to draw upon public values to anchor place meanings more so than personal experiences tied to a smaller scale site such as a family farm or local park (Díaz et al. 2015). If so, similarity in the processes that construct a regional sense of place—particularly in the absence of a publicly-shared regional place meaning—could explain the consistency across the two study sites and hold promise for transferability to other regions on the urban-rural fringe.

That both study sites were in some state of regional landscape change is also an important consideration for the generalizability of this scale. The lack of relationships between background experiences, demographic characteristics, and place meanings was not expected. An explanation for the consistency of findings may be related to regional landscape change processes. Both counties experienced landscape change across the past two decades, in part, based upon the growth of the larger metropolitan areas within proximity to them and the dynamic state of industry and federally designated grasslands. The landscape changes may have inhibited the social transfer of historic place meanings from new to old-time residents because the old-timers were responding in positive ways to the landscape changes, and in ways that mimicked the responses of newcomers to the landscape (Salamon 2002). Had we conducted the study in rural places not adjacent to urban centers, where the pace of change was slower and the anticipation of new development at a minimum, we might have seen a stronger effect of time and socio-economic status on place meanings. As suggested by Stedman (2003), people responded to the physical changes on the land which influenced their place meanings in similar ways across socio-demographic characteristics.

Conclusion

This research has outlined a mixed-methods study of place meanings, capitalizing on the strengths of interpretivist and positivist approaches (Creswell 2014; Johnson and

Onwuegbuzie 2004). We have provided an outline of our process for each of these approaches and demonstrated rigor in the transparency of our analysis and thought processes as our implementation unfolded. The value of methodological pluralism here was that the interpretive research allowed for a credible and trustworthy understanding of place meanings on the front-end, and for interpretation of quantitative findings on the back end, resulting in a deep understanding about regional place meanings in rural communities undergoing landscape change (Williams 2014). Also enriched was the positivist approach which allowed for the examination of the relationships between regional place-meanings, socio-demographic characteristics, and other constructs of interest. While this research approach was applied to counties on the rural-urban fringe in the U.S. Midwest, the design could be adapted across a variety of settings undergoing landscape change.

Future research could further explore the ways in which these place meanings are related to place attachment and other place-related variables as well as preferences for landscape change and pro-environmental behavior. It may be that a regional place meanings functions in different ways than smaller scale constructions of place meanings. Because this study focused solely on development of place meanings at the regional level, a useful direction for future research would explore the extent to which regional place meanings hold influence across spatial scales (Beckley 1998). This research provides both a transferable process to develop a place meaning scale, and a useable measurement scale to assess place meanings in rural communities undergoing landscape change.

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