

COMMUNITY ATTACHMENT AND RESOURCE HARVESTING IN RURAL DENMARK

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Abstract: Community attachment has been related to "sense of place," and by extension to factors such as the natural resource base of a local geographic area and the utilitarian uses of those resources—a functional attachment that helps root people to a place. The purpose of this study was to examine the resource harvest activities of residents of three modern rural communities in Denmark and relate their participation in these activities to community attachment and satisfaction. A total of 160 residents from the three small communities selected in Jylland, Denmark, responded to a single wave of the survey. Even though this was a limited sample, the study found that about one-third engage in harvesting of natural resources and two-thirds are involved in domestic resource use. Eighteen motivations for engaging in natural resource harvesting were reduced to four factors which were subsequently used in a k-means cluster analysis to differentiate five motivational types of harvesters: 1) Outdoor Recreation oriented, 2) Non-recreation oriented, 3) Experience Nature, 4) Recreation Activity Tradition, and 5) Self-sufficiency oriented. Analysis of Variance was used to determine if the five types differed in their participation in natural resource harvesting activities and domestic resource activity use; the "Self-sufficiency" type was differentiated by its greater participation in both sets of activities. A measure of community attachment was then regressed on natural resource harvesting motivations, an aggregated natural resource harvesting index, an aggregated domestic resource use measure, community satisfaction, and life satisfaction. The *t* values of the multiple linear regression suggest harvesting of natural resources has the strongest positive relation to community attachment, followed by community satisfaction, and that the other variables do not have a strong relation to attachment. While motivations appear useful for developing a typology for examining harvest activities, they do not appear to be strongly related to community attachment; rather, actual engagement in harvesting activities appears to be more significant. Further exploration of rural cultures is needed to determine if this functional attachment to communities is supported in other settings.

Introduction

Social researchers have described the tensions in modern cultures between the reward of residential mobility for economic and human capital development and the desire for a sense of place. Community attachment has been

empirically related to the intensity of a sense of place, contributing to bonding and helping to develop a rootedness (Tuan, 1980). Some authors have suggested these concepts of sense of place and community attachment also include an aspect of a culture's cosmology, a relationship with nature (Relph, 1976; Stokols & Shumaker, 1981). For rural cultures this has been conceptualized as not only a land ethic, but a utilitarian relationship, often involving consumptive uses of natural resources which bond people and people to place and thus, by extension, to community. Empirical studies in the U.S. have indicated that a positive, but weak, relationship exists between natural resource harvesting and place attachment (Williams, Patterson, Roggenbuck & Watson, 1992). A few studies have focused on such relationships in indigenous cultures, and found stronger relationships, but few have explored the relationship to community attachment in rural modern cultures with complex technology, mobility and education.

The purpose of this study was to examine a rural modern culture (i.e., rural communities within Denmark) with regard to their natural and domestic resource harvesting activities, explore the underlying motivations of those who engage in consumptive harvesting activities (e.g., hunting, fishing, vegetable/fruit farming, gathering wild edibles, and maintaining farm animals), and then relate these activities to community attachment and satisfaction.

Study Setting

Three communities were selected in western Denmark for this study. Bobøl is primarily a farming community of less than 40 residences. The community has a well known private fishing area, Ribehøj Fiskepark. Stenderup is a crop and dairy farming community of approximately 160 households, and Jels is a large village and agricultural area of approximately 650 households. All three communities have existed since the 17th century as agricultural samfund (communities or unions). Even though 17th century buildings are still used for dwellings and housing farm/dairy animals and equipment, the crop, dairy, and swine operations are highly mechanized. The Danish government provides low cost capitalization loans, subsidies and tariff protection for much of the dairy and swine industries.

The communities were selected because of their location in rural Jylland, Denmark; a known area for hunting, freshwater fishing, and less than 35km access to saltwater fishing; variation in population size; and the researcher's familial ties to the area.

Methods

A seven-page questionnaire booklet was designed for self administration. It included questions on number of adult relatives within a radius of 25km of the respondent, length of time in the lokalsamfund (community), three questions that were used in an aggregated community attachment measure, and questions on satisfaction with the local community and satisfaction with life in general.

Respondents were also asked a series of questions about whether they engaged in different types of hunting, fishing, and gathering activities, and activities related to domestic resource production such as gardening, raising farm animals, and of things others had discarded. In addition to their own activity and household use of these activities, the respondents were asked about their barter, selling and receiving of products from these activities. The sample members were also asked a series of questions about their motivations for participation in natural resource harvesting, rating the importance of each. They were also asked a series of socioeconomic and demographic questions. The questionnaire was translated to Danish, reviewed and checked by both the translator and a third party translator. It was then printed locally in Vermont.

Originally, the plan was to hand distribute the self-administered questionnaire to postal boxes at individual farm postal boxes in each of the three selected communities by walking or bicycling between residences. Upon the initial arrival in the communities and a two day surveillance, the initial distribution plan was abandoned as postal boxes were often at dwellings which were a quarter mile from the main road, residences were often considerable distances apart, and many residents retrieved their mail at the postal station. After receiving assistance and helpful suggestions from the regional post office in Rødding, a decision was made to distribute the questionnaire by mail, with a self-addressed stamped envelope for return. Subsequently, a census sample of households was drawn for Bobøl (N=37) and Stenderup (N=156), and a random sample of 350 households from Jels. As all stamps for the initial mailing, post card postage and return postage were purchased from the regional post office, postal authorities provided (after pleas and negotiation) two sets of labels for all households in the three lokalsamfunds. Questionnaire booklets were coded with an identification number, a cover letter was developed, translated to Danish, and printed in Copenhagen, and all 543 were mailed from Rødding, Jylland, Denmark. Returns were mailed to a postal pick-up in Copenhagen. Approximately three weeks later a postcard reminder and thank-you was sent to all members of the sample.

There were 532 deliverable questionnaires, a total of 160 were returned and considered to be useable. Response rates varied from 24 percent received from residents of Bobøl to 33 percent from Jels; a total response rate of 30 percent was obtained for the single wave of the survey and reminder.

Results

Over fifty-four percent of the respondents were male, 41.6 percent female. Approximately seventy-nine percent (78.7%) were married or living with a partner, 11.5% single, 6.1% separated or divorced, and 4.7% of respondents were widowers or widows. Education varied for 130 respondents to the question, 39.2% reported having a folkeskole education (equivalent to 11-12 year schooling in U.S.), 7.7% have gymnasium (high school) education, 13.1% have a 2 to 3 year teacher certificate, 7.7% have a university or post-graduate degree, and 30% report having "other", which include technical schooling, folkehojskole, certificate programs, etc. Approximately 58% of respondents were employed full-time, 18.3% were employed seasonally or part-time, 8.8% were on paid student or paid parental leave, 6.6% were unemployed, and an additional 8.8% listed their employment status as "other."

Respondents were asked about the type of area in which they grew up; 42.7% grew up in a village, 23.1% grew up on a rural farm, 13.3% in the rural countryside, 11.9% in a provincial town or suburb, and 9.1% grew up in a city. Respondents lived in their communities for an average of 20 years (Std. Dev. = 16.66) with a distribution of less than 1 year local residence to 80 years. Respondents were asked to rate how satisfied they were with their lokalsamfund (community). Approximately 85.8% were somewhat satisfied or satisfied with their local community. In contrast no one reported being dissatisfied and only 4.1% were somewhat dissatisfied (see Figure 1).

Generally the respondents were satisfied with life. Only 6.2% were somewhat dissatisfied or dissatisfied as contrasted to the 85.6% who were at least somewhat satisfied (see Figure 2).

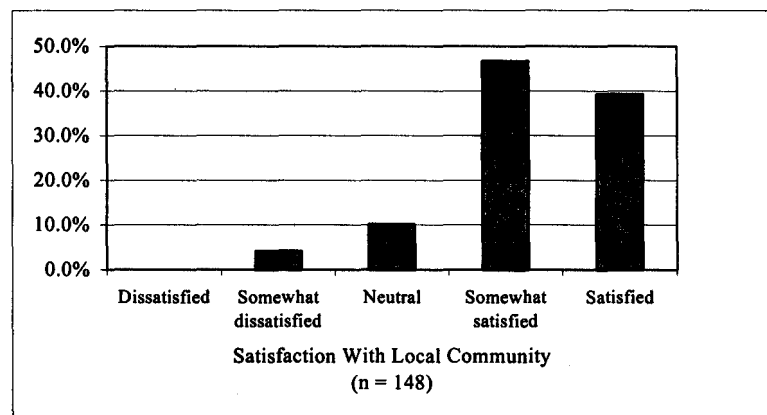


Figure 1. Respondent Satisfaction with Their Local Community

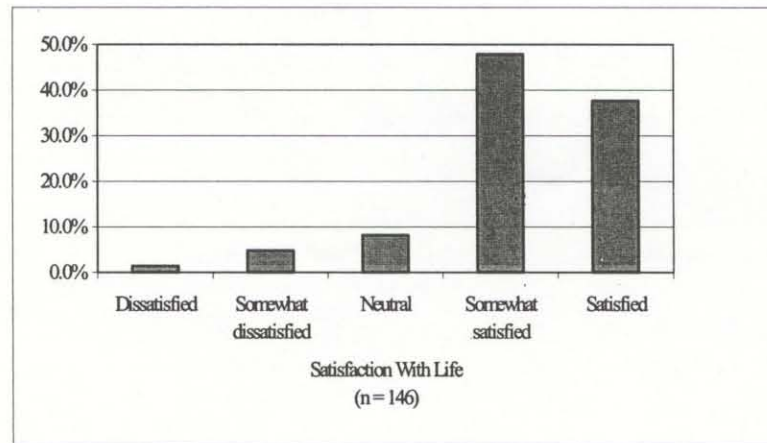


Figure 2. Respondent Satisfaction with Life, in General

Respondents engage in a variety of natural resource harvesting activities and domestic resource production activities; over 30.4% fresh water fish, 22.4% salt water fish, 19.4 % hunt birds, 21.4% harvest small game, and 31.7% gather wild edible plants. These five variables were aggregated to form an index of natural resource harvesting. Approximately 60% of the respondents plant and harvest their own gardens, 64.5% of the 138 respondents harvested from their own fruit trees, 21.8% raise farm animals, repaired discarded items for sale or own use (43.9%), sold things at yard sales or roadside (12.6%), 68.8% home canned vegetables or fruits, and 89.2% maintained own equipment and car. These latter seven variables were aggregated and used in an index of domestic production.

Respondents were asked to rate a series of 18 motivations of why people participate in natural resource harvesting on their importance each was to the respondent, with "not at all important," coded as 1 to "extreme importance," coded as 5. These were subsequently used in a principle components factor analysis with varimax rotation to reduce the 18 variables to linear combinations of variables representing underlying dimensions of the motivations. The number of components was determined by eigenvalues > 1, an examination of a scree plot, and interpretability of the components (factors). Factor loading greater than .500 were used to interpret the components. Cronbach alpha was used to assess the reliability of the motivation variables that were used to interpret the components.

A four component (factor) solution was selected as the best fit. The first component "loaded" on motivations related to the pleasure and enjoyment of the activity/experience and being and sharing with others. The first component was labeled as "Affiliative Recreation." The second component is defined by motivations related to self-reliance, independence and providing for self and family, it was labeled "Self-sufficiency." The third component was defined as "Experience Nature." The fourth component was defined by maintenance of "Tradition," and was labeled as such (see Table 1).

The factor scores on these four dimensions were subsequently used in a non-hierarchical cluster analysis to develop a typology of respondents based on the components (factor dimension). K-means cluster analysis runs were used to cluster the respondents into distinct groups or types. A five-cluster solution was selected based on changes in cluster groups and interpretability. Cluster 1 was defined by the relatively high standard deviation units above the mean for the "Affiliative Recreation" component and the .51 standard deviation above the mean on the "Experience Nature" component, this cluster was labeled "Outdoor Recreation." Based on the negative standard deviations units below the mean for the "Affiliative Recreation," component (1.1 sd.) and the 1.3 standard deviation below the mean on the "Experience Nature" component, the second cluster was labeled "Non-Recreation." Cluster 3 was defined by the 1.07 standard deviation units above the mean on "Experience Nature." On the fourth cluster Affiliative Recreation and Tradition were .72 and .50 above the mean respectively, the cluster was labeled as "Recreation Tradition." The fifth cluster was defined by the 1.4 standard deviation units above the mean on "Self-sufficiency." Clusters were then used as a constructed typology to examine respondents with regard to their involvement in natural resource harvesting.

One purpose of this study was to examine if respondents with varying motivations (as separated into "motivation" clusters) differed in natural resource harvesting activity and domestic resource use. A one-way ANOVA was used to compare the natural resource harvesting index scores of the five cluster types. A significant difference was found among the types ($F(4, 99) = 2.836, p = .028$). Tukey's HSD was used to determine the nature of the difference among the types. This analysis revealed the Self-sufficiency type (cluster) had a higher harvest activity ($m = 1.43, sd = 1.47$), than the Non-recreation oriented type ($m = .222, sd = .73$). The other three types did not significantly differ from these two nor were statistically significant differences observed among the three other types.

Table 1. Motivational Components for Engaging in Natural Resource Harvesting

Motivation	Component			
	Affiliative Recreation	Self-sufficiency	Experience Nature	Tradition
Experience fun & pleasure of activity	.824			
Participate in a favorite outdoor activity	.816			
Do something exciting & challenging	.740			
Have an enjoyable experience	.630		.582	
Share skills & knowledge with others	.604			
Be with friend who do the activity	.596			
Share experiences with my family	.556			
To be self-reliant		.897		
Provide food for my family		.873		
To be independent		.825		
Provide income for self & family		.740		
Observe nature			.812	
Learn about nature			.807	
Maintain family tradition				.775
Maintain rural Danish tradition				.738
Because I have always done it				.649
Cronbach Alpha	.9094	.9010	.9130	.7918

A significant difference was also found among motivation types on domestic resource use ($F(4, 101) = 3.835, p = .006$), using a one-way ANOVA. Tukey's HSD revealed the Experience Nature type ($m = 4.3, sd = 1.48$) differed from the Non-recreation oriented type ($m = 2.7, sd = 1.45$); and similarly the Self-sufficiency type ($m = 4.2, sd = 1.17$) also differed from the Non-recreation type. No other differences among types were found for domestic resource use.

A community attachment index was developed by aggregating scores on ratings of how well they fit into their local community (1 = poorly to 5 = well), how much they have in common with most of the people within their community (1 = nothing to 5 = everything), and ratings of their community in terms of an ideal community in which they would want to live (1 = farthest from ideal to 5 = closest to ideal). An Alpha reliability of .710 was obtained for the three variables of the index.

The community attachment (ATTACH) index was then related to the natural resource harvesting motivations (the four linear components: FAC 1-FAC4 described above), natural resource harvesting index (aggregated harvesting activity: HARVEST), domestic resource production activity (aggregated domestic production activity: DOMESTIC), community satisfaction (SATCOM), and life satisfaction (SATLIF) using multiple linear regression. A significant regression emerged ($F(8, 93) = 7.177, p < .001$), with an adjusted R^2 of .329. Respondents natural resource harvesting is equal to: $4.755 + .799(\text{HARVEST}) - .079(\text{DOMESTIC}) + .975(\text{SATCOM}) + .313(\text{SATLIF}) -$

$.016(\text{FAC1}) - .148(\text{FAC2}) + .114(\text{FAC3}) + .146(\text{FAC4})$, where FAC1 is the component of Affiliative Recreation, FAC2 is the Self-sufficiency component, FAC3 is Experience Nature component and FAC4 is the component related to Tradition. Only HARVEST and SATCOM variables appeared to be significantly related. As shown in Table 2, the t values of the regression suggest harvesting of natural resources has the strongest relation to community attachment followed by community satisfaction, and that the other variables ($t < .2000$) do not have a strong relation to attachment.

Discussion

Motivations can be used to differentiate the rural Danes in this study on natural and domestic resource harvesting, primarily discriminating between those who are motivated by self-sufficiency aspects of harvesting and domestic production from those who are defined by their lack of recreation motives. The respondents motivated by "Self-sufficiency" are, as expected, more engaged in the attenuated harvesting and production activities. The differences among motivational types on other activities, such as bartering and actual consumption of these goods by the households, remains to be tested. Motivational types do appear to be useful for exploring activities and behavior of a rural modern culture such as found in Denmark's Jylland province.

While motivations appear useful for developing a typology and examining harvest activities, they do not appear to be strongly related to community attachment. Rather, actual

Table 2. Regression Coefficients for Community Attachment Index

Model	Coefficients		
	β	t	Sig.
(Constant)	4.755	3.836	.000
HARVEST	.799	5.561	.000
DOMESTIC	-.079	-.598	.551
SATCOM	.975	4.017	.000
SATLIF	.313	1.305	.195
FAC1 (Affiliation)	-.016	-.088	.930
FAC2 (Self-suffic)	-.148	-.810	.420
FAC3 (Exp Natur)	.114	.600	.550
FAC4 (Tradition)	.146	.83	.409
Regression	$R^2 = .329$	7.177	.000

engagement in harvesting activities appears to have a more significant and positive relationship with community attachment. Similar to what has been revealed in previous literature, community satisfaction in this study was related to community attachment, but natural resource harvesting appeared to be stronger predictor. The relationship of harvesting to community attachment suggests that the connection to the land and resources may be operating as a place dependent variable. Rural Danes from these three small communities appear to have a functional attachment to community as a result of the access and established relationship they have with the natural resource base of the region. The benefits of such harvest activities are often referred to as "process benefits" (Kruse, 1991) and may be particularly valued for their maintenance of social support and self-reliance (Muth, 1990) in the complexity of modern rural life. The increasing decline of such harvest activities and their meanings for rural residents as a result of policy initiatives (such as increased regulation), land fragmentation, and animal welfare concerns may result in erosion of a significant factor which maintains the fabric of community.

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