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Indigenous people's attachment to traditional agroforestry system: An empirical insight from Churachandpur, Northeast India

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Indigenous people in Northeast India are facing significant challenges due to policy measures aimed at outlawing the controversial practice of shifting cultivation (SC) in order to cope with the environmental degradation and forest conservation, though, it has so far been unsuccessful. Such measures tend to overlook the contribution of SC landscape to the social and cultural well-being of indigenous people. This article explores the place and place-based practice bonding, drawing on a survey from Churachandpur, Manipur, Northeast India. Through structured interviews of 90 households of 9 village clusters with SC practitioners and focused group discussions, we outline the way SC system is developing the sense of place and giving the individual and community identities, besides giving a specific place character associated with it. Principal component analysis of four dimensions of place attachment reveals that traditional institution bonding exerts the strongest influence (Cronbach alpha 0.97) on their decision to continue with SC. Scores for nature bonding, lack of alternate occupation and economic bonding were 0.94, 0.92 and 0.83, respectively. The study established that SC is strongly intertwined with the culture and social life of people who practice it. Social wellbeing of jhumias outweighs their economic reasons of attachment to SC and it would not be prudent to brand it merely as a form of agroforestry system.

Keywords: Indigenous people, Place attachment, Shifting cultivation, Social bonding

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Shifting cultivation (SC) is one of the oldest, most widely practised, and, until recently, ecologically stable forms of agroforestry. The SC is a land use system in which trees and herbaceous field crops are deliberately connected with one another at the same time[1,2]. According to an estimate, about two million people in India are dependent upon age-old agroforestry system for their livelihood and food security with cultivated area of around 11 million hectares[3]. It is called "*Jhum"* in the Northeastern hill region of India. The native communities of Northeast India are endowed with salubrious natural gifts and the practice of SC is more important to them not only for economic reasons but also for their cultural practices where preservation of culture is more important than other concerns of governments and environmentalists[4]. However, during the 1990s, many disadvantages of SC outweighing its advantages have been underlined by many scholars and they offered alternatives to this practice across the tropical regions[5,6]. As a result, government institutions and scientific bodies have advocated to eradicate such age-old farming practice and recommended for evolving the alternative agriculture systems[7,8]. Despite this however, throughout the eastern Himalayan region, the practice remains entrenched over large areas[9].

In order to meet their livelihood, the tribes of the Northeastern region always accord priority for place attachment for continuing of SC. Place attachment is the emotional bonding of a person with the given place. It generally emerged as the permanent bonding of local people with specific areas which they prefer for dwelling, thus feeling comfortable and safe[10]. Emotion is crucial to the establishment of place attachment, which constantly consolidates and maintains the permanency in ties between humans and their surroundings, according to several experts. Place attachment is described in a similar way as a type of reliance based on place function. When compared to

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other alternative location possibilities, the value of a certain place is determined by its ability to meet the needs or behavioural goals of an individual or group[11]. It was also shown that, while place attachment begins quickly as a result of an individual's engagement with the environment, it takes some time to reach its peak, despite the fact that place identification is a complicated and long-term process[12].

An individual may feel devoted to either constrained or large regions with differing qualities in a restricted geographical sense. Place attachment, on the other hand, has antecedents such as mobility, length of stay, shared meanings and social belonging[13]. However, in the last two decades, environmental psychology and environmental management literatures have paid more attention to these notions of place attachment. Researchers still struggle to understand the various ideas of place attachment and the associated vocabulary. While in urban setting, nature bonding may remain absent when measuring the place attachment, it is relevant in natural and rural land use contexts. Moreover, with respect to the Indian subcontinent, a knowledge gap prevails for such an important academic issue, which also has developmental implications. The present study was, thus, contemplated to bridge such empirical knowledge gap with respect to the traditional dwellers in the Churachandpur district of Manipur, Northeast India.

Methodology

Study area

The present study was conducted in Churachandpur district (24° 17' 57.69" N and 93° 15' 30.11" E) a mountainous tract situated in the Southwestern part of Manipur state which share 4.18% of geographical area in the Indian Himalayan Region[14]. The topography of the district is hilly and inhabited by 15 ethnic groups like *Zomis, Kukis* and *Nagas*. This distant region has a low population density (60 persons per km^2, Census of India 2011) and about 85% forest cover[15]. The district is flanked by Bishnupur district in the North, Chandel district in the East, Myanmar on South and by Assam and Mizoram in the West. The economy of this state mainly depends on agriculture and allied activities.

Data collection

A structured interview schedule was utilised to collect pertinent qualitative and quantitative data from 90 households (tribal respondents) from 9 village clusters in two Community and Rural Development Blocks in Churachandpur district, Manipur, Northeast India. Oral informed consent was obtained from all participants. With the use of an instrument created by Raymond *et al*.,[16] the place attachment markers among tribals were quantified. The modified 18 place attachment items made up the survey instrument. All the indicators had identical response format; rural land use and livelihood contexts were empirically measured with the help of a four-dimensional model of place attachment in Northeastern hill region of India (adopted from Punitha 2017)[17]. Economic bonding (dependency on location for livelihood), nature bonding (connections to the natural environment), traditional institution/social bonding (connections to the community in place) and a lack of other vocation are all part of the concept. The items were assessed on a 5-point Likert scale, with 1 representing "strongly disagree" and 5 representing "strongly agree." The scoring was reversed for negatively worded items. The validity of the place attachment scale was confirmed using principal component analysis. The instrument included 18 place attachment statements, in addition to the items produced by the researchers, indicating strong internal consistency. Nature bonding related statements were developed as per the descriptors of affiliation and connectedness with nature[18,19]. Kyle and colleagues offered measures that were used to build social bonding indicators[20]. The overall and inter-item correlations between the place attachments scales items were investigated using summated scales. In generating factors, the criterion employed by earlier studies[21] was followed: *eigenvalue* $\geq$ 1.0, factor loading $\geq$ 0.40.

Results

Principal component analysis of place attachment

Four underlying factors with good reliabilities (Table 1, Cronbach alphas >.70 or higher) were evaluated in principal component and reliability analyses of responses to the 18-point place attachment scale in Northeast India.

Each primary component's eigen value represents its relevance. Only the first three factors had eigenvalues greater than 1, showing that a factor solution was likely acceptable. These three components together contributed 99.67% of the total variability in the observations, implying that a factor solution was certainly adequate. Following that, three

validated aspects with strong reliability (Cronbach's alpha>0.90), four items were related to economic bonding, followed by six items related to traditional institutional bonding and four things associated to nature bonding. When compared to other measures of economic bonding, the scale item "Non-timber-based forest products (NTFP) secured more income from the SC land" loaded less heavily on the economic bonding dimension. However, it was still considerable and made a large contribution (factor loading>0.88). With a maximum of six items scales that loaded significantly, conventional institutional connection was the strongest dimension.

Eigen values associated with principal component analysis plotted on Scree plot in descending order versus rest of components or factors (Fig. 1). The eigenvalues in Table 1 indicate that the first value accounts for 92.88% of the variation and the second value accounts for 6.77%, making a total of 99.65%

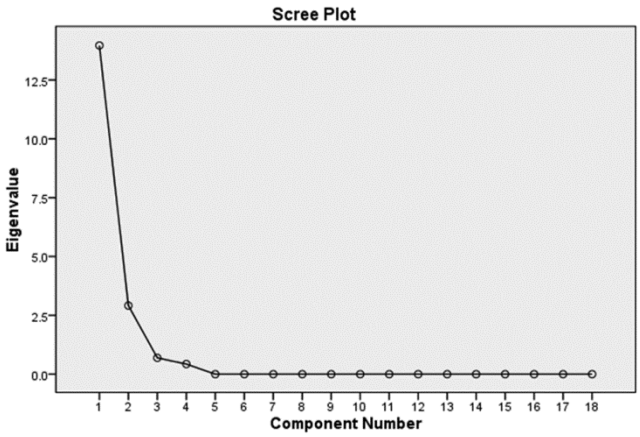

Fig. 1 — Each Principal Component explains a fraction of the overall variation in the data.

Table 1 — Principal component analysis of indigenous people's attachment to Jhum cultivation.

Item	Factor loading	Grand mean	Item mean	Standard deviation	Cronbach alpha
Economic bonding *(Eigenvalue = 3.71; variance explained = 92.88%)*		4.15			.83
Tribals have better access to timber resources	1.00		4.72	0.47	
Nowadays, in SC, commercial oriented crops are more preferred to subsistence-based food crops	0.66		3.61	0.93	
Non-timber-based Forest products (NTFP) fetches more income from the SC land	0.98		3.93	0.84	
SC is a major source of food security for *tribals*	0.98		4.36	0.63	
Traditional institution bonding (*Eigenvalue = .27; variance explained = 6.77*%)		3.53			.97
In the management of SC land resources, the collective decision-making process is not observed	0.80		3.31	1.18	
SC continues to exchange labour among family members according to ancestor's norms	0.97		3.88	1.04	
The customary laws are not as strong as they were in previous years	0.99		3.69	1.02	
SC has to be continued generation after generation	0.97		3.52	0.88	
The current generation does not manage SC resources as effectively as their forebears did	0.89		3.53	1.11	
SC upkeep is best served by the common property land tenure system	0.99		3.25	1.05	
Nature bonding (*Eigenvalue = .01; variance explained = .02*%)		3.87			.94
SC activity is laborious than settled cultivation	0.98		4.22	0.87	
Tribals have abundant SC land	0.94		3.43	1.03	
SC are more affected through climate change	0.92		4.04	0.95	
In SC, the failure of a single crop is not an issue since tribals grow a diverse range of food crops.	0.97		3.77	0.95	
Lack of alternate occupation (*Eigen value = .001; variance explained = .04*%)		3.72			.92
Apart from agroforestry, there are no other viable options for earning a living	0.94		3.91	0.79	
Tribes lack the knowledge to engage in non-SC activities	0.96		3.32	1.04	
High-income off-farm prospects may tempt tribals to leave SC.	0.96		3.89	1.05	
Due of a lack of decent job opportunities in the village, the younger generation is forced to continue the traditional agroforestry practices.	0.99		3.75	1.03	

of the total variation. The third value only explained 0.02% of the variation, and the contribution from the remaining eigen value is negligible.

Discussion

The study aimed to explain how people's commitment to stewardship of the SC landscape may be amplified, using empirical exploration of several key elements of human environment interaction at a place-based level. We identified four primary elements for inquiry based on a survey of the literature: economic bonding, natural bonding, traditional institution/social bonding, and lack of alternative vocation. The most important findings from the analysis of these four aspects are discussed below, and they may be valuable in formulating appropriate policies.

Traditional institution bonding

The traditional institution bonding component was shown to be more strongly connected with SC's location and associated practice. This tendency may have developed as a result of a widespread belief among them that the practice of SC will continue generation after generation with the highest factor loading in this component. Their forefathers, on the other hand, ran the SC more efficiently than the current generation. This could be due to the fact that the current generation has a wider range of occupations. However, it was also observed to be surprising that prevailing customary laws are not effectively influencing the SC as strongly as they happened to be in past and as a result, the collective process in managing the SC is missing but the management of labours through exchange is still followed with traditional methods. Tribals, contrary to the above observations, felt that still the common property land tenure system for effective management of SC is the best option for sustainability of the traditional land management system. Traditional agroforestry aids local populations in preserving their abundant cultural ethnicity and diversity as SC is intertwined with cultural and traditional practices[22]. Agricultural operations such as weed management, treatment of soil-borne pathogens and other crop diseases are also taken care of in SC plots due to measures like as burning and slashing. Indigenous religious practices such as making devotional gifts to Gods and Goddesses when crops are harvested have persisted over the years[23,24]. In fact, social and traditional values are indicators of place identity[25]. Moreover, unique institution of self-governance (Autonomous District Councils) that has evolved in the states of Northeast India under the 6th Schedule of Indian constitution wherein the village council administers SC cycle for all the farmers within the village and defines various powers in functions associated with the practice of SC. *'Housa'* (Chieftainship) is the oldest form of tribal administration that still works among the *Kuki* tribes of Manipur[26]. The beginning of any legislation such as land tenure in the hill areas is seen with doubt and the society considers such legislation being destructive to tribal land ownership system based on traditional customary laws[27]. As reflected from the study, the traditional ceremonies linked with SC among local tribes are the *Khe-Lhai-Khai* done to check the land suitability and performed before cultivation began, the *Ahtuisan* is done to ascertain if the proposed land under cultivation would yield good harvest, the *Tuilutna* ceremony at the time of seed sowing with main aim to appease the water god and the *Muchitu* ceremony wherein the village head along with villagers would visit the cultivation site[28]. The village head's wife would sow the seed first, followed by the ministers and then the rest of villagers. These rituals and ceremonies strengthen the bond between native people and their practice of SC.

Nature bonding

The second factor attributed to tribals' site attachment was nature bonding. Tribal farmers reported that, while the SC is being influenced by climate change, even if production of one crop fails due to adversity, tribals receive more or less some quantity of produce from other crops planted in the SC system that can withstand the disasters. As a result, even though SC was felt to be a cumbersome and labour-intensive land management system, nature has plenty of SC lands to offer to the tribal farmers of the region which is enhancing their probability of livelihood and survival. All over the world, tribals are known for their close proximity with the nature. The natural resources are used as means of their survival and protecting these resources are treated as the part of their duties and obligations. Thus, the nature-man-spirit interaction is very ancient both from biological diversity and cultural diversity points of view and the origin of many tribes in India relates to it and tribals often personify their origin from some plants and trees protecting them as sacred grooves[29]. Tribes like to live near forest regions not only because they are more reliant on natural resources but also because they have a tendency to conserve their

technologies/practices, even if they are poor and outdated technologies[30]. *Chavang Kut*, a post-harvesting festival in Manipur, is an important cultural expression of the Chin-Kuki-Mizo of the region. It is held to thank the Gods for keeping the community from injury during the clearance of forest on hill slants for SC at the start of the year. The dances in the festival were inspired by animals and agricultural processes and their cadenced motions demonstrated their link to ecology[31].

Lack of alternate occupation

This was ranked as the third most essential component in determining place connection. Underneath it, there were four major variables with varying levels of factor loading. It was discovered that if tribals are given off-farm income-generating labour possibilities, they are likely to abandon traditional agroforestry. In contrast, in the study areas, the tribal respondents expressed that they did not have any such opportunities and as a result in order to ensure the food security of their households, they resorted to SC system of land use. This was also confirmed by another related fact: not only was there no off-farm employment, but there were also no alternative better employment prospects in the villages, and this was also a motivating force for the tribals to continue their traditional methods despite their inefficiency. The other two variables were also interlinked which in one way reflected only lack of alternate options for the tribals. Thus, the community ownership of land ensures land misallocation and balance between the individuals' occupational choice of farming *vs* working outside agriculture[32] and such situations greatly influence the people to continuously opt for traditional agriculture.

Economic bonding

Economic ties have emerged as a key aspect in tribals' place attachment, manifested as place reliance. Economic livelihood values are essential as a metric of place reliance[25]. Among the economic items, tribals' stronger access to timber resources appeared as the most important variable (factor loading of 1), followed by SC as their primary source of food security. The other two variables, preferences for growing of commercial crops in SC and their preferences for non-timber-based forest products (NTFPs) for ensuring more economic security, had comparable factor loading. Such perception may be surfacing only on the ground that for any land management system, it is the economic returns from the system which matters the most. This is the reason that as the tribals are getting the sense of economic security from SC, the place attachment for tribals is more discernible. The basic reason for poverty in the region can be attributed to dependency on forest products and secondary forest fallows which sustain shifting cultivation. Indeed, indigenous peoples are drawn to the agricultural process by agrobiodiversity in shifting cultivation systems[33,34], which leads to a sense of economic security based on their strong ties to the forest.

Conclusion

The study has clearly brought out the relationship between stronger place attachment and perceiving governance as inadequate; while it could not identify the causal relationship between these two pivotal factors. Stronger attachment of place of local communities may lead to perceive the efforts of government as weak, leading the other group to disruptive place change. Inadequate public participation might have resulted in individual's stronger sense of place attachment, leading to hard feelings of any sudden place change. However, this is going to be challenging for researchers to examine the causal relationship between these factors in the future. Not only the location and location-based practices can help us understand how and why people react to projected developments or turbulence, but they may also help us understand how new initiatives and developments with localized attachments are received. It is critical to know if it is supported. People-place linkages in the form of social connections (shared relationships, networks, tales, and affection for the community) as well as the physical and functional purposes of places such as environmental facilities, resources, and labour markets are examples of these links. It also offers a link to the target side. People may be motivated to participate in sustainable living by these ties.

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Conflict of Interests

There are no conflicts of interest declared by the authors.

Authors' Contributions

Each author made an equal contribution.

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