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RESEARCH ARTICLE

A Spatio-Temporal Study of Rural Settlement Attributes Between ADC North Sonaichhari and non-ADC Hrishyamukh Villages of South Tripura District

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Abstract

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..... The study of settlement is basic to human geography as the form of shelter in any particular region not only reflects man's response to his environment but also the religious and social customs of his society. It is for all these reasons that a genuine effort has been made for empirical study of rural settlements through collection of primary data by structured questionnaire. During field survey using random sampling techniques, 160 households were visited and persons interviewed in order to gather knowledge about different dimensions of settlement characteristics in Autonomous District Council (ADC) administered Sonaichhari village and non-ADC Hrishyamukh village. The analysis of data revealed that out of 100 per cent, 21 per cent of settlements in Hrishyamukh are of katchha type while it stands at 30 per cent in case of tribal inhabited Sonaichhari village. The Hrishyamukh village is having 14 per cent settlements with reinforced cement concrete (RCC) structure but the Sonaichhari village is have meagre four per cent dwellings with RCC foundation. In respect of availing sanitation facility, 94 per cent of households in tribal Sonaichhari village use katchha house while it is 49 per cent in Hrishyamukh village reflecting disparity in cultural perception of surrounding environment and varying stages of social conformity upon space.

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INTRODUCTION

The study of settlement is basic to human geography as the form of shelter in any particular region not only reflects man's response to his environment but also the religious and social customs of his society (Leong & Morgan, 1982). Cultural geographers are unanimously agreed upon the proposition that any sign of human action in landscape such as settlement, imply a culture, recalls history, demands an ecological interpretation and the discovery of traces it has left on the earth. Shelter is the third basic need of the human beings. Its basic function to provide shelter against climatic austerities has remained the same from the dawn of civilization (Naidu, ed. 1984). Mandal (1979) has rightly expressed the morphology of rural settlements as its anatomy, governed by physical and cultural factors. In morphology of settlements we study the ground plan and the built of the settlements (Singh, ed. 1972). It includes the layout of the lanes and arrangement of houses, type of material used for wall and roof, roads and village paths or cart tracts, cultural and religious centres of the villages, field pattern, types of economic activities and the social structure of the inhabitants which in turn determine the shape and pattern of rural settlements. Thus, Nath (1989) concluded that the concept of geomorphology-"structure, process and stage" launched by Davis, can be seen in the arrangement of dwellings, resultant lanes and the layout of the village paths as structure, the factors which influence the settlement structure as process and the historical growth of settlements as the stage. The general shape and pitch of a roof is partially dependent on the material of which it is made (Hudson, 1976). Variations in climate and relief, diverse agricultural economies, social history and the ethnic influences to which societies have been subjected all

help to account for the detailed design of rural dwellings. So, through this research work genuine attempt had been made to gain insight and understanding into the morphology of settlement attributes in the selected rural households from the area under study. The empirical study tried to highlight on various aspects of social differentiation between non-ADC Hrishyamukh and ADC North Sonaichhari village in respect of house type based on type of material used for wall and roof, direction of house doors, door and window height, number of rooms, availability of sanitation facility and distance required to cover to avail infrastructural facilities in order to find out probable solutions aimed at preservation of facts and documentation of known evidence.

MATERIAL AND METHODS

Study Area

The North Sonaichhari ADC village comes under the Hrishyamukh RD Block and the Belonia Sub-Division of South Tripura District. The village covers an area of 15 km^2 and formed on 1^{st} January, 2002 bifurcating the erstwhile Sonaichhari Village. The topography of the area is mainly undulating tilla-lunga topography pierced by small rivulets. The village is located approximately at a distance of 5 km from Belonia, Headquarter of South Tripura District predominantly inhabited by Tripuri tribes numbering 1652 persons settled in 378 households.

Hrishyamukh Village covers an area of 11 km² situated adjoined to international boundary of Bangladesh under Hrishyamukh RD Block. The topography of the area is mainly plain land drained by small rivulets notably Ganga. The study area is located at a distance of 22 km from Belonia predominantly settled by migrants from former Zamindari province of Chakla-Roshanbad under Tripura Kingdom. The present settlement composes of 3840 persons scattered in 1200 households.

Objective

The main objectives of the study are

- (i) To understand how geographical ethos are manifested upon space in the form of rural settlement types.
- (ii) To study and analyse the extent of socio-cultural impact upon rural settlement attributes.



Figure No. 1: Location of the Study Area.

Methodology and Data Base

The study is aimed at the spatial analysis of rural settlement characteristics in the selected villages. For this purpose, data obtained from the primary and secondary sources supplemented in making general observations. The Histpgenetic information on the settlement morphology has been derived from the published Gazetteers, published and unpublished Government reports and non-government organisational sources. During the field survey using measuring tape and compass 160 households were visited and using random sampling technique interviewed in order to gather knowledge about different dimensions of settlement characteristics in Autonomous District Council (ADC) administered Sonaichhari village and non-ADC Hrishyamukh village. Perception study to know about the socio-economic status of rural households had been carried out. The collected primary data are tabulated and graphically represented.

RESULTS AND DISCUSSION

House Type Based on Wall and Roof Material

Rural settlements are natural growth in their physical environment and cultural setting. They do not have well defined shapes and a distinct internal structure. The layout, morphology, design, architecture and direction of windows, doors, and ventilators are directly controlled by the physical environmental factors and prevailing cultural traditions. For the ease in the survey of the selected households the house types are categorised into five types. They are as follows-1. RCC, 2. Katchha, 3. Mud wall with tin roof, 4. Half wall with tin roof, and 5. Tin houses, etc. Here, RCC- Reinforced cement concrete type houses are those where bricks, sand, cement, columns, slabs are used. By the combination of this all things, the foundation and the interior structure of the building are done. These types of buildings are stronger than the other types. These types of houses are constructed in those households having sound economic condition. Katchha- folk dwelling houses constructed with bamboo cane and thatch roof. Thatch is the warmest of the traditional roofing materials that needs regular maintenance on the most exposed areas such as the ridge but this rarely involves replacing the whole roof, usually the top layer is removed down to good thatch and then this is covered with new material. On thatch roofs, rainwater is thrown directly off the roof. Mud wall with tin roof- in these types of houses, the wall of the house is made by mud or soil and the roof made of tin. Half wall with tin roof - In these types of buildings half portion is made from bamboo, tin or mud and the other portion are made of brick and cement. That means two parts are constructed from different materials. Tin House- This type of building is totally constructed of tin. The wall and the roof are tin constructed, therefore known as tin house. In the selected village of Hrishyamukh it was observed that 14 per cent is RCC house, katchha house 21 per cent, mud wall with tin roof 31 per cent, half wall with tin 19 per cent and tin houses 14 per cent.

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Table No.1: Show	ing the House Types base	ed on Material Used	for Construction of Wall	and Roof in
	Hrishyamukh a	nd North Sonaichha	ri Villages.	

			Mud Wall with	Half Wall with		
	RCC	Katchha	Tin Roof	Tin	Tin House	Others
Hrishyamukh	14 %	21%	31%	19%	14%	1%
North Sonaichhari						
	4%	30%	33%	24%	9%	00

Source: Computed and Collected by Researchers, 2014.





On the other hand, the final tabulation of primary data from North Sonaichhari ADC village reflects the following scenario where house type of RCC stands at four per cent, Katchha- 30 per cent, mud wall with tin roof-33 per cent, Half wall with tin roof-24 per cent, tin house- 9 per cent. It is observed that mud wall with tin roof dominates the socio-economic space and percentages of RCC houses are less in North Sonaichhari village. From the survey of these two areas, we can see that Hrishyamukh is more developed than North Sonaichhari village. As the number of RCC houses in Hrishyamukh is 14 per cent whereas in North Sonaichhari the number of RCC house is four per cent. Marked variation was also noticed between two areas in case of katchha and half wall with tin houses. In Hrishyamukh area, the half wall is constructed by bricks or tin, whereas in the North Sonaichhari village the half walls are made of bamboo or mud. Therefore, to conclude we can say that Hrishyamukh area is more developed that North Sonaichhari area clearly reflecting a more touch of modernity in the living pattern of the people residing in Hrishyamukh area.

HOUSE TYPE BASED ON ROOF AND WALL MATERIAL



RCC HOUSE

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METAL SHEET

MUD WALL WITH METAL ROOF

Plate No. 1: The Different Type of Houses in the Study Area.

Direction of Main House Door

Doors are one of the most important features of a building. The direction of main door of the house and the layout of the house depends on the environmental conditions. The cultural values, traditions, rituals and superstitions are also considered in the layout, placement of doors and windows of the house. In rural area the day of villagers begins with sunrise and ends with sunset. So, sunlight unknowing plays an important role in determining the direction of main door of house. Therefore, the practice of day lighting i.e., placing of windows or other openings and reflective surfaces so that during the day natural light provides effective internal lighting seems to have got imbibed within the social setup. In Hrishyamukh village most of the doors of houses are located on the east side (57 per cent). Minimum numbers of doors are present in North-East and North-West side (2 per cent). In the same manner, most of the main house doors in North Sonaichhari are present in the East direction (49 per cent), followed by North (17 per cent). Less numbers of doors are present on South-West and North–West (2 per cent). From the collected data, it is clear that most of the house doors in both the two areas are present in East Side, because villagers begin their day on the basis of sunlight. As an example, population of east part is more than the western part of the Himalaya. We also noticed that the same occurrence of phenomena from the survey of the North Sonaichhari area where dense settlement compared to west in the east is observed. Thus, sunlight and terrain are also important determining factor for location of main house door.

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Direction of House	North	North-	South	South-East	East	South-	North-
Doors		East				West	West
Hrishyamukh Village	20%	2%	10%	4%	57%	4%	2%
North Sonaichhari	17%	4%	21%	6%	49%	2%	2%

Table No. 2: Dire	ction of Main House	Doors in Hrishvamuk	ch and North Sonaic	hhari Villages.

Source: Computed and Collected by Researchers, 2014.



Figure No. 3: Showing the Direction of Main House Doors in the Study Area.

Height of Main House Door

Doors are integral part of any shelter that in rural areas are observed to be made of wood and bamoo. From primary observation, the doors measuring 6 feet were found to dominate the socio-economic space in both the study area. The percentage of doors measuring 6 feet was recorded as 69 per cent in respect of Hrishyamukh village while 71 per cent in North Sonaichhari village clearly reflection its dominance upon landscape.

Table No. 5: Showing the Height of Main Doors in Hitshyamukh and North Sonaichnart vinages.						
Height of Doors (ft)	4	5	6	7		
Hrishyamukh Village	5%	4%	69%	22%		
North Sonaichhari Village	1%	14%	71%	14%		

Table No. 3: Showing the Height of Main Doors in Hrishyamukh and North Sonaichhari Villages.

Source: Computed and Collected by Researchers, 2014.

In Hrishyamukh village, dominance of 6 feet door is followed by doors measuring 7 feet whose percentage is calculated to be 22 per cent, then by 4 feet doors recorded to be 5 per cent and the least percentage of 4 per cent for 5 feet door is found. When the average door heights of the two villages are compared, it was found that the average height of the doors stands at 6 feet. In North Sonaichhari village door height measuring 5 and 7 feet together standing at 14 per cent each follows 6 feet door height recorded to be 71 per cent. When two villages are compared, we observed that the houses of Hrishyamukh village are very modern and strong. Looking at the height of the doors, we can remark that in Hrishyamukh the number of RCC Houses is more than North Sonaichhari resulting in higher percentage of doors (22 per cent) compared to 14 per cent in North Sonaichhari.



Figure No. 4: Showing the Height of Doors in the Study Area.

Window Height from Ground

Window is a very important part of a house. In our country, the windows are manifestations of architectural marvels reflecting the socio-cultural blend of any locality in its decoration and material used for construction. Windows are the most common way to admit daylight and air. Their vertical orientation means that they selectively admit sunlight and diffuse daylight at different times of the day and year. Therefore windows on multiple orientations must usually be combined to produce the right mix of light for building, depending on the climate and latitude.

Table No. 4. Show	ving the Height (f Windows in	feet in Hrishvs	amukh and Nort	h Sonaichhari V	Villages
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Window Height (Ft)	2	3	4	5	6
Hrishyamukh Village	9 %	44%	17%	29%	1%
North Sonaichhari Village	15%	47%	27%	6%	00

Source: Computed and Collected by Researchers, 2014.





The average height of windows in both the study areas is recorded to be 3 feet from ground surface and width is measured to 2-2.5 feet. In Hrishyamukh village, it was observed that 9 per cent of windows stand at 2 feet from ground, 17 per cent windows are in 4 feet, 29 per cent windows are in 5 feet and 1 percent windows are in 6 feet. On another side, in the North Sonaichhari village 15 per cent windows are of 2 feet high from ground base, 47 per cent windows are in 3 feet, 27 per cent windows 4 feet and 5 per cent windows are in 5 feet. It was noticed that the windows measuring 3 feet & 4 feet windows are maximum in two villages and 5 feet windows are maximum in Hrishyamukh compared to the North Sonaichhari area. So, we understand that the common height of the windows is 3 & 4 feet. In RCC houses there are 4 & 5 feet windows are noticed. 2 feet windows are noticed in old model houses. To conclude the distinguishing attribute that needs mention is that the windows in Hrishyamukh village were recorded to have more height and length compared the North Sonaichhari area.

House Type based on Number of Room

The number of rooms and size of the dwellings indicate the economic well being of the household. In the study area, they vary from concrete palatial building in Hrishyamukh to a small hut in North Sonaichhari ADC village. It is determined mainly by the economic status, conventionality and the size of the family.

Villages	1 Room	2 Room	3 Room	4 Room and more		
Hrishyamukh	56%	32%	8%	3%		
North Sonaichhari	65%	29%	5%	1%		

Table No. 5: Size of Rural Dwellings Based on the Number of Rooms.

Source: Computed and Edited by Researchers, 2014.





(i) One- Roomed Houses: The above table and figures reflects the distribution of one room houses at greater number in North Sonaichhari village where the economically weaker Tripuri tribes built their one roomed houses and where human beings and animals find shelter under the same roof. These are the rudimentary houses in which life is purely based on hand to mouth economy.

(ii)Two-Roomed Houses: The frequency of two-room houses is high in Hrishyamukh village. These houses are generally constructed on the rectangular ground plans. A little less than half of it is used as the kitchen, separated by food grain stores mad of mud called "Gola" and "Rondok". The kitchen, called "Ganti Nog" is connected with the sleeping room with opening on the road or lane.

(iii) Three Roomed Houses: these can be called the dwellings of the middle class farmers. Their percentage on the whole varies from eight per cent in Hrishyamukh village to five per cent in North Sonaichhari village. A kitchen, a sleeping room and a waiting room are the main features of such houses.

(iv) Four and Multi-Roomed Houses: These large houses, in number of cases, are observed to be constructed by rich farmers having the spacious, vertical and horizontal expansion of the area. These palatial buildings form very meager percentage of three in Hrishyamukh village and one in North Sonaichhari village.

According to shape, almost all the houses are constructed on the rectangular or square plans. The rectangular shapes are in vogue which forms the overwhelming majority of the shapes of rural dwellings in the region. However, the vertical and the horizontal expansions of the houses and their internal features vary as per the type of activities needs, social and the economic status and the size of the family. Recent technological developments play important role in determining the shape of the houses.

Fence

There is an old saying by Robert Frost 'good fences make good neighbours'. The implication is that without good boundary fences, disputes arise. However, the ideal of creating discrete, independent properties is only reason for building fences.

A fence is a freestanding structure designed to restrict or prevent movement across a boundary. Fences are generally distinguished from walls by the lightness of their construction and their purpose. Walls are usually barriers made from solid brick or concrete, blocking vision as well as passage, while fences are used more frequently to provide visual sectioning of spaces.

Table No. 6: Showing the Percentage of Fence Presence in Hrishyamukh and North Sonaichhari Villages.

	Yes	No
Hrishyamukh Village	44 (55%)	36 (45%)
North Sonaichhari	14 (17.5%)	66 (82.5%)

Source: Edited and Computed by the Researchers, 2014.

Table No. 7: Ty	pe of Fencing	Used in Hrish	vamukh and N	North Sonaichha	ri Villages.
	r · · · · •				

	Hedge	Bamboo	Tin Sheet	Brick Wall	Others
Hrishyamukh	14%	18%	52%	9%	7%
North Sonaichhari	36%	50%	14%	00	00

Source: Edited and Computed by the Researchers, 2014.



Figure No.7: Showing the Type of Fencing Used in the Study Area.

Today, fencing is considered an important residential design element and regulations are in place to protect property values and the general public from construction that could damage the character of a neighbourhood. Fence can have various functions. They can be constructed for security reasons, pet or child confinement, hazard control, and agricultural usage or the fence can simply be an architectural or aesthetic improvement to our property.

Live fencing, an age old and traditional agro-forestry practice, remains relatively less understood and least documented. From field survey it becomes evident that the Tripuri people have vast knowledge about their live practices and the species used as 36 per cent of the fencing in North Sonaichhari is found to be of hedge and 50 per cent of locally available bamboo. Settlers planted hedges, known to farmers as live fences, as these were cheap to establish and the material cost was low and planting required little labour. Once established they provided shelter from the wind on the open grasslands. A disadvantage was the time needed for a hedge to grow dense enough to form an adequate barrier for stock. They also needed regular trimming to maintain a tight form, otherwise gaps developed where sheep could push through. Perhaps the most serious problem with live fences was that the best plants-gorse, broom and various thorns proved to be highly invasive.

Brick walls and metal sheets recorded 52 per cent were used as fencing by the well to do families in the study area of Hrishyamukh village. They were labourious to erect and therefore expensive. But once built they were durable and also provided shelter for stock



METAL SHEET

BAMBOO

Plate No. 2- Showing Type of Fencing Used in the Study Area.

Sanitation Facility

The development index of any area can be judged from the presence of sanitation facility. Sanitation is an important factor of our daily life. The health care is totally depends upon the sanitation system. From the survey of Hrishyamukh, we can see that 49 per cent people used katchha sanitation system and 51 per cent used pacca sanitation system. In North Sonaichhari, 94 per cent people use katchha sanitation system and only 4 per cent people used pacca sanitation. The most shocking part is that 2 per cent people do not have any sort of sanitation. By the above data it is clear that the people of Hrishyamukh area are more aware and developed than the North Sonaichhari area. In respect of availing sanitation facility, 94 percent of households in tribal Sonaichhari village use katchha house while it is 49 percent in Hrishyamukh village reflecting disparity in cultural perception of surrounding environment and varying stages of social conformity upon space.

Table 100, 0, Sanitation Facility Type in Thisnyanukh and 101th Sonaichnaff y mages.						
Type of Sanitation	Katchha	Pakka	Nil			
Hrishyamukh	49 %	51 %	00			
North Sonaichhari	94 %	4 %	2%			

Table No. 8: Sanitation Facility Type in Hrishyamukh and North Sonaichhari Villag

Source: Computed and Edited by Researchers, 2014.

CONCLUSION

The study of rural dwellings has shown a wide disparity in its structural, material type, designs and layout. The rich farmers make their houses more spacious in both the dimensions-the horizontal and the vertical; whereas the middle and the lower class farmers dwellings can be characterised as having a kitchen, a sleeping room, a verandah, a cattle-shed and a courtyard, varying in size, designs and appearances, according to the economic status of the dwellers. The weakest or those living under the poverty line including the agriculturalist labourers and a bulk of scheduled tribes, make one roomed thatched roofs. Under such roofs, they have very little of their own belongings. Thus, complexity, in rural dwellings, occurs not to the spatial determinants but also to the variations in the economic levels and the individual whims, at every kilometre of the area under investigation.

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