Understanding housing design and expectations of Assamese rural communities: Case Study Selection

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Abstract: An examination of a house design proposed by the Department of Rural Development of India’s Affordable and Appropriate rural housing scheme showed a major cultural gap of understanding between urban perspective and rural expectation. Significance of community value and cultural ecology have been compromised in planning and implementation of grand housing schemes. This research argues that mere design of rural housing runs the risks of not being culturally inclusive. This paper elaborates the description of the cultural ecology as defined by the literature review within the context of the research to be conducted in Assam. The culture of the place or region is the product of a cultural ecology that is the intersection of environment, community and interactions. In a rural household as the cultural ecology; the house and its boundary signify the environment where the members of the household are the community and activities of each member are the interactions. To reflect the culture and value as an integrated design element, the emancipatory research paradigm is highly significant. The approach is demonstrated by developing a questionnaire/survey which encompasses the family structure, life style and income for collecting relevant data necessary for designing culturally inclusive housing for rural community.

Keywords: Rural Perspective, Cultural Ecology, Case Studies, Selection Criteria

1. INTRODUCTION

Assam is a North-eastern state in India which, as seen in Figure 1 and Figure 2, is surrounded by the lesser Himalayas in the North (Arunachal Pradesh), Khasi, Jaintia and Garo Hills (Meghalaya) in the south-west and the Naga Hills (Nagaland) in the East. The Mikir hills and North Cachar hills that fall within the state of Assam to the south between Meghalaya and Nagaland helps shape the river valley which along with the juxtaposition of the other hill states that forms the mouth of the river Brahmaputra to be located at the north-eastern tip of the state. This leads to heavy annual floods with the monsoons which flows through the state into Bangladesh where it shares an international border in the West. For more than a quarter of the year, the people living along the banks of the river are affected by the flood due to submersion of roads, swept away houses, broken bridges and flooded agricultural fields.

Figure 1 Location of Assam
In the context of affordable housing especially for the rural community, numerous approaches have been utilised by both public and private agencies across many countries (Rowley, 1996; Ward and Brown, 2009; Chigbu, 2012; 2015; Hornidge et al., 2016). With recent emphasis on rural housing in Indian context, wide varieties of public schemes are adopted across the country. One of the adopted schemes is the ‘Housing for All: Affordable and Appropriate Rural Housing’ scheme by the Government of India under Pradhan Mantri Gramin Awaas Yojna (PMGAY) where an attempt was made for designing housing alternatives with rationalisation of location-specific environment.

Upon studying the housing models in Pahal- A compendium of Rural Housing Typologies that was developed based on the rural housing scheme by the Government of India, it was observed that the housing options provided for the Assamese context were affordable, however, they were not necessarily appropriate in a social and cultural context (Katharpi and Doloi, 2017). Furthermore, the methodology used to arrive at the results also indicated the reduced opportunities for the participation of the community. Though the house study selection did not adopt a random sample selection method, it seems, there is a lack of integration of the community as the selection criteria. The houses selected were those that were constructed under the Indira Awaas Yojna(IAY) rural housing scheme but excluded the houses which were not constructed under any housing scheme (UNDPIndia, 2016).

Upon review, it was found that the households and families living in these houses had moved out of their traditional homes and had adjusted to living in houses that are not quite conducive to their social culture and inappropriate to the traditional landscape. This has happened due to replicating the rural house designs from one place to another without fully understanding the context of the requirement of rural housing in that place. While such filtration criteria may have been used in designing model houses under the PMGAY scheme, this criterion to improve the existing designs of the previous scheme was inappropriate. This paper intends to take into consideration of all the factors that may influence a village or an individual household through a questionnaire/survey designed to define the few select representative household case studies to represent the village.

2. METHODOLOGY FOR CASE SELECTION

Due to the limitations of a PhD research, only a handful number of households of the village will be selected for data collection from the village instead of taking all households into consideration. The village will have differing types of households representing different demographic characteristics within a single village which will produce dissimilar amounts of data to analyse. An array of inferences could be drawn from the data of each household, which may not necessarily be present in each case leading to disparate conclusions. The need to systematically reduce the number of variables in the data synthesis and analysis facilitated the need of a questionnaire/survey component to be added to the research design instead of opting for random case selection.

Leslie Kish (1949) formulates a procedure to conduct a random sampling selection to conduct household surveys, yet meeting the criteria required for participating in the survey. However, his arguments and reasoning in the paper indicate a less random and a more decision led respondent selection which he calls the objective respondent selection. He argues
that a more objective selection procedure needs to be designed when there is more than one individual meeting the criteria within a household in contrast to when only one out of the household meets the criteria for the household survey. He also mentions that even though all individuals in the house meet the criteria of the respondent selection, the exercise would give unfavourable results.

Nine case selection strategies have been defined by Gerring (2009): typical, diverse, extreme, deviant, influential, crucial, pathway, most-similar, and most-different case selection strategy. Among the nine, typical, diverse and extreme case selection strategy have the most representativeness of cases that is critical to the research. All case studies seek representatives samples, they are in search of a typical case or cases (Gerring, 2007). The methodology for the case selection of the representative case studies for the research is based on the typical case strategy in combination with the diverse case strategy.

Both strategies of case selection facilitate in selecting cases that are representative case for case study inferences (Seawright and Gerring, 2008). The typical case strategy directs the criteria to define the description of the household to be studied, while the diverse case strategy directs the criteria to choose cases that represent different socio-economic status and socio-cultural integration that is present within the community. In the context of the paper and the methodology adopted for the paper, the households to be selected for conducting a comparative case study analysis will be referred as ‘case’ or ‘cases’.

In using a case study research as a strategy, it is important to establish the theory and concepts that define the goals of the research also guide the case selection, so that it results to a consolidated result from common goals. Hence, in this paper, the concept of cultural ecology and the emancipatory research paradigm that guide the aims and objectives of the research, will guide the methodology of the case selection strategy. A questionnaire survey component is intended to provide demographic data for the village which would aid in collecting enough information to identify sample size and characteristics of the few distinct households that would represent the socio-economic character of the community.

### 3. EMANCIPATORY RESEARCH PARADIGM AND CULTURAL ECOLOGY OF A HOUSEHOLD

To study the culture of a community as represented by a household, the cultural ecology of the household, which is the intersection of Environment, Community and Interactions, is required to be defined (Steward, 1972; Bourdieu, 1986). It can be considered analogous to the house, its boundary and surroundings, the family members and their activities that they do with each other or by themselves. Part of the research is to study the environment that the households reside in and observe and learn from them the activities that take place in a space within the Environment.

The emancipatory research paradigm supports the inclusion of factors that influence the cultural ecology. It allows for the consideration and inclusion of multiple ‘realities’ (contexts) shaped by various factors that influence the usage and perception of space that have the potential to improvise a space to a greater degree (Groat and Wang, 2002). This section discusses the kind of information that is being pursued to study the environment, community and possible interactions which would indicate the kind of cultural ecology each household possess. The selection and study of a few distinct households would aid in understanding the generalised cultural ecology of the village, which in turn would aid in understanding the social culture of the community of the village.

Alkire and Seth (2013) propose how to select a methodology to target multidimensionally poor households and identify the families below poverty line (BPL) so that the benefits of government support reach those who actually need it. The census data of families in rural areas conducted in 1992, 1997 and 2002, was analysed. The criteria of the census data was based on income, owned and operated land holdings, material possession, permanent structured shelter, farming tools and assets, employment and education. The methodologies of the BPL identification were criticised based on methodological drawbacks, quality and corruption of data and the data content itself.

### 4. RESULTS

In keeping with the intention and the title: “Appropriate and affordable” of the rural housing scheme, the basis of the criteria is meant to represent appropriateness of a design for a community, that is, to be culture-sensitive and affordable for the rural community. To select cases that represent the community in terms of affordability and appropriateness of design, the questionnaire/survey has been designed to collect data on the demographic, data on their socio-economic status and preferences in housing and construction.

#### 4.1 Sample size and representation

Figure 3 indicates the basis on which the households will be selected to represent the diversity within the village through five typical cases. The data collected from the exercise would enable the research to select households that are:
a) Rich living in traditional homes,
b) Poor living in traditional homes,
c) Rich living in contemporary designed homes,
d) Poor living in contemporary designed homes and,
e) An average income household living in a home that is both traditional and contemporary.

Figure 3: Affordable vs Appropriate

Rich in the context of the rural community would refer to a family with enough income to afford amenities and modern luxuries in the village including renovation and re-construction of their house. Poor would refer to a household that would define as the opposite in terms of income and affordability of amenities and modern luxuries including renovation and reconstruction of the house. Traditional cases would require to be considered as one of the main aims of the research is to produce culture-sensitive design, while contemporary cases would be considered to learn the direction of the construction and design trend of houses within the community. The comparison between traditional and contemporary styled cases would indicate the way the concept and value of culture of the community has been translated and expressed through design of both styles.

4.2 Sample characteristics

From the above discussion, the questionnaire survey has been designed in stages to gather as much demographic data and information as possible to understand the cultural ecology of a household. The questionnaire survey is divided into four parts as follows:

4.2.1 General House Information

The location of the house with respect to other houses in the vicinity and the village in the larger scale, orientation of the house, plot topography and soil type were considered as relevant to understand the Environment of the Household. This information is not an influencer in the criteria selection, however, it aids in understanding the context of the household during the observation and analysis stages of the research.
Table 1: General household information.

<table>
<thead>
<tr>
<th>Village name and House Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of participant and relation to family head</td>
</tr>
<tr>
<td>Orientation</td>
</tr>
<tr>
<td>Plot Topography:</td>
</tr>
<tr>
<td>Soil type</td>
</tr>
<tr>
<td>Existing/ preferred house type</td>
</tr>
<tr>
<td>Existing/ preferred construction material</td>
</tr>
<tr>
<td>Rooms in the house</td>
</tr>
</tbody>
</table>

Table 1 facilitates to learn the physical attributes of the house, design and construction style. The section on whether the existing house is traditional or contemporary helps to determine the cases that would be representative of the construction trend being followed in the village. The preference between a traditional or a contemporary styled house and construction material would indicate the degree of socio-cultural integration and the value given to the traditional style of construction in relation to the value system of the village. While the former question is relevant to the immediate use of the questionnaire survey, the latter supports to visualise the construction trend and preference of the village collectively.

The section on the number and type of rooms in the house indicate the kind of segregation of space the households consider when building a house for themselves. The following sections of the questionnaire clarify the use of the information that can be extracted when analysed along with number of people in the house, annual income, material possessions and individual profiles of the member of the household.

4.2.2 General household profile

The requirements of a family can change based on number of members, age groups and gender. The number of members in the family may not determine the size or define a ratio that is proportional in terms of space per person (Jayantha and Lau, 2008), but this difference between two families may result in how economically or lavishly a person may use the space around them. A family member’s relationship to the head of the family along with the age group may determine the safe accessibility to spaces for the elderly parents or visitors to the house. In some cultures that have segregated spaces for males and females, the circulation around spaces maybe designed to promote the distinction of spaces.

Table 2 indicates the information being gathered to define the general profile of the household. The relation to head facilitates to vaguely identify the household in terms of members of the household and the number of generations that may be present in the house (Neufert, 1970; Perissinotto et al., 2002; Moulaert et al., 2017). The average income indicates the affordability of the family to go on vacation or making unhindered life style choices, in addition to education, healthcare and access to basic amenities such as water and Electricity (Indira Awaas Yojana (IAY), 2013; Department of Rural Development, 2015; Ministry of Rural Development, 2017). Different social groups within the same community may practice religion differently and as a result, the space for practicing their religion may be segregated or combined from the rest of the house (Indira Awaas Yojana (IAY), 2013). As some globally recognised religions have specific designs for their religious space within their house, some local religions may also have the similar traditions and customs of segregating a space that is dedicated to religious practices of the household. In some cultures, it is believed to have house gods that look over the house and members.

Table 2: General household profile.

<table>
<thead>
<tr>
<th>No of occupants</th>
<th>Spouse, Father, Mother, Daughter, Son, Brother, Sister, Uncle, Aunty, Niece, Nephew, Daughter-in-law, Son-in-law, Grandson, Granddaughter, Cousin Brother, Cousin Sister, Maid, Driver, others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relation to head</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Approximate Gross Annual Household Income (INR)</td>
<td>Below poverty line, Lower class, lower-middle class, Middle class, higher middle class</td>
</tr>
<tr>
<td>The family has been residing at the current address since</td>
<td>Recent, a decade, few decades, centuries</td>
</tr>
<tr>
<td>Original residency</td>
<td>In case of recent move to the village</td>
</tr>
<tr>
<td>Religion</td>
<td>Hinduism, Christianity, Islam, Buddhism, Traditional, Other</td>
</tr>
<tr>
<td>Category</td>
<td>General, Scheduled caste, Scheduled tribe, Other Backward class, another minority</td>
</tr>
</tbody>
</table>
Another information also considered was whether the residents had previously belonged to another village or settlement. This is generally the case when a person relocates for their partner or spouse. Another reason for migration may also be due to establishment of a local school or institution by the local community, or the state council or an NGO that provide job opportunities for the community.

### 4.2.3 Additional information

Materialism is a concept in sociology that theorises that the materials around an individual reflect an individual's socio-economic status (Karabati and Cemalcilar, 2010). The kind of exposure that an individual is given based on where one grew up, played, learned or worked, determines the choices that one makes (Dittmar, 1994). It was observed that along with the physical dimensions of a house, the furniture and other materials of the household also determined the interactions within the space, by changing the space in form and essence. The nature of the possessions also aids in understanding the social perspective of the household as one of the units that make up the generic societal opinion of what is acceptable or recommended in the community (Rapoport, 1969). Possession of domestic animals as pets or farm animals also change the way the household is socially perceived by the community.

Table 3 facilitates in identifying the household in terms of affluence, interests and family structure based on the materials possessed by the household. An individual's behaviour patterns are modified and adapted according to the environment around them, and the kind of functions and activities it provides. Villages mostly dependant on agriculture and storage spaces for tools and agricultural produce required by the household. Presence of an additional room or shed that may or may not be detached from the house indicates that the household has gone through changes in their lifestyle. The description of the exterior spaces is also an indicator the kind of interactions that the household engages in within their neighbours or the kind of outdoor activities that they might enjoy. The flora and fauna within their house and boundary environment also add to the description of the exterior spaces that are useful during the analysis stage rather than for developing a criterion.

| Material Possessions                          | Vehicles, Refrigerator, Washing Machine, Landline Telephone, Radio, Television, Mobile, Computer, Generator/Inverter, Water Pump, farming tools, Traditional tools, Electrically powered tools, others |
| Domestic Animals                              | Dogs, Cats, Pigs, Cows, Buffalo, Goats, Poultry, None, others |
| Outhouse or detached room from the house      | Yes or No. |
| Open spaces                                   | Flower Garden, Vegetable Garden, Plantations Soft paved (earth), Hard Paved (concrete), Others |
| Landscape details                             | types of plants, herbs or trees |

### 4.2.4 Individual specific information

The relation to the head of the family, gender and age group indicates the kind of spaces that might be required to be designed and built in a certain way to meet the requirements (Harris and Atalan, 2002; Perissinotto et al., 2002; Sadoughianzadeh, 2013; Chigbu, 2015). In the case of no pre-existing design elements for the family members, this will add an added information as to what and how does the family improvise the space according to their needs.

Table 4 facilitates in defining each member as internal influencers within the household through the individual profile. The level of education and occupation of the individual determines the kind of exposure the school or workplace provides that can influence the ways and reasons they use the interior and exterior spaces of their house. The distance from their house and the mode of transport adopted also indicates the influence of the surrounding context that is not within the village yet influence the village in some way or the other.

| Gender                        | Mele, female, prefer not to mention |
| Age                           | Toddler, Preteen, teenager, Young adult, Older adult, elderly, +86 |
| Education                    | Primary, Intermediate, High School, Higher Secondary, Bachelors, Masters, Doctorate degree |
| Employment                   | Government Service, Private Company, Self Employed, Unemployed |
| Mode of transport            | On foot, Bus, Bicycle, Motorbike, Three-wheeler, Four-wheeler |
| Income range (INR)           | Below poverty line, Lower class, lower-middle class, Middle class, higher middle class |
| Time spent outdoors          | Less than 1 hour, 1 < 3 hours, 3 < 5 hours, 5 < 8 hours, 8 < 12 hours, More than 12 hours |
| Hobbies and skills           | |
The hobbies and additional skills possessed by the individual further determines the use and improvisation of space when required by the individual. The hours spent indoors vs. outdoors add to the perception of space and time that is preferred or required by the individual for their daily tasks or their interests. This added information indicates the flexibility of the usage of both interior and exterior spaces by the individual to accommodate more activities and interactions. Ultimately, the decision to renovate or reconstruct and how either should be executed would be the collective influence of the needs, requirements, knowledge and exposure to other cultures of each member of the household.

5. CONCLUSION

The demographic profile of the village is significant in depicting the general socio-economic status of the village. The number of members and the relationship with the head of the family, age group, gender representation, level of education, occupation and income range are among the crucial details that distinguish one household profile from another. Information such as religion, caste or category, previously resided location, type of property, possessions and pets owned, distance from work or school, etc are among the details that enhance the understanding of the socio-economic profile of each household. However, these details are significant in understanding use and design of space that is specific to the individual.

Most of the discussion within the paper was based on the socio-economic and socio-cultural factors, while the physical location of the house with respect to the village is considered a determinant for lifestyle choices. The physical factors are not part of the selection criteria however, they are part of the variation in the context that help in distinguishing among the households. A generic questionnaire survey has been designed to collect information on the demographic profiles of all households of the village. Though it was designed with the intent to be used among the rural communities in Assam, the survey template is reusable with the appropriate modification to obtain the required information.

This results into five typical, yet diverse cases among the households that facilitate the research to understand the socio-economic status as well as the socio-cultural factors that influence their choices. The members of the household are the main influencing factors and the composition of each household identifies the nuances of the information gathered from the questionnaire survey. In other words, to understand the kind of Environment (that is rural house design) for a person, who live and interact in a space, the Community (household members) along with the Interactions (social culture and activities) are the criteria that require to be identified. This helps in understanding the cultural ecology of the households, and each case study in turn defines the similarities and dissimilarities and circumstances that highlight that essence of the culture of the community with respect to architectural design and space.

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