Chapter 5

SITE FORMATION PROCESSES

Steward (1955: 82) holds that *"...certain aspects of the Environment (quality, quantity and distribution of resources) are more intimately linked with the essential components of the culture called the cultural core (technology, socio-economic organization and demographic arrangements)."*

The term site has a broader meaning as it encompasses all available tangible components as well as intangible components. Site forms a part of the 'prime data' in archaeology. Within this data bank, it has artefacts, structures, features, and eco-facts. A site gets formed primarily due to both natural and anthropogenic agencies. It may be a find spot or an artefact cluster or an activity area or an amalgamation of various cultural milieu. The visible ones in the archaeological sites are the tangible components and the invisible, but equally important are the intangible components. Over the years, mostly during the early years of the development of the subject, archaeologists focused on the visible artefacts, features and structures, until they realized that archaeology should be viewed as human ecology to derive more meaningful interpretations with regard to the adaptational skills of human population from time to time. Very often, the "static" archaeological remains were recorded and described, although they remained in the present due to exposing them without making attempts to extract the dynamism of life from the contexts. This led to several debates in archaeology and finally made us realize that within an archaeological deposit, especially during the post-desertion period, several "cultural" and "natural" transformation processes are taking place and the story of the site and its people will always remain incomplete unless such transformations are properly recorded and understood. Hence, changes taking place within a site, whilst it was alive and after its desertion need to be understood. Within the aforesaid context, this chapter tries to see how the changes have taken place within spatially different regions in a chronological framework.

Formation or transformation of sites in archaeological context gives us clue about the activity and adaptability of human in a particular environment and landscape throughout a huge span of time. Multiple cultural and natural agencies influence site behavior. While natural agencies deal with environmental phenomena like erosion,

tectonic activity, and floods that are beyond human control; cultural agencies deal with the behavior of both humans and animals. There is a likelihood that different behavioral patterns mix within a single site, which s determined by the production of artefacts, the shifting of activity areas, and the expansion of settlements, which is again determined by population growth and a mix of economies.

Within the context of the Indian sub-continent, site formation studies have been attempted by Paddayya (1982, 1987, 1991, 2007) at Hunsgi and Baichbal valleys. These are Acheulian sites with the cultural material; cleavers, handaxes, knives, and animal fossils. Paddayya's study at Hungsi Valley aimed at understanding the cultural process and working of a single cultural system from a synchronic perspective and while studying Baichbal Valley, he adopted a diachronic perspective aims at investigating the changes in land-use patterns from Acheulian stage to the Iron Age, by considering the environmental settings (Paddayya, 1987). As a methodology, he used foot survey of the area, located all possible sites and non-sites or off sites by citing the locations, extent, stratigraphical context, distribution pattern of artefactual and structural remains which was followed by excavation at selected sites. Here, in the context of Hungsi-Baichbal Valley, all possible sites denote all significant sites or "sites" with prehistoric material remains. On the other hand, archaeological non-sites or off-sites approaches address the challenges of interpreting surface materials and offer alternative methods of deriving insights into patterns of human behavior (Raschkow, 1998). Here, in this approach one focuses on individual artifacts rather than on the sites. To understand parallel developments, ethnographic relationship was carefully examined here. After the study, he observed that in Baichbal Valley, all the sites are primary with some amount of reshuffling or rearrangement of the evidence due to various natural and cultural factors. And in Hungsi Valley, sites are formed either in the foothill region or the valley floor, near the old drainage lines or present nullah. There are two types of formation of sites consisting of two principal strategies in Hungsi Valley; in dry season population dependent on animal food (large game hunting) and the central part of the valley was occupied where there are spring-fed channels are present and during wet season population split into groups, spread all over the valley, as plant food and drinking water were available everywhere (Paddayya, 1987). Pappu and Deo (1994) studied the Acheulian sites in Kaladgi region through a geomorphological approach and noted the morphometric parameters such as

relief, slope, and drainage density that governed site distribution. Morphometric analysis is the quantitative measurement and mathematical analysis of landforms. Their study attempts to integrate geomorphological studies altogether and palaeo-environmental reconstructions with evidence for human adaptations and their settlement patterns. They concluded their study by noting that 'Palaeolithic Man' avoided the mountainous rugged terrain of the Western Ghats and preferred to live in the semi-arid lower reaches of the basin. Further studies for the site formation processes were carried out in Isampur (Paddayya 2002), Attirampakkam (Pappu, 2003) and Kibbanahalli (Shivarudrappa, 1990; Srinivas, 2014) Paisra (Pant and Jayaswal, 1991 and Jayswal 2007), Jwalapuram (Korisettar, 2014; Petraglia et al. 2011)), Tikoda (Ota and Deo, 2014), Hunsgi and Baichbal Valley (Jhaldiyal, 1997, 1998, 2006) Orsang Valley (Ajithprasad,2007), lower Narmada (Sant et.al. 1999, Sukumaran et.al. 2012) and several other palimpsest formation studies by Basak (2007), Pal (2007) in the subsequent years (only selected few studies are cited here). Some of these cited works directly deal with site formation, while the others peripherally touch upon it, primarily on the depositional environment.

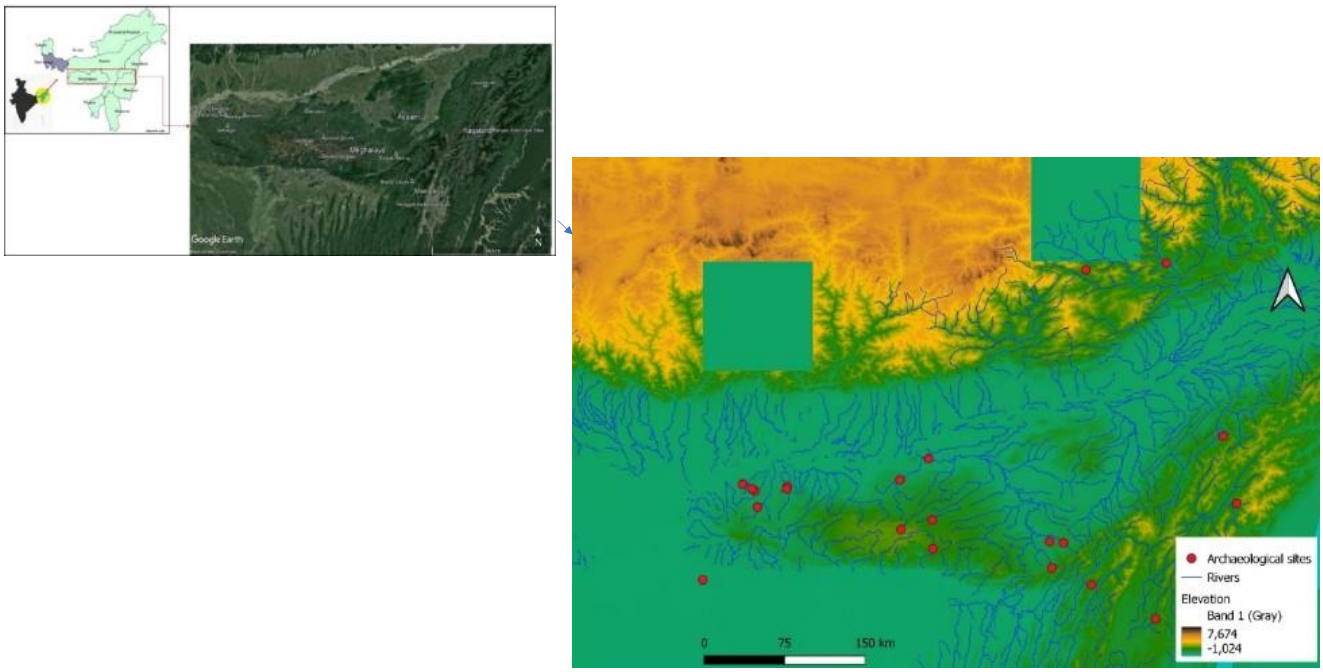
The formation process of Northeast Indian sites is little different from the rest of Indian sites. There is a difference in the use of present-day landscape by different tribes. The material remains also show these variances. The entire landmass of the northeastern India falls between lower Himalayan region and different plateaus. These have a unique geographical and geological identity. Its geological history spans over 2 billion years and around 470 million years ago, sedimentation formed landmasses including the Khasi and Jaintia hills. Uplift and subsequent deposition of sediments continued through various geological eras, leading to the region's present geological configuration. (Sarkar et al, 1964:159). The Meghalaya-Mikir region is the eastern extension of the massive block of Indian peninsular shield which has been separated by various tectonic and denudational movements (Singh, 2016). The plateau is mainly consisted by the rocks of Pre-Cambrian age and Pre-Tertiary and Tertiary rocks above it on some parts. The terrain of the plateau is highly dissected and irregular and has several broken low hills or ranges towards lower and Central Assam Valley. Notably, the Tura range and the Simsang Valley, separated by gorge, are the most significant physiographic features of the Meghalayan Garo hills, which provide the highest number of sites for prehistoric period. The Khasi and Jaintia hills are true plateaus, unlike the other Meghalayan hills. In the north, Meghalaya's rivers

flow to the Brahmaputra, while in the south, they flow to the Surma and Sylhet plains. A detached but connected extension of the Meghalayan plateau, the Mikir hills (currently in Assam's Karbi-Anglong Districts) are drained primarily by the Kopili River and are situated on three sides by plains. The Assam Valley, on the other hand is mainly a flat plain land surrounded by hill ranges consisting of Garo, Khasi, Jaintia, Naga hills and joined by the Patkai to Himalayan system and by the mountains of Manipur to the Arakan Yoma.

Detailed environmental and physiographic descriptions of these regions have been studied along with the sites explored in this current research. These belong to different cultural periods/phases, and will be discussed in conjunction with the formation process of all prehistoric sites so far excavated within the study area. These sites fall in the present political boundary of Meghalaya, Assam, Manipur, and Nagaland. One of the prime objectives of this was to understand the choice of habitation by the early settlers. Given that only a small number of prehistoric sites in the current Assam region have been excavated, this overall study will draw some conclusions to understand the region in a broader sense. The sites of northeastern India appear to have a distinctive pattern of distribution. These prehistoric sites stretch from Meghalaya in the west to Nagaland in the East, Arunachal Pradesh towards the extreme north and Tripura towards the south. A vast majority of the reported sites come from the Garo hills and its number decreases in the Khasi and Jaintia hills of Meghalaya, Nagaland, and Manipur. Only a small number of sites are reported from rest of the parts of the region.

To comprehend the processes involved in the formation of archaeological sites, Chang (1972) used two different types of models: the geographic model and the ethnographic model. The geographic model is followed by Friedmann (1966), who describes the connections between a dwelling or a group and their immediate physical surroundings, as well as the connections between individual dwellings and the distribution of settlements. On the other hand, an ethnographic model is specifically related to the current population, their variables, and the hierarchical relationships between them and other natural variables (Chang 1972). These two models are considered for the current study, and to begin with, all the significant sites from the entire Northeast in general and Assam in particular, are studied to acquire the geographic understanding and draw conclusions

about the selection for habitation. It is further realized that the present-day ethnic groups in the area provide a good indication of the continuity in the kinds of dwellings and habitats evolved from the same that the ancestors of the region must have preferred. Moreover, it is possible to assume that their agricultural practices are descended from the earlier inhabitants. Ethnographic documentation of two Dimasa communities living in two different locations, as well as one Zemi Naga community, was conducted, to understand their current settlement pattern. Different aspects, such as, traditional practices and their contribution to the preservation of ancestral heritage were investigated in this study.



Map 5.1: Explored and Excavated Neolithic Sites from entire Northeast India

5.1: Description of Sites

Prior to delving into further research, a comprehensive description of the significant sites in the area is necessary. Special attention is directed towards excavated regions that have yielded substantial evidence in the form of tools, pottery, and various material remains. A dedicated table has been prepared to facilitate this purpose (Table no 5.1)

Table no 5.1: Site Context

Site	**Nature of the Site**	**Artifactual assemblages**	**Raw Material**	**Water Source**	**Present population**	**Current Subsistence Pattern**	**Reference**
Daojali Hading (Neolithic cultural site)	Open air site on hillocks of North Cachar, Thick vegetation cover. The entire region is geologically falls under teritiary period.	Shouldered celts and cord-marked pottery	Slate, Jadetite (Sarpentine rock)	Langting River, a tributary of Doiyang (Barail Range is the source)	Dimasa (Tibeto Burman)	Based on agriculture (Jhum cultivation), hunting	IAR 1962-63
Sarutaru (Neolithic cultural site)	Dotted with low hillocks, a part of Shillong plateau merges to Brahmaputra valley, relieved by alluvial patches, Physiographically situated between high and low rainfall area	Celts, axes	Slate, Sandstone	Digaru, a tributary of Brahmaputra	Khasi, Karbi	Agriculture mainly Jhum	Rao, 1976
Bambooti (Neolithic cultural site)	A site near a small hillock, slopes of that hill, undulating plains, moderately high hill terrain, geologically the	Celts, adze, abrader	Slate, Sandstone	Right bank of Bambooti chiring stream	Garo, Rabha	Jhum cultivation	IAR 2012-13

	region falls under Meghalayan Gneissic complex, above flood plains of Brahmaputra, situated near high rainfall area						
Rongram and Ganol River Valley sites (Neolithic cultural site)	Sub-surface site on alluvial soil, formed by Archaean Gneissic rock, narrow valley and deep gorges, highly separated hills, thick vegetation cover	Polished celt, pestle, flakes, short axes, pebble scrapper	Sandstone, Dolerite, limestone, basalt	Rongram River	Garo	Jhum cultivation	IAR 1963-64
Selbalgiri (Neolithic cultural site)	Mound formed by alluvial sediments	Celts, hammerstone, flakes		Selbalgiri stream, Rongram River	Garo		IAR 1965-66
Chitra abri (Neolithic cultural site)	On a steep ridge at the left bank of river, slope of Arbella Mountain, formed by Archean Gneissic rock, tertiary age form, thick vegetation cover	Celts, flake artefactartefacts, doubled shouldered celts	Sandstone, dolerite, limestone, basalt	Ganol and Rongram River Valley	Garo	Agriculture (slopes are mainly used for shifting cultivation at present)	IAR 1969-70
Gawak Abri (West Garo hills) (Neolithic cultural site)	Uplands of Ganol-Rongram valley, hill slopes, formed by Archean Gneissic rock, tertiary age form, thick vegetation cover	Lithic artefactartefacts consisting celts, short axes, chipped celts, micro-sized flakes	Dolerite dyke	Rongram River Valley	Garo	Shifting cultivation	IAR, 1979-80
Missimagiri (Selbal river) (Neolithic cultural site)	Topmost terrace of Selbal river, soils of hills are derived from sandstone or gneiss or from conglomerate	Debitage (large in number) with cores, elongated flakes (no retouch),	Sandstone and gneiss	Ganol and Rongram River Valley	Garo	Shifting cultivation	IAR 1969-70

		hammerstones, short axes.					
Law Nongthroh(Ri-Bhoi district of Khasi hills) (Neolithic cultural site)	Low ridges, lies in the transition zone between the northern undulating Khasi hills and the Central Khasi upland zone	(Axes, adzes), blade/knives, shouldered and tanged types tools, flakes					Mitri, 2009
Pynthorlangtein (Jowai tehsil of Meghalaya) (Neolithic cultural site)		Adzes, axes, chisels, points, celts and cord impressed pottery					IAR 1992-93
Myrkhan (East Khasi hills) (Neolithic cultural site)	Gorge of the Umium stream flows toward entire northern undulating Khasi hill and joins Brahmaputra	Axes and adzes, waste flake debris, unfinished stone tools, cord-marked pottery		Umiam stream	Khasi and Jaintia	Shifting cultivation	Mitri, 2009
Kolaghar (Haora valley), Tripura (Neolithic cultural site)	Latosolic profile	Stone implements from the top soil of the latosolic profile	Fossil wood	Haora River	Bengali and Tripuri		Ramesh, 1986
Teliamura (Neolithic cultural site)	West Tripura, located at an isolated tilla or mound (hill top) of T1 formation of Khowai River, Mio-Pliocene deposits, between Baramura and Atharamura hill ranges, grassy land, numerous streams and water sources	Stone axes, adzes, grinding stone	Fossil wood	Khowai River	Bengali and Tripuri	Both Terrace, jhum and wet cultivation	Ramesh, 1989; Hazarika et.al 2000
Sonai Cluster of sites (Neolithic cultural site)	West Tripura, located at an isolated tilla or mound (hill top) of T1	Stone axes, adzes, choppers,	Fossil wood	Sonai River	Bengali and Tripuri	Both Terrace, jhum and wet cultivation	Ramesh, 1989; Hazarika et.al 2000

	formation of Sonai River, Near Baramura hill ranges, Mio-Pliocene deposits, Quaternary sediments, grassy land, numerous streams and water sources	scrapers, potsherds					
Purakha (Neolithic cultural site)	Tropical evergreen to temperate climate	Axe, choppers discs, spindle whorl, anvil, potsherds, shale/slate	Shale/slate		Naga	Slash burn and terrace cultivation	Nienu, 1974
Chungliyimti (Naga ancestral site) (Neolithic cultural site)	Located in the lower drainage area of river Dikhu and marked with high hills and rugged terrain, on Naga Ophiolite belt, tropical evergreen to temperate climate	Both finished and unfinished stone tools, terracotta objects (TC), stone pestles, hammer stones and few ground celts	Spilite, sandstone, phyllite and black chert	Dikhu	Naga	Slash burn and terrace cultivation	IAR 1980-81
Ranyak Khen, Cave site	Situated at the foothill of a limestone ridge of Mimi formation and occur east of the Ophiolite belt of Nagaland, Tropical evergreen to temperate climate and rugged terrain flowing streams with exposed cobble bed.	Cord mark wares, curved paddle impressions Stone objects as formal and informal tools	Limestone and Serpentine	Perennial stream which joins Tizu, the major river of Nagaland drains into the Chindwin in Myanmar	Naga (surrounding region)	Slash burn and terrace cultivation	Jamir et.al. 2014, 2017
Tsie Khen, Cave site	Located on a sleep cliff of limestone kharst region of Mimi formation and occur	grinding stones, charred animal bones, cord marked ware.		Tizu River	Naga	Slash burn and terrace cultivation	Jamir et.al (2017)

	east of the Ophiolite belt of Nagaland, has a narrow and long tunnel like feature, Tropical evergreen to temperate climate and rugged terrain flowing streams with exposed cobble bed.						
Photangkhem Longkhap	A massive rock shelter of low-grade quartzite, formed by limestone kharst region of Mimi formation and occur east of the Ophiolite belt of Nagaland, dense vegetation with numerous perennial water streams	edge ground tools, one cleaver, seven human burials, bone beads, cord-marked potteries, bones of medium sized mammals and rodents	Limestone and quartzite	Perennial streams	Naga	Slash burn and terrace cultivation	Jamir et.al, 2017)
Nongpok Keithelmanbi (Thoubal river), Manipur	Located on the top of a flat hill ridge, some 45 m high from the river bed	Two celts, cord mark pottery, unfinished sandstone pebble		Thoubal River			IAR 1984-85
Tharon (Cave site) Five caves altogether		Choppers, handaxe, hand-adze, pointed tool, scraper, edge-ground knife, quern and grinder					IAR 1980-81
Khangkhuikhullen (Cave site, 4caves)	On a range of hills formed by Limestone of Creataceous origin	Stone and bone artefacts and faunal remains include bovidae (teeth), Cervus, Sus, Fowls, small Herbivorous		Tributary of Thoubal river			IAR 1968-69

Parsi-Parlo (Neolithic cultural site)		Tools with Hoabinhian affinity (Period I)					IAR 1982-83, 83-84

The above site-specific description (Table No. 5.1) reveals the various types of landscape chosen by the region's prehistoric inhabitants. Meghalaya, the hilly region is formed on Pre-Cambrian geological fragments over which pre-Tertiary and Tertiary rocks occur. Due to its high relief, the climate of the region differs from that of the Brahmaputra Valley. The sites in Meghalaya are either on alluvial soil-formed mounds, deep gorges, ridges, or slopes of mounds that are currently used as Jhum cultivation grounds, or on any river's upland region. Most of the locations are near a perennial stream, a small tributary of a larger river, or a gravel-bedded stream. The locations close to the valleys of both Rongram and the Ganol River, which is a hilly terrain and a large number of sites, are distributed in the valleys of these two rivers and their tributaries. In the entire North-east, the valley has the largest evidence of ancient habitation. The valley is formed with quaternary formations with both older and recent alluvium. Tropical rain forests are essentially what cover this area and the river bed is heavily populated by boulders, cobbles, and pebbles, indicating a high energy condition of flow during the rainy season. Sharma (2002) had attempted to understand the geo-stratigraphic contexts of the lithic assemblages discovered in the Rongram and Ganol River Valleys. The cultural assemblages are discerned both on the surface and within buried contexts. Her examination of sediments containing lithic tools reveals the presence of angular gravels, indicating that they were not transported over great distances. She indicates that the prehistoric people had chosen the alluvial/colluvial mounds in between the right bank of Ganol River and left bank of Rongram River specifically where the slope is comparatively gentle. In case of the site’s morphological modification, there was no evidence of any kind of natural disturbances in the stratigraphy, that was reported by Sharma (IAR, 1966-67), revealing a primary depositional activity that shows people used to occupy the area near the river banks. The entire valley is rich in grounded Neolithic celts with specific shouldered variety, short axes, chipped tools, pebble tools or choppers and scrapers.

Another site, Didami, named after the tributary Didami, which is a branch of the Ganol River, is an abandoned jhum field that was once used by the Missimagre people. An exposed stratigraphy revealed that there is a pebble horizon in between the Tertiary-Quaternary sediments and Quaternary alluvial sediments, over which lay an implementiferous layer, which is partially exposed in the slope. This feature is not continuously present in the entire exposed section (Sharma, 2007). This may be a buried

site and the portion of tool bearing deposit, which is exposed here is due to various natural activity. The site is also near the raw material source i.e., dolerite dyke. The soil's hue ranges from reddish brown to yellowish brown (Bora, 2017).

The site Selbalgiri1 of Garo hills on a dome shaped hillock was brought to light as a result of various erosional and agricultural operations, and resulted in the findings of large number of potsherds and a smaller number of stone axes. On the other hand, Selbalgiri 2 was on the ridge of river, on a heavily eroded gravelly surface. The excavations at Selbalgiri 2 uncovered three layers of cultural material, all of which contain reddish yellowish earth mixed with quartz gravels that get progressively thinner as you get closer to layer III (IAR 1967-68). The gravels are formed as a result of sediment being transported by streams at such a rapid rate, and the reddish earth indicates a hot, humid, tropical environment. Additionally, the gravel distribution in all the layers at Selbalgiri does not appear random and is supported by the archaeological findings. Stone axes, hammers, and thick, handmade potsherds are found in layers 1 and 2, while layer 3 contains microliths and the same kind of potsherds. This demonstrates that the Selbalgiri people chose a wetter habitat to create their habitation, which is nearly identical in current contexts. The excavations at the Missimagiri site, which is essentially a terrace of the Selbal River, uncovered a significant amount of debitage. The reddish-brown soil in Layer III, which is only the tool-bearing layer, is partially compact and abrasive in texture. Both sites, which are only 5 km apart, appear to have the same type of site formation. Cultural remains as debitage show Missimagiri as a factory site for tool manufacturing but abrasive nature of the tools shows transportation of materials from immediate vicinity.

Cultural resources from Lawnongthroh and Myrkhan in Khasi hill indicate that areas with sloping high altitude and the narrow valley with steep sides were chosen for habitation and as factory site, as the source of raw materials are in the immediate vicinity of the sites. A part of cultural remains indicates the site's nature as factory that involves waste flakes and fragments along with both finished and unfinished ground and polished tools, largest artefacts pile along with cores. Simultaneously, recovery of huge quantities of potsherds indicates its habitational nature also. Cultural materials from Lawnongthroh have been uniformly recovered from surface and up to 25 cm below which there is a semi-thick gravel bed overlying by sandy layer. In site Myrkhan, 20-25 cm below the finding

spot of cultural materials, there is a strong trace of burning of the soil from slash and burnt cultivation.

According to Rajaguru et al. (1977), the early Quaternary formations in Garo hills are represented by ferruginous conglomerate resting unconformity on the bed rock. The younger rock formation is represented by reddish-to-reddish brown silt which rests on the highly weathered gravel i.e., older rock formation. In the contexts of all sites explored and excavated so far from the Garo hills, the soil formation is reddish brown which is tropical in nature and basically tropical regions are preferable home for most of the wildlife and plants and an area suitable for growing different kind of crops. According to White, (2011) tropical or higher rainfall areas does have high species diversity or large number of resident species, but proportionately fewer individuals of that species or community in comparison to temperate region with grasslands or pinelands.

With a tropical to temperate evergreen and coniferous vegetation cover, Nagaland and Manipur are regions with high rainfall. Both regions are a part of the Assam-Burma geological province, a part of the Archaean era. Slender stretches of the Arakan Yoma Mountain ranges constitute this Cretaceous-Tertiary-aged formation. The area is highly prone to earthquakes and is in a seismically active area of the world, where the Naga thrust is the most significant fault. The lithology comprises the conglomerates, sandstones, limestones, and shales. The primary occupation of the inhabitants is agriculture where jhum and terrace is the common process of farming (Singh, 2016). Its proximity to Myanmar has led to the discovery of archaeological evidence that points to a possible cultural link between the two nations. As shown in the table, a sizable number of cave sites containing artefacts of stones, bones, and pottery were reported from Nagaland and Manipur.

The cave sites of Nagaland are situated in the limestone karst of Mimi formation which is a metamorphic formation of stone going back to Cretaceous to Eocene. Table no. 5.1 Data from the excavated sites reveals cultural and occupational continuity from Pre-Neolithic to present (Nienu, 2014). The population is depending upon slash and burn as well as terrace cultivation which is little different from Jhum cultivation. Nienu (2014) remarked that both ethnographic and prehistoric settlements in Nagaland are upland oriented and dominated by subsistence related necessities. Ranyek khen is a site over the

rugged terrain which is cut by small streams with patches of exposed cobble beds that are the source of raw material in addition to the limestones (Jamir et al. 2017). Excavations in the inner side of the cave revealed occupational debris with grinding tools, both plain and cord marked wares from different layers, and faunal remains. The cultural assemblages, represented by dispersed evidence in certain areas, exhibit anthropogenic activity including traces of campfires denoted by patches of ashes, presence of finished tools, altogether suggests relatively short periods of human occupation (Jamir et al. 2017). Some of the post depositional activities are also noticed in recent periods, as revealed by the excavator. The location is a suitable area for food and water resources, suitable for game hunting, which are the adaptive mechanism for hunter-gatherer and early agriculturist habitants. The site is dated to Conventional radiocarbon age: 5560 ± 40 BP (Sample 1), 1 Sigma calibrated result: Cal BC 4450 to 4350 BCE (Cal BP 6400–6300) (*68 per cent probability*) (Jamir et al. 2017). In addition to cave sites, Chungliymti, one of the significant Naga ancestral sites, is located close to the lower drainage area of the river Dikhu and was selected as a location for habitation due to its high hills and rugged terrain, which provides evidence of stone tool use. Preliminary excavations at the site revealed a mix of material culture including potteries (Ambari type ware), iron tools, perforated terracotta discs, both finished and unfinished adzes, and polished Neolithic celts. Earlier explorations revealed the same material remains from eroded surface of the hill slopes (IAR 1991-92). The site has been dated to 980-1647 CE (Jamir, 2011:42).

Presence of Palaeolithic tools from undisturbed Pleistocene deposits from the caves of Manipur (present Manipur) shows oldest habitation. The Khangkhui cave in Manipur was discovered by O.K. Singh (IAR 1968-69), Located on a range of hills comprising mainly of limestone of Cretaceous origin, the site is situated near Khangkhui Khullen, on the northern slopes of Nangsong Machung hill. Among the four caves in the region, two are situated on the eastern slopes, and the other two on the western slopes. Cave-3 was subjected to excavation in 1969 and 1972, leading to the discovery of stone and bone artifacts, as well as faunal remains (Singh 1997: 26). The caves are formed by fine quartzite sandstone and artefacts were found from both inside and outside the cave. Explorations at one of the famous sites of Manipur "Nongpok-Keithelmanbi" began during 1984-85 by the Department of Archaeology, Government of Manipur, near the

Thoubal River Valley. The site is in the terrace of present river bed which is alluvial in nature. The cultural material includes choppers, flaked pebble and many potteries including pieces of glazed ware (IAR 1984-85). Excavations revealed a gravel deposit overlain by clayey silt, as well as a slope deposit of fissured clayey loam. Silt is a type of sediment caused by water activity, such as flooding, that forms a fertile deposit on valley floors. Clay indicates a tropical environment. Clayey loam is the preferred soil type for most plants because it is higher in nutrients and humus and retains water while allowing excess to drain away. The soil profile specifies a wetter climate, adopted by the earlier inhabitants.

Compared to the other north-eastern states, Tripura is more closely aligned with Bangladesh in a single group of cultural horizons. Geologically, the state was covered by Indo-Burman hill ranges during the Tertiary Period, which ran from east to west, eventually merging with the plains of Bangladesh. Between these hill ranges, there were numerous streams and water sources that contributed to the formation of Quaternary sediments, which resulted in the formation of terraces, also known as tillas, and flood plains. The geoarchaeological investigation in this region of the north-eastern states began in 1980s (Ramesh, 1989) in the areas of the Khowai, Haora, and Sonai River valleys of western Tripura and discovered prehistoric cultural remains from Quaternary deposits. Hazarika et al. (2020) re-examined several previously explored sites near the same river valleys at an elevation and reported sites with cultural materials such as axes, adzes, choppers, scrapers made of fossil wood, and hammerstone made of quartzite, as shown in table no 2. The sites were formed by river activity and were surrounded by steep cliffs and they were formed on the tillas of T1 river formation. Those tillas do not have any further sedimentary deposition, gullying due to sheet wash erosion during rainy season can be observed (Hazarika et al. 2020). The flat valleys and river plains near the sites were possibly used for agricultural activity during prehistoric times as well as later historical periods, and they are still in use today. According to the recent field survey, river beds downstream are devoid of any artefacts, indicating that tillas are the primary habitation areas. So, in order to understand the formation of Tripura's sites, it is necessary to first understand the location of sites that are specifically near water sources but at a higher elevation, near raw material sources (fossil wood), areas suitable for different types

of agricultural methods (both wet and Jhum cultivation), and valleys suitable for habitation.

Among the sites mentioned in table no. 1, some have been dated using various methods such as OSL, carbon dating, and so on (table no. 2), giving us the impression that the majority belonged to the Holocene epoch of the Geological time table, though we have tools from undisturbed Pleistocene deposits in Manipur, as previously mentioned. So, if we examine the cultural remains as well as the dates from some of the sites from the entire northeast Indian region, the potential environment of that time should be investigated through the region's current landscape as well as the landscape of Late Pleistocene epoch. Additionally, this can be accomplished by examining the ethnic communities' ways of life and the culture that was still forming them. There is always the question of why there is no Palaeolithic evidence from the mentioned area. Was the area previously unsuitable for human habitation, due to its location in a tropical area with a heavy vegetative cover? There may be some explanation for these questions, such as the overuse of natural resources as opposed to man-made ones, given the availability of sources (suitable evidence from ethnographic data) that have been advanced by numerous scholars. Even though some new evidence has come from the cave sites in Manipur and Nagaland, the material evidence also supports the idea that the land was not used until a very young age.

When we examine the significant Palaeolithic sites in India, we can observe a distinction in the landforms between the sites of northeast India and the rest of Indian sites. A tropical geomorphology, which refers to a geomorphic system of low latitudes and respective landform assemblages that are distinct from those in other environments, is what distinguishes the landforms of Northeast India (Migon and Prokop, 2013). In the low latitudes, a climate is characterized by high temperatures and humidity prevails, creating a concentrated and uncomfortable environment. The ample rainfall in these regions fosters the growth of dense forests, leading to a remarkable diversity in the animal kingdom, particularly among arboreal species. However, larger animals face challenges surviving in such ecosystems due to limited resources and competition for space. The Zaire Basin and the Amazon Basin serve as illustrative examples of the adverse impact of tropical climatic conditions on human habitation in equatorial lowland regions (http://nios.ac.in). The combination of high temperatures, humidity, and frequent rainfall

poses considerable hurdles to human settlements. Despite the ecological richness and biodiversity of these regions, the harsh and unpredictable environmental factors have acted as formidable barriers to sustained human habitation. Additionally, if we look at the tool typology of the entire Northeast, it is primarily composed of Neolithic assemblages made using the ground and polished method, as well as some flake blade assemblages discovered on the Meghalayan plateau, but there are no early Palaeolithic tools, which may indicate that the area had been neglected for a longer period of time. If we look at the raw materials used to make tools, they comprise quartzite; dolerite, sandstone, chert as well as granite were the common raw material in many of the earliest prehistoric sites in India, which are readily available materials in the northeastern region. We must therefore persuade that tropical areas were either unsuitable for human habitation or that the precise location of earlier human habitation has not been discovered yet in case of Northeast India.

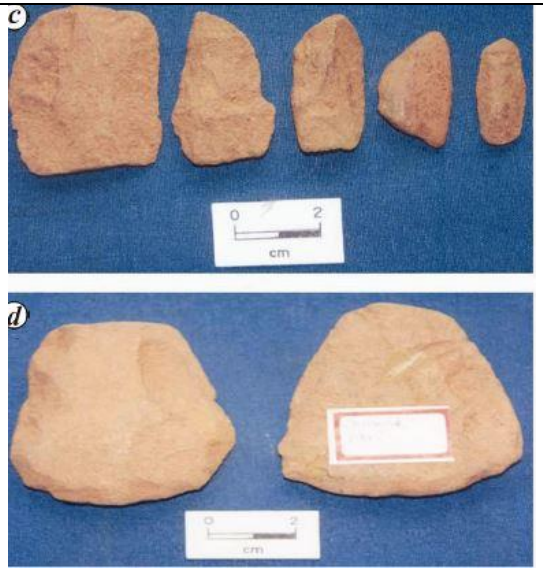
According to Pappu et.al. (2003), due to a regional variability, there is a difference of hominoid adaptations in different areas. To begin with, the Hungsi-bBichbal Valley is a semi-arid and draught-prone zone of the Deccan plateau where continuous human occupation has been recorded from the Palaeolithic to the Early Historic period (Paddayya et al. 2002). The geomorphology and environmental factors make the area a favorable habitat for hominins, which include: a good cover of savannah woodland type vegetation, a sheltered topography with an unlimited supply of raw materials of various types for the manufacture of tools, perennial water sources in the form of spring flows, pools in nullahs that appear to be a major factor permitting continuous human occupation in that valley (Paddayya, 1991; Paddayya et.al. 2002). The raw materials used for making tools were limestone, dolerite, schist, quartz, and chert etc. The significant Isampur site, which dates to 1.2 Ma and is classified as a quarry-cum-workshop site, was formed over a limestone outcrop that was previously well-preserved before being covered by colluvial silt deposition. Attirampakkam, the oldest Palaeolithic site of India, confirms a new environmental context for Indian Acheulian. The artefacts are discovered in a laminated clay deposits that represented fluvio-glacial deposits, indicating a palaeo floodplain situation. The principal raw materials to manufacture the assemblages were quartzite and sandstone. The area is in seasonally dry tropical regions (Pappu et. al, 2003,). Comparable evidence comes from Singi Talav, Rajasthan, where artefacts are discovered from clay

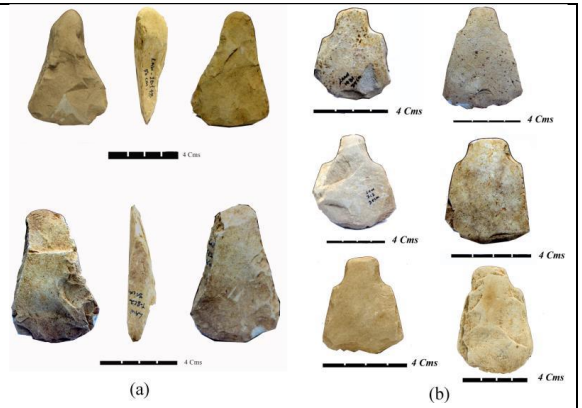
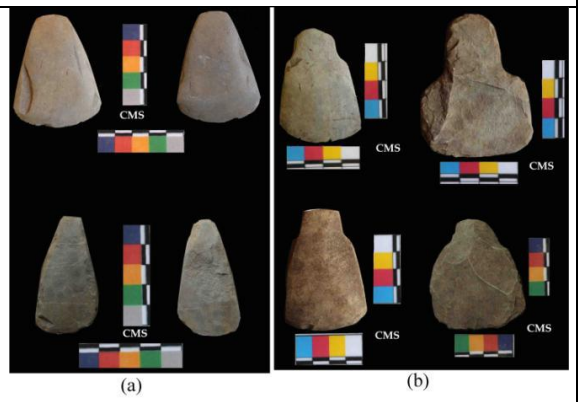
deposits. Similarly, another important site is Tikoda, an open-air site surrounded by hill ranges. The soil context contains yellowish sediment with a high concentration of iron oxide and the principal raw materials were sandstone, chalcedony, chert, and quartzite. Those soils frequently have poorer drainage than red soil. The topography is badland, which evolved in arid and semi-arid regions. The climate of the region is semi-humid, with southern tropical dry deciduous and minor dry deciduous scrub forests (Ota and Deo, 2014). The Paisra in Bihar is an Acheulian site located in the exposed rock surface of the Kharagpur hill ranges that has been continuously occupied up to Mesolithic times. According to Jayaswal (2007), the main factors that led to the formation of the sites of Paisra are the congenial environment, which has thick vegetation with various perennial water sources, appropriate adaptation strategies, and technological outfit. The soil formation of the site is yellowish in color which has rich iron content, same as Tikoda. Sandstone and quartzite were the raw materials used to make the tools. Furthermore, the Lower and Middle Palaeolithic sites in the Belan Valley are mostly found in the alluvial deposits in river beds or basal deposits, whereas upper Palaeolithic artefacts are discovered at the foot of the hills. Son Valley sites, on the other hand, are in the Kaimur range's medial ridge and the foot slopes of high hills, close to a perennial water source. Soil sediments in both cases are yellowish and high in iron content (Pal, 2007). Basak's (2007) site formation studies on the 'Tarafani Valley' of the Chotanagpur plateau reveals that sites were formed during terminal Pleistocene when the climate was more arid. Again, most of the Acheulian sites in western Gujarat are in the alluvial plains of the major rivers Tapi, Narmada, Mahi, Sabarmati, and their tributaries. This part of India is predominantly in the semi-arid zone. Artefacts are found in coarse pebbly gravels near the bottom of alluvial sections (Zeuner, 1950; Allchin et.al. 1978). It has been suggested that the climate during the Acheulian period was slightly wetter than it is today (Ajithprasad, 2007). The research on Orsang Valley reveals that sites are in open air near the foot of hills where the formation is on colluvial deposits where sediments are loose and unconsolidated formed by rain storms (Ajithprasad, 2007).

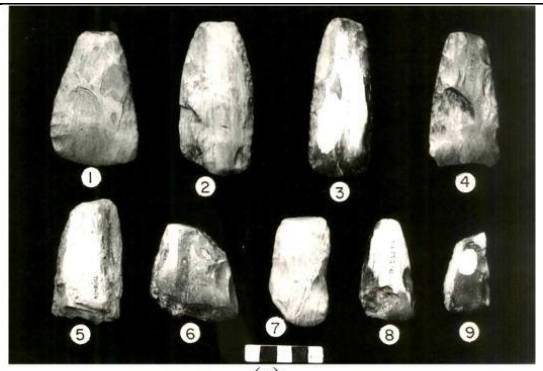
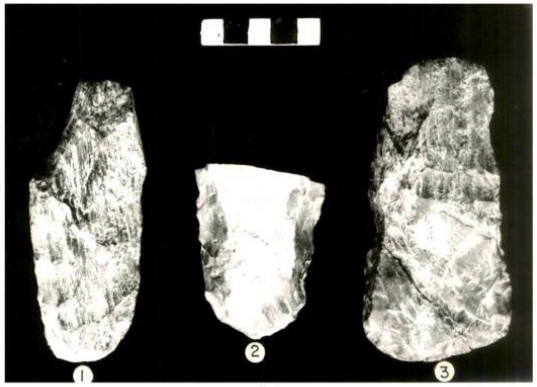
There appears that almost all the Palaeolithic sites of India are in arid or semi-arid regions as well as the soil sediment is yellowish and high in iron oxide. On the other hand, Northeastern region falls under higher rainfall area which according to Chauhan (2014) has high rainfall and dynamic topography, which may have contributed to site formation

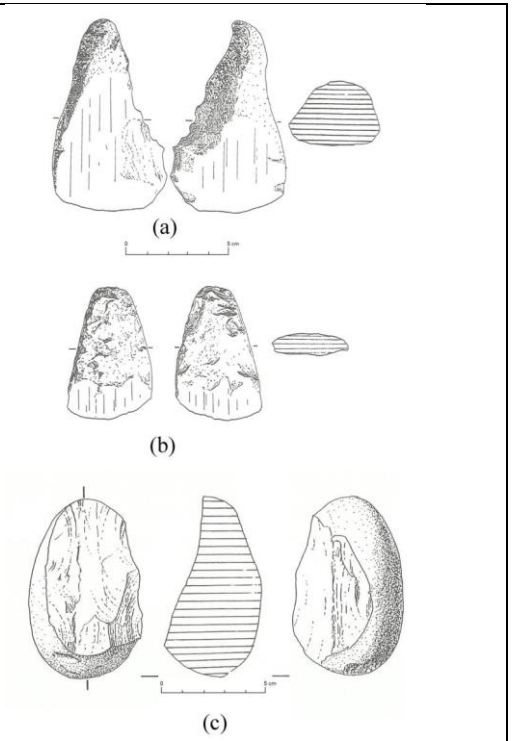
processes and fossil taphonomy that is different from those known from central and peninsular India. Although it is difficult to place the likely Pleistocene climatic variation in this region, and from the dates of excavated sites, which mostly falls into the Holocene geological epoch, make it abundantly clear that a wetter climate prevailed during the early stages of habitation which is proved through the soil composition retrieved from the stratigraphic layers of few excavated sites and current environmental factors suitable for vegetation growth.

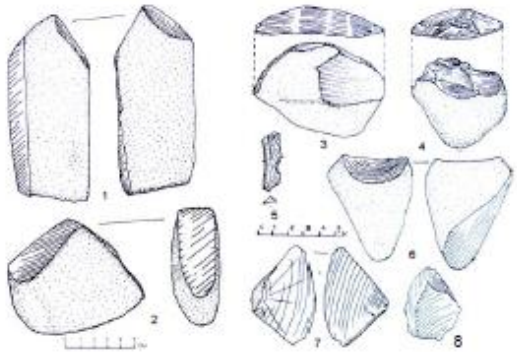
Table no 5.2: Sites and Dates of Prehistoric Sites from North-east India

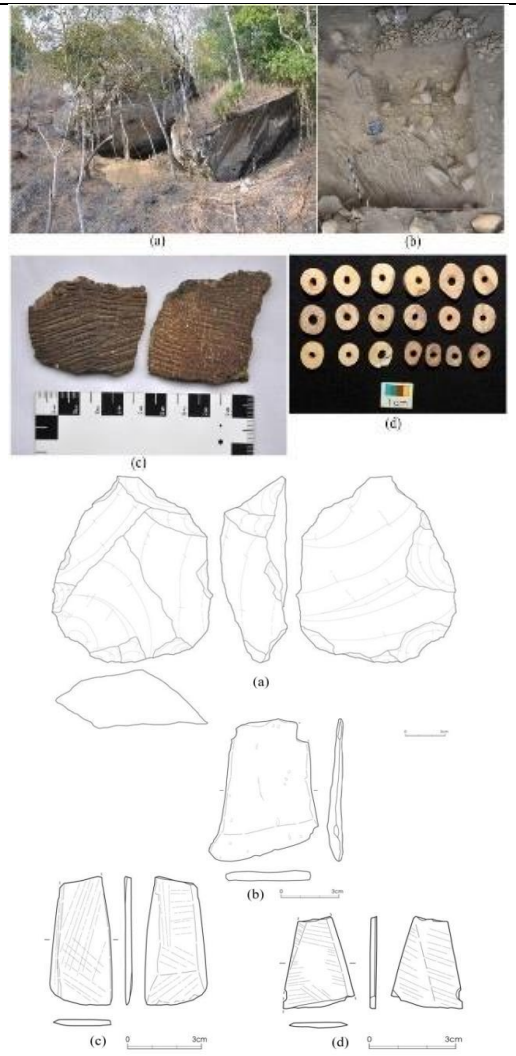
Sites	Excavation Year	Location	Dating	Findings/Remarks	Figure
Daojali Hading	1962-63	North-Cachar Hill (Assam)	2.7±0.3 Ka (OSL dating) (Sharma and Singh, 2017)	Ground and Polished stone tools, Shouldered Celts and Cord-marked pottery	
Gawak Abri	1999	Garo Hill, Meghalaya	2.3±0.2 ka (recent OSL dating) (Sharma and Singh, 2017)	Lithic artefacts consisting ground and polished celts, short axes, chipped celts, micro-sized flakes Late/Terminal Pleistocene-Early Holocene (Based on typological attributes)	

Law Nongthroh	2013-14 (excavation by M.Mitri)	East Khasi Hill (Meghalaya) Ri-bhoi district	2960±30 BP (lowest layer) and 1640±30 BP (Upper layer), C14 date	Ground stone tools (Axes, Adzes), Blade/Knives, Shouldered and tanged types tools, Flakes	
Myrkhan	2016 (Excavation by M. Mitri and Neogi)	East Khasi Hill (Meghalaya) Umiam stream	Cal 3500±30 BP C14	Unfinished tools with Hoabinhian tradition (axes and adzes)	
Khas Kalyanpur (Khowai Valley)	1981-82 (Quaternary Mapping by GSI)	Tripura	1190±90 to 3450±110 BP	Potsherds probably belonged to Proto-historic or Historic period.	
Kolaghar (Haora Valley)	1981-82 (Quaternary	Tripura	c. 35,690±3050BP	Stone implements from the top soil of the latosolic profile	

	Mapping by GSI				
Sadar and Khowai sub division	(Geological Mapping)	West Tripura	C 35,690±3050BP	Rich stone age sites with stone tools believed to be primary camping sites from the river banks of Khowai, Sonai gang, AghaleChhara and Gumti. Tool assemblages were made of silicified fossil wood like the Anyathian culture of Myanmar. Based on dates and other geological/geomorphological features the west Tripura culture divided into: 1 Late Tripurian=Late Middle Palaeolithic,2. Evolved Tripurian=Upper palaeolithic, 3. Neolithic, 4, Late Neolithic.	 (a)  (b)

Purakha	1970s (excavation by V.Nienu)	Nagaland	2580±200BP 5568 half life	Pre-Neolithic to Neolithic sequence Ground and polished axe, choppers, discs, spindle whorl, anvil, potsherds Shale/slate	
TsieKhen (limestone kharst region of Mimi formation), Cave site	Excavation, Harris Matrix	Nagaland	5870±30 BP (Cal BC 4795-4690) and 15150±50 BP (Cal BP 18535-18310), AMS date	Charred animal bones, cord marked pottery, grinding stones, hearth	

Nongpok Keithelmanbi (Thoubal River)	1983 (Trial Trench)	Senapati District (Manipur)	4460±120 BP (C14)	Corded ware phase overlies Hoabinhian Cord marked Ware in linear/criss cross design (Bowls, Globular Pot) Two Celts	

PhotangkhemLongkhap (limestone kharst region of Mimi formation	Excavation	Nagaland	3460±30 BP (cal BC 1881-1689) and 3880±30 BP (Cal BC 2465-2280)	Human burials, remains of hearth, edge ground tools, one cleaver, bone beads, cord marked pottery and bones of mammals and rodents	

The prehistoric sites of Assam Valley are all located near the Meghalaya foothills or low hills that were once separated from the Meghalayan plateau and on the same tertiary complex as that of Meghalaya. The North Cachar Hill District of Assam is primarily covered by the Barail range, which is composed of post-Oligocene sedimentary rocks that merge with the Mikir hills of Assam, a separated hill range, again from Meghalaya hills and extends towards the Naga hills. The rivers that flow into this area have their origins in the Barail range. The site Daojali Hading is located on a high hill on the Langting river's bank and similarly, another reported site, Asalu, is also located on the bank of Mahur River which originates in the Barail range. The entire river valleys are subjectively assigned to the Neolithic period. Furthermore, in most cases, the collection of tools is practically collected by the inhabitants, who are primarily engaged with cultivation and hunting of animals (occasionally). The location of the sites within North Cachar demonstrates the use of land on hill slopes or tops for cultivation or habitation as in today. The current population in most interior areas of North Cachar still prefers to live on hill tops.

The excavations at Daojali revealed a habitation area with high moisture content, indicating a wetter climate. Layer 1 of each trench has dark loose grey soil content, indicating that the soil was wet at times and the cultural materials are recovered from those soil clusters. The site was being formed near the cobbly pebbly bed of the Langting River, and was on the slope that must have a secondary depositional profile. In this hilly region, with nearby river activity, slopes have multiple levels of deposition such as aggradation, landslides due to heavy rainfall, earthquakes, and yearly human activity as a process of cultivation. During the excavation at Daojali Hading, there are irregularly distributed angular blocks of sandstone in the excavated area, which appears to be foundation but was not confirmed by the excavators (Roy, 1977). Daojali Hading has been dated to 2.7±0.3 ka; it is very late when compared with the other areas of the sub-continent. In contrast, the tools found at Mailu were not procured in substantial quantities but rather obtained haphazardly from diverse locations. According to local informants, these artifacts were collected either from jhum fields, small river channels, or form the aggregate of pebbles amassed for road construction from the riverbed, with only one or two samples available. Due to their proximity to the same hills, river valley, and typologically similar tools, the sites Daojali Hading and Mailu appear to share a similar

geomorphology, leading us to believe that they were both inhabited during the same time period. In all the cases, the periodical collection of tool assemblages shows a secondary medium of deposition of artefacts and their primary contexts is still in the phase of '*terra incognita*.' As most of the tool assemblages are typologically similar to many of present-day agricultural weapon, we basically can assume that the tool finding location is primary in contexts of cultivated area.

Looking at the distribution of tools at Mailu, it seems quite possible that the Neolithic people of the area chose to live in one place at a specific point of time, and their movement was consistent with the changing of cultivated land each year, as seen in the context of the current population living there, who change the jhum land each year and move to another. However, in contradiction if we consider agricultural innovation during late Stone Age which demands a settled way of life, nomadism does not much fit into this concept. Earlier, a study carried out in the eastern Malwa region of India by Jacobson (1975), showed that Early and Late Stone Age site deposits with relatively low densities and wide-ranging coverage, areas owed to nomadic people who stopped for very short periods of time). This has been used as a representative example in case of Mailu. Although this model was for Early and Late Stone Age sites, yet this can be considered as an indication for a movement pattern of populations' dependent on nature.

Furthermore, sites with Neolithic material evidences from Assam's foothill region (Meghalayan border) show that the areas used for either habitation, camping, or agricultural purposes were on top of small hillocks or moderately high hilly terrain. Human activity in the foothill region has been influenced by those terrains considering the area near small tributaries, away from Brahmaputra bed where areas are occupied in historical periods. In all the cases, these hillocks serve the purpose for an easy settlement pattern; like easier to move for cultivation, water resource and away from flooding zones. The depressions between the hills, over which the sites are present, appears to be used for wet cultivation of crops as well as the slopes are used for jhum, shows sedentary living habits based on full-fledged agricultural economy, which is similar in case of present-day context in the areas near the foothills. The two significant prehistoric sites, Sarutaru and Bambooti, share similar characters in its geomorphology landscape type. Both locations are surrounded by plain river valleys on one side and hills on the others. All the current

Assam's sites are physiographically situated between regions with heavy rainfall. It is also significant that a large number of prehistoric sites from the present Kamrup district (Sarutaru, Bogibogi, and Marakdola) and Goalpara (Bambooti) regions are dispersed throughout a single geological belt, mostly on the foothills of the Meghalayan plateau that have merged with the Brahmaputra plain.

To date, no prehistoric site has been discovered in the Brahmaputra Valley. Cultural remains from Bambooti have been recovered from clayey and sandy layers with blackish-brown soil color which indicate a wet area with high moisture content but well drained due to the sandy nature of the soil. There is a posthole, as explained by the excavator, and potsherds are collected from the garbage area, which might be an indication of habitation, that was already explained as Kitchen Midden by the excavator. The site's period as determined by OSL dating is 2.07±0.05 ka, making it almost contemporaneous with Daojali Hading. In the same stretch towards east from Bambooti, site Sarutaru revealed a cultural deposit with brown silt and murram, indicating that the region at the time experienced a wet, humid tropical climate, which is almost similar in cases of all northeast Indian sites. When compared to typical Neolithic assemblages, the sites Sarutaru and Bogibori, which both contain the same kind of cultural material, show that the Neolithic phase continued for a considerable amount of time. This is when people first learned how to make wheel-thrown pottery, and a similar environmental phase also appears to have persisted for a long period too. However, when the sites, Sarutaru and Bambooti were stratigraphically defined, the assemblages found from site Bogibori appeared to be of secondary in deposition activity, as it is in a slope area. On the other hand, it is also used as a farming land regularly within the present-day context due to which a long-term cultural activity and a possibility of continuous depositional transformation.

Sites representing Early historic culture (i.e., Ambari) or later than that (sites of Goalpara District of Assam) are particularly located near present Brahmaputra River where soil formation is mainly by younger alluvium. Geographically speaking, the site of Ambari was formed in the old Brahmaputra channel. The river is said to have shifted from its earlier course after the great earthquakes of 1897 and 1950, which totally changed the physical setting of the region. The Brahmaputra's course is strongly controlled by the geotectonic set-up and tectonic activity which affecting river's braiding pattern (Saikia,

2020). Eight layers of occupation with cultural materials were discovered during excavations. Most of these layers contain semi-compact soil, exhibiting a colorspectrum from greyish-brown to reddish brown, while some layers also contain ashy patches. A greyish brown soil formation indicates a moist and warm environment t. The area has been continuously occupied for a considerable amount of time in the past, and Assam's current capital city continues to expand over its ruins. The earliest habitation dates to Sunga-Kushana, which dates relatively and raises the possibility of trade and commerce activities. The formation of sites is primarily related to the riverine topography. Because it is situated in the central region connecting both valley people and hill people, it was the political and economic center of the entire northeast during both historical and medieval periods. This statement means, either the earliest population did not settle near the main plain river valley or those sites with prehistoric affinity were washed away by heavy floods over the time.

In general, Assam's prehistoric sites are found in hilly terrain with higher rainfall areas, which appears suitable for them on various grounds. Higher elevations and plateaus were always preferred locations for previous hunting and gathering communities during the Palaeolithic periods in other parts of Indian subcontinent. It was thought that during the Holocene, as a result of climate change, various natural streams and water sources were formed which provided abundance of resources in the form of crops and marine food. So, basically, the formation of streams and other water sources as a result of heavy rainfall is a better place for game hunting; this is something that is observed in various ethnic groups' community settings today. Higher precipitation results in wetland, which is ideal for wet rice or paddy cultivation. Rice, the staple food of this region, may have originated from that period. Hazarika (2006) demonstrated that prehistoric occupation on the high hills implies rice cultivation as a dry crop, but the historical period migration of Tai Ahoms was essentially related to the same type of cultivation process, i.e., wet rice cultivation, as mentioned by Gogoi (Personal communication). The slopes, which are favored in most cases, have good drainage capacity, are free of water logging, and are suitable for vegetation growth, though habitation must be in nearby locations, either on top of hills or in the valley area and in both cases, slopes can be used for daily subsistence activity. Furthermore, the appearance of crude handmade ceramics with cord markings implies their utility as storage and cooking purpose, which was also revealed in the excavation of

Bambooti where ceramics are said to be used for cooking and baking purposes (Duarah, 2014).

Table no 5.3: Explored Sites in Context

Site	Nature of the site	Cultural Material	Raw Materials	Water source	Present population	Current subsistence pattern
Daojali Hading	Open air site on hillocks of North Cachar, deep vegetation cover and bamboo forest. Geologically it falls under Barail range of tertiary period	Shouldered Celts and Cord-marked pottery	Slate, jadetite (Sarpentine rock)	Langting River, a tributary of Doiyang (Barail Range is the source)	Dimasa (Tibeto Burman)	Based on agriculture (Jhum cultivation), hunting
Mailu	Open air site near Langting River, surrounded by Daojali Hading (pahar) and sarkehading. Geologically it falls under Barail range of tertiary period. The vegetation cover is thick with deep bamboo forest	Shouldered celt, celts		Langting River, a tributary of Doiyang (Barail Range is the source)	Dimasa (Tibeto-Burman)	Based on agriculture (Jhum cultivation), hunting
Chaikam	Hill slope used for jhum cultivation. It is an extension of Meghalayan plateau and merges to Barail range. High trees and scrubs	Stone jars	Sandstone	-	Zemi Naga	Agriculture mainly Jhum
Bolasan	Slopes used for Jhum cultivation on high hills. It is an extension of Meghalayan plateau and	Stone jars	Sandstone	-	Zemi Naga	Agriculture mainly Jhum

	merges to Barail range. High trees and scrubs					
Sarutaru	Dotted with low hillocks relieved by alluvial patches. The hillocks are a part of Shillong plateau merges to Brahmaputra valley. Physiographically situated between high and low rainfall area	Celts, axes	Slate, sandstone	Digaru, a tributary of Brahmaputra	Khasi, Karbi	Agriculture mainly Jhum
Marakdola	Little upland area surrounded by low hillocks. Physiographically situated between high and low rainfall area	Cord-impressed pottery, red ware, buff ware	Kaolin clay,	Digaru, a tributary of Brahmaputra	Khasi, Karbi	Wet cultivation of rice, Jhum in nearest areas
Bambooti	A site near a small hillock, slopes of that hill, undulating plains, moderately high hill terrain, falls under Meghalayan Gneissic complex. Located above flood plains of Brahmaputra, situated near high rainfall area	Celts, adze, abrader	Slate, Sandstone	Right bank of Bambooti Chiring stream	Garo, Rabha	Jhum cultivation
Asalu	Highland topography but site nature is plain area on top of hill. Rich in vegetation cover. Geologically it comes under tertiary period	Stone tools, potsherds and iron fragments	Sandstone, shale	Mahur River	Zemi Naga	Jhum cultivation

Bogibori	Low hillocks, extension of Shillong plateau. Physiographically situated between high and low rainfall area	Stone tools and potsherds	-	Kolong River	Karbis, Tiwas, Bodos	Both Jhum and Wet land cultivation
Kekang Adong	Alluvial flood plain area of Karbi-langpi river. Physiographically situated between Mikir hills Jaintia hills, a plain land extended upto Nagaon District of Assam (Kopili Valley)	Potsherds	-	Karbi-langpi or Borapani River	Karbis	Wet cultivation and nearest hills are used as Jhum field
Langmet	A hilly area, an extension of Meghalayan plateauwith dense vegetation with high rainfall.	Potsherds and stone tools (collected by locals)	-	Karbi-langpi	Karbi	Jhum and step cultivation
Bichikkri	Entire area is hilly and plateau, extension of Meghalayan plateau, thick vegetation cover with higher rainfall.	Potsherds and stone tools	Quartzite and phylite	Karbi-langpi	Karbi	Jhum and step cultivation
Guwahati	Alluvial Plain land, flood prone area	Potsherds	Kaolin clay	Brahmaputra River	Assamese	-
Ambari	Left bank of river Brahmaputra, Alluvial (recent) plain land	Sculptures, Pottery Terracotta plague	Kaolin clay, glazed ware	Brahmaputra River	Assamese	-

Doyang-Dhansiri valley	Upper course of river Brahmaputra, alluvial (recent) plain valley, high rainfall area near bounded by Mikir hills from south	Inscription, sculptures of Mediaeval period	-	Doyang-Dhansiri River	Ahom, Kachari, Karbi	Wet land cultivation
Dibru valley	Upper course of Brahmaputra, both older and recent alluvial deposits, flood prone area with various erosional activity, high rainfall area, near Mishimi hills, arunachal Pradesh	Celts, axes and cord-marked pottery	Sandstone	Dibru River	Ahom, Kachari, Chutia, SonowalKachari, Moran, Motok, Khamti, Khamyak	Wet land cultivation
Mornoi (Goalpara)	Plain land on the bank of Dudhnoi-krishnai river, alluvial formation (recent), high rainfall area with thick vegetation cover	Pottery, Brick bats	-	Dudhnoi-Krishnai River	Hira potter community	Pottery making, plain land cultivation
Ganapati (Rani)	Foothills or Hill slopes on the bordering region of Ri-bhoi district, Meghalaya, extension of Shillong plateau. High rainfall area with thick vegetation cover	Pottery	-	Kopili River	Garo	Jhum and plain land (wet) cultivation

5.2: The relationship between the living system of the population and the material/ Cultural process for site formation (An ethnographic parallel)

Ethnography is the study of living culture, an applied science in the field of archaeology in order to put conceptual development on past material culture. Lawman remarked Ethnoarchaeology as a study of contemporary cultures with a view to understand the behavioral relationships which inspire the production of material culture (2004). According to the 'Anthropologist and Workers,' the Indian tribes can be classified as three different categories (Kalita, 2006):

- Tribal communities or those who are still confined to the original forest inhabitants and follow the old pattern of life
- Semi-tribal community settled in rural areas and
- Cultural tribal communities migrated to urban or semi-urban area

While discussing the living heritage of Northeast India in connection with past material culture, two leading ethno-archaeologists of Northeast A.A. Ashraf and S.K. Roy fetches out the problem of interpretation in ethno-archaeology due to the perishable material culture and absence of archaeological events in this particular region (Ashraf and Roy.2012). Ethnographical studies in Northeast India started in the first half of 19th century with the British occupation of the region. The first of such kind of study was initiated by Dalton (1872) followed by Risley's work in (1891Vol a and b). Godnin-Austen (1872) wrote about the ethnic groups of North-East India that was published in the Journal of Asiatic Society. Along with the officials, the contribution of the missionaries is worth mentioning as they have studied the manners and customs of different ethnic groups. The second half of the 19th c. can be called the formative period, in the ethnographic studies of Northeast India. With the establishment of Department of Anthropology, University of Calcutta in 1921, these studies regained its momentum and continued up to present time with the initiative of politicians and various scholars from entire northeast region (Sahu, 2002).

The prehistoric material remains of Northeast India can now be classified as belonging to the Neolithic cultural period, and the study of materials and the environment can be viewed from a recent climatic perspective, indicating that, apart from the Anthropocene,

a similar environment and landscape were present at the time. A recent study at Garbhanga reserve forest by Hazarika (2016) discovered that the ancestors of the current tribal population from the forest area used functionally comparable types of equipment during farming similar to stone tools found in archaeological contexts, demonstrating a material similarity of past and present. The stone tool assemblages found in this area are connected to a variety of belief systems, such as "Moon God," "Thunderstone," and used as medicine for stomach and headaches. The believes are basically manipulated by the hilly agrarian community who use the slopes for Jhum and Step cultivation, and when it rains, the soil washes out of the slope and tools appear from the ground. As a result, they are frequently thought to be "Thunderstone" that fell during a rainstorm. Simultaneously, stone tools are associated with negative concepts in some cultures while being revered as gods in others.

The study of current traditional living communities is always beneficial in establishing a cultural parallel with the past. The natural environment, the level of technology used, social interaction, and control that the culture maintained are all reflected in settlements (Chang 1972. 1-26). These characters came together to create a site where the people could get everything they needed. Here is an ethnographic sketch of two Dimasa communities living on the banks of the Langting River and hills on the bordering area of Nagaland respectively as well as Zemi Naga community living nearby the stone jars locality, which may bear some resemblance to the early population.

5.2.1 The village Mailu (N 25°29´04.9" E093°12´15.5")

Mailu, a Dimasa-populated village in the Dima Hasao district, is situated near Langting River, a landlocked village encircled by hills; Daojali and Sarki. To get to the nearby Langting market, which is about 25 km from Mailu, it takes four to five hours to walk to. There is a road that winds through the hills that connects the village. The Mailu village people can travel three to four hours to reach Nagaland by traversing the Sarki Hading Hill. They only prefer routes that take them quickly through the passes between the hills. There are three localities in the entire village; i.e. Mailubra, Mailu-hajong, and Mailu-haflai (see figure no 5.1). Mailu Hajong is situated close to the Langting River and has a plain landscape. Mailu-bra is in a small elevated area two kilometers from the river, while Mailuhaflai is at the highest elevation of the three and is close to the Daojali pahar.

Farmers, hunters, and pastoralists make up most of the population. Rice (*Oryza sativa*), sesame (*Sesamum indicum*), mustard (*Brassica)*, black gram (*Vigna Mungo*), and a variety of vegetables are grown using both Jhum (shifting) and conventional farming methods (which is common among people living in plain land). Their primary domesticated animals are buffalo and goats. Communal feasts and festivals occur occasionally and these feasts are only open to members of the same clan, with no outsiders allowed to attend not even any outsider's presence is acceptable. There is no private land ownership, and anyone from the Dimasa community can live there indefinitely. The societal norms have been in the hands of the village head or chief who is considered the head of the clan who has the authority to decide anything for the people living in that area. This is an egalitarian society; all are equal in terms of wealth and rank and the village head is selected from one among them.

The river where these community lives, is a tributary of the Doiang which originates at Barail range and flows a course of approximately 150 km upto its confluence with Doiang. The bed is rocky and full of pebbles and boulders and at some places hardrock. Geologically it comes under tertiary period or upper tertiary sequence. Lithology consists of massive bedded sandstone, shale, sandy shale and carbonaceous shales with interbedded hard sandstone and well bedded compact flaggy sandstone. Topographically it comes under highland topography and altitude ranges from 600-1200 m AMSL. The maximum and minimum temperature is 25.8º C and 5.3º C respectively. The area is rich in natural vegetation and also rich in fauna wealth with different kind of animals, reptiles and birds.

Figure 5.1: Distribution of Dimasa tribe in Mailu village, North Cachar Hills and Dimasa community living in the hill slopes at present (Pic Courtesy- Google Map)

Figure 5.2: Dimasa women carrying bamboo vessel for booming wooden sticks, vegetables from jhum field and hills.

The study of this Dimasa community is a substance of importance as the selection of area for habitation is largely linked with the landscape. By examining their pattern of living, we are able to understand the dynamics of their adaptations in that environment. The population is mainly agriculturist and collectors of sources available in nearby forests. The area is on the mid of two hills which are exploited by them both for hunting and Jhum

cultivation. Cultivated lands are yearly shifted from one area to another as per needed. Langting River flows through the middle of both the hills where rice and other food stuff are grown. The river has several small channels which flows through some narrow lane between dark rocky grounds with deep vegetation cover and as per the local inhabitants those areas are the first choice for hunt as animals come there for water. Most of the stone tools have been recovered by the people from these areas only along with from the Jhum lands (see figure no 5.3). Those small channels are fed by rainwater that joins the main river. Both Sarki and Daojali hill are the source of these small channels. Most of the time the community prefer group hunting as it is an easier to catch animals as well as an element of safeguard. Single game hunting is also there as told by one inhabitant that they hunt for selling the meat to the nearest market in exchange of their necessities and so the whole animal makes more if not divided. The people are hunters; it is not only a choice of amusement but related to their basic livelihood. For the game hunting, they use a peculiar kind of gun made of wood or bamboo with the pointing end made of iron, as shown in figure no 5.4.

Figure 5.3: Find spots of stone tools in Mailu village by the villagers

Figure 5.45: Gun Used for game hunting

The nearest area of movement as per mentioned are Nagaland and Langting market and both takes four to five hours to reach and importantly nobody prefers to stay at the market area and generally return to their home in the evening. Same type of evidence where hilly paths are used till today for daily or weekly movement for basic system of livelihood comes from Karbi-anglong and Goalpara of Assam. The weekly market at Baithalangshu has evidenced the movement of population representing Karbi people living in the nearest hills, a little distance away from the plains of Baithalangshu and aintia hills who used to come to the market for their necessities and they prefer to use the hilly paths which are shortcuts then the present municipality roads. Markets are opened early in the morning, and it takes few hours to reach the market, while they have to return in the evening. People from distant hills never prefer to stay at the market place. Similarly, Garo people of western Meghalaya, used to visit the local markets of Goalpara for their necessities and they also use the hilly tracts as mode of communication. This type of evidence shows movements to the nearest source of raw materials they needed for their daily life. These again show a present-day movement of different tribal population through the hilly passes as preferable routes even in the days of developed communication.

5.2.2 Semkhor: (N25°15´49.46" E93°18´07.54", Elevation: 1598 m AMSL)

Semkhor village is generally considered as the land of the Dimasa Sacred groves (Semkhor Daikho). The population presently living on the top and slopes of the hills and are believed to be a different clan from those Dimasas of Dima Hasao and they are considered as one of the earliest inhabitants of the region. According to the village headman they believe that their ancestors had migrated here long ago and they alleged since creation they continue to reside in the land. Gait (1926) also mentioned the tribe as the earliest inhabitants of Brahmaputra Valley; however, records do not allow us to trace back their history prior to the 13th c CE, from the rule of Bicharpathpha in 1361 to Dersongpha till 1536 (Barpujari, 1997: 36). As told, the village is very close to Nagaland or served as bordering region of Nagaland which is also noticed in their dialects. Historically the Nagas are said to be the original inhabitants of present day Karbi-anglong and Dima Hasao District of Assam. Their subsistence is based on agriculture with the specific and more common method of cultivation for entire Northeast India i.e., jhum, for which they used the slope areas downhill to their habitations as well as the nearby hilly areas, a quick reachable from their home. Their settlement choice also considers the nearby areas that they can utilize as much as possible. Apart from rainwater the village's closest water source is the Maibong, River about 12 km away, on which they rely more heavily for agriculture. Small seasonal streams are also a source of water for the inhabitants.

There are three localities of the tribe in Semkhor, living on the hill tops of almost opposite to each other (figure 5.5). According to population census 2011, there are 110 families residing with a village population of 431 of which 219 are male while 212 are female. Their main festival is Bushudima which is a post harvesting festival, celebrated when all the works from Jhum cultivation is finished. Similar harvest festivals such as Bihu of plain river valley Assamese community and Makar Sankranti in peninsular India are celebrated. Though related to harvesting, it is basically religious in nature. At present, before this festival begins in the end January every year, the Semkhor people used to go to other villages in the months of November and December, near Maibong and Langting to help them in clearing the cultivated jhum ground for wages of labour so that they can spend and celebrate the festival. Intermingling with other communities was absent in

earlier days. They isolate themselves during this festive period for a quite long time. They usually perform sacrificial rituals throughout the year if any emergency or pandemic comes. The two main rituals they have done are known as "*Mulukjangmishengba*" and "*Jaba Mishini Mishengba."* The sacrifices include animals and fowls along with fruits and other food items, offered to their presiding deities and by the priests (*Hojai*). The menhirs shown in figure 5.6 (a) is presently used by them as sacrificial stone and according to the size of the stone, the size of the sacrifice is selected. There are other menhirs haphazardly fallen in the entire village, which are memorial stones, in memory of the owner who offered buffalos for sacrifices for the well-being of the community. Keeping buffalo horn towards the front entrance of outside house is believe to be a symbol of strength and prosperity among the tribes' as shown in figure 5.6 (b). Figure 5.6(c) shows the ground where the village headman with the village person standing is the ritual ground of the community which is little elevated area within their settlement with high hill on the back side. Women are not allowed to move and stand there, and all the performances are done here by the village headmen with the presence of all the male members of the clan. IWomen of all ages hold similar responsibilities to men and perform equal duties in the cultivation field. Only pregnant women and women with a young child are exempted from agricultural operations. Marriage is exogamous and they stick among the same clan within the village but with different families. The Semkhor people cremate their dead and ashes are placed somewhere near their habitation site and a small mound is made as a memoir. Basically, the concept of secondary burial is present among them. Similar types of burial practice is observed amongst the Niamtre Jaintias of Meghalaya, where after cremation they collect ashes and bone fragments of the deceased and place them in a temporary crude stone structure and then transferred to a permanent clan stone (Meitei et.al, 2015). Normally burial grounds are on the lower and downhill from their habitation.

Figure 5.5: Semkhor village and a traditional hut

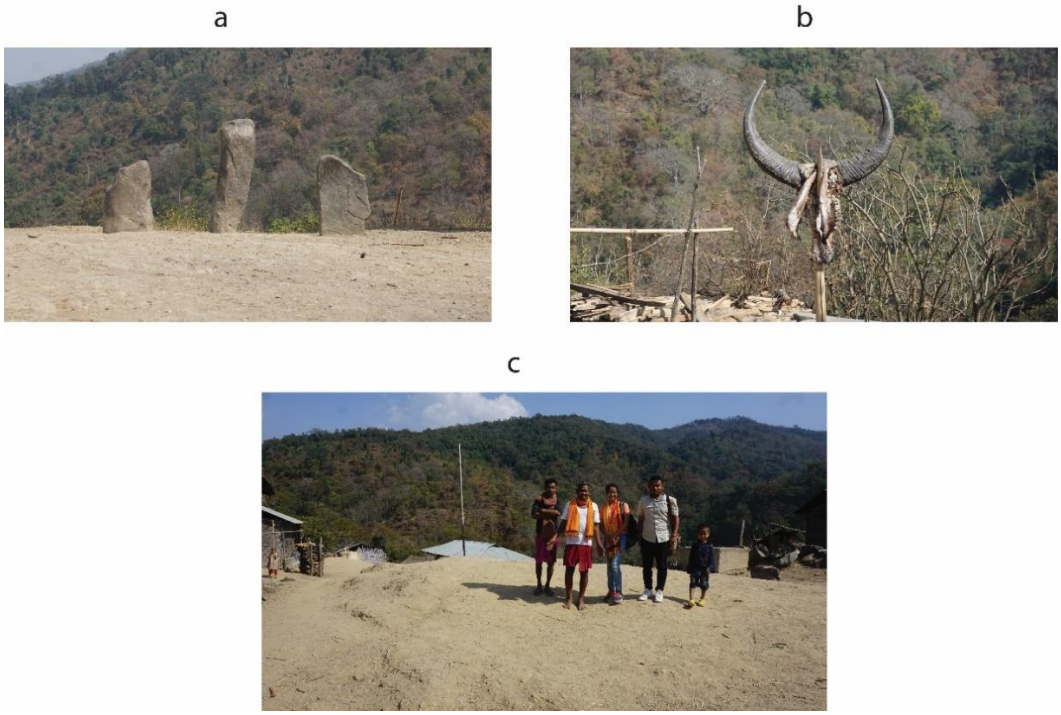


Figure 5.6 The sacrificial stone (a), the decorated buffalo horn (b), the sacrificial ground (c)

5.2.3 Bolasan (N25°12.750′ E092°58.638′ Elevation: 791-497 m AMSL): One of the significant communities in the Dima Hasao or North Cachar Hill District, the Zemi Naga people live in a village that provides evidence of stone jars on a nearby locality. They follow a traditional way of life (figure 5.7a). Most of them converted to Christianity towards the latter half of 19th century with the coming of the British but still they continue to practice a few religious festivals and dedicated their prayers to *Babumen*, their God.

The village is located in the Dima Hasao district, about 40 kilometers to the west of Haflong town. The houses are arranged in a nonlinear fashion, ranging from plateaus to hills. Their basic way of living is based on Agriculture i.e. specifically Jhum and hunting. Their habitational area is moderately elevated or plateau type surrounded by hills, which are the locations of stone jars. Houses made of bamboo strokes tied with reddish pink ties which is common only among Zemi Nagas. The huts are having thatched roof made of bamboo straws. Hunting of animals specifically wild boar, wild buffalo, deer and many numbers of fowls are done with gun made of wood or bamboo and iron (figure 5.7 b). Keeping wild animal skeletons from their hunt as house decoration is common among them as shown in figure 5.7 (c) and (d). Moreover, drums made of animal skin are mainly used in religious and other community functions. Those festivals are restricted only among the same community and no other member from other tribal groups are allowed to participate. The women folk of the community are engaged in different household works (see figure 5.8) in their traditional attire and traditional Naga jewellery, as well as their engagement into jhum field is also noteworthy.

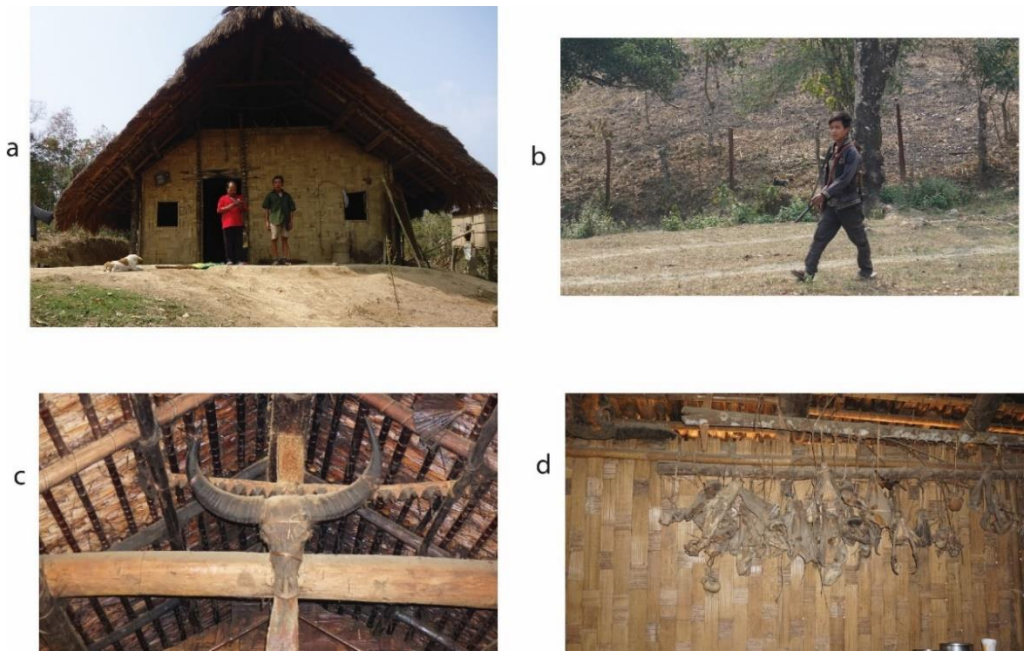


Figure 5.7: Traditional house exterior (a), A male hunter with equipment's (b), a buffalo horn as entrance decoration in house interior part (c), different skeletons of animals on side wall of house interior (d)

Figure No 5.8: Three Zemi-Naga women in three different household works; milling process of rice in traditional wooden tool (a), weaving of traditional dresses for women (b), preparing food in a traditional kitchen where pork's are smoked (c)

Figure 5.9: The local beer storing and pouring vessal

The bottle gourd, also known as Undraw, is used to store "Laopani" (local beer), and the right figure (see figure 5.9) depicts the serving vessel, known among the tribes as Umfung, which is kept below the roof of homes. This natural fruit is grown on the jhum land used both as a vegetable and vessel. It is like a flux in common term. Among many tribes of Northeast India this gourd represents honour and respect during marriage functions, death rituals etc. The Karbi community residing in the Karbi-Anglong region

associates this particular fruit with a prominent folktale. In this narrative, their tribal deity is believed to cultivate this fruit atop the Moring-Morong Hill, a nearby elevation within the Karbi-Langpi River valley. In response to a scarcity of foof within their community, the ancestors of the Karbi people reportedly descended from the hill, bringing this fruit to the earth or plain river valley and eventually domesticating it. This narrative offers a valuable glimpse into the cognitive perspective of the population concerning the process of taming wild food resources. It underscores their initial reliance on elevated terrain such as hilltops and slopes for agriculture activities before eventually expanding their cultivation practices to encompass the fertile plains along riverine areas.

Megaliths and memorial stone making are a common practice among different ethnic communities of Northeast and it is a continuous social practice having its origins from the time memorial. The stone jars near Bolasan, (figure 5.10) are a protected area by the Bolasan community though they do not have any ancestral relation with them nor they still practice any ritualistic rites related to the jars at present (Das and Krishnan, 2022). Such type of Jars has been reported from Laos and Philippines and are said to be used as bone repository (Thakuria *et.al*, 2016). The present burial system (see figure 5.10b) of the people living surrounding Bolasan area, are a sort of stone disc that are placed on the standing stone blocks. Same platform shown in picture number of same figure, is used as sitting platform by the people normally placed in an area used as playground. Thakuria remarked that similar type of stone platforms like arrangements are noticed in front of some houses, built close to main gate, which are directly not associated with any kind of primary and secondary burial system, but the family members of Zemi Naga make such stone receptacles for elders or for respected ones after his/her death, just like a memorial stone. Similiar types of dolmens were reported by Mills and Hutton (1932) from some other places of Dima Hasao. It may be assumed that these dolmen-like stone blocks are used for different purpose as sitting platform, memorial stone blocks and burial stone, which is a continuity of ancestral practices.

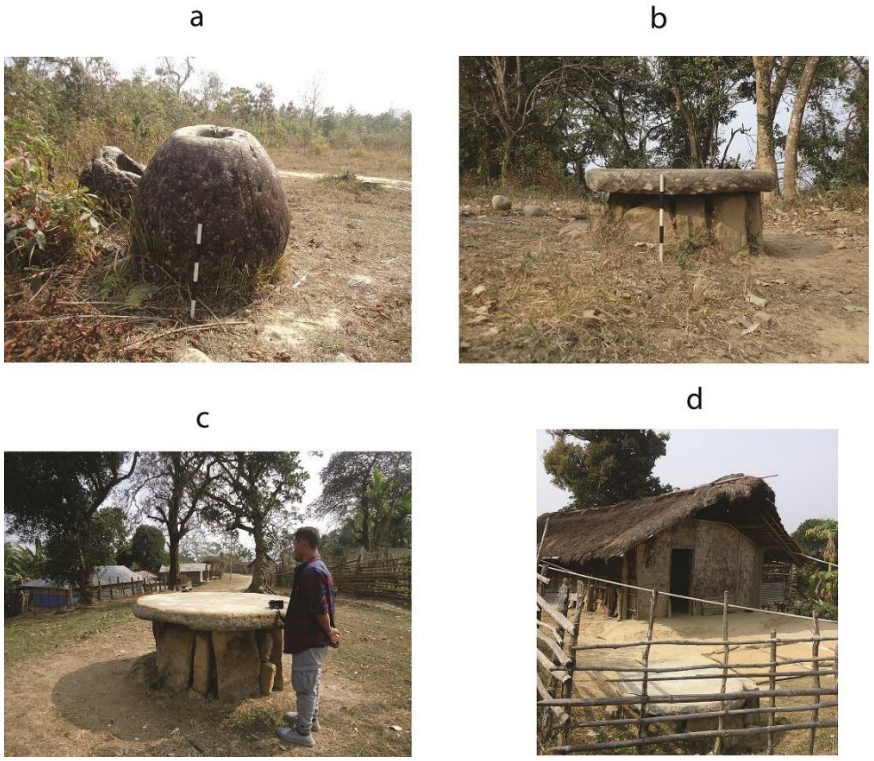


Figure 5.10: The stone jars (a), the present burial stone (b), the sitting platform (c), the memorial stone platform in front of house (d)

Although there are minor variations, yet almost all sites have a similar geographic layout. This horizontal belt connecting Meghalaya to Nagaland and Manipur has a similar type of land use, environment, and population relationship. Compared to the lower Himalayan region, the Barak Valley, and the plain Brahmaputra Valley, the entire belt is different. The valley region of the Northeast provides evidence of Early Historic cultural growth from east to west, which seems to be the earliest occupation of the area. Ambari, located in the centre of Guwahati City, is the only site from this time period, and it is followed by the sites of Goalpara, Doyang-Dhansiri Valley, Kapili Valley, etc. The only Prehistoric site, that has been excavated in Lower Himalayan region or Arunachal Pradesh i.e., Parsi-Parlo where three cultural phases was reconstructed i.e., Aceramic Neolithic, Ceramic Neolithic and Ferro-lithic. Although there are other sites, from where stone tools has been reported (See chapter 3). Till date, there is no site representing Mizo prehistory though from time-to-time celts have been recovered by villagers in nominal quantity mostly from the eastern part of Mizo hill. Earlier a thin slate axe and two small jadeite

tools have been reported by Sankalia (1974) from here. Hence it may be observed that the maximum number of sites representing prehistoric cultures come from this single horizontal belt where tools and other material evidences are almost similar though the North Cachar hill and Mikir hill of Assam gives the evidence of celt, axes, adzes etc, the Meghalayan and Naga hill shows much richer variety of stone tool assemblages.

According to Chang (1972), there are two types of site selection for settlements, where both horizontal and vertical model of arrangements are preferred. A vertical arrangement assumes the existence of a hierarchical society of discrete groups or communities, the kind that is more typical in protohistoric and historical sites, as opposed to a community of hunters, gatherers, and farmers. In contrast, a horizontal arrangement has a regular area or central location where everyone can assemble to form networks. They are regularly spaced to form a triangular lattice. The choice of the kind of sites has always depended on the maximum utilization of resources and the least amount of movement efforts, which can also be seen among the present ethnic community of the region. Similar to this, the choice of settlements or habitational areas is always influenced by the environment, accessibility to the closest area of exploitation for habitation, water sources, and a social environment. Agriculture is another significant factor that determines the distribution of sites in the study area. The gravelly riverbeds and sources in hilly areas have provided the raw materials required to produce stone tools. According to typological and technological studies on cultural materials, stone tools appear to have been used primarily for agricultural tasks like soil preparation, sowing, and harvesting, and the discovery of tools on sloping terrain supports this.

Though the Population-linguistic similarity among the North-eastern sites does not support the horizontal movement of population in a larger way as almost all the tribes belonged from Mongoloid branch divided into various sub groups and it is not clear from linguistical history as why that horizontal belt has larger concentration of sites. But it can be said that the Mongoloid population is basically the earliest human settlers who occupied almost all the areas which are found to be easier for movement. Here it is noticeable that the Brahmaputra plain population who are basically Siamese-Chinese who migrated at a very recent past and the Caucasoids who entered NE India from the western direction (Das, 2008) following the valleys of the Ganges and the Brahmaputra, speaks

Assamese (Indo-Aryan language) and particularly this area does not give any evidence of Prehistoric past.

When we see the ethnographic data, it is noticed that despite being two of the largest ethnic groups (Dimasas and Zemi Nagas) in the Dima Hasao District, Bolasan and Mailu appears to have a slightly more affluent material culture than Semkhor. The latter had a very basic living arrangement, only the bare necessities. However, they use the same strategy for survival. Religious celebrations are kept private in all situations, possibly as a form of purification or cleansing, and approaching any other community at that time is viewed as an act of impurity. One perception contends that a family has its own space from the start of sedentary life and that the geography of the area suffices to meet their needs for food and lodging. As a result, those families unite as a community, and the idea that "these areas belong to us and nobody should enter and hold them in authority" becomes a tradition. The ritualistic practices of today may reflect this. In a word, sedentism begins with agriculture when examining the fundamental elements of human existence, which are always connected to their means of subsistence and clothing. As time went on, a social structure became dominant, which was later bound by various belief systems. These were previously kept up or manipulated by our ancestors to keep the society, which became a tradition that their descendants had to adhere to.