CHAPTER IV

TRADITIONAL TECHNOLOGY OF THE BODOS

TECHNOLOGY

W. Brian Arthur considered Technology to be "once a means of production". However, with changing times, it transformed into "becoming chemistry". Technology, we are told, is a branch of knowledge, or the application of science, or study of techniques, or a practice, or even an activity.[1] According to, *Oxford English Dictionary*, technology is the application of scientific knowledge for practical purposes. Its machinery and equipment developed from scientific knowledge and it is the branch of knowledge concerned with applied sciences".[2]

Technology means the study of human activities, directed to satisfy human needs, which produce alterations in the material world[3] and it is the basic to human nature, which interacts deeply with human society and helps in producing an impact on the directions and pace of social evolution and it is almost contemporary with the starting of human history.[4]

Shereen Ratnagar mentions S. Lubar's definition of Technology as, "Technologies are the product of economic forces, and of social and cultural needs of the people concerned".[5]

Sanjeeb Kakoty mentions that according to Karl Marx Technology, *"... is not the articles made, but how they are made, and by what instruments, that enable us to distinguish different economic epochs. Instruments of labour not only supply a standard of the degree of development to which human labour has attained, but they are also the indicators of the social conditions under which that labour is carried out"* and *"Technology discloses man's mode of dealing with nature, the production whereby he sustains his life, and thereby also lays bare the mode of formation of his social relations, and of the mental conceptions which flow from them"*.[6]

Technology is a complex subject and it is not one "thing" but a complex of practices, methods, hopes, intentions, goals, needs and desires, besides all the actual technologies in hand and any one definition is not enough to define it comprehensively. And this changing pattern in the meaning of technology is making it difficult to define technology and this changed perspective has enriched the studies of technology as well as the outcome of the history of technology.

The study of technology includes more than machines, processes and inventions. A study of technology concentrates more on hardware (buildings, plants and equipment) traditionally but at present, the focus is more on software (skills, knowledge, experience, together with suitable organizational and institutional arrangement). Hence, manifestations of technology are many; while some are very simple, yet others are very complex.[7]

Bodos like any other civilizations of the world have been making use of the locally available natural means and resources for earning their living since the ancient times. Their knowledge and skills are found to have developed as per as the ecological, geographical, socio-economic and religious environment. The simple economical skills help enhance productivity by keeping the local socio-cultural values, environment and economic activities intact. The age-old fundamental indigenous activities such as defensive and hunting methods and practices, agricultural activities, constructing earthen embankments, fishing methods, *jou* (rice beer) making techniques, methods employed in sericulture practices, methods and techniques of spinning, weaving and dyeing, methods and practices in *kherai* (ritualistic dance or greatest religious festival) and *garja* puja (ceremony to purify the village community) and technology of constructing *Bathou* (traditional religion of the Bodos) altar*, Kherai* (religious festival) altar and *Garjasali* (place for performing ceremony to purify the village community), techniques or methods employed in playing traditional games and recreations, techniques and methods employed in celebrating traditional festivals and in performing traditional rites and rituals, house making technology and technologies applied in building communication networks etc. can be included under traditional technologies. The traditional technologies of the Bodos are based on the community's local knowledge, skills, abilities and efforts.

TECHNOLOGY OF DEFENSE AND HUNTING

Defense Technology

Collective Method

The village defense mechanism of the Bodos is based on the use of local material, labour and skill set by the villagers. The villagers are collectively or communally responsible for the welfare of the village. The Bodos like any other Neolithic people depended on collective traditions, where all the members of the community's experience and wisdom were counted and every body's cooperative effort was visible be it in clearing patches in a forest, draining a marsh, digging drains, protecting the village etc.

In the olden days, when there were not too many thieves and dacoits, the only enemy from where the Bodos had to protect themselves and their pets, was from the wild animals. At night when the dogs barked, pig, goat, cow, buffalo, hens, ducks etc. cried then the people became aware of the attack of the wild animals. The family members used to raise alarm by shouting, which awoke the villagers and the male members of the village used to drive away or if possible killed the wild animals. The villagers used to carry *jegab bunta* (twisted dry straw or bundle of straw) by lighting. Their weapons for defense included *jong* (spear), *ruwa* (axe), *sikha* (knife), *bwrla- tir* (bow- arrow), *Lauthi* or *pala thokon* (stick) and *batul* (catapult). They also used to shout, yell and beat drums while chasing the prey.

In olden days when there was no government, as self-dependent in nature, the Bodos moved to *sangrang* (higher) lands during floods and drought and they took measures for water supply to their paddy fields by constructing irrigation canals and earthwork embankments.[8]

Building fences

Rev. Sidney Endle marks about Bodo village and fencing as…

"*A Street separates the two or more lines of houses which compose a village. One prominent feature in the typical Kachari village cannot fail to strike the*

attention of any casual visitor at first sight. Each house, with its granary and other outbuildings, is surrounded by a ditch and fence; the later usually made of ekra reeds, jungle grass or split bamboo etc. The ditch, some three or four feet in depth, surrounds the whole homestead, the earth taken from it being thrown up on the inner side, i.e., that nearest to the dwelling- house; and on the earth-works, some two or three feet in height, so thrown up firmly inserted the reeds or split bamboo work forming the fence itself, this latter often inclining outwards at a very obtuse angle; so that the ditch and fence are not easily surmounted from outside by would-be intruders. A Kachari village usually abounds in domestic live- stock of various kinds, e.g., ducks, fowls, goats, pigs, cattle etc. ; and it can hardly be doubted that fence and ditch above spoken of are largely intended to prevent the cattle, pigs, etc. from getting into the rice- fields at night, and so doing serious damage to the paddy and other crops".[9]

The life style of the Bodos as well as their putting fences all around their homestead, which is a very common sight, speaks about their sense of privacy and esthetic beauty in putting up a residential house.[10]

The Bodos being the agriculturist people take a great care to protect their agricultural products from various live-stock. They traditionally built fencing around their agricultural plot by using *ekra* reeds, jungle grass or split bamboo. While building fencing by split bamboo, the length of the vertically placed split bamboo measures 3 feet long and the longer split *oua kami* (small bamboo sticks) are placed horizontally. (Sometimes by closely placing two to three *kamis* together). They are woven distantly back and forth. This kind of similar fencing is done to fence around the *maihung* (heap of dry hay for feeding the cows) in order to protect the hay from being eaten by stray animals. Again a round fencing of split bamboo sticks are built, to store dry straw to feed the cows besides *goli* (cowshed) measuring approximately 1 and ½ feet in height. In traditionally fencing the compound of the house with split bamboo sticks, a single bamboo pole is split into 4-5 pieces and *oua burka* (the largest variety of bamboo) is made into 4-5 holes in between and stab into the ground vertically and *oua kami* measuring 40-45 feet are inserted into the holes horizontally and again split bamboo sticks measuring 2-3 fingers in shape are woven back and forth vertically, making fence

measuring 6-7 feet in height. Sometimes, the Bodos also used areca nut leaves for building fencing around their dwelling houses. The areca nut leaves are placed hanging on split *kami*, which are inserted to *oua burkha*.

The same kind of fencing, which the Bodos build around their *bagan* (plantation) and around *maihung* (a heap of hay for feeding cows) is built for supporting the climber plants in the form of *janla* (post and fencing of bamboo poles). The fencing is placed horizontally over the bamboo posts measuring 4-5 feet in height and again tied with *raidwng* (cane rope) or *patw durung* (jute rope). This is still prevalent in the Bodo villages.

Construction of gate

The Bodos traditionally constructed gate by using woods and bamboos for defensive purpose. Two big wooden poles or big bamboo poles are inserted on the ground on both sides of the entrance and 3-4 holes are made on the wooden or the bamboo poles, where equal numbers of long bamboo pipes are inserted on the holes made on the wooden poles, which is pulled and pushed from both the sides to open or to close respectively known as *hankla*.[11]

Hunting Technology

The hunting form of technology is the oldest and most widely distributed in time and space. It has been regarded that the ancient hominids were probably hunters and gatherers 2.5 million years ago and this notion is further supported when stone tools first appeared in the archaeological record. In the beginning before the agricultural phase of man's history humans were hunters and used many hunting and trapping tools and this form of technology was actually practiced in so many places and among so many communities.[12]

Food has been one of man's foremost biological needs and thus obtaining food has always been his top priority. Man has always managed to procure food from the surrounding resources and developed an adequate knowledge about the resources as well as the technical means to exploit them for his survival, no doubt he had to struggle

with other wild animals for food but he also had to live in symbiotic relationship with other competitors and resources in varied environments.[13] Hunting and trappings depends mainly on weather and season.

Amarendra Kumer Thakur mentions the quotation of Upinder Singh, who writes that *"The beginning of animal and plant domestication did not mean the end of the hunting-gathering way of life. Communities who practiced animal rearing and agriculture usually continued to hunt and forage for food".*[14]

There are still large numbers of hunting and gathering societies in both the new world and Australia, and smaller number of them in South West Africa, parts of the rain forest in Central Africa, certain remote areas in South East Asia and neighbouring islands (Andaman & Nicobar Island) and in Arctic Asia. The same thing goes for Bodos, Premalata Devi writes, *"...Boro-Kacharis of lower Assam are seen to be practicing hunting (though occasionally) in the jungles of plain areas. This, of course, may be categorized under transitional stage of hunting and agrarian societies".*[15]

Hunting practices and type of weaponry employed are related and apart from traps, snares, and other techniques, the spear and the bow and arrow received most archeological attention in North America, with the spear being incontestably the older based on available evidence.[16]

The Bodos were early settler of the Brahmaputra Valley and the foot hills of Himalayas, surrounded by dense jungle and forest.[17] So, they had to struggle with nature for their survival and so also they had to go *mwihur khalamnai* (hunting) and trapping to fulfill their hunger. The Bodo hunters like other hunting community, in order to overcome their quest for food took part in foraging (plucking and eating berries while walking), predation (chasing a small animal such as a rabbit that happened to cross one's path), gathering or collecting roots in a container to carry home, trapping and netting animals and hunting (setting out to track down a particular kind of animal). All these required the making of appropriate tools and implements for each task.[18]

Bodos are good communal hunters. The communal hunting of the Bodos like any other communities was considered very important which shaped their manner of collecting food and social life.[19]

The Bodo-Kacharis knows many technologies for hunting by using various types of hunting tools since time immemorial. The hunting implements of the Bodos are mostly made by the Bodos themselves for their convenience and the artisans applied their artistic mind and expert craftsmanship.[20]

The Bodos have good knowledge about their hunting. Instruments for hunting birds and animals are made according to the food habits, inhabitants, foot print and stool of the animals.

Dr. Anil Boro has given good example of animal proverbial saying from perspective of the hunters and gatherers-

Moiya thoiyo aganao

Sesaya thoiyo khiyao

Manciya thoiya khugayao

Naya thoiyo phorkhainayao

i.e. The deer dies because of his foot print

The rabbit dies because of its stool

Man dies because of his speech

The fish dies because of slow movement.[21]

The Bodos technology of hunting is simple and it is largely based on the food habit, inhabitants, foot print and stool of the animals. For instance, where there are rabbits, there will be lots of stool around, which are round and a bit flat, smaller than goat stool. By seeing the stool, the Bodos assumed the presence of rabbit and placed the *sesa* (rabbit) trap for trapping it. In case of hunting deer, the Bodos looked for their foot prints, which are deeply pointed and on seeing their foot prints, they assumed the presence of *mwi* (deer) and trapped them.

Thus, the Bodos observed and gathered knowledge about the animals and birds according to their nature.[22]

The Bodos used some basic principles for trapping, such as camouflage, concealment, constricted locality, attraction and obstruction to alternative routes. The Bodos placed the traps in the middle of the route and on a beaten track, in such a way that the traps are concealed or camouflaged from the view of the prospective prey animals and they keep the area of intended attack narrow, so that the animals do not have wide venture opportunities to move about. In many a times, the Bodos placed attractions with a bait in order to draw the animals to the traps and blocked the sideways so that the prospective prey by any means does not use the side–ways.

Most of the hunting is carried out by the Bodos in winter season, when the paddy fields and vegetable gardens are fullest and at its best. The Bodos use many indigenous technologies and methods for hunting animals and birds like noosing, netting, shooting and spiking. Noosing and netting is the most common and widely used hunting technology of the Bodos. Netting is used for hunting bigger animals, while noosing is used for trapping of birds and small animals. Shooting and spiking are used for hunting bigger animals and while a catapult is used for hunting small animals in general and birds in particular. Besides the above mentioned technologies for hunting, Bodos also use knives, daggers, sticks, tins, axes and ropes for hunting.

Noosing

It is a trap used for capturing birds and small animals and it has three main components namely, the tension strip, the string and the trigger assembly consisting of a pin, a sliding rod and a holder trip. A silky, smooth, strong string is used to provide tension to the strip and is generally of dull colour, so that animals do not get attracted. The trigger and the sliding rod are made up of bamboo or sometimes hard wood stick. The noose is an extension of the tension string and a trap can be placed horizontally or vertically depending upon the nature of movement of the animals. Many traps falling in this category are *sesani phan*, *khiwar*, *khal*, *dorpi phan* and *je daobo jinthi*.

Sesani Phandw (Trap)

Sesani Phandw is used in capturing rabbit, fox or hare. This type of hunting is carried out by the Bodos during winter seasons. While mustard plants grow up, rabbits

come for grazing in the mustard field as the mustard plant and newly sprouting grass grows up in the cultivation area. The Bodo hunters on seeing the stool of the rabbit assume their presence in the area and put *sesani phandw* on the path where the stool can be traced. Sometimes even fox are also captured by this trap.

Khwisar (Trap)

This type of trapping is carried out in winter season, when the vegetable gardens are full of vegetables and the birds come for eating the vegetables. The Bodos place the *Khwisar* in the vegetable gardens or orchard to capture birds.

Khal (Trap)

This is used for capturing mice and mongooses, especially in winter season where the *phan* is kept open across the way by which the mongoose comes in paddy field and in jungles.

Dorpi phan (Trap)

The Bodos in order to capture *sesa* (rabbit), *jahamalai*, birds' etc. make another kind of trap called *dorpi phan*. This type of hunting is carried out in winter season, while mustard plants and crops grow up. When birds and animals come for grazing the crops or mustard plants, *dorpi phan* is placed on the path. For this trap, some soil is dug out in square shape on the path of the animals and bamboo made *dorpi phan* is placed on top of the ditch. The trap is placed in the middle of the route and concealed or camouflaged from the view of the prospective prey animals by covering with soil and grass. The area of the intended attack is not wide, so that the animals do not have wide venture opportunities to move about. In many cases, attractions such as bait are essential to draw the animals to the trap. The sideways of the trap is effectively blocked so that the prospective prey, alarmed by even little disturbances in the route, does not use the side-ways.

Je Daobojinthi

Je daobojinthi is used by the Bodos for trapping crane. It is placed in the open areas, especially near the river banks where the crane come for eating fish. So a fish is placed in the center of this trap to trap the crane.

Netting

It is used for capturing bigger animals and it is made out of jute, weighing nearly 15-16 kg and 20 *hath* in length. It required 30-40 people to carry the net. Here the Bodos applied the method of obstruction to alternative routes. The net is placed at a particular point or route or at the animal's lair and the hunters move beating tin from surrounding opposite sides for scaring the animals and thus obstructing the alternative routes and thus animals like deer, wild pigs or even tigers get caught in the net. Once they reached till the net, they are covered by the heavy net and killed by spears and bludgeons. Net falling under this category is *mwi sagra je* (net for hunting deer) and *hagrani oma je* (net for hunting wild pig).

Mwi sagra je (Net for hunting deer) and *hagrani oma je* (Net for hunting wild pig)

Mwi sagra je and *hagrani oma je* are used in hunting deer and wild pigs respectively. This hunting is carried out mainly in winter season, as well as during marriages, seasonal and agricultural festivals. The Bodo hunters move in group inside the jungle by shouting, yelling and beating tins or drums for scaring the deer and wild pigs and drive the animals into nets from the opposite direction of the animal's lair, which is usually small patch of jungle in the vicinity of the village, which would already be surrounded with nets where the animals fall an easy victim to the spears and beating of the hunters. Different people perform different duties. Some hold the net, some chase the animals to be hunted from the opposite direction, some kill the trapped animal by hitting with hammer or spiking and some carry the dead animal etc.[23]

Shooting

This trap is used for hunting bigger animals like tiger, deer, and wild pig and it is carried out by *jilit-bla* (bow and arrow).

Jilit-bla (Bow and arrow)

A bow is fitted to a bamboo frame, which is tied securely on one side of the track with the help of *patw durung* (jute rope). This levels the mid-trunk of the moving

animals and arrow made of pointed tip such as *sengmari tir* (with sharp pointed teethed end), *dofa tir* (without teeth) and *loutop* or *bwrlatop tir* (made out of polished cow horn fixed to the bamboo or wooden stick) is laid over the frame aiming at the track. A slight disturbance of the string operates the trigger and releases the arrow with full force and shoots the animal at the middle of the track and paralyses the animal in no time. Bodos used *jilit-bla* (bow and arrow) for hunting *mwi* (deer) and *hagrani oma* (wild pig), during marriage ceremonies, seasonal and agricultural festivals. The hunting of *mwi* and *oma* were carried out in both winter and summer seasons depending on the weather. In earlier period, only people who were rich and courageous indulged into *mwi* and *oma* hunting, as lots of courage and experiences was needed to go into dense jungle and forest.

Spiking

A bamboo pole or wooden pole with a spike or spikes is/are fitted at one end and secure the peg. The targeted animals are beaten forcefully by the spiked end of the bamboo or wood. Deer, tiger, wild pig etc. are hunted through spiking. *Jong* (spear), *sikha* (knife) and *dagger* comes under this category.

Jong (spear)

This was used by the Bodos for hunting deer and wild pigs. The hunters usually throw the spear at the animals to kill it. This type of hunting used to be carried out mainly in winter season, as well as during marriages, seasonal and agricultural festivals. Even to this day in some remote forest areas such practices take place.

Sikha (Knife)

Sikha is used by the Bodos for the purpose of clearing bushes, plants or trees on the way to the forest while hunting as well as it is helpful in gathering wild herbs and fruits.

Dagger

It is used mainly to stab the hunted wild animals in the process of hunting.

Besides the above mentioned, the hunting of the Bodos is incomplete without *ruwa* (axe). It was/is used for cutting shrubs, chopping wood and clearing the path in hunting and even in bludgeoning the hunted animals, bamboo pole or wooden pole**,** where the hunted animals were tied to the pole and was carried back home by two people, by holding both ends of the pole and the captured animals was tied to the wooden pole by *patw durung* (jute rope). They used *batul* (catapult) to aim the birds or small animals from little far of distance.

The Bodos have certain belief and practices associated with hunting. They worship Gods, whom they believe to be the controller of wind, rain, sun, air and fire. The Bodos used to pray to their deities for guiding them throughout the process of hunting. They prayed and offered to their deities before proceeding to the jungle for hunting and when they came back safely, they offered deer meat or pig meat or any birds to thank their deities for protecting them and also to guide them on their next hunting.

Hunting was generally not carried out by the Bodos on Tuesdays, Saturdays and Thursdays for their wellbeing. As far as their belief, those days were/are *barai gwsa* (strong days) and hunting on these days could/can be fatal. Moreover they regard Thursday as *Guru barai* (master day), when the *Guru* (Master) has to be worshiped for guidance.[24]

TECHNOLOGY OF AGRICULTURE

Agriculture is the chief occupation of the Bodos and rice is their principal agricultural product. The Bodos are also expert in preserving seeds for future sowing. They have their own indigenous devices, their technologies for digging dongs and construction of irrigation canals which are widely acclaimed. Besides rice, they cultivate different crops, vegetables, pulses, jute, sugarcane etc.[25]

Technology for Preserving Seeds

The Bodos used/use indigenous devices for preserving seeds which are widely acclaimed. The Bodos are expert in preserving seeds of paddy, pulses, garden

vegetables (*lai*, *lapha*, *mula* etc.) and the preserved seeds are called *zwlwi*. The first ripen paddy was considered the best and was kept in *laotai* (made of *lao* fruit outer skin) or *oua hasung* (bamboo tube) and *kholtha* (cover) a place specially meant for keeping paddy and pulses. After thrashing the grains, it was/is dried under the sun for maximum 2-3 days and was/is placed in *patw bosta* (jute sack) or in a bag made out of straw and bamboo. And thus they preserved seeds which were/are used for future sowing.

Technology for Digging Dongs and Construction of Irrigation Canals

The Bodo indigenous devices for digging dongs and construction of irrigation canals are highly acclaimed. Though this part of district is abundantly supplied with water by numbers of streams flowing from the lower spurs of the Bhutan hills, streams which for the most part of the year, flow in very shallow beds help in irrigation purposes. But whenever the rainfall is not sufficient, they themselves take measures to supply water to their cultivable lands by irrigation. They are expert in constructing irrigation canals, earthwork embankments for diverting water from rivers and canals into their paddy fields[26] and also expert in constructing earthwork embankments in between paddy fields for storing sufficient water in the paddy ground for cultivation. The Bodos divide their rice field into square blocks by *alis* (earthen embankment), made by raised mud to a few inches high to store water around the plants.

Indigenous technologies of irrigation consist of raising water from near-by streams by putting cross-bands leading water through *dongs* (channels) to the fields. Many of these channels extend over several meters and eventually some have attained the dimension of streams. But they are likely to be frequently damaged during floods, mainly by out-flanking and over-topping of water. But if the parent stream dries up, this system fails. The Bodos also construct ponds by damming dead courses of rivers in which rain water and seepage water are stored and led to the fields by channels. The constructed *dongs* (channels) and ponds are guarded by the villagers to prevent their use by others. *Sali* (paddy) cultivation is mainly irrigated by such system, as their water sources dry up during winter months. This practice has been continuing since time immemorial.

For the purpose of letting pass the excessive water from the paddy field, the Bodos make small passes through the earthen embankments, which is later sealed as par as the requirement.[27]

Regarding the construction of irrigation canals and earthwork embankments of the Bodos, Rev. Sidney Endle writes,

"...the people are especially skillful in the construction of irrigation canals and earthwork embankments for diverting water from river beds into their rice-fields and their efforts in this direction are very largely aided by their closely clannish organization. Whenever the rainfall threatens to be below the average, the village headman with his associated elders fixes on the spot whence water is to be brought from the nearest river to the rice fields. At this spot very rude and primitive shelters of jungle grass, etc. are put up and here all the manhood strength of the village, each man armed with hoe, dao, etc., are compelled to take up their abode until the necessary work has been fully carried out. In this way it will be obvious that the Kacharis have a highly efficient and very inexpensive "public works department" of their own; and vigorous efforts of self-help of this character would seem to be worthy of high commendation and hearty support".[28]

Technology of Cultivation

It is mentioned that in earlier times the Bodos cultivation was carried on by a crude method of *jhuming* or shifting, which involved cutting down jungles and trees and setting fire to them. Then holes were made in the land by digging sticks and then seeds were sown without hoe or plough,[29] but due to the scarcity of land, people learnt to use hoes, plough, etc. and took up to more complicated method of cultivation, where they cultivated *sali* (paddy), *ahu* (paddy) and *rabi* (agricultural crops sown in winter) crops in the same plot of land.[30]

The Bodo indigenous technology of cultivation involved/involves land clearance and preparation, ploughing, sowing, weeding, irrigation, harvesting, post-harvesting operations and transportation technologies.

The staple food crop of the Bodos is rice. But there are also other crops such as wheat, mustard, jute, pulse, bamboo, areca nut, banana, sugarcane, tobacco, etc. which the Bodos cultivate.

Rice Cultivation Technology

Rice grown by the Bodos can be classified under three main heads *maisali* (paddy), *asu* (paddy) and *baowa* (paddy).

Maisali (paddy)

The Bodos for the purpose of cultivating *maisali*, plough their lands with the onset of the monsoon (towards the last part of April or towards the first part of May). The first time ploughing is called *khahrainai* and the seeds which are selected from the previous year's crop are sown over the beds which is known as *khotia phwnai*. Cow dung is used to manure the seed-beds.[31] The proper area borne by the seed-beds and the area to be transplanted vary according to the fertility of the soil, time of transplanting along with some other factors. The seeds which are selected from previous year's crop are soaked in water for 2-3 days and allowed to germinate and then sown over the beds in the month from May-June. The period in-between is, preparation of the field is carried out for transplantation of the seedlings. After the reception of the spring rain, when the soil becomes soft, ploughing starts and it is repeated till the land is reduced to a rich puddle of mud,[32] the second time ploughing is called *sumer hwnai*. After the third ploughing, known as *pwmwnnai*,[33] land is harrowed and then small earthen embankments of few inches high, surrounding small plots of land, in order to retain water, are erected or in case of existing old earthen embankment, they are repaired. The work of lifting of seedlings is a tough in nature and requires stooping for hours in a muddy field under the sun, which is why the Bodos wear *khopri* (kind of hat made out of bamboo sticks and leaves of wild plants) to protect themselves. From the month of November the crop becomes ready for harvest and the operation continues till the middle of January. The reaper grasps a handful of the ears and cut them off about 0.2 meters below the hand.[34] A piece of straw is used to tie up each of the handfuls called *akha*, and scattered over the field as the cutting process goes on, 7 *akhas* make one

dangri (small bundle) and 6 *dangris* (small bundles) make one *bojha* (bigger bundle) and *baukha* (bamboo stick with pointed ends) is used for carrying a *bojha* (bigger bundle) which is affixed to the ends of the *baukha*, tied with *sinkhay* (a loop of cord) and carried across the shoulder and taken to the homestead. The straw is also taken for storage and used as fodder. The varieties of *maisali* (paddy) are *jwsha*, *maibra, pulpakri,* etc.

Asu (paddy)

There are two different conditions how *Asu* is sown broadcast, as early crop and late crop. Both are sown on high land, the former being sprinkled over the ground transmit in February and March, and reaped in May and June; the latter is sown in May and cut in September. When sown on marshy land, the jungle over it is cleared with the help of *bedha* (wooden rake) and burnt in May month.[35] The ploughing begins in the month of February and before that the fresh jungle grown in between is also cut down and burnt. The land for cultivation of *asu* rice is first ploughed five or six times to the depth of six inches, the clods being well beaten and harrowed. After the seed is sown, the ground is again ploughed and harrowed. The seeds germinate in about ten days if the land is a little wet, in about fifteen days.[36] When the young plants are six inches high, the field is weeded and thinned by *bedha* (a large wooden rake with teeth) being drawn across it. Two other weeding take place subsequently. Sometimes, the Bodos do not at once cut down the plants to the root at the time of reaping the corn, but take the ear off with about eighteen inches of straw, leaving the remainder of the stalk standing, for the hard straw is useful for thatching purposes; and for feeding the cattle or otherwise it is left without cutting as a soil fertilizer.[37] In case of heavy rainfall, if the flood water does not subside within a week or two, there is possibility of the crop to be destroyed completely.

Asu (paddy) is also sometimes, grown in combination with *baowa* (paddy), so if in case *asu* gets destroyed due to flood, *baowa* with longer stemmed may survive. *Asu* is also sown on higher lands and land is manured with cow dung. Sometimes, *ahu* is also cultivated as transplanted paddy in the same way as *maisali* (paddy). It is generally grown on irrigated land which gives quicker result as it ripens early.

Baowa (paddy)

In the flooded areas especially in the mid-March, *baowa* is sown broadcast. It is harvested in the same manner as *maisali* and it ripens in the month of December or January. It grows in a considerable depth of water, sometimes as much as twelve or thirteen feet. There are different kinds of *baowa*, some increase in length as water level rises and some stalks attain huge dimensions. If there is a sudden flood and plant remains under water for some times, it get destroyed but in case if by chance the water level rises gradually, the fast growing plant keeps the ears of grain safely above water.[38]

Wheat Cultivation Technology

Wheat is also cultivated to some extent as a *rabi* crop (winter crops), especially during the winter season particularly on high lands with good irrigation facilities. It is sown broadcast in October and November and reaped in May.[39]

Mustard Cultivation Technology

In order to cultivate mustard, the jungle is cleared by burning, Stumps are removed and the land is ploughed several times. Mustard-seed is sown broadcast in October and November and pulled in January and February. It is left for a few days for drying, then bundles are made by tying and are taken home for thrashing by cattle;[40] the young leaves are also used as food by the Bodos.

Jute Cultivation Technology

Jute is the most important fiber grown by the Bodos. Jute is sown broadcast in April and May.[41] The land is ploughed as many as even ten times in case the soil is hard. If it is not grown on land enriched by mud deposited during floods, manure (cow dung) is largely used.[42] After cutting the plants when they are about six inches high in September and October, the crop is weeded out and the plants that are removed are used as food.[43] Their leaves are stripped and tied in bundles and are dipped in ponds of water and left to decompose for half a month or even more. Then handfuls of stems are taken up, broken near the lower end, and beaten to and fro in the water till inner parts drop out. The fibers are then dried.[44]

Pulses Cultivation Technology

Pulses are cultivated on higher land. There are varieties of pulses such as *mati kalai* (a large dark coloured lentil) which take about three to four months' time to ripe, *mug* (smaller and lighter coloured lentil), *masur* (pink coloured lentil) and matar (peas), which are sown in October or November and take about six months to ripen and *arhar* (bigger yellow coloured lentil) which are sown in April and May which takes about ten months to ripe.

Bamboo and Areca Nut Plantation Technology

Bamboos and areca nuts are grown universally among the people of Assam in general. The plantation is hoed up and kept clear of wild plants. The trees are most abundantly manured with cow-dung.[45] The bamboos are used by the Bodos in building houses, fences and in making various house hold articles. The habit of betel chewing is one of their characteristics.[46]

Banana Plantation Technology

An important garden crop of the Bodos is the banana. There are many varieties of bananas which are grown by the Bodos, out of which the most important are, *manohar*, *chenichampa*, *malbhog*, *manua*, *athia*, *purakal* and *jahaji*. *Purakal* is used as vegetable. *chenichampa* is of a high yielding variety. *Malbhog* and *manua* are medium yielder and have very pleasant flavor. *Manua* is also used by the Bodos in prayers and offerings. *Athia* is considered cool and wholesome. *Jahanji* and *manohar* are regarded by far the best in quality of fruit. *Jahaji* is also taken as vegetable. The plantation of banana requires cultural and manure practices as they are very extracting in their soil and get degenerated unless proper care is taken.

Broadcasting of banana is done by employing suckers which arise at the base of their plants from the underground rhizomes. Suckers, possessing long narrow leaves are removed with a bit of the rhizomes from the mother plant and are planted in holes prepared in the field. The size of the holes usually varies according to the varieties. Generally holes are 45 cm wide and deep respectively and are manured with cow dung and ash. Young plants take from 18 months to 2 years to flower.

The Bodos use the whole banana plant from leaf to root for different purposes such as the terminating bud is used as vegetable, the leaves and sheath are used as substitute for dishes. The sheath tumblers are made for serving food.[47] The plant in general is used for decorating gates in various ceremonies. The leaves are used in building tent in various ceremonies. Banana trunk boats are also made during floods, etc.[48]

Sugarcane Plantation Technology

Sugarcane is grown by the Bodos normally on high land by well manured with cow-dung. For broadcasting the carefully preserved of the tops of the best canes produced in the previous harvest are taken. The hoeing is done till the land is reduced to a fine tilt and the tops are planted in ditches between April and June. The fencing is built with split bamboo and a solid hedge of *rohar dal* (bigger yellow dal) or *koklin* (a variety of pulse) is generally grown as barriers to protect them from stray animals. The continuous hoeing and weeding are necessary. In August the leaves are tied up around each cluster of canes. Then the earth from the edges and ditches are reversed and finally the canes stand upon ridges with ditches in between.[49]

The Bodos sometimes indulge in making *gur* (jiggery) or *metai* (jiggery) out of sugarcane juice.[50] The traditional tools and technology for making *gur* or *metai* (jiggery) are with two wooden rollers fixed side by side in a trench hollowed out of a heavy block of wood and at top of the crusher a stout bamboo pole is fixed so that the movement of the rollers is regulated by the pole. The driving power is supplied generally by the villagers themselves but buffaloes are also used. Handful of sugarcane is placed between the rollers and crushed. The juice tickling from the trench is kept in an earthen vessel.

The juice is collected and placed in *lohani sarai* (iron pan) for boiling. The refuse that accumulates on the surface of the juice when boiling is strained out by a small bamboo sieve having a long bamboo handle. Another same kind of sieve is used for controlling the boiling juice constantly and the juice after it is reduced to the proper state is transferred to another vessel, scooped out of log and stirred for some time to cool. The finished *gur* (jiggery) is stored in earthen pots or tins.[51]

Tobacco Plantation Technology

Another important garden crop of the Bodos is tobacco and it is grown in the new alluvial soil. Carefully the seedlings are raised in manure beds in the months of August and September.[52] Until the plants reach about three-four inches high, a proper care is taken; cultivators build covered enclosures of thatch over the plants to protect them from the violence of rains.[53] In the beginning of November, the plants are transplanted into the field which has been reduced to fine condition by repeatedly ploughing and harrowing and marking field off into small squares. One plant is placed at each of the angles of these squares. Ten or twelve leaves are allowed to grow on each plant and more leaves are picked off as they appear. The leaves are first gathered in February and March while the second cultivation takes place after three months, the quality of the crop becomes inferior. After the leaves are gathered, they are dried in the sun for one day and are stored in dark room. In a month, the leaves are bound together into bundles and ready for use. The leaves are also kept in shade or else into *oua hasung* (hollow bamboos) and allowed to ferment. When the tobacco is destined for pipe, leaves are piled in heaps till they ferment, then cut into pieces and mixed with molasses when it is ready for *hookah* (smoking tobacco). [54] This has been in practice for decades together.

The Bodos, besides above mentioned, cultivated and planted many other fruits and vegetables such as mangoes, jackfruits, lemons, coconuts, etc. Among vegetables they grow spinach, arums, yams, *lapha* (a malva verticallata, a garden vegetable), *mula* (radish), sorrel, bringal, potatoes, onions, garlic, chillies, ginger, turmeric, etc.[55] And for the purpose of climber-vegetation like *lau* (gourd), pumkins, gourds, etc. they build *janla* (kind of fencing of split bamboo or small bamboo pole and by placing small bamboo branches over the fencing) and place it over and tie on bamboo posts 4-5 feet above the ground, where the vegetables creeps bear fruits. It allows the climber plants to spread freely and especially in summer seasons, protect the plants from watery surface.[56]

From the ancient times the Bodo people have been earning their livelihood mainly through agriculture and there are many myths, beliefs and festivals in the Bodo

society related to agriculture. The Bodo people follow certain religious functions and observances while sowing of seeds, harvesting, etc.[57]

Bodos worship God, the controller of wind, rain, sun, air and fire. They perform *pujas* (prayers) to different deities to get sufficient food from agriculture, as agricultural product is the main source of their livelihood. Their agricultural *pujas* or festivals are celebrated just before sowing of seeds, after the harvest of the crops and sometimes in between.[58]

TECHNOLOGY OF FISHING

Based on a general survey of the fishing traps and trapping technology of various parts of India, it can be said that there is a striking similarity between the various devices used in different parts. The diverse tribes use remarkably identical types of devices. Traps are the earliest devices that man ever resorted to for catching fish, long before nets evolve. Some of the earliest types of traps are still being used in different parts of the world and interestingly, most of the traps, being fixed engines, do not even need continuous attention and vigilance on the part of the operator but can be left to function and secure a catch while the owner is away reposing or engaging in other occupations. Diverse fish traps, ranging from the simplest to the complicated and amazingly effective types, are in vogue in different waters of India.[59]

William Robinson writes, "*Fishing forming by the far the greater part of the animal food consumed in the country, fishing is a pursuit carried on by the natives with exemplary industry. During five months of the year, when the river are much swollen, fish are very scarce; for they have then such an extensive range, that they are not easily taken: but as the inundation subsides, and when the fish are confined within narrow bounds, they are easily secured by various simple means which the natives employ".*[60]

Among the Bodos, fishing has great socio-cultural importance in the society and traditionally a Bodo man without the ability to make the basic fishing tools for him got lesser importance in the society. According to the Bodos there are two types of fishing – individual and community fishing. Individually, people can fish in water which is not

deep and in case of community fishing they go for deep water.[61] Bodos usually go for fishing in the month of April and May in summer and in winter in the month of December to January where the water of the lakes, ponds dries and the water level of the river becomes low and dries. Besides, as the Bodos generally reside near the rivers, they go for fishing whenever they wish especially when they are free.[62]

Rev. Sidney Endle writes, "The Kachari often varies his diet by adding to it the proceeds of the chase and by fishing in the numerous shallow hill-streams in which his country abounds". Fish- eating practice is a pre-Aryan custom and it is said that in Assam, it might have been borrowed from Mongolian people as they introduced different devices of catching fish, like *langi je* (fishing net), *khokha* (fishing trap), etc. are of Tibeto- Burman origin.[63]

The fishing operations of the Bodos are mainly led by women on certain given dates and sometimes accompanied also by a group of villagers. They fish on a certain stream, or a number of streams, sometimes the distance extend for over several miles.[64]

The Bodos use many indigenous technologies and methods for fishing such as grappling and wounding, line fishing, trapping, areal trapping, bag netting, seining with nets, lifting with nets, falling gear, gill and tangling with nets and other methods.

Grappling and Wounding

The Bodos traditionally use number of fishing tools for grappling and wounding, which they push, pierce and shoot in order to fish. The Bodo traditional fishing method through *suli* (spear), *Jangkhra* (multi-Pronged Spear), *jilit- bla* (bow and arrow) and knives falls under this category.

Suli (Spear like)

Khusia (eel fish) is a kind of fish that dwells in holes or muddy and wet lands underneath ponds, so it is hunted by stabbing the *suli* to the slippery eel fish into the muddy land or wet land rapidly and firmly.[65] The *suli* is used for stabbing at the fish

coming to shallow marginal areas of water and on the part of the fisherman special awareness and skillfulness is required.[66]

Jilit-Bla (Bow and arrow)

Jilit and *bla* are used for fishing. The whole process of fishing with bow and arrow is called *na gaonai* (shooting fish), which is carried out in clear and flowing river and streams. This gear is used for fishing large sized fishes. A bow is fitted to a bamboo frame, which is tied securely on one side of the track with the help of *patw durung* (jute rope), *raidwng* (cane rope) or *theoul* (split bamboo rope). This levels the mid-trunk of the moving fish and arrow laid over the frame aiming at the track. A slight disturbance of the string operates the trigger and releases the arrow with full force and shoots the fish at the middle of the track and paralyses it in no time.

Jangkhra (Multi-Pronged Spear)

Jangkhra is used by the Bodos for fishing during the early part of monsoon in flooded areas, by holding the bamboo handle of the multi- pronged spear which are made by joining 10-12 umbrella sticks. Major fishes like crabs, cat fish etc. are hunted with this. [67]

Sikha (Knives)

The Bodos used/use knives to hit and catch fishes at shallow water. For this purpose, they carried/carry lanterns or *sakhi* (open lamp) and attract or blind the fishes with the help of light at night. When the fishes come near, these are caught by hitting or cutting across the body by knives.[68]

Line fishing

In this traditional method, the Bodos fish by putting food such as earthworm on a hook to attract fish. The food on the hook is attached to a line in such a manner that it is impossible for the fish to escape from the line after it swallows the lure. The fishing

through *Bwrsi* (fishing stick) and *batha* (floatable stick for fishing) comes under this method.

Bwrsi (Fishing stick)

The Bodos fish through this type of method especially during monsoon months and this type of fishing is done by inserting insects like earthworm, larvae of bee, grasshopper, etc. into the hook. The hook is tied with the help of nylon or parachute thread. While *bwrsi bwnnai* (fishing with stick) is operated by an individual holding the *bwrsi*, which is prepared from a long stick or stake of bamboo and long rope tied at the top end of the stick with sinker and lured hook thrown at certain depth of river water holding the stick at the other end. When fish take the lure, a jerk is felt by the fisher and then he pulls out the hooked fish quickly. In this process, the mouth of the fish stays wide open stuck to the hook which make it impossible to escape.

Batha (Floatable sticks for fishing)

Batha on the other hand is kept on the surface of the water on floating object such as a reed or a twig, by inserting insects into the hook, which is tied and coiled to the middle of the *batha* with nylon or parachute thread. This type of fishing is done on less current water. Fishing with *batha* is called *batha sanai*, where the fisherman learns about fish being hooked by seeing the coiled thread being unfurled when it comes to eat the baited hook.[69]

Trapping

The traditional trapping of the fishes by the Bodos are done through traps, where fish enters but cannot come out. These traps are made in such a way that they have one or more chambers which get closed when the fish enters in. Many kinds of traps are used by the Bodos where some are closed on all sides except for the entrance and some are kept erected to block the ways. Fishing through *sen* (trap), *Khokha* (trap), *patha* (trap), *khakhi* (trap), *Burung* (trap) and *khurai* (bowl) falls under this category.

Sen (Trap)

Sen is put in the embankment of paddy field where water is left to flow through. Catching fish with this instrument is known as *sen sanai* in Bodo. The inlet tunnel with inwards pointed bamboo strips is made in such a way that fishes can easily enter into the trap but cannot come out of it easily.[70]

Khokha (Trap)

This is a cone-shaped fishing trap used by the Bodos; the upper part is wider and the lower part is narrower. [71] This is placed in small stream with the mouth facing strong current.[72] The fish coming along with water therefore enter the trap and as a result of conical at the bottom end, the fishes get trapped head-on. Then after a day or night *khokha* is taken up from the place to see whether any fish has been trapped. This kind of fishing is called *khokha sanai* in Bodo.[73]

Patha (Trap)

The fishing through *Patha* is done by placing it over the fish in the shallow water and the lower surface of the basket closely clutch the ground and the enclosed fishes are then taken out by the hand through the opening in the upper part of the instrument.[74]

Khakhi (Trap)

It is an elongated conical fishing trap.[75] The water flowing over low-lying fields especially in rainy season is synchronized through a number of small gaps. These traps are set in these gaps against the current of water. Here fishes enter the trap which flows along with water.[76]

Burung (Trap)

Burung is somewhat similar to *sen* (trap) and this is rectangular in shape. This fishing gear is placed vertically against current of water where the fishes mainly the small ones enter through several inlets which are made very simple without any spine like inward directed structure in it.[77]

Khurwi (Bowl)

In *Khurwi sanai* (trapping with bowl), feeds of rice husk and rice malt, a bowl covered with thin piece of cloth is required. A small hole is made in the middle of a thin piece of cloth and inside the bowl a small solid or paste prepared from rice malt or rice husk is placed. The bowl is dived into the river or in the pond. Small fishes enter into the bowl through the hole made. Catching fish with this instrument is called *khurwi sanai*.[78]

Aerial Traps

This method is used by the Bodos for fishing and targeting the fishes having the habit of jumping out of the water whenever in danger or face obstacles. The fishes are provoked to jump out of water by putting certain obstacles and are caught in the air by special devices hindering their smooth movements. Catching fish through this method is carried out by the Bodos by constructing mud ditch.

Mud Ditch

In this method which is generally practiced during post- rainy season, a mud ditch is constructed to block a water channel. A mud ditch measures about 40-50 cm in width. By creating a muddy pit in between the sizes of the ditch are made high. The fishes try to jump over the ditch and fall in the muddy pit when they encounter the obstruction. Then they are caught by hand.[79]

Bag Netting

In this type of method, nets are used like bag and these nets are vertically kept open through fixed frame. It opposes forces of floats into the mouth of the net. The net is horizontally extended by the current of the water. Thus the fishes entering the net are filtered and caught. Catching fish through *Sandanga* (bigger sieve)*, Zekhai* (trap) and triangular net falls under this category.

Sandanga (Bigger sieve)

This is used for catching small and medium size of fish. In pond water, below a patch of floating water, in wild plants- contaminated regions, fishing with this gear is carried out. The small fishes taking shelter inside thick roots of wild plants in water are caught when the thick roots of wild plant are shaken on the sieve, as the result of which fish hiding inside the root tufts are forced to come out and fall on the sieve from where they are picked by hand.[80]

Zekhai (Fishing net, a contrivance made of bamboo splits)

Fishing with *zekhai* is simple but very effective. It is done by holding the handle and on the rope firmly. The holder enters usually two or three feet deep water and lowers the basket to the bottom keeping the open end in front of her and then making a splattering with her feet, she moves to drive the fish and other prey into the open mouth of the basket which are then quickly lifted and transferred to the *khobai* (fish-basket). This is done on the bank of the river, lake, on the muddy area etc. Rev Sidney Endle writes, *"Armed with zakhai, a number of women, sufficient to extend across the entire width of stream, enter the river together, whilst another party commences operations fifty or a hundred yards away. The two parties work steadily towards each other, so that such fish as are not caught on route are gradually driven into an ever narrowing stretch of water: and as a rule not many fish would seem to escape. The whole scene is a very merry one, accompanied with much laughter and pleasing excitement; and more particularly, as the two parties of fish-catchers approach each other, and the fish make frantic efforts to escape their doom, the fun becomes fast and furious. A fish-catching expedition of this kind is invariably looked upon as a village holiday, the entire population not infrequently taking an active part in it".*[81]

Fishing with *zekhai* is called *na gurnai* in Bodo. This fishing instrument is generally used by the Bodo women but men also use it sometimes. Bodo damsels sing as they go for fishing which is their favourite hobby or leisure time activity in a river or a pond during community fishing:

Phoi hai logo phor
Thuhai logo phor

Dubli khonoyoao
Zugugu na gurni
Na monini dikharao
Phicai monini dikharao
Bikha couyoi couyoi
Thoinoco goco zacoi
Cuni khaphalalai
i.e. Come oh friends
Let's go oh friends
To the corner in the paddy field
To catch fish
Disappointment in not getting fish
And not getting a husband
Make us willing to die
Striking hard at the bosom
We have a cursed fate.[82]

Triangular net (Pushing triangular net with fixed frame or fixing it at some particular place)

Bodos fish with this net in shallow water which is triangular in shape. It is a kind of a net bag. It is done by holding the handle of the frame and dipping it into the water and pushing it forward for some distance along the bottom and then by lifting the net. The fishes get caught in the process.[83]

Seining with Nets

In this method of fishing, a portion of open water are enclosed with this net and pulled slowly and steadily to a fixed point on the coast where the caught fishes are manually caught. *Bidhan mara je* (fishing net) falls in this category.

Bidhan Mara Je

It is like a mosquito net measuring at least 5 meters long and 2-3 meters in breath. The surrounding boundary is knitted with tread lining with parachute string like

strong rope. On the two sides of the breath, handles of bamboo is tied according to the size of the net and on the one side of the net *guli* (sinker) is knitted to make the net dive into water. *Guli* is a kind of iron measuring one inch big and long having hollow in the middle. The rope is passed through the hollow and knitted with thread. It requires two men to hold in two sides and pull the net to catch fish.

Lifting with Nets

This type of fishing is done by lifting the net from the water immediately in order to catch the fishes which are moving over it. *Lab je* (fishing net) comes under this category.

Lab je (Fishing Net)

Lab je have four corners where each corner is tied by bamboo laths crossing the laths to each corner of the net. The fishing handle is tied up just to the middle of the crossing point of the laths as the handle of fishing hook. This kind of net is placed on the flowing slow current water and is lifted by pulling the handle of the pole. The fisherman picks the fishes caught by hand. Women and children operate this fishing gear and this gear is highly used in community fishing of the Bodos.[84]

Falling Gear

In this method fishes are caught by making the fishing gear fall over the fish inside water from above. *Polo* (trap), *zulakha* (trap) and *kheoali je* (fishing net) falls under this category.

Polo (Fishing Trap)

The *polo* with two openings one at the top and the other at the bottom resembles a bell in shape or a gigantic wine glass with a short stem made of bamboo work. It is used by the Bodos to catch various kinds of fish in shallow water. In order to fish with this fishing gear, a person needs to walk into the water and presses it down at his front and puts his hand through the opening at the top and grabs the fishes trapped inside the

polo in the muddy water. Catching fish with this gear or instrument is called *polo jwng na homnai*.

Zulakha (Fishing Trap)

The fishing operation by this gear is similar to that of *polo* but since the inter space between adjacent woven bamboo sticks are small very small fishes are caught through this gear. [85] Sometimes, rice bran bails are used by the fishermen to lure the fish for trapping.[86]

Kheoali je (Fishing Net)

This is a fishing net, which is operated by a single person. [87] The fisherman operates it by holding the rope that passes from the center and the border of the net are inwardly turned over in order to form pockets. Then the net that is folded carefully is thrown into the air with a full strong swing down inside the water. Because of the weights attached to the net, it sinks to the bottom and circumference closes. The fishes are entrapped within the pockets which are present along the lower margin when the fishes inside the net try hard to escape. Then the rope at the center is slowly pulled till the border is closed.[88]

Gill and Tangle Nets

This method of fishing is done by fishing nets; the size of the mesh of the net varies depending on the size of the fish to be caught. These are regarded as vertical wall of netting which are placed erect in water through floaters and sinkers and are perpendicularly set to the direction of movement of the target fishes. In this process, the fishes are caught when they get gilled or entangled while trying to pass through the net. This type of method of fishing is carried in all depths of water ranging from shallow wet lands to deep rivers. Fishing nets such as *pasi je, langi je* and *ashra je* falls under this category.

Pasi je (Fishing Net)

In order to catch fish through this net, the net is generally set freely by fastening to anchor or even the net is simply allowed to drift for some distance especially in

flowing water at streams as the fishes usually lie in the surface and at the column zone of the water at the stream site. In order to drive the fishes into the net, the water is stirred with bamboo poles and fishes are caught when they get entangled in the loosely set net. [89]

Langi Je (Fishing Net)

This is also fishing net and is made of very thin nylon material. The Bodos use this fishing net to catch more fish at a time in the pond, lake, river and river banks etc. More than two people are required for catching fish with this fishing net and fishes that are gilled in the net are caught. Sometimes this fishing net is fastened to the anchor and set or sometimes the floats are allowed to stretch and in order to drive the fishes to the net a bamboo pole is stirred in the water. Sometimes this net is also left overnight tied against the current of the water.[90]

Ashra Je (Fishing Net)

The fishing technique through this net is similar to fishing with *pasi je.* The fishes are gilled in the net and caught.[91]

Other Traditional Methods of Fishing

Besides the above mentioned methods, the Bodos practice some other traditional methods of fishing by dewatering devices and de- oxyfication. Fishing by *chilli* and community fishing comes under this category respectively.

Chili (Water Lifter)

Chili or water lifter is used by the Bodos to lift water from pond or lakes for the purpose of fishing. It involves simple method of fishing when a pond, ditch or marsh, has become nearly dry. The fishes of a large space are collected into a small pool which is divided by dams of mud and then having thrown the water with the help of *chili* from each pool successively the fishes are caught.[92] Sometimes the Bodos use *twarsi* (plates) or *gambla* (an open vessel basin) too instead of *chili* as water lifter which helps them to

throw the water at *zekhai* or at triangular net with fixed frame or by fixing it at some particular place where fishes are stuck.[93]

Community Fishing Method

In community fishing method, the entire village community generally takes part in fishing, which are carried out in community pool of the villages such as *beels*, streams etc., especially in winter season when the water level becomes convenient to fish. In this method of fishing the villagers adopt bare hand method accessibly and grasp the fish in water, because when large number of people fish the water becomes muddy and the fish becomes breathless and swims to the water surface.

Again, groups of people fish in stream or *beels* by constructing artificial barrier with mud. The entire group of people jump over the barricaded water and catch the fish with the help of traditional fishing gears such as *polo* (trap), *zekhai* (trap) etc.[94]

Khobai (Cylindrical bamboo basket for storing fish)

The Bodo traditional fishing is not complete without mentioning *khobai* and it is like harvesting pots. The captured fishes are kept in *khobai.* While fishing in waist-deep water as well as in knee and ankle deep water, the *khobai* is tied with jute rope around the waist of the fisherman to keep the caught fishes.[95]

TECHNOLOGY OF *JOU* (ALCOHOL) MAKING

The Bodos from social and cultural point of view are very rich and varied. They have their own technology of *jou* (alcohol) making, without which it is believed that they could not have laboured so hard. The Bodos are expert in preparing alcohol or beer from rice. The Bodos make two types of *Jou– Jou bidoi* (*giswi*) or rice beer and *Jou goran* or fermented liquor or distilled liquor. *Jou* being an integral part of the socio-cultural life of the Bodos is traditionally used in marriage, religious functions and in all social ceremonies including *enkham godan janai* (new rice eating ceremony), funeral and death rituals. Bodo festivals like *baisagu* (a New Year festival), *domasi* (harvest festival) and *kherai* (a ritualistic dance) cannot be accomplished without these drinks.[96] The Bodos greet guests by offering *jou* and they drink *jou* to refresh themselves after

whole day work too. Both *jou bidoi* and *jou goran* are prepared by the Bodos themselves. Bodos depend upon wild resources around them for their needs and thus possess fairly good knowledge about the plants to be selected that give improved quality of *jou*. They also believe that the alcoholic propriety works as medicine to cure diseases.[97]

Technology of Preparing *Amao* (Condiment)

Preparation of *jou* (alcohol) is not achievable without preparing a medicine called *amao.*[98] In order to prepare *amao*, some amount of uncooked rice is required, which is then added to some pieces of *mokhna* or *lwkhna* leaves (a kind of wild plant with red flower), some leaves of *kanthal* (jack fruit) tree, whole twig of *bongfang rakeb* (licorice weed) plant, some leaves or bark of *anaras* (pineapple), roots or bark of *agarcitha* (doctor bush) and the *bithorai thalir bilai* (top leaves of the banana tree). All these ingredients are forcefully powdered together using *ural* and *gaihen* (mortar and pestle) and this powder goes through *sandri* (sieve) and is mixed with water to make paste in order to transform it into the cake-form. This cake form measures approximately 3 inches in diameter and 1 inch thick at the center but with thin edges. Dusts of old *amao* are applied on the newly prepared raw *amao* cakes and after that the cakes are placed on *sal daokumwi bilai* (leaves of wild plant) or *jegab goran* (dry paddy straws) on *songrai* (winnower) or *sandri* (sieve). The cakes are again covered with *sal daokumwi bilai* or dry paddy straws and kept on a *bwisang* (rectangular bamboo craft usually hang over the traditional fire place) inside the house for some days in order to let it dry. The old *amao* known as *amao mokhang* in Bodo is vital for making new *amao.* It takes a week to make raw *amao* ready for the use. After that they are kept into *dwihu* (an earthenware pot) placed at several feet over the fire place till it is required for use. It is said that the *amao* can be used effectively for 5-6 months.[99]

Technology of preparing *jou bidoi* (rice beer) *and jou goran* (distilled alcohol)

Jou bidoi (Rice beer)

Jou bidoi (rice beer) is prepared by cooking a quantity of selected *baksha mairong* (unclean rice) which can be *maibra* (broni) or *mata*, which may be broken or

un-broken rice and it is later spread out by *kadou* (bamboo ladle) on a big *songrai* (big winnower) or *m* (bamboo mat) and allowed to cool down after covering it with clean *talir belai* (banana leaves). The *amao* (condiment) cake is broken into powder and is carefully mixed with the boiled rice and this mixture is placed on *dala* (rounded mound). As par the belief of the Bodos in the center of the mixture a small open space is created to place 2-3 *banlu* (chilli) and 2-3 pieces of *hangar* (charcoal) and to protect the preparation from evil spirit and also to produce good quality *jou*. It is then stored in a thoroughly dry big earthen pitcher called *maldang or dabkha* in Bodo. Banana leaves are used to cover the preparation. After six-seven days, the cooked rice which is kept in *maldang* or *dabkha* becomes *jou* or *jumai* (alcohol) and can be consumed as *jou bidoi.* The incubated mixture when it forms abundant whitish foam can be poured to the sterilized *maldang* where *janta* (conical or cylindrical bamboo sieve) is inserted into the *maldang* for easy harvesting of the *jou* and the mouth of the *janta* is closed using banana leaves or wrapped tightly with a cloth or closed with an earthen plate and stored for fermentation. It requires maximum three-four days in summer for fermentation but it takes six-seven days in winter for fermentation. Bodos keep the whole preparation away from sour material which is believed to spoil the taste of *jou* by making it sour. The changing of colour of the *jou* into deep or golden yellow with sweet smell, indicates fermentation of good quality *jou* and the *jou* prepared from the *maibra* (sticky or borni) rice tastes sweet as honey. The prepared *jou* can be kept for as many as several months and years and it is known as *jou finai* (alcohol nurturing) in Bodo.[100]

Jou goran (Distilled alcohol)

Jou bidoi (rice beer) after it becomes sour or tasteless; it is then used for preparing *jou goran* (distilled liquor). After 3-4 days of fermentation, *jou* (alcohol) normally becomes ready for preparing *jou goran*. In the course, *jou* or *jumai* is transferred to silver pot from *maldang* (big earthen pitcher) and after being diluted with water, it is kept for some hours. The Bodos called the diluted form as *afri*. The whole procedure of distillation takes approximately 3-4 hours and this consists of three parts. The upper part consists of a silver pot with shorter neck and open mouth acting as a condenser and it is filled with cold water throughout the process of preparing *jou goran.* The middle part consists of *mwkra koro* (earthen pot with small holes at the base) and

another small bowl is placed to receive the *jou goran* and the lowest part is silver pot consisting of diluted fermented rice called *jumai.* Wet muslin clothes and sometimes squeezed *jumai* or mud is used to seal the gaps between these components in order to prevent leakage of vapours. On being continuously heated, the *jumai* is placed at the lower part in a silver pot. It forms vapour and passes through the perforated base of *mwkhra koro* and reaches the cool base of the condenser and then the vapour strikes on the cooled base of the component placed at the upper part. Then it forms liquid which drops by continuous vaporization from the lower part resulting in falling of liquid called *jou goran* to the small bowl which is kept as receiver inside the *mwkra koro*. In the whole procedure of preparing *jou goran,* when the cold water placed in the upper silver pot becomes hot, it is poured out and again filled with cold water. It can be done for as many as 2-3 times during the whole procedure. *Jou* after distillation is called *afri katla*, which is used for feeding pigs.[101]

TECHNOLOGY OF SERICULTURE

Sericulture is a cottage industry practiced by the Bodos. Bodo women largely practice this culture during leisure time to improve their economic condition. The cloths of the Bodos significantly reveal their socio-cultural life. In the state of Assam there are three principal varieties of silk- *pat* (costliest), *eri* or *endi* (coarser and is generally used by the common people) and *muga* (stouter and more durable than pat but coarser and less glossy). Initially, the Bodos of Kokrajhar district reared only *eri* worms most commonly. Manufacturing of *eri-sadar* (wrapper made of *endi)* is one of the important industries of the Bodos. *Eri-sadar* is made from a kind of cocoon thread by the Bodo women by rearing castor- worms at their own homes.[102] The *eri* culture is regarded as part of cultural ethos and tradition of Bodo community since time immemorial.

In the summer season, when the rainfall is fairly heavy and the climate is moist which is generally regarded as the best period for rearing *eri* cocoons. It feeds principally on the leaves of *Ricinus communis* and it is the best season for growing the leaves of the *Ricinus communis* (*endi belai*). The duration of its life varies according to seasons. In summer it is shorter and the production quality is both greater and better.

During summer season, the time period from the time it is born till the time it begins its cocoon; it takes twenty to twenty four days. After fifteen days moth is produced and within three days eggs are laid and on the fifth day the eggs are hatched. All together the total duration of a breed comes to forty three days. In winter season it lives nearly for two months and in a year the number of breeds are considered at seven.

In a year, five to six breeds are normally reared. For the purpose of breeding, cocoons which initiate to be formed in the largest numbers on the same day are selected. Moth females, which are larger in body size are separated from the males on the ground that the males have more pointed ends. The moth females which are 2.5 or 3 inches in length are perforated through long reeds or sometimes canes, through the base of the of the cocoons, numbering twenty to twenty-five each and are hang in long garlands with the support of *patw durung* (jute rope). [103] The moth males are left free to visit the females which are placed on bamboo pipe or wooden piece called *empou danda* by Bodos.[104] The insects appear in the butterfly stage after remaining in this condition for fifteen days in the cocoon. The butterflies, before they learn to fly are carefully collected and placed on *hasib* (brooms) which are hanged across on a long bamboo stick or a long wooden piece. [105]The butterflies lay eggs resembling sago-grains or a turnip seed after three or four days in large numbers.[106] Generally a single insect can produce eighty to hundred eggs on an average or sometimes even more. And these eggs that have been laid during the first three or four days are kept alone and tied in a piece of cloth and suspended to the roof till a few start to hatch. After thirteen to fifteen days the eggs are hatched and *empou gerlai* (new-born insect) comes out which at first seems to be almost black in colour, then becomes brown and finally turns white at intervals of three to four days by casting its skin. The *empou gerlai* (new-born insect) are placed on a *songrai* (bamboo platform or winnower) covered with cloths on top of tender *endi* leaves (*Ricinus communis*), on which they are fed. There is a belief among the Bodos that as the *empou* grows and turns dirty white or green in colour, varying in length from 76.20 to 88.90 mm, bigger *endi* leaves are only given. Giving tender leaves make the *empou* (worm/insect) grow again smaller in size. After the final molting the *empou* are removed from *songrai* (Winnower) to feed on bunches of *endi* leaves, hang a little above the ground on a bamboo pipe or of wooden piece or forked twigs suspended across a piece of wood with the support of *patw durung* (jute rope). Upon the ground a

bamboo woven mat is placed to receive the *empou* when they fall. Bodos go by certain signs, which if the *empou* refuses its food and becomes light, bright in colour and when soft, crunchy sound from the *empou* can be heard particularly, then the *empou*, forms their cocoons. At that time when they have ceased feeding, they are placed in *khada* (bamboo weaved basket), which are filled with dry leaves such as *lakhana bilai* (leaves of wild plant with red flower), *thalir bilai* (banana leaves) or *gambari bilai* (leaves of *gambari* tree) among which they form their cocoons. It takes three to four days for the cocoons to be complete. The Bodos select cocoons for the next breed, which are again suspended a few feet from the ground perforated through long reeds or canes being passed through the base of the cocoons in long garland and hanged on a bamboo pipe or of wooden piece and some are exposed to the sun for two or three days on *sandanga* (bamboo platform) after which the cocoons are perforated to take out the *empou* (insect) from the cocoons for food as well as for selling. The Bodos use *haani dw* (earthen pot) or sometimes *khada* (bamboo basket) to store dried cocoons until a fitting time usually in a cold season.[107]

TECHNOLOGY OF SPINNING, WEAVING AND DYEING

Handloom weaving is an important cottage industry that flourished in Assam from ancient times, which occupies an important place in every Assamese household, which customarily maintains a handloom. It is a universally practiced cottage industry by rich and poor alike and has no stigma of caste or creed attached with it and the womenfolk still continues to practice this occupation. Mahatma Gandhi, Father of the Nation remarked that Assamese women could weave "fairy tales in their cloths".[108]

Weaving and spinning has a great significance also in the Bodo society. Bodo women are industrious and their special craftsmanship can be seen from their weaving of cotton and *endi* (coarser) cloth with fine embroidery.[109] It was regarded that in ancient times a Bodo woman without weaving knowledge was not given due respect in the society. Bodo women are excellent weavers and all necessary clothes of day to day life are made by the women at their own house. Bodo women weave *dokhna* (traditional dress of women)*, pasra* (shoulder scraf)*, aronai* (traditional scarf)*, sima* (bed cover),

gamsa (loin cloth) etc. at their leisure time. Domestic weaving is like cottage industries of the Bodo Kachari. Bodo women's skills in weaving are testified by the remark of the Lady Hydari, the wife of Sir Akbhar Hydari, the last British Governor of the province of Assam after Independence. The Lady who was a Swedish born said that she had travelled throughout the world with her husband but she had not seen in any part of the world that a mother has spun and woven the cloth for her and for her children. This exhibits which she had seen in those days were the best specimen and have ever seen in India and abroad".[110]

Spinning

Spinning of thread and weaving by Bodo women are vital elements in Bodo culture and it has contributed a great role in preserving Bodo identity in the world. Bodos take pride in their ability to produce their own dress such as *dokhna* (traditional dress of women), shawl, *gamcha* (loin cloth), scarf etc. They can weave their dreams in their looms. In ancient times they grew cotton plant and got the material for thread. They knew the art of dyeing the spun thread in varieties of colours. For winters they had another source of thread which they got from caterpillar which gives them cocoons. *Eri* (coarser) cloth made of caterpillar cocoons is still in great demand in the market.[111]

Bodo women are expert in spinning as well. The rearing of *eri* (castor worm) is an important tradition for the Bodos economically. *Eri* cloths are produced by them for their own as well as for their commercial purpose.[112] Rev. Sidney Endle mentioned in his book, *The Kacharis* that if a Kachari woman works steadily at reeling of cocoons, can reel off some 150 or 200 cocoons a day.[113]

In order to spin, the cocoons are soften in boiling water with a solution of alkaline[114] or *katri bilai* (wild leaf) in a silver pot.[115] Then the cocoons are removed from the water and the water is gently squeezed out and dried in the sun.[116] Then the cocoons are stored away in a *haani dwihu* (earthen pot), for a period of 11 days. [117] Then generally in dry and cold season the work of reeling is carried out by the Bodo girls step by step.[118] The cocoon cake is placed within the thumb of the left hand whilst the right hand is employed in drawing out the *eri* thread to the *thaokri* (spindle) which is the traditional spinning process consisting of a spindle with disc-like base. The spindle is a smooth and straight slender rod usually made of wood or bamboo. The spindle is

inserted into the center of round flat hard or clay spindle whorl. The spindle because of its weight, considerably facilitates the spinning process. It acts both as weight and fly-wheel helping in the motion of the spindle. The spinner starts the spinning by taking a bit of *eri* fibre and by twisting it by hand into a short length of thread or yarn. This is then fastened to the spindle. The spindle is next twisted to start turning it and to allow it to fall towards the ground while the spinner elongates the thread or yarn by adding a bit fibre to it. If any inequalities exist, they are reduced by rubbing them down between the thumb and finger and the same thing is done for joining on new cocoons. The spindle is occasionally rotated by right hand to impart twist. Sometimes the spindle is twisted clockwise with the right hand against the right thigh of the spinner with a rotating motion in between the palm of right hand and the upper outer surface of the right thigh and a bit of *eri* fibre is held on the left hand. After a certain length of yarn is spun, spinning is discontinued in order to wind the yarn to the spindle and from two persons per day the production is around 40-60 gm. The thread after it is allowed to accumulate in small quantities of about a quarter of a seer in a *thaokri* are later exposed to the sun or kept near a fire till it is dry. They are winded up into skeins in *sorkhi* (spindle) then again winded up in *mushra* (bobbins) with *jenther* (spindle) and *eri* is then ready for weaving by the weavers.[119]

The cotton plant is also grown extensively by the Bodos. The Bodo women prepare the cotton thread for weaving by taking out the cotton fruit and dry it in the sun and then take out the cotton from the fruit with their hands, separating the seeds from the cotton. [120] The spinning of the cotton thread is done on a very fine, thin and smooth-surfaced piece of bamboo stick with a hard flat clay disc at lower end called *thaokri* and this they turn round with the left hand and supply the cotton with right hand. As the spindle is dropped downward with a twist, a thread is pulled from the pack of un-spun fibres and the thread is then wound upon a stick (made out of *enkir*-a variety of marshy reed) and for the coarser thread, the spinning wheel very similar to that of English spinster is used, though of a smaller size.[121]

Weaving

Weaving, the traditional art of the entire Northeastern states holds a great value in the lives of the Bodos. The Bodo women are expert weavers and weaving among the

Bodos used to be a part of a woman's ordinary household duties.[122] Weaving bears great significance in the Bodo society and Bodo women have been using the dress materials which are hand-woven by themselves from ancient times. Some beautiful designs are created by the Bodo women on their traditional dress materials which are woven by them in their handlooms with the help of some other hand made tools, which reflects the high quality of creativity, expertness and the artistic minds of the Bodo women, as well as the rich culture of the Bodos.[123] Rev. Sidney Endle mentioned that a Kachari woman, if not greatly or frequently interrupted in her work can weave half yard each day.[124]

A method of fabric production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth is called weaving.[125] Bodo women have highly distinguished weaving skills. They weave on the frame loom (throw- shuttle loom) and produce their own requirement of fabrics in their spare time. They still wear the hand woven traditional *dokhna* (traditional dress of women) and *phali* (shoulder scarf) of different floral and geometrical design.[126] They produce their own cloths and *auluri* (good for nothing) is the word use to address a Bodo woman, who does not know the art of spinning or weaving who is also neglected by the society.[127]

The technology of the weaving loom of the Bodos is simple and easy to make. The menfolk use their own hands to make the traditional handloom from local resources and this handloom has served the Bodos down the ages.[128] The loom made out of thatch and bamboo work to shield the weaver from the sun is generally built on the shady side of the dwelling house,[129] either in the backyard or in the inner yard by the side of the verandah.[130] In the throw shuttle loom, the shuttle is thrown across the shed using hand where the loom is fitted to four posts fixed on the ground. The shedding is created by a set of healds which are functioned by the foot of the weaver. A *rasw* (bamboo reed) is used in beating up the weft to a *tath* (sleigh). It consists of bamboo teeth which is kept fitted by two bamboo frames. The Bodo weaving loom consists of a hollow cubic structure with four vertical posts made of bamboo pole or sometimes of areca nut tree. These posts having four sides have a cut on each post and on these cuts lay the *saal-gandwi* (wrap beam at the back and the cloth beam at the front). On the lower half of this hollow structure, there are two horizontal wooden bars connecting the vertical posts on each side. There is a *ban gwja* (that holder-wooden bar) connecting the upper ends of

two posts on two sides of the operator on which is kept a *saal- saikong* (circular bamboo pole). A string is rolled on this bamboo pole and the free ends of this pole tie the heal rods. The healds consists of two string loops that crosses one another. The *saal-gandwi* (wrap beam and the cloth beam) is circular wooden beam and it contains a hole, through which a circular bamboo-stick called *berani* passes. It is put against the horizontal beams fixed on the wooden posts at the lower half. This is regarded as a break which is used in keeping the wrap and the cloth beam fixed on a certain place.[131]

Dyeing

The Bodos are expert in dyeing their yarns prepared from raw indigo, wild herbs, vegetables etc. It is said that in olden days materials for yielding colours for cloths were collected from natural plants such as tree leaves, roots and stem of different plants where all the collected materials are powdered on a flat stone by a wooden hammer or by a stone into small pieces and the powdered mass is then boiled in required quantity of water in a container. Bodo woman produced powder from leaves of *bhaira* (a kind of tree) which was necessary as a first step for dyeing all other colours. For yellow colour, they obtained it from *mohen* (a kind of small tree or herb), skin of jackfruit or kernel of jackfruit and *deoa* (a kind of tree of jackfruit family or artocarpus). From the stem of cherry fruit they got brown colour, from *laokhri* (a large tree with hard heart) leaves, *silikha* (myroblan), *thaisri* (hog fruit) and *amlai* (gooseberry) they got black colour and red colour from *mwifrai* (herb). Bodos traditionally did not use chemical powder for the purpose of dyeing and in the process of dyeing, the white thread was kept under water mixed with *bhaira* leaves powder for more than a week and after that it is boiled for few minutes. Then it becomes ready for dyeing with other colours. The yarn is then dipped into the mixture and is left to boil for an hour. The mixture is stirred at intervals with the help of a stick till the yarn is completely dyed. The yarn, after it is completely stained in the mixture, is taken out and dried in the sun. In case the colour does not stain properly or if the colour is lighter than required the same process is repeated by adding fresher leaves. Though the process of dyeing required time, labour and efficiency of the weavers, it was practiced by the Bodo women largely as it played an important role in their cultural and economic life.[132]

METHODS AND PRACTICES IN *KHERAI* AND *GARJA PUJA* AND TECHNOLOGY OF CONSTRUCTING *BATHOU* ALTAR, *KHERAI* ALTAR AND *GARJASALI*

The traditional religion of the Bodos is not animistic; rather the Bodos belief in *Bathousim* presided over by Supreme God *Bathou Borai* or *Bathou Raja.*[133] Traditionally, they have no temples, written scriptures and religious books nor prayer songs.[134] The Bodos are not idol worshippers and the *siju* plant (*euphorbia splendens*) is regarded as the living symbol of their traditional religion '*Bathou*'. The Bodos worship their God near '*Bathou Gudi*' (the sacred place) in the north- east direction.[135] The planting of *siju* plant along with a *jatrasi* (a wild herb) and *tulsi* (basil) in the northern corner of their courtyard is visible in every Boro- Kachari household.

Bathou Altar and *Kherai* Altar

The altar for both *Bathou* (traditional religion) is prepared with soil in a square shaped bumped up altar called *dahab* with 5/6 feet long and half a foot wide tiny spur like structure projected in the south west direction. It is divided into three parts- (i) the first part is fenced by bamboo strips and it is the principal altar, where the Supreme God Bathou is prayed to, (ii) a part of the altar is extended spur like from the parent altar to the northern direction and in this part the *Noni Madai* (family Deities), the subordinate deities of *Bathou* are prayed and (iii) in the part extending towards the southern direction the *Hagrani Madai* (Deities not belonging to the *Bathou* family) are prayed.

The Bodos for the purpose of family worship of the household deities installs permanent *Bathou* altar at north- eastern corner of the courtyard by planting *siju* (euphorbia splendens) plant. The *siju* plant is surrounded by a round fence of bamboo strips folded with five fastenings, which symbolize the five religious and spiritual principles of *Bathou*. At the below of the *siju* plant, the *tulsi* (basil) plant is planted symbolizing *Bathou Borai* (Supreme God) and *Bathou Buri* (*Mainao*) respectively. The altar is encircled by a bamboo fence consisting of sixteen pairs of bamboo- split sticks planted in pair in circumference in vertical direction and fastened by a pair of longer bamboo splits horizontally in five rings or circles. Each pair of bamboo stick symbolizes a lesser deity, meaning sixteen different deities worshipped at *Bathou* altar along with

Bathou Borai and *Bathou Buri*. A little space of the altar towards the west is kept open without being covered by the bamboo rings from the fourth stage upwards for entry. Apart from the *siju* and *tulsi* plants, the spacious altar has many other symbolic elements. From the center of the altar to the northern section, embankment of white pounded rice is raised, two rows of *khangkhla* (wild reeds) are planted leading to the northern end where *Mainao* (Goddess of wealth) is installed, and this part symbolizes the Mother Earth. A stone and an egg are also placed inside the altar symbolizing the permanence of truth and the creation of the universe from an egg respectively. The top of the *siju* plant is fastened five rounds with the white thread symbolizing unity and love in *Bathou* religion. A white cloth without any mark remains unfurled at the top on the altar or in the first part of the altar, which signifies the formless existence (*Nirakar*) of *Obanglaori* (The God). A *lotha* (pot) containing holy water is placed at the altar. The foreparts of bamboo are planted, one each side of the door of the altar called *Zata gainai* and on top of these bamboo branches white cotton wool are fastened with white thread. Three pairs of bamboo sticks crossed at the entrance of the *Bathou* are twisted in traditional way called '*Daothu Bikha Hebnai*' (Dove's heart shape) and these crossed sticks symbolize the three fold of power of *Bathou*- creation, nutrition and dissolution.[136]

Garjasali (Place for performing *Garja*)

During *Garja puja* (religious festival for purifying village community), the Bodos built small huts called *dera* of bamboos and woods. The huts are made of four bamboo posts measuring 2-3 feet in height and the walls of the huts are made of woven split bamboo sticks. The floor is plastered with clay and the roof of the hut is made of *thuri* (hatch) fastened with *theuol* (Rope made of split bamboo). The *Dera* is an accommodation for many minor gods and goddesses. The *Bathou* is built in the middle portion. The huts of original Bodo gods and goddesses are built on the left side and the huts of non Bodo origin gods and goddess are built on the right side of the *Borai Bathou* (Supreme God). A special house is built for *Bathou Borai,* the Supreme god of the Bodos at the *Garjasali* which is a temporary storied house with small steps to climb up the house called *Sang Dera*. The four posts of the special house is made of bamboo. The wall is made of woven split bamboo sticks; the floor is built 3 feet above the ground and

is made of wood. The roof of the hut is made of *thuri* (hatch) fastened with *theuol* (Rope made of split bamboo) and the steps to climb up the house is made of small wood pieces measuring 1 feet in length. The seats or the huts of the minor gods are built towards the left side of the seat of the *Bathou Borai* (Supreme God) and another small hut is built at the right side of the seats of the Bodo gods.[137]

TECHNOLOGY IN PLAYING TRADITIONAL GAMES AND RECREATIONS

The Bodos have many traditional games and recreations played to forget their tiredness, sorrows and for enjoyment. Some of their traditional games and recreations are played by both boys and girls while others are played by only boys and girls. The technology or the knowledge in playing their traditional games and recreations are very simple and easy to understand.

Based on four models classification of traditional recreations and games by Robert A. Georges, the Bodo traditional recreations and games can also be placed under four models, such as model of probability where the result is determined by chance, model of achievement where the result is determined by strategy, model of achievement where result is determined by physical skill and dexterity and model of mimicry based on social roles and human activity as an end in itself.[138]

Model of Probability Where the Result is determined by Chance

The traditional recreations like *aso-biso, juguni baha, daisri-baha, asini- bisini, sun-okaphwr, gaanthi-khanai* and the games like *hakor-kiko* or *gob gelenayr* and *mongal batha* comes under this category.

Aso-Biso

It is a recreation played by sitting in a circle by stretching their palms together and sings rhyme and counts through rhyme. When the song ends in a particular palm, that palm is to be reversed and in the second rhyme, the palm is to be hidden. The rhyme is:

Aso-biso gwmbri biso

Saldang maldang wowa dong
Sukur pani siling- salai
Go gai thum

Juguni Bahaa

This recreation is played by sitting in a circle and by placing their tightened hands together. The *Balonda* (widower) is determined by a small knot of paper and while singing the rhyme, the player distributes the knot among the tightened hands. The *balonda* has to guess in whose tightened hand the knot of paper is hidden. The rhyme is:

Juguni bahaa juguni
Juguni bahaa jug
Slip slap.

Daisri-Baha

This is also played by sitting in a circle especially on the grass land and a small thimble is used to determine the *balonda* (widower). Except one player who has to hide the thimble, all the players have to shut their eyes and at the given time have to look for the hidden thimble.

Asini-Bisini

In this recreation, the *balonda* (widower) or *balondi* (widow) is determined by chance through rhyme. Here two or more player sits in a circle by putting their fingers together and count the fingers. The particular figure becomes *balonda* or *balondi* in which the rhyme ends and that finger has to be hidden. The rhyme is:

asini-bisini dup- dup bisini
silwobari, nwonari, telagari
gwmte-gwmte, gajani korojabai baidwng
hal kal kusini kaal
ting nalai kood.

Sun-Okhafwr

The *sun* (sun) and *okhafwr* (moon) is the name taken by two players respectively without letting the rest of the players know. Then the *sun-okhafwr* makes gate by

holding their hands together and they sing rhyme while the other players enter through the gate in line by holding their hands. As soon as the rhyme stops, the handmade gate falls down and the player who is caught in the middle of the gate is asked to decide to choose between *sun* and *okhafwr*. Then the players are divided into two groups for the game.

Gaanthi- Khanai

In this game, the entire player brings one *dubri* (grass) and these grasses are held together hiding the other parts. There is a grass among all the grasses which is knotted in the other part and the player who draws the knotted grass becomes *balonda* (widower) or *balondi* (widow) who has to chase and touch other to purify himself.[139]

Hakor-Kikor or *Gob Gelenai*

This game is played in such a way where the playground is prepared in any ground. There are ten small holes, five holes in each side (5+5=10 holes). Then five to ten seeds or stones or marbles are placed in each hole. This game is played by two players at a time, one from each team. They have to take out all the seeds or stones from a hole and place the seeds or stones or marbles one each at five holes and in the process if one hole is followed by one blank hole, the player will win the seeds or stones of the next hole. When the stones or seeds finish, the number of stones or seeds will be counted and one who gets the maximum numbers of seeds or stones or marbles will be declared as winner.[140]

Mongal Batha

It is a game played by the Bodos traditionally by boys for rainfall when there is no rain or if there is drought, as they believe. Playing this game can bring rainfall. This game is played in a comfortable place such as shadow of a tree along the roadside. Traditionally black and white tarto is used for the playing materials by cutting 1 inch each up to 20 + 20 = 40 pieces. This game is played by two people by sitting in opposite directions by drawing tables under the shadow of trees, one from each team. This game

is played for three times and one who manages to win it for the three times wins this game.[141]

Model of Achievement where the Result is determined by Strategy

The traditional recreation like *takhwmalainai gelenai, ghora chak, Bwrlai thir gaonai, dhop gelenai* and *gila gelenai* comes under this category.

Takhwmalainai Gelenai

In this game, the *balonda* (widower) shuts his eyes and remains so, till all the players of the game hide and signals to look out for them. Then the player opens his eyes and search for the hidden players and on seeing the hidden players the *balonda* utters "fridge".[142]

Ghora Chak

In this game, a bamboo pole and a piece of wood or a spike is required. In a bamboo pole, the piece of wood or a spike is inserted in such a way that two boys can stand on both the ends of the piece of wood. Then in a quick motion, the bamboo pole is turned. Whoever can still maintain the balance without falling down is the winner.[143]

Bwrla Thir Gaonai

In this game, the archer has to touch the point marked on the banana trunk with the arrow from a given distance, and one who succeeds to touch the marked point on the banana trunk wins the game.[144]

Dhop Gelenai

In this game which is played between two teams, the Bodos make a ball out of cotton cloths. The two teams are separated from each other by a demarcating line. Cotton ball is thrown to the opposite team. If the player from the opposite party fails to catch the ball in spite of being touched the ball goes to the other party. In the process of

the game, if a team wins over all the players of the other team then the team is declared to be a winning team.[145]

Gila Gelenai

This game is played in any plain area where all the players come with their own *gila* (Seeds of a creeping plant.). The players prepare the playground by drawing three parallel lines. The *gila* seeds are kept standing in the middle line and from a specific distance they target to hit by another *gila* seed by the finger of the player. It is a game almost resembling the modern marble play of the boys.[146]

Model of Achievement where result is determined by Physical Skill and Dexterity

The games like *hudu- dudu, shila gelenai*, ready *gelenai*, *dwi- bwri*, *antai gelenai* or *gor gelenai*, *bima thanai*, *daola soulainai*, *gud- gud*, *bata gelenai*, football and *khomlainai*.

Hudu- Dudu

This game is played between two groups. The boundary or court of rectangular shape is made for this game with a division line in the middle of the court with the members of two groups facing each other. The members from the respective groups come one by one to catch or strike the members of other group by holding their breath and mouthing *hu….du….du…du.* The members of the group, whose domain has to be intruded are required to hold back the intruder within their territory till he opens his breath and reduce the total number of the members of the opposite group. If the intruder succeeds to reach his home safely then members of the other group having physical contact with the intruder are sent out of the court. They can come back to the game only by sending the member of the opposite group out of the court.

Shila Gelenai

In this game the players are divided into two teams, one representing the team of *shila* (kite) and the other representing the team of chicken. In this game the kite intrudes into the area of the chicken with an intention to carry away them. Chicken on

the other hand defend and attack the kite and hold back the attacking kite by keeping it in their fold by guarding heavily. In the process of the game one team will win over the team members of the other team and wins the game.[147]

Ready *Gelenai*

This game is played between two teams where one group has to make their way to their home through lines where the members from opposite group stand and prevent their advance. The successful player who reaches the home is called *gwmwn* (ripe).

Dwi–Bwri

This game is played in groups where the players dig one small drain which is supposed to be as water. The players stand in row on the bank of the water. One speaker speaks aloud *dwi* (water) and *bwri* (shore) randomly where all the players are standing on the bank should accord himself and failing to do so lose the game.[148]

Antai Gelenai or *Gor Gelenai*

This game is played between two players, where both the players hold equal number of chips as their capital. One of the players throws the entire collection of the chips up in the air. He then tries to hold as many chips as possible on the back of his palm before these chips scatter on the ground. He further tries to collect as many chips as he can from the ground by spinning up one of the chips in his hand. While this particular chip is still in the air he picks up the other chips from the ground while receiving the chip which is in the air. Failing to hold the chip will make him a looser and the turn goes to the next player. Failing to collect the original number of chips will make a player run into debt who is required to borrow the extra number of chips from the player who had picked up the extra number of chips.[149]

Bima Thanai

This game is played between two groups, in one group there is one mother and rest are the children. While the other group has to prevent the children from meeting the mother and the children have to chase the other members of the other group to clear the way between the mother and the children.

Daola Soulainai

This game is the imitation of natural cock fighting and this game is played in groups. The players have to fight among each other and one who knocks down every other player is the winner of the fight.

Gud-Gud

In playing this game, a court is drawn where at a time only one player can play. The player has to start this game from the tail and reach the head by pushing a coin like stone towards the head with one leg. On reaching the head, the player stands before the head and throw the stone backward and if the player completes the game till the tail back, it is taken as one score and failing to throw the stone backward within the court will bring in the next player to the court for playing.[150]

Bata Gelenai

This game is played with two sticks measuring about four and twelve inches long respectively. The shorter one is horizontally placed in a small hole which exposes one end of the stick above the hole and this stick is hit at its end while it is resting above the hole with the longer stick by holding it in the hand in such a way that the stick lying over the hole rises up in the air and again hit and sent to a distance.[151]

Football

In olden days, the Bodos played football with *zumbra phithaya* (a big kind of citrus fruit or a kind of big sour lemon). They played this game between two groups in the roadside or any open fields or cultivation fields, where the numbers of the players were not limited and there was no referee system. The main reason for playing this game then was only for enjoyment and recreation.[152]

Khomlainai

One of the most unique traditional games and recreation of the Bodos is *Khomlainai* (Wrestling). This game is based on physical strength and mind. This game involves various technique of self-defense such as skilled application of pulling,

pushing, lifting, kicking, punching and blocking with hands, arms and feet in order to attack rapidly and for self-defense. It is played between two persons at a time.[153]

Model of mimicry based on social roles and human activity as an end in itself

Wngkham- wngkhri gelenai and *sudam danai* comes under this category.

Wngkham- Wngkhri gelenai

Here the children play by imitating the elders. The children play the part of a teacher, student, doctor, nurse, drivers, army etc.

Sudam Danai

In this game child imitates the weaving practices of the elders by building small looms of bamboo sticks and by coiling treads in the bamboo sticks.[154]

The Bodos for the purpose of making traditional toss system in any games, a small and short dry straw was knotted or made a kind of lace which was kept inside a fist of a hand of the referee to hide along other laces which were kept knotless and whoever pulled out the knotted straw was declared winner of the toss.[155]

TRADITIONAL FESTIVALS AND TECHNOLOGY OR PRACTICES USED IN TRADITIONAL FESTIVALS (SEASONAL AND AGRICULTURE)

The festivals of the Bodos are divided into two divisions- Seasonal and agricultural festivals. *Baisagu* (New Year festival)*, domasi* (harvest festival), *khathi-gasa saonai* (seasonal festival) comes under the first division and *khotia pwnai* (sowing seeds)*, khotia phunai* (uprooting seedling)*, mai gainai* (planting paddy)*, nangal jankhra* (celebrating after finishing rice plantation)*, Mainao lainai* (bringing *Mainao* from paddy

field to house), *enkham godan janai* (new rice eating ceremony) comes under the second one.

During *Baisagu* (New year festival), which is one of the most popular seasonal festivals of the Bodos continues for seven days. They eat bitter and sour leaves with pork and rice beer on the day before the first day of the New Year. The cattle are bathed, gods and goddesses are worshipped, the elder relatives are paid respect and they sing, dance and make merry with traditional musical instruments such as *kham* (drum), *siphung* (flute), *jotha* (cymbal), *gongona* (jew's harp) etc. in the villages from house to house. During *baisagu*, traditionally the Bodos avoid in sitting on *khamplai* (four legged wooden low tool) as they believe sitting there would mean sitting on the parents head or burdening them. Earlier the Bodos used to destroy eggs of the snakes by producing a particular tune on flute called *satravali* for the general welfare of the Bodos, as they regard them to be their greatest enemy. Cattle are applied with the mixture prepared from black ashes and mustered oil with the help of stem of *eri* tree[156] and are garlanded with raw gourd, turmeric and brinjal before they are led to the river for bath with singing and slightly beating them with *dighalati* plant. The dwelling houses are cleaned so also the cowsheds and old earthen utensils are thrown away and are replaced with new ones.[157] Gifts are exchanged, medicine men are offered rice beer, who in return replaces the *tabij* (armlet) and respect and greetings are shown to everyone.[158] In early days, the Bodos use to believe that the third day of *Baisagu* is meant for dogs, the fourth day for swine, the fifth day for fowl, the sixth day for ducks and other birds and the seventh day for friends and relatives.[159]

In *domasi* (harvest festival), the Bodos celebrate by eating different types of *pithas* made out of rice powder. As par the custom, fruit bearing trees are tied with cords of straw at the height of 3-4 feet by twisting it in a round shape and tying it to join both the ends making it look like a ring, as they believe doing so would bear more fruits. The male members of the family and the young boys together construct *belagur* (a high temple like in conical shape with pointed end towards the top made out of bamboo poles and banana leaves). A long green bamboo pole is stabbed into the ground as a beam and dried banana leaves or *jegab* (dry straw) are placed around the bamboo poles and at night it is burnt for making bone fire, where they sing and dance sleeplessly.

In *khathi gasa saonai* (seasonal festival) along with lighting earthen lamps at *mai dubli* (paddy fields), *goli* (cowshed), at the *bakhri* (granary) and at the *Bathou* (altar) on the last day of *Ashin*, they used traditional *gasa* or candle by cutting and taking out the outer layer of the *thaigir* (an indigenous fruit with acid content) fruit which is like a small bowl in shape. It is then placed on top of a long stand made of *oua gubwi* (local bamboo), which is cut like a stick, making it like a sharp needle in one side. This stick is stabbed in the paddy ground and is used for lighting the candles in the paddy field for the welfare of paddy crops. They use *sewari* (traditional weaving instrument) which is cut out of bamboo into stick and polish it with mustered oil. The unmarried girls hold it and touch the paddy plant believing that it would bring large scale of paddy.

During *khotia phwnai* (sowing seeds), *Khotia Phunai* (uprooting the seedling), *mai gainai* (paddy plantation) and *Nangal jankhra* (feast after finishing rice plantation) all agricultural festival of the Bodos, the elderly female members of the family offer a pair of areca nuts and betel leaves to the goddess *Mainao* facing towards the east. During *mai gainai* (paddy plantation) they apply a little mustard oil on a small quantity of seedlings before planting.

At the time of *Mainao lainai* (bringing *Mainao* from paddy field to house), the male guardian of the family in the early morning before sunrise brings a handful of paddy by cutting with sickle and place it in the granary house after sprinkling it with holy water.

During *Enkham godan janai* (eating new rice ceremony), a small quantity of rice and pork is first offered to the *Bathou Barai* (Supreme God) and *Mainao* (Laxmi) which is followed by grand meal to the invitees from the village and all members of the family.[160]

TECHNOLOGY OR PRACTICES IN TRADITIONAL RITES AND RITUALS (BIRTH, MARRIAGE AND DEATH)

Birth

In the cycle of life, birth is the first crucial transition of human life.[161] Traditionally, the Bodos had no midwives and the duties or the responsibilities of the midwives were taken up any competent matron. Any pregnant woman used to kneel

down by resting her knees against the floor keeping her hands around a mortar and gave birth to the child.[162] Bodos did not use knives, scissors nor other implements made of steel or one stroke cut in cutting the umbilical cord and instead they used a cutting instrument made locally by them out of bamboo. The bamboo is cut into thin hard strips in the shape of a knife. In case of a girl child such bamboo knives were made seven in numbers. While in case of a boy child five numbers were made. With these seven and five separate bamboo knives seven times and five times were used in cutting the umbilical cord of a female and male child respectively.[163] Then they used cotton or *muga* thread to tie around the detached cord. The person with bitter hand were employed for cutting the umbilical cord and for early drying of the wound. Widows or widowers were not allowed to perform this. The placenta was buried sometimes at the front of the main house or away from the house.[164] The place where rain water falls directly from the roof was preferred.[165]

In case of complications during child birth, a *zonga baukha* (bamboo stick) made out of bamboo having two pointed ends was used for piercing the roof made of thatch from where water was poured from roof to the mouth of the pregnant lady as the Bodos believed, doing so would relieve the pain and complications.

After cleaning the new born child, the child was placed on *songrai* (winnower), because traditionally the Bodos believed that, doing so would make the shape of the child head round and beautiful. The head of the child was placed on the pillow made of mustard seeds, as they believed that would help in chasing away the evil spirits[166] and elderly village women after sprinkling water from *lotha* (pot) would hold the child and utter, "*Nwi gotho, nwngba agwlni jwnwmao Bangal na Jungal mwn jwng mwnthilia, nathai nwng dinwi Boro nokhor- ao ujibai, binikhainw, dinwinifrai nwng Boro jabai*" (you child, we don't know, whether in your earlier birth you may have been Hindu or Muslim, Assamese, Bengali or whatever, but today you are born to the Bodo family, and from today onward you are a Bodo).[167] The child who cried a lot was placed inside a *polo* (fishing tool) and poured water, as they believed so would make the child cry less.[168]

Marriage

Man being a social being cannot survive alone and in order to strengthen his social ties he practices marriage and marriage is an important social system meant for

the welfare and to control human society. There are different types of marriage practiced by the Bodos traditionally such as (a) *Sangnanoi lainai haba*: - This is where the marriage takes place through arranged system where the bride is selected and marriage is fixed. This type of marriage is solemnized sometimes at bride's place or at the bridegroom's place. (b) *Gorja haba*: - In this type of marriage bridegroom comes and stays at bride's place and this marriage is solemnized at the bride's house. (c) *Kharsonnai haba*:- Here the bride enters into the house of the bridegroom before marriage and this type of marriage is solemnized at the bridegroom's place (d) *Bonanoi lainai haba*:- Here the bride is taken forcefully by the bridegroom and after that marriage is solemnized at the bridegroom's place (e) *Donkharlangnai haba*:- here both the bride and the bridegroom elope and get married and (f) *Dongkha habnai haba:*- here a man starts living with a widow who are to get married as far as social customs.[169] The Bodos have traditionally three stages in marriage, the first one is pre- marriage stage, where the members of the bridegroom by carrying bundles of areca nuts and betel leaves go to the bride's house where the bride's villagers are given rice beer and areca nuts. This is called *goi khaonai* ceremony (areca nuts cutting ceremony). The next ceremony is *biban langnai*. It is where the bridegroom party goes to the bride's place by carrying areca nuts, betel leaves and two earthen pitchers filled with rice beer with signs of sun and the moon painted on the two pitchers. This *biban* (responsibility) is carried out by *barlangpha* (important participant in a Bodo marriage who offers necessary help and guidance to the bridegroom's party) who places it in front of the main house. In this ceremony a pig is cut into two equal parts and are divided between the bride and the bridegroom families. In this occasion invitees are given rice beer, areca- nuts, betel leaves etc. On the day when the final settlement of the marriage takes place, the bridegroom entertains the villagers of the bride with rice beer, pork, betel nut etc. and on the roof top the skins of the areca nuts are thrown up and kept till the day of marriage ceremony. On the day when the marriage date is fixed, the bridegroom and a few elderly members go to the bride's place with rice beer, areca nuts and betel leaves. The marriage is not fixed on Sundays, Saturdays and Tuesdays.

The next stage is the proper marriage stage. This traditional system of marriage is called *hathasuni khurnai* where the bride and the bridegroom addresses the *Bathou Barai* (Supreme God) and other gods and goddesses separately. Here the bride has to

offer meal to the bridegroom after offering a portion of meal to the god and goddesses of the *ishing* (kitchen) and pray and touch the *maihando* (earthen rich pot) to live a happy and peaceful life. The meal is prepared without applying spices and colour. It is then served to the villagers. This type of marriage is celebrated for three days where everyone enjoys eating, drinking and dancing to the tune and rhythms of *serja* (four stringed musical instrument), *siphung* (flute), *gongana* (jew's harp) etc. The bride is then taken to the bridegroom's house.

The last stage is post marriage ceremony called *athmangal*. It is performed on the eight day after the marriage ceremony at bride's parents' home where only relatives and few people are invited.[170]

Traditionally the Bodos used banana trees, leaves and bamboos for decorating marriage place. The altar of the marriage was decorated with posts of four banana trees, planted in the ground. The gate of the main entrance was also decorated with two banana trees. The main pandal was made of bamboo posts which were erected vertically as well as placed horizontally tied with *patw durung* (jute rope) and covered with banana leaves as roof.[171]

Death

Traditionally, the Bodos just after the death clean the corpse, apply hair oil and put new cloths to the corpse and keep it in the courtyard after cleaning and plastering the place with cow dung mixed with water, placing the head towards south.[172] After this, the relatives of the deceased cook and feed the dead body with his favourite food items with water then taken to the burial ground. Both the burial and cremation ways of disposing the dead body are practiced by the Bodos traditionally.[173] The dead body is covered with white cloth and tied with *theuol* (rope of split bamboo) to the *seren* (dead body carrier) made like a fencing of raw bamboo sticks with holder made of bamboo poles carried by four people on the shoulders to the burial or cremation ground where no women are allowed. The *Dauri* (male shaman) leads the procession, who leaves some pieces of yarn, so that the soul of the dead sees it and follow to the cremation ground. For burying the dead body, the grave is dug. The relatives make a solemn march around the grave five or seven times in case of a man and woman respectively.

After placing the body in the grave along with few coins and *cowries*, the relatives fill it with earth. A little hole is kept just over the nose of the dead body to let the spirit of the dead enter the body to help in breathing by placing a hollow reed vertical in the grave extending from the nose of the dead body to the level of the ground. A pot of water, cooked rice, utensils of day to day life are placed at the burial place, because they believe that the soul of the death will take rice before pursuing its journey.

In case of cremation before the funeral pyres are lit the relatives offer water with the leaves of *pakri belai* (fig tree leaves) to separate their relation with the dead. They place a piece of red thread on the lips of the dead body as they believe doing so will result in making the lips red when re-birth takes place. Bodos believe that placing a branch of fig tree with full leaves on the head of the grave of a female will make her born again with thick quality of hair. In case of a male it signifies that the dead person will take rest under the fig tree till the attainment of salvation. A pair of chickens is also taken to the cremation ground, while one burnt along with the dead body, while the other is set free.[174] If the dead person is a male five layers of woods are placed both under and above the dead body and in the case of a female dead body seven layers of woods are placed. Then the relatives march around five times in case of a male and seven times in case of a female. Then on all the four sides the fire is lit and generally four posts are placed in the ground enclosing the oblong space on which the cremation is done. A piece of cloth is spread on the top to protect the spirit of death from the sun and the rain.[175] The members attending a funeral procession are to take bath on returning and drink holy water and eat a little amount of bitter tasting dried leaf and end the relation with the dead person.

Daha garnai or to give up grief (post burial rite) is performed on the tenth day where favourite foods of the dead person are offered. This is followed by the *saradu* (post burial ceremony) performed on the eleventh or the thirteenth day where the relatives and the villagers are served meal. All the invitees in the *saradu* ceremony are offered uncooked rice and coins. This ritual is called *dan sarnai.* In some cases a bullock is set free by the family members of the dead person and is called *mosow saran hogarnai*. Towards the end of the *saradu* ceremony a ritual called *sua garnai* is performed where the son throws away all the unclean leaf plates (paper plates).[176]

HOUSE MAKING TECHNOLOGY

As seen by Rev. Sidney Endle, the houses of Bodo Kachari village were built closely together. Generally each hut contains two rooms, one for eating and the other for sleeping.[177]

A traditional Bodo house is most commonly made with cane, bamboo, woods, mud, thatch and other naturally available materials.[178]

Construction of the Houses by the Bodos

Bodos have great artistic skill that can be seen in the construction of their houses. They use cane, bamboo, wood, mud, thatch etc. for construction purposes. The typical Bodo traditional household generally consists of four houses on four sides of *cisla* (inner yard) and *khanta* (front yard in front of the southern house). They are *bakhri* (granary), *goli* (cowshed), *n'mano* (principal house) and *chhwrano* (guest house). Bodos also build houses for domestic animals, loom, etc.

Bakhri (Granary) and *Goli* (Cowshed)

The two most important houses of the Bodos are *bakhri* and *goli* constructed in the east and in the southern east corner respectively. The importance of the *bakhri* and the *goli* can be seen in a Bodo folk song:

Daokha habnai noawlai,
Sila habnai noawlai,
Angkhau dabilai apha gosai,
Mai bakhri nunaiao,
Mosow goli nunaiao,
Angkhou bilaihor apha gosai,
Angkhou bilaihor apha gosai.[179]

In English translation: "Don't give me in marriage to a house where the crows and kites can easily enter, O my God the father; give me in marriage to a house where the granary and the cowshed are easily visible, O my God the father".

Bodos construct *bakhri* in the form of *baisang* (raised platform) having only one entrance without any windows. The platform of the *bakhri* is made of *oua* (bamboo) or

dongpang (timber) which also protect paddies from floods and dampness. Its platform is three to four feet high above the level of the ground. The entrance of the *bakhri* is kept closed with knotted bamboo mat and is kept locked with the support of a long bamboo pole which is tied to the bamboo mat with the help of *raidwng* (cane) or *theuol* (bamboo rope). If the size of the *bakhri* is small, the pillars of the *baisang* is made by placing the *oua burka* (big bamboo poles) and in case of bigger *bakhri* it is made by placing *dongpang* (wood). The wall of the *bakhri* is made of split bamboo or reed plastered with mud and cow dung which the Bodos consider as sacred to keep away the insects. The roof is made of *thuri jegab* (thatch) fastened by *raidwng* (cane) or *theuol* (rope made of split bamboo) to beams made of split bamboo sticks. The sides of the floor of the *bakhri* is extended in all directions and it is used for keeping household things such as *kada* (bamboo basket), *sandri* (sieve made of bamboo), *songrai* (bamboo platform) etc. and the extended part is called *bakhri danggur*. They use *bakhri* to store paddies and the lower part of it is hollow which is used by them to keep *bon* (fire wood) by some, agricultural items like *nangal* (plough), *jungal*, *khodal* (digging hoe), *kontha* (spud), *dangan* (leveler), etc. The steps of the *bakhri* are made of *oua* (bamboo) or *dongpang* (wood) in the shape of ladder or sometimes the Bodos place old *ural* (mortar) upside down where they step on and go inside the *bakhri*.

Goli (cowshed) is constructed with wooden or bamboo pillars without wall. Its roof is made of *thuri jegab* (thatch) fastened by *raidwng* (cane) or *theuol* (rope made of split bamboo) to beams made out of split bamboo sticks. The *goli* is kept open so that the sunlight can reach every nook and corner, so to keep it clean and dry. The *goli* is cleaned every morning. To keep the *goli* free from mosquitoes to protect the cows, smoking system is arranged in the *goli* during the evening by burning *jegab buntha* (twisted bundle of dry straw). Besides the *goli*, *maihung* (heap of dry straw for feeding cows) is built on a wooden post.[180]

The *bakhri* and the *goli* indicate the economic condition of the Bodo family.[181]

N'mano (The Principle House)

A Bodo traditional house is one- storied with the walls being made of *ekra* reed or of split bamboo. [182]The pillars are made of bamboo and wood. The walls and the

floor is plastered with mud and cow dung. *Hamamata* (sticky soil or clay found by the river side or under water) is mixed with cow dung to add colour to the walls of the house. One single piece of bamboo is used for each *mandali* (beam). *Farai* (bamboo frame work) is used for placing thatch for roofing. [183] The roof is made of *thuri jegab* (thatch) fastened by *raidwng* (cane rope) or *theuol* (rope of bamboo split)[184] to the beams made of split bamboo sticks and rim made out of bamboo pole. The traditional roofs of the Bodos are built sloping and steep pitch to drain properly. [185] *Swima* (a bamboo piece) is placed vertically to support the roof from bending in the middle portion and *sokti* (a bamboo piece) is also placed vertically to support the roof of the house to stand fixed in a particular position.[186] The horizontal pole below the ridging to which both the roofs of the *n'mano* are joined is left untied to the post with a belief that the storm god will anger and take it away as a challenge to his power and become furious and destroy the house. Generally the houses of the Bodos are built low.[187] *N'mano* (principal house) is built on the northern side of the homestead and it stretches from the west to the east. *N'mano* is divided into three parts namely, *iching* (kitchen) which is used for cooking, *okhong* (dining hall) which is used for dining and *khopra* (master bed room) which is used for sleeping with a provision of a door facing to the south.[188] The *n'mano* has only one main door and a passage from one room to another inside.[189] The door of the dwelling house is made of woven bamboo mat and the lock is made of *oua* (bamboo pole) called '*pala thokon*', which is tied to the woven bamboo mat with the help of *patw durung* (jute rope) and twisted from both inside and outside to lock.[190]

Chhwrano (Guest Room)

Chhwrano is the guest house which is built in front of the homestead[191] and the walls are made of *ekra* reed or of split bamboo, plastered with mud and cow dung. The roof is made of *thuri jegab* (thatch) fastened by *raiding* (cane rope) or *theuol* (rope of bamboo split)[192] on *mandali* (beams) made of split bamboo sticks. Mixed *hamamata* (sticky soil or clay found by the river side or under water) and cow dung is used to add colour to the walls. The roof of the house is built sloped and steep pitch to drain properly, with proper support from bending with bamboo pieces.[193] The floor of the

house is plastered with mud and cow dung. This room is also used as dwelling house for young boys.[194]

Bodos in olden days also built *chang* or *sang bangla* (raised platform), of wood like other hilly tribes.[195] Though later on *bangla* (houses having ground floor and first floor) were also built by some.[196]

Houses for domestic Animals

Bodos domesticate live- stock of various kinds like ducks, goats, chicken, pigs, cows and buffalos, and they build *hangsw gogra* (duck coop), *barma gogra* (loafing shed), *dao gogra* (chicken coop), *oma gondra (*pigsty), *mosow goli* (cowshed) and *mwisw goli* (buffalo shed) respectively to keep these animals but small in size. *Hangsw* (duck), *bwrma* or *barma* (goat), *oma* (pig) are kept near family dwelling- house but *mwswo* (cow) and *mwisw* (buffalo) are kept far away from family dwelling- house.[197] *Hangsw gogra*, *bwarma gogra* and *dao gogra* are built in *bwsang* (raised platform) form having only one entrance without any windows, one and half to two feet high above the level of ground. Both *dongpang* (timber) and *oua* (bamboo) are used in building *hangsw*, *bwarma* and *dao gogra.* If the platform is made of split *oua* (bamboo), then it is plastered with mud and cow dang, but if the platform is made of *dongpang* (wood) then it is left as it is and also Bodos used bamboo woven basket to let hen hatch eggs.[198] *Oma* is reared by each and every Bodo family and pigs are treated to be important part of the Bodo society.[199] They build *oma gondra* with bamboo fence, where the bamboos are woven closely and tightly, to each other around the post made of bamboo sticks by weaving back, without roof or sometimes with roof, where the roof is made of *thuri jigab* (thatch)*,* fastened by *raiding* or *theuol*. *Mwisw* (buffalo) *goli* is built by the Bodos in a similar way as they built their *mosow goli* (cow shed), with wooden pillars, without wall and the steep pitch sloping roof to drain properly is made of *thuri jegab* (thatch) fastened by *raidwng* (cane roof) or *theuol* (rope made of split bamboo) to beams made of bamboo sticks and it is built without wall so that sunlight can reach every corner.

Bon Dwngra (Place for keeping Firewood)

The Bodos also construct *bon* (fire wood) *dwngra* for the purpose of keeping fire woods. It is constructed in *bwisang* (raised platform) form, one and half to two feet in

height above the level of ground with *oua* (bamboo) or *dongpang* (wood). The roof which is built in shape of shed roof is made of *thuri jegab* (thatch) fastened by *raidwng* (cane rope) or *theuol* (rope of bamboo split) to beams made of bamboo sticks and the platform is made of *oua* or *dongpang*.[200]

Ishan (Loom)

The weaving is an integral part of Bodo household. The *ishan* (weaving loom) are installed either in the backyard or in the inner yard by the side of the verandah.[201] The *ishan* is built with pillars made of wood or bamboo or areca nut tree, without wall and the shed roof is made of *thuri jegab* (thatch) fastened by *raidwng* (cane rope) or *theuol* (rope made of split bamboo) to beam made of bamboo sticks.

TECHNOLOGY OF BUILDING COMMUNICATION NETWORKS

The development of communication networks has contributed to the growth and development of human society because for the fact that any society cannot survive in isolation. Human can survive only by interacting with sound environments and sound socio-economic conditions and by responding to the important changes. All this development is not possible without building communication networks.[202]

Bodo mode of communication can be divided into two divisions.

(i) Land network and

(ii) Water network

Land Network

Bodos traditionally travelled on foot as it was the most common mobility on land by cutting woods in building communication networks and making path and by making other identification marks on trees as to make the network easily identifiable on uneven, narrow tracks detouring around difficult natural obstacles, but to travel to distant places they travelled by using horses and bullock-drawn carts. The rich people travelled to markets by riding on horses and bullock-drawn carts. They used horses and bullock drawn carts to visit relatives at distant places as well as in weddings for carrying new brides. The traditional carts of the Bodos have two open wheels. The wheels are fitted with iron rims and the spokes are made of wood and axles are made of iron. The carts are capable of forceful handling on uneven roads.

Water Network

Bodos made traditional bridges and boats for crossing rivers. To cross small rivers, one big wooden piece like *sumli dongpang* was sliced in the middle and put across the river to cross it. To cross big rivers, some bamboo poles were joined and tied with *raidwng* (cane rope) or *patw durung* (jute rope) and placed horizontally across the river, which was supported by more bamboo poles placed vertically on only one side and tied to the horizontally placed bamboos at the bottom with *raidwng* or *patw durung*. Further some more bamboo poles were joined and tied and placed horizontally and tied at the center of the vertically placed bamboo poles, so that the person crossing the river could cross it by holding their hands to the bamboo poles without the risk of falling down. Again split bamboos were closely woven together, tied and placed over the bamboo poles that were placed vertically and used for crossing the rivers.

Bodos also crossed rivers on boats. Traditionally, they made floats out of banana trunk and woods. For making boat out of banana trunk, they would cut down 3-4 banana trees and joined the trunks by penetrating them at both the ends with long bamboo sticks. For rowing the boat the Bodos used one big wooden piece or bamboo pole as *baitha* (an oar).

Another traditional way of boat making by the Bodos was by cutting down the trunk of a *sumli* tree. The inner surface of the trunk was cut out and a hollow was made, making it concave in shape. Then the concave shaped trunk was heated on fire at the bottom and as it dried it expanded and was used by the Bodos as boat.[203]

From the discussion it can be opined that in order to satisfy their needs at different situations knowingly or unknowingly the Bodos applied scientific knowledge to develop tools and implements and used them which can be termed in conclusion as technology.

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