CHAPTER - 4

RAW MATERIALS AND METHODS OF MANUFACTURE

Many scholars use the term “resources”, instead of “raw materials”. Arnold (1988:20) remarks that the mineral resources necessary for making pottery are clay, water and fuel for firing. In fact, the items necessary for making pots are clay and the potters’ skilled hands.

Manufacturing of pottery is universally based on a very simple principle. Clay, when moist, is malleable and attains plasticity which can be given any desired shape. If allowed to simply dry in the sun, it will become “leatherhard”. A comparatively small amount of extra heat will cause the clay to be hardened, and because of chemical changes that takes place in the clay structure due to firing, it is impossible to regain its original state, in whatever way it is being treated either physically or chemically. The clay once baked in fire will retain its form and colour for years together with all its inherent characters.
Clay is found all over the world in natural condition. There are many factors that affect the qualities of clay, such as mineral composition, degree of crystallinity, plasticity, particular size and the amount of soluble salts exchangeable cations and non-plastic present (Arnold 1988:21).

Clay is a mixture of aluminium silicate and hydrates. It is mixed with a large variety of impurities present in greater or lesser quantity in different proportions. The essential properties of clay are classified into two. First, when it mixes up with a certain required quantity/proportion of water, it makes a paste which is a plastic material, and that can be moulded into any shape and size. Secondly, when baked under a fire with a required degree of temperature and time, it becomes hard and durable. The first property is "plasticity" which is most important for the purpose of pottery making. The second is a matter of physical as well as chemical reactions taking place during baking in a fire. The firing permanently fuses the siliceous material in clay and gives a permanent desired shape of the vessels.

Patwardhan (1984:2) refers to two types of clay found on the surface of the earth. These are residual clay and sedimentary clay. Residual clay is
found in the same place where it is formed. In fact, it is formed as a result of in-situ weathering of rocks. This type of clay is purer, but is less plastic than sedimentary clay. On the other hand, sedimentary clay as she has referred to is secondarily deposited, as a result of washing down or being blown from higher regions. This may also be considered as transported clay(soil). However, it contains many organic materials and attains plasticity. Geologist Raistic defines “pottery clay” as that type of clay which has considerable plasticity, and at the same time can be treated so as to maintain a correct shape while burning will be used for pottery.....such a clay burns white or cream and bakes hard of extremely fine texture. It must be free from shrinkage, cracks, and warping on cooling. The finest of all pottery clay is Kaolin or “China clay” which is used for the finest porcelain manufacture. In all cases, the pottery clay need most careful cleaning and grinding of material and a constant check on their composition and physical properties.

It is a fact that potters do not have a scientific knowledge of the quality of clay they use for pottery making, so far as the scientific explanation of the clay is concerned. Therefore, their perception of clay quality, may be limited to their experience gathered traditionally. In
selection of clay, they apply their own traditional methods, which have been perceived and inherited from their ancestors.

Though clay is found all over the world, the suitable plastic clay or potters’ clay for pottery making is not available everywhere. Sometimes potters are to travel into long distances for collecting clay. As a matter of fact, it is not a question of choice but the availability of the ‘quality clay’ for the pottery.

Nungbi (Longpi) pots can be easily differentiated from that of Oinam pots. The latter clay is corded and grey in colour and while the former is hard as stone and black in colour. The black ware pottery of Nungbi (Longpi) is highly popular within the state and beyond. The texture and colour of the pottery has an appealing touch and this attracts the buyers. Nungbi (Longpi) pottery is popular especially with modern Latin American and Europeans.¹ The Nungbi (Longpi) earthen pots are popularly used till date by the poor and the rich alike. Shapes and designs have gradually improved over the years.

¹ Keisham Shantibala Devi, op cit.: 47.
Implements used in the collection of raw materials and pot making

a) Oinam village

**Implements used in the collection of raw material**

1. *Pho:* Local spade, length of the wooden handle: 56.5 cm. Length of the iron head: 25 cm. This is used for digging the mud

2. *Rei:* A basket used for carrying mud from the place of collection to the residence.

**Tools used in the making of earthenware of Oinam consists of**

1. *Ngeabung (Mortar)*

   This implement is locally made by menfolk. It is a small dugout, rectangular wooden mortar used in pounding the clay and tempering materials together with the help of pestle. The maximum length is 100 cm, breadth 30 cm and depth 13 cm.

2. *Mee (Pestle)*

   It is a solid cylindrical wooden pestle, about 3 metres long and 8-10 cm in diameters. This is locally made and usually made by men. It is made out of a single piece of log. The two ends of mee are rounded and the mid part is thinned out for handling. The clay placed on the mortar is pounded into powder with the help of the mee.
3. **Platform**

   It is a thick wooden plank of about 2 metres long. It is used as the seat of the potter, and a platform for making the pot.

4. **Ngeajande (Bamboo Sieve)**

   It is made of cane or bamboo and is used as a sieve to separate the pounded materials. Coarse granules that do not pass through the sieve are again pounded and sifted. This process is done repeatedly. Traditionally, their implements are made locally, maximum length 31 cm, breath 28 cm, depth 5 cm. However, modern potters have started using sieves purchased from the market.

5. **Vu (Roller)**

   It is a solid cylindrical wooden rod of about 23 cm with a circumference of 4 cm. It is used as a mould for wrapping the paste, as the first step of making a rough out. It is to be noted that the sizes vary depending on the user's choice.

6. **Titu (Beater)**

   Locally known as *titu*, it is about 12 cm long. It is used to gently pat the other surface to achieve required shape and thickness of the pot.
7. **Zha (Smother)**

   It is a thin bamboo wand or bamboo split. It is used to scrap the unwanted clay from the body of the pot so as to obtain an even surface, or to smoothen certain types of earthenwares.

8. **Tuta (Protector)**

   It is a stone, oval in shape of about half a kilogram in weight. The stone is collected from the river bed. A smooth, river worn pebble is usually selected. They use pebbles of different types and shapes as stone anvil. It is inserted through the mouth of the pitcher or ware and used to prop the wall. The wall exactly opposite to it is dabbed by the wooden dabber. It gives better support for the basal part of the pot.

9. **Piisu (Wooden Protector)**

   It is a wooden protector and is used as a supporter in making the basal part of the pot.

10. **Khaouthing (Heavy Beater)**

    A “T” shaped wooden plain beater, which is used in shaping the pot by dapping the outer surface with *Khaouthing*.

11. **Khya (Designer)**

    A “T” shaped net wrapped wooden paddle made by the villagers of Oinam. The upper border portion is wrapped with a net piece. This implement is used for decorating pot by imposing corded pattern.
12. **Phakung (Round Basket)**

This is a round basket covered with cloth, use as a pot stand in giving a shape for a big pot as the pot is too big to give the shape with thighs.

**Process of collecting raw material and manufacturing of pottery**

The process of collecting raw material and manufacturing of pottery by the Oinam potters is studied as under

a) **Type of clay**

The paste used for pottery is a blend of three types of clay *Dongea* (Black clay), *Ngeasou* (Brown clay), *Ngeahai* (Red clay).

b) **Collection of clay**

*Dongea* is collected from *Kure* and *Ratonga*. *Kure* is at a distance of four and a half kilometers from the village. This is the place where the clay has been collected from time immemorial. *Ratonga* is located at a distance of four kilometers. However, this side is no longer utilized due to landslides. *Dongea* is collected from foothills.² There is a paddy field named *Phoazüki* and a Kouri river (this river starts from *Vourei* and flows down to the Barak river). Next to the river is a foothill where *Dongea* is collected.³ In the olden days, a ritual was performed by setting a cock or a hen free on the spot where the clay is to be collected. It is believed that if God is not pleased the pots made out of the clay taken from there will break while

---

¹ Informant, K.R. Thithi Khopuneme of Oinam.
² Informant, Henii Sophei and Ngaokhani Sani of Purul Akutpa.
firing, etc. They set the hen free by saying that God will permit them to take clay for making pots. *Dongea* is available only at the above mentioned two spots.

*Ngeasou* is collected from Ja and Raw, which are respectively 3 kms and 2 kms away from the village. This brown clay is available in many places. Recently the quarrying site for this clay had to be relocated due to frequent landslides. For selecting such a site, proper examination of the nature and quality of the clay is done by observing its physical properties by smelling. Once a new site is located, collection of clay can be started only after performing a ritual. A man not born of the village, follows village endogamy, performs the rituals on the site. This ritual is believed to exorcise evil spirits.

The reddish clay known as *Ngeahai* is available everywhere. In this collection, no ritual is performed. Lastly, collection of clay is done only in the dry season i.e. from November to May. During the rainy season, due to landslide, it is a little risky. The potters collect as much clay as they can before the rainy season as there is no problem of storage of the clay.

---

Informant, K.R. Thithi Khopuneme of Oinam.
The characteristic features of three types of clay are:

1) *Dongea* contains more sticky properties. This black clay helps to stick the pot to come to its shape and mould according to potter’s desire.

2) *Ngeahai* makes the pot smooth. The smoothness of the pot is due to the presence of this clay.

3) *Ngeasou* helps the pot to be hard as stone and not to break during firing.\(^6\)

The clay is collected by men, women, children with the help of spade, and carry it back in a basket, any member of the family can collect.

### Preparation of clay by the Oinam potters

The process of preparation of clay starts only after it has been brought home from the source. In fact, the clay cannot be used in its raw or natural condition; it needs preparation before it is used for pottery manufacturing. As regards the preparation of the clay, Saraswati and Behura (1966:41) remark “the methods of preparation differ largely from region to region, according to the nature of locally available clays... But there are certain standardized processes which are adopted by potters all over the country. These are mainly in relation to cleaning, mixing and kneading”.

---

\(^6\) Informant, Relongla Daeme Khopuneme of Oinam.
Earthen pots are made by Oinam potters only in dry seasons during November to May of the calendar year, as it is not convenient to make pots in the rainy season.

a) Drying

The initial process of this work is to expose the clay in the sun for weeks to make it completely dry. By spreading a mat or plastic on the top spread the clay for drying.

b) Pulverization

This process is locally known as Ngeadingdo. In this stage, the potter pulverize the clay with the help of wooden mortar and pestle. The pounded materials are sifted through a sieve locally known as Ngeajande. The coarse granules that do not pass through the sieve are again pounded. The other clay is also pounded separately and kept separately by following the same process.

c) Mixing

Pulverization is followed by mixing of the powdered clay in the mortar. In order to make the clay qualitatively better for pot making they mixed the three different clays namely Ngeasou, Dongea, Ngeahai in the ratio of 2:1:1.
d) Levigation

In this stage the powder of clay after mixing thoroughly in accurate measure is witted with water. This is locally known as Dunaodo. The mixing is done thoroughly not too sticky, nor too hard, but according to the potter’s desire. It is again pounded with a pestle, locally this process is called Ngeonaonele deingdaedo. After which the well kneaded clay is ceded apart into many balls, locally known as Ngealaodo, according to the size of the required pot.

Technique of production

The potter sits on the platform by drawing up her lower garment above the knees. On the base surface of the platform at the available space in front of her, the earthen ball is flattened a little by her hands and then wrapped round the Vu. This rolling is locally known as Labupaedo. The vu together with the paste of clay enveloped around it are rolled to and fro to lengthen the paste regularly. At times the claded vu is hit alternately up and down against the edge of the platform so that the roll of clay does not stick to the vu. When the rolled clay attains the desired length, the roller is put vertically and rotated so that the mouth of the cylinder shaped clay may become wider. After this the vu is taken out. The potter starts to shape
the pot after the vu is taken out. The starting of pot is known as Lasopaedo. On this wider portion from the outer surface, it is stabbed with a water dipped beater, (titu) while it is supported from the inside with the other hand. When it is a little enlarged, the outer surface is supported by the left hand. The bent right index finger pushes out from inside to enlarge the wall of the pot evenly. The starting of the neck portion is locally known as ngoudeithedo. The starting of the rim is known as tisopaedo. The expansion of the rim is slowly done which is known as tipheipaedo; the second expansion of the rim is known as tizapaedo; then the neck portion is also expanded and is known as ngouzhapaedo. In the meantime, with the help of the left hand and the right thigh, the pot is rotated slowly. By making the body it bulge out, known as lapoukhupaedo. It is beaten by using titu on the outer surface while supporting the inner surface with the other hand. The pot is manipulated by the two thighs; the left hand support from inside then, the outer part will be padded with titu. At the same time, the pot is rotated slowly by the combined action of the two thighs and the left hand. When the surface becomes evenly flat and thin, the rim is rubbed on the inner and outer surface with water-soaked titu locally called tizhileido. On the lip its regularity is adjusted by tapping with titu and the finger placing below giving support and taping by Khaouthing on the realm and
shoulder, this process is locally known as *Khaethedo*. After this, the uneven surface of the rim is obliterated by shaving with *zha* and rubbing with the index finger. It is then dried in the sun.

After it becomes a little harder, placing the pot on her lap the potter starts beating the base of the pot, locally known as *püsopaedo*. The base is enclosed by simply pushing and pinching. The excess part is taken off. Then the potter dilates the base portion by beating on the other surface with *titu* while it is protected from the inner surface with a *tuta* or *püsu* held by the other hand up to the greatest diameter. After the completion of shaping the pot it is decorated by imposing corded pattern with the help of *khya* and *tuta*. After this, the pot is tap slowly with *titu*.

The ring footed pot is made by pasting a round strip of clay at the basal part of the pot, then shaped with the help of the finger, then tap slowly with the *khouthing*. This is locally known as *phadudo*. At the shoulder, a round strip of clay is formed. It is fixed to the upper circumference of the pot by pinching from the inner side. The right hand hold the *Titu* and beat the outer surface, left hand support the inner portion. Even after this, uneven surface of the rim is obliterated by shaving with
zha and rubbing with index finger. This finishing touch is known as sochangdo.

Decoration

The whole process of producing the pot starting from the collection of clay upto stamping in corded pattern is completely based on tradition. The potters of Oinam further decorate the upper parts of the shoulder with rows of beadlike structures superimposed with clay. The uniqueness of the Oinam pottery is the occurrence of charming base-relief of women’s breasts at regular intervals among the rows of beads. The women’s breasts conventionalizes the consideration of pots as women and it is believed that using these brings prosperity to the village. A kneaded clay is taken separately and pasted on the pot, by making a zig-zag line by the finger on the shoulder of the pot. The wavy line for producing corded design by a net wrapped paddle, tapping on the pot from shoulder to basal part. The art of spelling articles not only indicates the impulses of the aesthetic component in the pottery, but also personifies it by giving a separate existence, independent of the particular people or cultural responsibility for its production.
Drying and firing

The finished pots are dried for a few hours in the sun and kept on the suspended platform over the family fire place until it is completely dried and ready for baking. The drying period varies from 3-10 days according to the size and type of the vessels and also depending on the weather.

The next is taking down the pot from fire hearth and heating the pot one by one on the fire for around five minutes. It is roasted on fire by rotating the pot after which a burning charcoal is kept inside the pot and placed horizontally near the fire. This prevent the pot from breaking while firing.

The dried and well hardened pots are ready for the next step i.e. firing. They used open space method of firing generally in the courtyard of the potter in which men, women and children are involved. For this, fire wood is placed in a square and over it a bed of straw and small branches of trees are made to pile over a layer. A pot is placed horizontally in the middle a bowl with burning charcoal is kept where at both side of the pot are placed horizontally, the mouths facing each other. On the top straws and twigs are kept and it is lighted at one of the edge. It takes 1-2 hours to
get the pot completely baked. The firing is locally known as *ladeima*. When the straw and twigs are completely burn, it is examined by inserting a long pole to check whether the pots are baked well or not. After it is baked properly the pots are removed one by one with a long pole.

**Surface Treatment**

After the pot are being removed from the fire while it is hot the husk of paddy are thrown all over the pot. This process is locally known as *laphirudo* the heat of the pot produces smoke when the husks are thrown over. This help in strengthening the pot. When this process is completed, the bark of the *Paothing* Alder (*Alnus Nepaleusus*) is cut into pieces and when the pot is cool it is scrubbed with the *Paothing* bark. Then the juice prepared from the bark of *paothing* by soaking into water is poured inside the pot till the brim and kept for a month. This process is locally known as *Thingduthedo*. When that is done, the pots are ready for use.

**NUNGBI (LONGPI)**

*Implements used in the collection of raw materials and pot making*

a) *San* (spade): Local spade with wooden handle, used by women in digging the clay. Length of the wooden handle 56.5 cm, length of the iron head 25 cm.
Tools use in making earthen wares of Oinam

Pestal (Mee)

Mortar (Ngeabung)
Bamboo Sieve (Ngeajande)  
Roller (Vu)  
Beater (Titu)
Heavy Beater (Khouting)

Smooother (Zha)

Protector (Tuta)
Wooden Protector (Piisu)  Net wrapped Wooden Paddle (Khya)  Round Basket (Phakung)
b) *Yorpak* (spade): Local spade with wooden handle, used by men in digging the clay. Length of the wooden handle 60.0 cm, length of the iron head 26 cm.

c) *Sop* (basket): This is used for bringing clay and rock stone from the area of collection to the house. Both men and women use the same kind. The sizes vary according to their capacity to carry.

d) *Shamkhur* (wooden Mortar): The mortar locally known as *Shamkhur* is made of solid log. The outer wall of the mortar is rather constricted in the middle. The inner portion of the mortar has a round cavity achieved by scooping out the log. The mouth and the base are round. This implement is used in pounding the rock and clay into powder. It is locally made by the menfolk. Any member can make it if he has the skill.

e) *Suk* (Pestle): The pestle is made out of a single piece of log much smaller in size than that of mortar. The two ends, of the pestle are rounded and the middle portion of the body is thinned out for handling with hands. The rock or clay placed on the mortar is pounded into powder with the help of this pestle. This implement is made by the local menfolk.

f) *Lishon Naya* (Sieve): Locally known as *lishon naya* is square in shape. It is made of metal or iron with holes inside, the rim or the frame is made of wood. Traditionally, sieve was made of cane. The purpose of the holes
is to separate the powder from the bigger lumps of rocks and clay particles. This implement is made by both men and women.

g) Likhu (wooden trough): It is locally known likhu, made of wood. The implement is square in shape; the length is longer than the breadth. It has a length of 110cm, breadth of 31cm, depth 14cm. The thickness of length is thicken by 4cm and the breadth is thicken by 12cm. Size varies according to the desire of the users. The implement has two faces the front and the back. The front has a hole and is used for breaking the rock into pieces for easy pounding. A rock being placed on the big stone anvil inside the wooden trough is broken with the help of hammer. The other use is for mixing the powder of clay and rock thoroughly. After that, the paste is prepared by pouring in this wooden trough. The back of the wooden trough is flat and used for flattening the paste with the help of the fist. This implement is made by the menfolk.

h) Hamkhalou (pot roller): This implement locally known as hamkhalou is a bamboo, which is cylindrical in shape. It is a bamboo piece, cut according to the desire length of the potter. It has a length of 35cm, breadth 10.2cm, thickness 0.5cm, depth 33cm. It is used in shaping a cylindrical rough out of the pot by rolling up the flattened paste on the wooden trough.
i) *Hamkapi* (Wooden Paddle): This implement, locally known as *hamkapi* is made of wood. It is T-shaped, with length 41cm, breadth 7.5cm, thickness 1.5cm, and the length of the handle 27cm. The *hamkapi* differ in sizes. The potters possess two or three different sizes. The upper side is broader, the lower is a handle. There are two types of *hamkapi*: one is woven with cane and the other type is a wooden. The woven one is used for gently patting the outer surface to bring the roughness, and the other unwoven one is used for mixing the clay and rock powder with water. It is used when the potter wants the pot surface smooth by tapping the outer surface.

j) *Hamtatan* (prop): It is a gourd-shaped tool made of wood, used by inserting through the mouth of the pitcher or ware and used to prop the wall. The wall exactly opposite to it is dabbed by the wooden dabber. It gives better support for the basal part of the pot. The basal is made round with the help of this implements. It gives support to the pot to prevent from breaking or cracking while making. The potters make different shapes and sizes according to the shape of the pots. If the basal part of the pot is round, the *hamtatan* is round in shape. Usually the potters keep different type of *hamtatan*. 

k) **Hammatom** (pot stand): This is a square board locally known as *hammatom*. The material used in making this implement is wood. It is a square board with a circular depression in the middle for placing the pot. This acts as a platform for keeping the pot, which is placed again on a stool.

l) **Hamlar** (scraper): Locally known as *hamlar*, it is a thin bamboo sliver. It is a straight and pointed at one end. Ventral edge is touched to the body of the pot to scrape out excess clay as well as to incise a few circular lines just below the neck and creative design is done with this implement.

It is to be noted that the tools used by the potters in making pot are locally made. Some tools are made by women and some by men. There is no specific social group to make the tools. Anyone who has the skill makes the tools. Mostly the potters make the tools according to his necessities. There is no season for pot making. The whole year is engaged except during festivals, specially *Luira phanit* or death in the family. Pots are made even during the rainy season, but firing of pots is not possible as it is done in an open space; for this reason the pot is piled on the fire hearth. Some pot users are of the opinion that the pots made during rainy season are easily breakable. The best pots are those made during dry season. The former
may be due to not drying in the shade (it is to be noted that it is not directly exposed to the sun as direct exposure to the sun cracks the pot) or due to improper drying. In case a male family member passes away, the pot making is stopped for six days and in the case of a female family member it is stopped for five days. It is believed that if this custom is violated it cannot be cured if one gets injured.

The study on the process of collecting raw materials and manufacturing of pots can be made under five stages:

1. Collection of raw materials
   a) Clay
   b) Rock

2. Preparation of paste

3. Shaping of pots

4. Pre-firing surface treatment, decoration and polishing

5. Drying & firing

6. Post-firing surface treatment
Collection of raw materials

(a) Clay: Nungbi (Longpi) pottery is made of two main ingredients namely the leshon (clay, reddish in colour) and leshon lung (black serpentine rock). The clay is obtained from a particular spot known as SLA (shonkashok ngalei). The location is around 4kms to the east of the village. The black serpentine rock is obtained from the Kaphangran and Sarasen sites, which are located respectively 2kms and 3kms away to the north of Nungbi (Longpi) village.

All work is done only after the celebration of the Luiya phanit (seed sowing festival). So the clay collection is also done after this festival and it is believed that this festival brings good luck and prosperity. No villagers are allowed to start their work before the festival. It is usually celebrated in the month of January. After this festival, a group of men perform the ritual Kapa khayang (Bamboo divination). But after Christianity this practice is completely stopped. It is a ritual to be performed before going for head hunting, inter-village fight, hunting and digging of clay. According to the belief associated with this ritual, women cannot make pot. The clay is normally collected between January to April every year before the rainy season. According to Mr. Mathing Shangrei, in the year 1965, Paisho
Luiram son of Pola Luiram was killed in this place while collecting clay with his father due to landslide where he was buried alive and his father Pola Luiram was also injured. He was luckily saved by his friends. Due to this risk they do not collect clay during the rainy season.

This clay collection, as stated above, is from one area, but the villagers keep on rotating the spot every year. For every new spot a narrow path is made first by a group of men and they start digging the outer part, since the upper part of the clay is not a good clay. They spend lots of labour by digging 10-100 feet to get a good clay. It is voluntary, the group of man who start the digging slept there digging whole day and night. Then the whole potters give one day labour in digging. The clay will first be collected by the volunteers for the whole years i.e 30-40 basket each keeping the collected clay aside, only then the other collected the clay. The place where the clay is to be collected is kept unused for 3 to 4 years till the hollow pits are found to be filled up again. There is a limestone inside. The villagers believe that this limestone inside produces the clay. It can be due to weathering of rock, or clay can be formed out of decomposed rocks. Some villagers have a concept that during rainy season the rain water flows inside the hollow pits along with sand, mud, rock particles, etc and
whatever is accumulated inside the hollow pits becomes clay. The longer
the clay is kept near the lime stone which is inside, the better and stickier
is the quality of clay.

The clay is collected by both men and women, potters and non-potters
with the help of spade and it is carried back in a basket. The non-potters
collect the clay, dry and store the clay for selling it to potters when the
potters finish their stored raw materials.

b) Rock: Black serpentine rock is collected throughout the year. It is
mostly collected by children after school, but collection of clay is mostly
done by adults as it is risky. There is no danger when it comes to rock
collection. In the days of yore, children do not go to school, they help their
parents in the paddy fields, collection of firewood, fetching water and
collect rocks for making pot. The black serpentine rocks are of three types
— hard, medium and soft. The harder the rock, the longer is the durability
of the pots. The hard rock needs more energy and time in grinding into
powder. Today potters mostly use soft types of rocks as it is easier to make
into powder. The soft type is due to the weathering of the serpentine rock.
Preparation of paste by Nungbi(Longpi) potters

After collecting the raw materials, the potter cannot use it directly. There is a need to grind or pound both the rock and clay separately into powder.

a) Preparation of clay

1) Drying

Collected clay is dried in the courtyard. By spreading mat or plastic on the top the clay are spread. It takes two to three days, during hot season and could take one week or more to dry the clay during the cold season.

2) Pulverization

The clay is then pulverized with the help of a wooden mortar and pestle into powder. The sieve is used to separate the powdered and unpowdered clay. This process is repeated till the clay is pounded into fine powder.

b) Preparation of rock

The rock used in manufacturing the pot is broken into pieces. In the past, this was done with a hammer stone but is now done with an iron hammer in a wooden trough (likhu). Traditionally, the rock particles are crushed into powder manually on mortar with a pestle.
Now-a-days, the potters initially break up the larger rock particles into smaller pieces by pounding with mallets. The smaller pieces of rock are then crushed into powder with the help of a machine. The non-uniform particles are further pounded into powder manually on the mortar.

c) **Mixing of pounded clay and rock powder**

In a wooden trough (*likhu*) a proportionate amount of rock and clay powder in the ratio of 3:2 are mixed thoroughly by hand and wooden paddle (*hamkapi*).

d) **Levigation**

Water is added to the mixture of power clay and rock and kneaded thoroughly. It is then pounded with a pestle (*suk*) into the wooden trough (*Likhu*) to make the clay and rock powder of fine consistency and free from any tiny particles so that the shaping of the pot is not deterred. This mixture is then shaped into separate lumps by hand, after which the shaping of the pots is done.

**Shaping of pots**

The wooden trough (*likhu*) used for mixing the rock and clay powder is turned upside down. The paste lumps are then presseded flat on the back
of the wooden trough with the help of the hand to its desired length and breadth. The flat paste is wetted with *Hamlar*. Now it is rolled with a cylindrical bamboo (*hamkhalou*) to place it on a wooden square board (*hammaton*), which in turn is placed on a stool. The cylindrical bamboo is taken off. The potter then actually moves himself around forward and backward for shaping and forming the pot. Some potters use turn table for rotating instead of moving themselves around. Another earthen ball is taken and flattened on a wooden disc. On the round flat clay piece is put the hollow earthen cylinder. And excess portion of the flat clay piece around and outside circumference of the earthen cylinder is removed with the bamboo sliver (*Hamlar*). Then the two pieces are joined by pressing. Now it resumes the shape of an earthen cylinder with one open end.

In order to get uniform height, a stick attached with a needle on the top is taken around the pot by the potter to cut off the uneven part of it by the needle. After this, beating of the pot begins from the upper part with *hamkapi*, with its wide end on the outer surface while the inner surface is supported by the palm of the other hand. Then the rim is made; it is made by hands soaked in water. *Hamlar* is used to smoothened the surface.
Pre-firing surface treatment, decoration and polishing

After shaping the rim, the pot is decorated by applying additional clay in relief. In some varieties of pot, lugs of floral structure are luted. The decorative designs found on the pots of Nungbi (Longpi) are parallel lines, herring bone, heads of buffaloes, or mithuns, spears etc. The pot is kept intact till the lugs are hardened into oneness with the pot. After the pots are well-hardened, the base portion is beaten into a definite shape with the wooden beater (hamkapi) on the outer surface while the inner pot is supported by hamlatan, which is held inside, to regulate the force given outside. This decoration is executed before drying and firing. All these decorations are done with hand or with fine bamboo sliver (hamlar). They do not use any paint stain brush for decorative/painting purposes. For smoothening and glazing, the body of the pot is rubbed repeatedly with the hamlar.

Drying and firing

The well-shaped pot is dried in the shade and is not directly exposed to the sun as direct exposure to the sun cracks the pot. Sometimes the pots are kept on the fire hearth until they are well dried. After the pots are moderately dried, they are exposed in the sun. Drying a pot takes about
three days. Traditionally, the raw pots are placed in the shade by covering with rags. The process takes longer to dry, but this strengthens the pots. During the rainy season, the raw pots are dried by placing them on a hanging shelf over the fireplace in the house. The drying period varies from three to ten days according to the size and type of the vessel and also depending on the weather. The hamlar is used to give a smooth surface after drying and before firing.

When the pots are well dried, they are placed carefully in baskets in groups for firing. The number of pots to be fired is according to the desire of the potters. This is locally called hamkhru for strengthening and durability of the pot. For this purpose, they carry the pots into the jungle. Firing of ten to twenty pots is done by two/three persons, but for five/six pots only one man is needed. The tree branches are cut down, collected dried leaves and branches, first the kiln is prepared by putting the branches and leaves then burnt to heat up the surface. After that the pots are placed horizontally one after the other in 4-5 lines according to the number of pot. The pot's mouth are not placed in wind direction, during firing process when the wind is blown inside the mouth of the pot breaks. The pot which are not dried properly are kept horizontally in a circle. After this
arrangement the tree branches that was cut down are put on the top of
the pot, on the next layer kept the dried branches and leaves which kept
burning for one and half hour. Once the fire started, it should go without
extinguishing until the pot is completely baked. After keeping for about
one and half hour in the smouldering heat, the pot are carefully taken out
from the fire one by one with the help of long stick.

Post-firing surface treatment

The completely baked pot turn into ash colour. While the pots are
still hot they are rubbed with dried pine leaves which produces smoke
and turn the pot into black. The next step is rubbing with green leaves of
local name Machini (Quercus species), which gives lustre to the pot and
are kept for few minutes to make the pot cool. It takes 30-60 minutes to
make it cool. There is no firing during the rainy season because of the
wetness of the surface. The finished pots are carefully packed in strongly
lined baskets supported with cushions of leaves, and taken to Ukhrul,
Imphal, and other places for sale.
Tools use in making earthen pots of Nungbi (Longpi)

Mortar (Shamkhur)  Pestle (Shuk)  Sieve (Lishon naya)
Prop (Hamtatan)
Prop (Hamtatan)
Pot Stand (Hammatom)