

# ***Cord-impressed Pottery in Neolithic-Chalcolithic Context of Eastern India***

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**A**s the term suggests, cord-impressed pottery bears cord-impressions, mostly on the outer surface, either partially or fully. Impressions are made either as a decorative pattern with a paddle wrapped with a cord, or they remain over the surface as a by-product while beating and shaping the pot in leather-hard condition with a cord-wrapped paddle. These impressions can be considered either as decorations (stylistic) or just as a process of potting (technological) or both, besides its functional aspect, if there is any. The cords are wrapped around the paddle for easy beating of the sticky clay by preventing the paddle from sticking to the clay. In many cases, the paddles are also curved with various designs for the same purpose which also depicts impression over the body of the pot. Moreover, cordage or basketry is also used to wrap the paddle. In certain cases, it is observed that these impressions are shallow and not very clear, and so the decorations cannot be figured out. Sometimes, it becomes difficult to identify whether these are cord-impressions or impressions of a carved paddle. All the terms, like cord-impressed, cord-marked and corded wares, are used to designate this kind of pottery.

The Neolithic culture of Japan, starting as early as 13,600 BC, is termed as Jomon culture on the basis of the pottery it has revealed, which bears cord-decorations. The term Jomon was coined by Edward S. Morse who discovered corded ware at the Omori site in 1867. *Jomon* means 'cord-mark' in Japanese (see Zhushchikhovskaya 2007 for details).

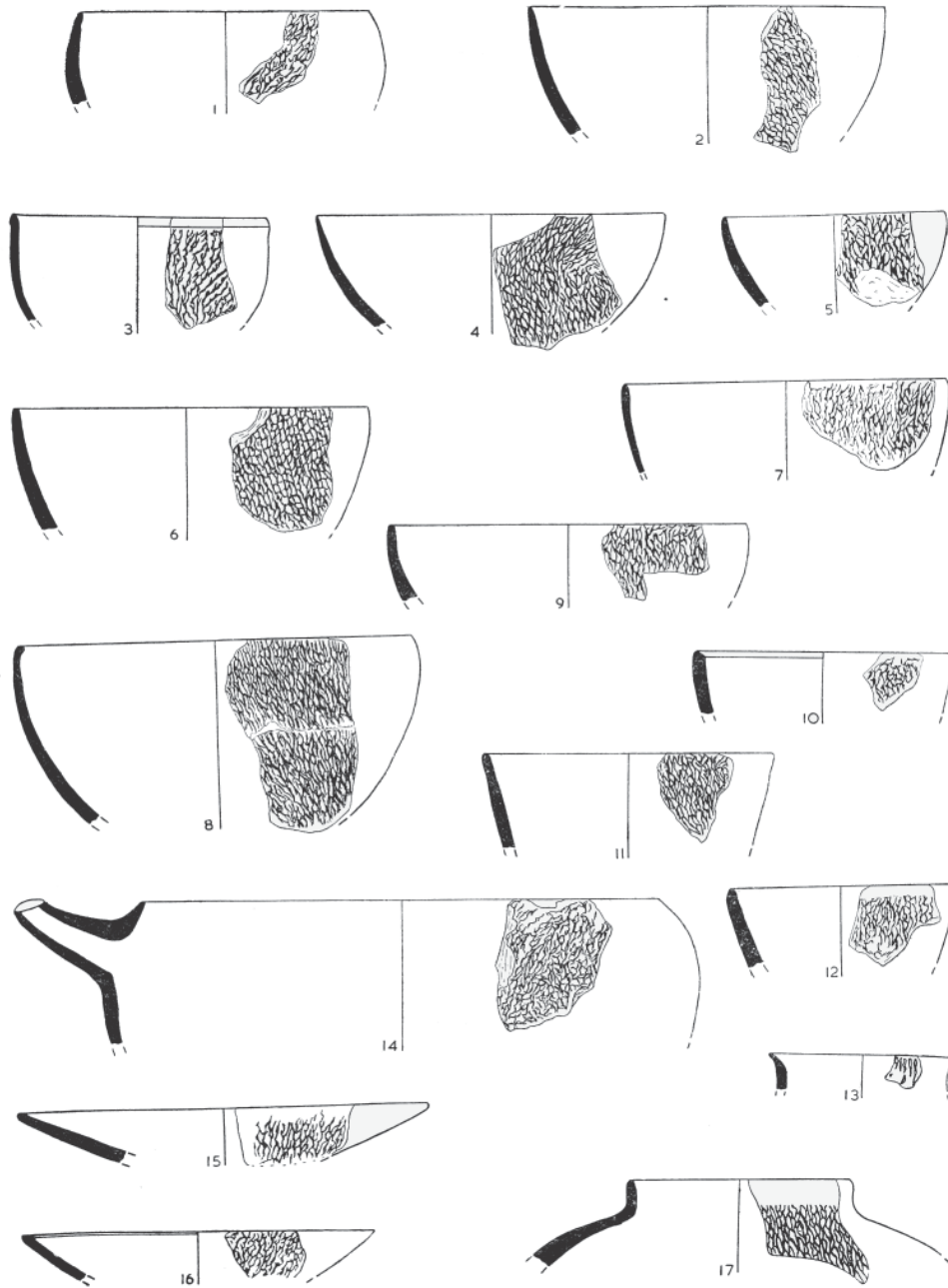
The cord-impressed ware, a typical ceramic industry widely distributed in the prehistoric contexts of East and Southeast Asia was first reported in the Indian context from Assam

(Sharma 1966). Later on this ware has been reported from several sites of northern Vindhya and the Gangetic valley. Considering the wide occurrences, this ware has been considered as a unique characteristic of the ceramic traditions of Neolithic-Chalcolithic culture of Eastern India. By the term Eastern India, we indicate the region in the eastern part of the country comprising the present states of Bihar, Jharkhand, Orissa, West Bengal and the eastern part of Uttar Pradesh. Although situated in the northeastern corner of India, we also cover the present day states of Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura in our present discussion which has also revealed cord-impressed pottery in Neolithic contexts as well as later periods. This ware has important bearings on the origin and development of the Neolithic culture of Northeast India (Hazarika 2006a, 2006b, 2008a, 2008b). In this paper, we shall be dealing with the archaeological context of this vast area based on its geo-physical entities rather than the political boundaries of these Indian states.

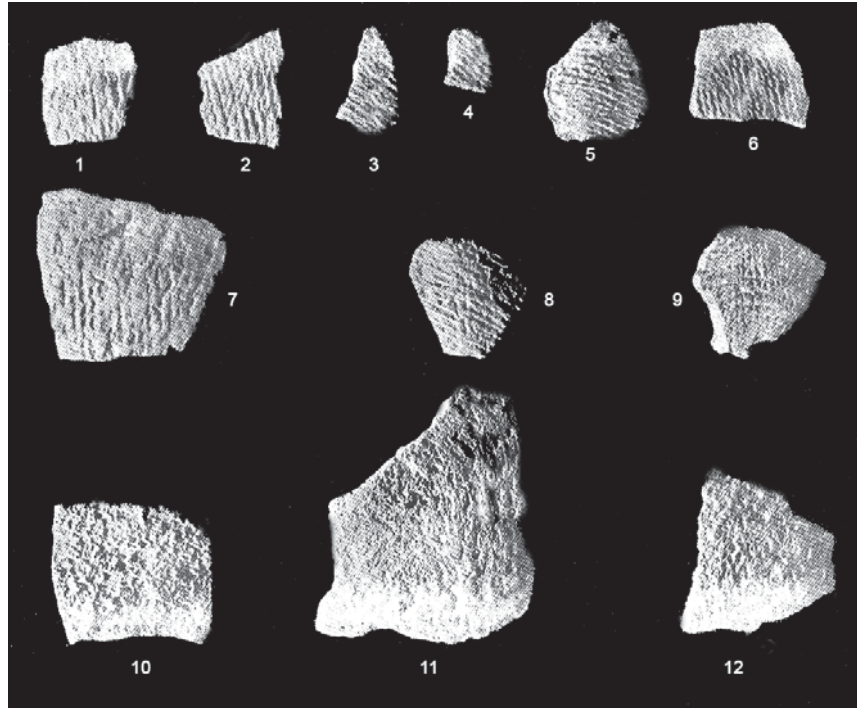
#### **NORTHERN VINDHYAN REGION**

Sites of northern Vindhyan region like Koldihawa (Lat. 24° 54' N and Long. 82° 2' E), Mahagara and Kunjhun have yielded a considerable percentage of cord-impressed ware besides rusticated ware, burnished red ware and burnished black ware (Pal 1987: 62). The cord-impressed ware of Koldihawa (Pal 1986) is made of semi lavigated clay and is not fired at high temperature. The surface colour is mat or dull red and the colour of the core is blackish, ashy, grey and dull red. It has a coarse fabric and porous core. Except a few, most of the sections of the potsherds are thick to medium. In a general description of the Vindhyan cord-impressed pottery, Pal (1987: 63) mentions that the clay for making this pottery is not well lavigated and contains calcium granulates and small iron nodules. Several materials such as rice and millet husk, chopped straw and leaves are mixed. The pottery is handmade and ill-fired, and palm and finger impressions can be observed (Fig. 1, 2, 3 & 4).

The bowls and basins are cord-impressed on the whole exterior, but the neck portions of the jars and handis lack cord-impressions. The cording pattern of each pot is different in terms of intensity and cording strokes. The impressions vary from thick to thin through medium and deep to dull and indistinct and the cording strokes are vertical, horizontal, oblique or slanting and occasionally multi-directional. The core of the pot is blackish, smoky grey or dull mottled and the surface is matted, dull yellow and smoky blackish. The shapes are convex, straight or tapering sided shallow and deep bowls, flat bowls or platters, tubular spouted bowls, and straight, concave or carinated necked jars and handis. Pal (1987: 61-65) observed similar cord-decorations on the pottery of the Vindhyan region with those found at the sites of Daojali Hading and Sarutaru of Assam. However they differ in colour as well as in the range of other decorative patterns (Sharma and Mandal 1980: 48). Pachoh, Indari (Pal 1986: 92-116) and the recently excavated site of Tokwa (Lat. 24° 54' 20" N and Long. 82° 16' 45" E) have yielded cord-impressed ware



**Fig. 1:** Cord-impressed pottery from Mahagarha (after Sharma and Mandal 1980)



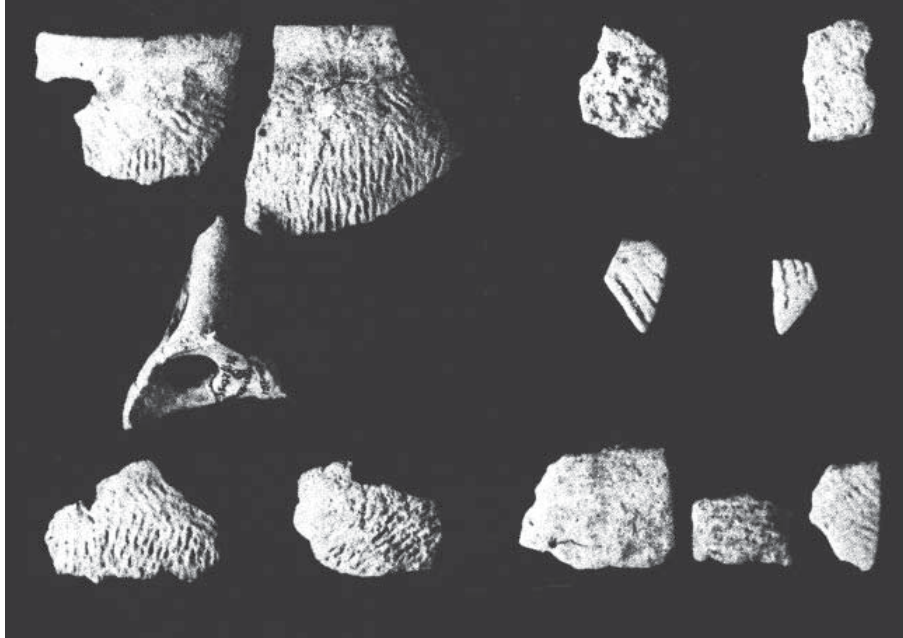
**Fig. 2:** Cord-impressed and rusticated ware, Mahagarha (after Sharma and Mandal 1980)

in the Neolithic level besides other ware which is similar to the other sites of the Vindhyan region (Misra et. al. 2000-01: 59-72).

In certain Mesolithic sites of the Vindhyas such as Morahana Pahar, Baghai Khor, Lekhahia and Ghagharia, cord-impressed pottery with geometric Microliths (Pal 1986:76-79) also appear, though primitive in terms of clay preparation, firing condition and state of preservation in comparison to the Neolithic context, probably due to cultural interaction (Pal 1987: 63). The cord-impressed ware of Lekhahia (Pal 1986: 79) is ill-fired and has a coarse fabric, thick to medium section and gritty core containing small lateritic granules. No shapes could be



**Fig. 3:** Cord-impressed pottery, Koldihwa (after Sharma and Mandal 1980)

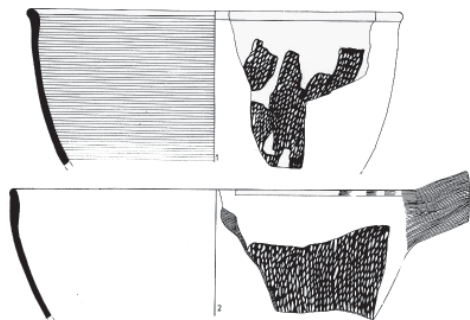


**Fig. 4:** Cord-impressed pottery, Koldihwa (after Sharma and Mandal 1980)

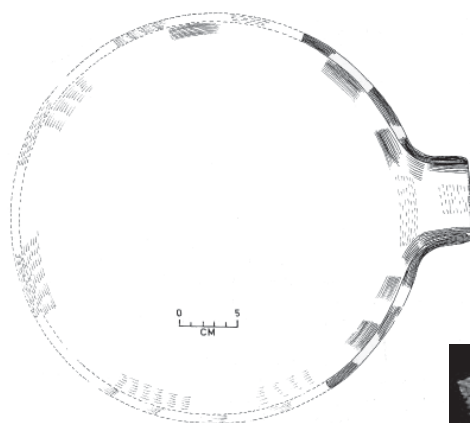
reconstructed. Misra (2010: 14) suggests that the recovery of cord-impressed pottery from rock shelter sites of late Mesolithic context might have been due to the symbiotic relations between late Mesolithic and Neolithic cultures. He further suggested that there were certain people still living a Mesolithic way of life even at a time when Neolithic people were living in this area.

#### **MIDDLE GANGA PLAIN**

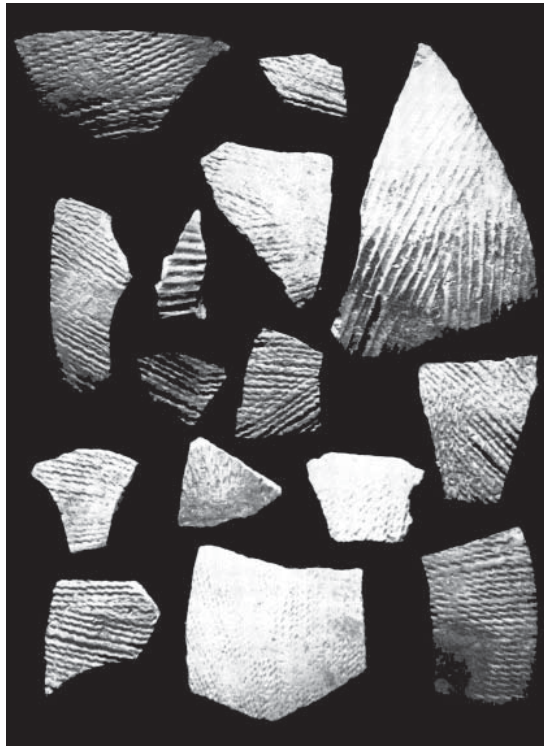
In period I (Narhan Culture) at Narhan, two cord-impressed potsherds have been found, out of which one piece is a deep bawl of black and red ware in coarse fabric. The whole interior is black and the rim portion of the exterior is also black while the rest of the exterior is red. Cord-impressions are found on the exterior of the pot on the red portion which is identical to Mahagara. The other piece is lipped basin of red slipped ware bearing a thick slip. The cord-impressed design, similar to other potsherds, is seen on the exterior about 4 cm below the rim (Singh 1994: 43). Cord-impressed pottery is also found in later periods, even during the Early Historic period (Singh et. al. 1984-85: 117-120) (Fig. 5 & 6). Moreover, another variety of this pottery which is different from the period I pottery comes from the lowest levels of period II identified at mound-2. Cord-impressed pottery has also been found in period I at the site of Taradih in Gaya district of Bihar (IAR 1984-85: 9). Excavations carried out at Chirand (Verma 1970-71: 19-23) in the district of Saran in Bihar reveal a Neolithic stratum of 3.5 m thickness in which a potsherd shows mat impressions.



**Fig. 5:** Corded ware from period I, Narhan (after Singh 1994)



**Fig. 6:** Cord-impressed pottery from period III, Narhan (after Singh 1994)

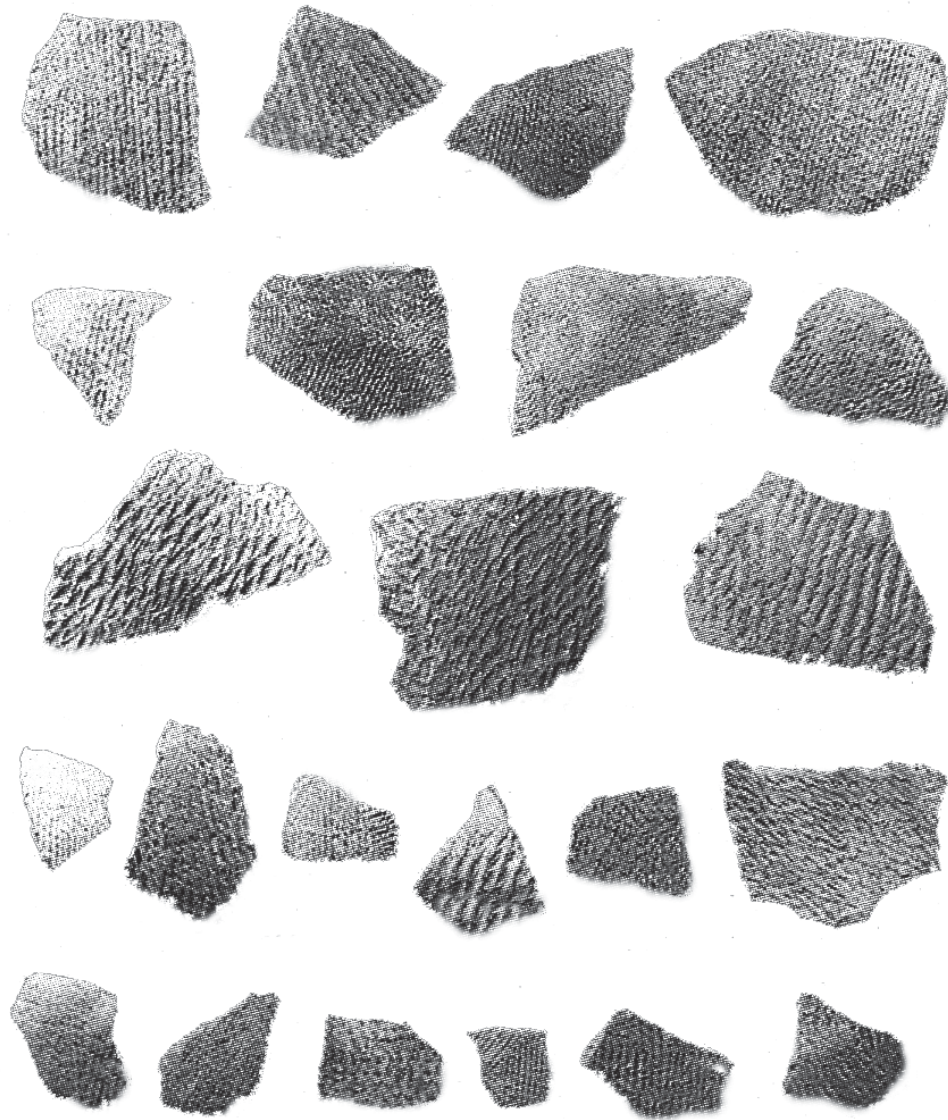


At the site of Sohgaura (Chaturvedi 1985: 101-108), on the confluence of rivers Rapti and Ami in Gorakhpur District of Uttar Pradesh, cord-impressed ware dominates Period I which is assigned to the Neolithic period. The pottery is coarse to medium in fabric and usually ill-fired. It is made of gritty clay mixed with rice husks, straw, etc. There is no uniformity of colour in the section of the potsherds. Sometimes the middle portion is black with red zones on either sides and in some potsherds, the inner portion of the core is black and the outer portion is red; however, some potsherds show uniformity in black colour in the section. The exterior in some potsherds is red while the interior is either grey or black. Cord-impressions occur only in the exterior and consist mainly of beaded lines usually vertical with other patterns. This pottery continues even to Period II assigned to Chalcolithic and also found in sites like Susipar, Ramnagar Ghat, Gerar and Lahuradewa in Basti District of Uttar Pradesh, Lalnahia and Kunjhum in Sidhi District of Madhya Pradesh, Chechar in Vaishali District of Bihar etc.

Archaeological explorations at the alluvial plains along the foothills of Kaimur, within a radius of 25-30 km were conducted by Singh (1988-1989: 6-18, also see Singh 1995-96: 75-93) and several sites of early farming communities were discovered. Cord-impressed ware, noticed during the excavations at Senuar in the period IA (Neolithic) is thin to medium in section. The clay is not heavily tampered and not well levigated, core is gritty and porous and external surface is marked with cord-impressions. The impressions of cord are incipient to thin and, at times, are indistinct; the cording strokes are vertical, oblique and slanting. Only bowls can be found in this ware. In the subsequent Period, IB (Neolithic – Chalcolithic), this ware shows greater variations in impressions and is usually in bold relief.

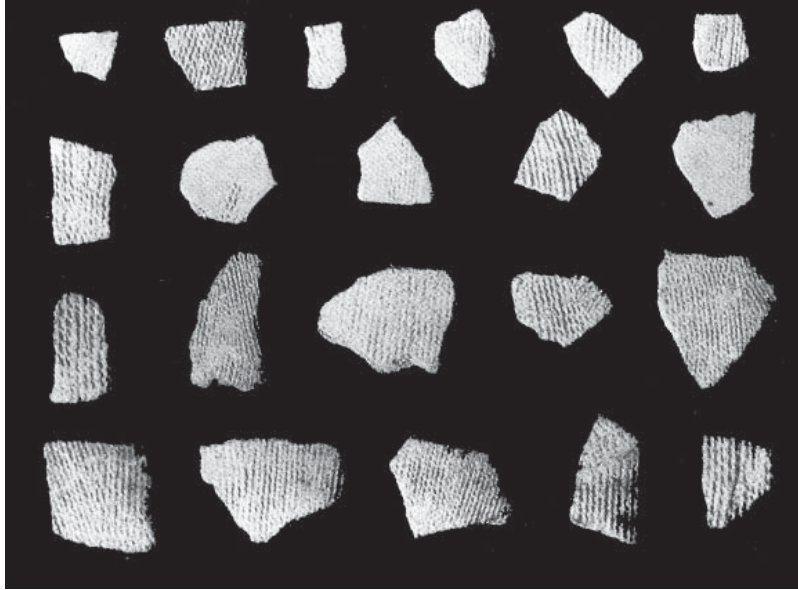
Few cord-impressed ware potsherds were also recorded in the Chalcolithic context of the site of Khairadih (Singh 1987-88: 32) on the right bank of Ghaghra in the Ballia District of Uttar Pradesh as well as in several sites like Daindih, Senuwar, Raja ki Akorhi, Akorhi, Kusuridih and Madhuri of Neolithic, Chalcolithic and Northern Black Polished Ware contexts (Singh 1987-88: 33).

In the site of Senuwar, located in the district of Rohtas of Bihar, cord-impressions are found in various patterns in bold relief and noted exclusively on red ware bowls and small-sized pots. The upper portion of the pot is treated with a thick red slip to cover the rough surface and the remaining lower portion is covered with cord strokes. It has medium section and coarse fabric. This pottery, found at the sites of Sakas (Lat. 24° 54' 10" N and Long. 83° 56' 45" E) and Malaon (Lat. 24° 55' N and Long. 84° 00' E) in the alluvial plains of Kaimur foothills in southern Bihar, are coarse and the impressions on the exterior are bold. The strokes are vertical, slanting and horizontal. The clay is not well levigated and heavily tempered with organic contacts and ill-fired. These are usually dull red and mat red and without surface treatment. Very few potsherds are treated with red

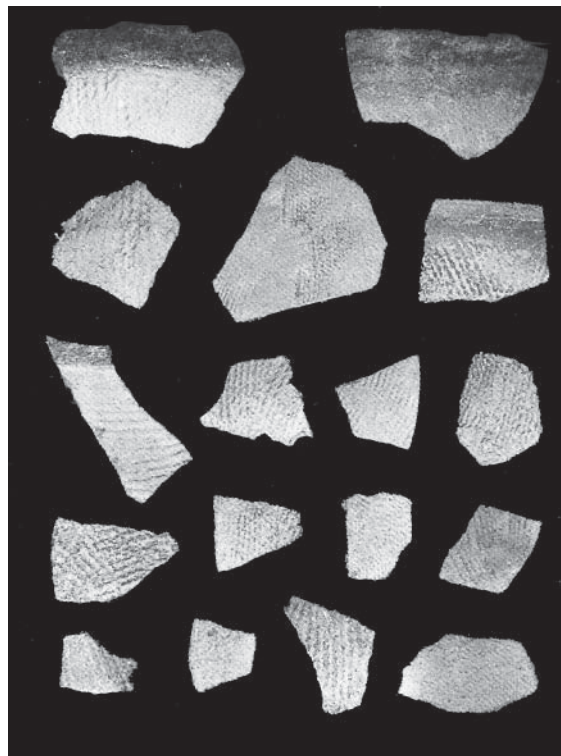


**Fig. 7:** Cord-impressed pottery, period IA, Senuwar (after Singh 1995-96)





**Fig. 8:** Cord-impressed pottery, period IB, Senuwar (after Singh 1995-96)



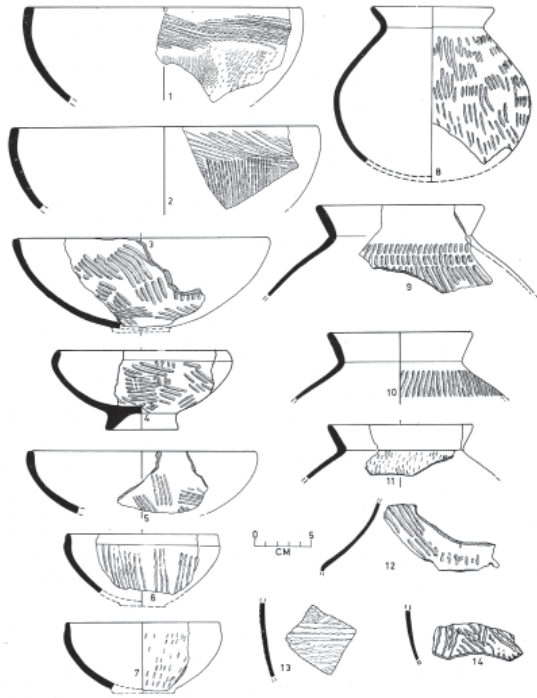
**Fig. 9:** Cord-impressed pottery, period II, Senuwar (after Singh 1995-96)

slip in the interior part. The slip on the outer surface is noted up to the rim or slightly below it and the exterior is covered with cord-marks. Shapes are mostly bowls and vases. The potsherds have remarkable identity with that of Senuwar (Singh 1996-97: 67-75) which again has striking similarities with the Vindhyan Neolithic pottery (Singh 2000-01: 110) (Fig. 7, 8 & 9).

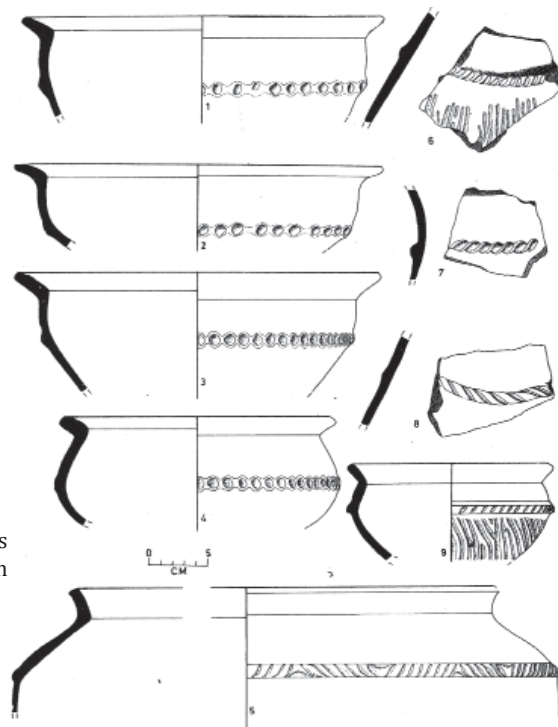
Singh et. al. (1991-92) also recorded cord-impressed ware during the excavations at Imlidih Khurd, in the left bank of Kuwana river, a tributary of Ghaghra River. Period I is characterised by crude red ware, occasionally bearing cord-impressions. Main types are: pedestalled bowl with incurved rim and cord-impressions on the exterior and a slipped and heavily burnished interior. The pedestal of such bowls was made separately, probably on wheels and then affixed to the body. Another type of vessel is a vase with a flaring rim, constricted neck and expanding sides, making a globular pear-shaped body, which bears cord-impressed designs just below the neck and all over the exterior. The third type of vessels is a handi like vase with out-turned or flaring rim and expanding body below the neck and sharp carination at the waist, which has cord-impressions below the carinated waist. Singh (1992-93: 21-35, also see Singh 1993-94: 41-48), further outlining the corded ware, found in this site mentions that the cord-impression has at least a dozen of patterns which include rope pattern, criss-cross design and excised notches. After making these patterns, a thick paste is applied in the pre-firing stage which subdues the impression. In addition to the corded pattern, pots are also decorated with post-firing scratching by a sharp instrument and the painting is done on the pot with dots and dashes in red colour over a bright red surface (Fig. 10, 11 & 12).

Tewari and Srivastava (1993-94: 13-39) also record some mat-impressed or corded ware potsherds from sites like Bhati (Khorja) (Lat. 26° 41' 13" N and Long. 83° 10' 15" E), Chandidiha (Lat. 26° 49' 19" N and Long. 83° 1' 50" E), Nagwa (Lat. 26° 43' 4" N and Long. 83° 16' 12" E) and Pipri (Lat. 26° 35' 37" N and Long. 83° 2' 59" E), which are handmade and small in size and the shapes are not clear. A few cord-impressed ware potsherds were recovered from period I and II of Musanagar (Lat. 26° 9' 55" N and Long. 79° 58' 13" E) during the excavation in the year 1995 (Tewari and Srivastava 1995-96: 69). Excavations at the site of Bhunadih, located 2 km east of Janwan on the right bank of Bahera nala, have shown two-fold cultural sequence in which period IA (pre-Narhan, Neolithic) and IB (overlap phase between Neolithic and Narhan culture) and II (Narhan, Chalcolithic) yield cord-impressed pottery besides other wares, which resemble pottery of Imlidih Khurd (Singh and Singh 1997-98: 11-29).

The site of Waina in the left bank of the ancient bed of Chhoti Saraju has yielded cord-impressed red ware with spouted vessels, bowls and vases as principal pottery types in Period IA (Singh and Singh 1995-96: 42). This pottery is recorded at different contexts at sites like Tulsi Diha, Dhuriapur, Duruie etc. of Saryu valley of Middle Ganga plain (Pandey and Srivastava 2009: 220-224); Ammadei, Bharaturwa, Khatkar, Bhatolwa, Deoraon,



**Fig. 10:** Corded ware from period I, Imlidih Khurd (after Singh 2010)



**Fig. 11:** Corded ware with appliqué designs from period I, Imlidih Khurd (after Singh 2010)

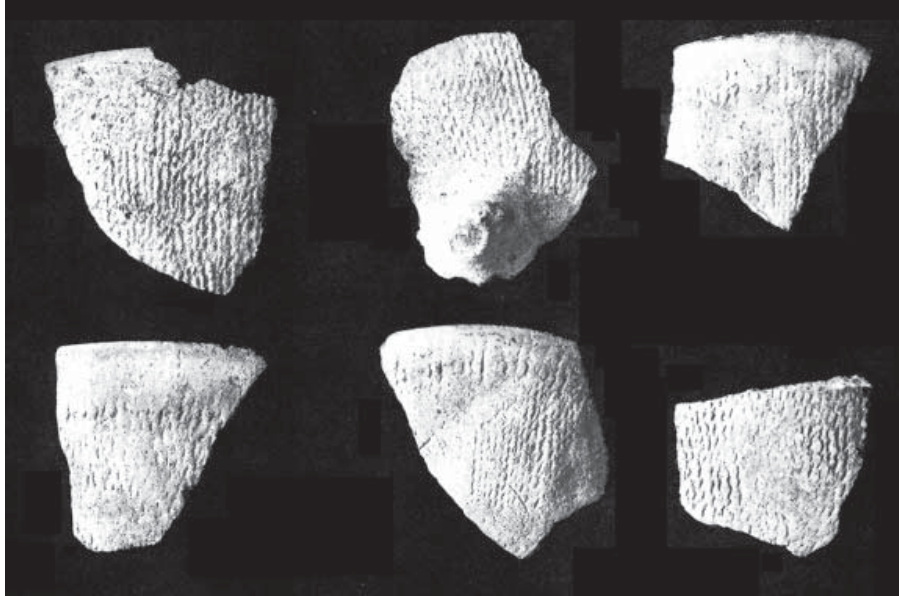


Fig. 12: Corded ware from period I, Imlidih Khurd (after Singh 2010)

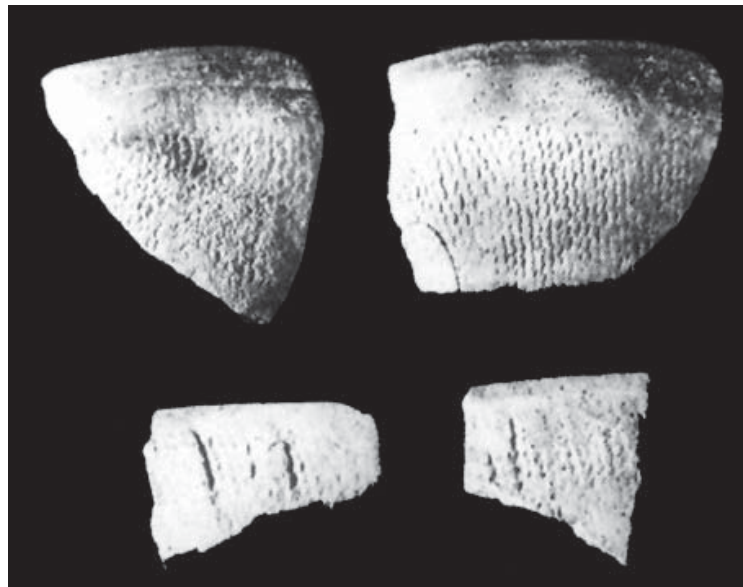
Tendhiya Bargaon, Siswania/Pachisa, Susipar, etc. from different cultural context, i.e. Chalcolithic to Early Historic context (Singh et. al. 1990-91: 69-82, Singh et. al. 1991-92: 33-44); Dhuriapar (Singh et. al. 1991-92: 58), Hulaskhera (Lat. 26o 41' N and Long. 81o 1' E) (Tewari et. al. 1995-96: 95-133), Benipur (Lat. 26o 53' 0" N and Long. 82o 30' 08" E) (Tewari and Mani 1995-96: 149- 168), Raja Nal Ka Tila (Tewari and Srivastava 1996-97: 81), Agiabir (Singh and Singh 1998-99: 116, Singh and Singh 1999-2000: 32), Malhar (Tewari et. al. 1999-2000: 68-98) (Fig. 13, 14 & 15), Phakkada Baba (Lat. 24o 58' N and Long. 83o 17' 26" E) (Tewari 1999-2000: 102) and Gauriaghat Ranijot (Lat. 27o 15' 15" N and Long. 82o 8' 20") (Tewari and Srivastava 1999-2000: 174). Tewari et. al. (2001-02) also recorded a few sherds bearing cord-impressions on their external surface in Period I at the site of Dadupur (Lat. 26O 42' N and Long. 80o 49' E) in the banks of Nagwa Nala in Lucknow District (Fig. 16).

Excavations at Lahuradewa (Tewari et. al. 2001-02: 54- 62, Tewari et. al. 2005-06) yielded coarse variety of red and black and red wares, mostly handmade, which bear cord-impressions on the exterior in Period I, assigned to early farming phase. Some of the potsherds are treated with red slip in the outer surface and the shapes include vessels and bowls. Few painted potsherds of coarse variety of black and red ware have fine red slip in the upper shoulder; decorated with post firing incised parallel linear pattern and subsequently with painted small vertical lines in creamish white colour. Below the shoulder, they bear oblique cord-impressions. The cord-impression continues even in the later Chalcolithic stages.

Jhusi (Lat. 25o 26' 10" N and Long 81o 54'30" E), located on the left bank of the Ganga within a marked meander, very close to the Ganga-Yamuna confluence, also yielded cord-impressed ware along with other handmade wares, i.e. rusticated ware, burnished red ware, burnished black ware and crude black and red ware. Rice husk was used as a tempering material. The ceramics are ill fired and has thick to medium fabric. The clay is not well lavigated. In some instances, there is rustication on the corded or burnished red surface. The rustication and cording pattern have similarities with the Neolithic pottery of the Vindhyan region. The corded designs continued even in the succeeding Chalcolithic



**Fig. 13:** Corded ware, period I, Malhar (after Tewari et. al. 1999-2000)



**Fig. 14:** Corded ware, period II, Malhar (after Tewari et. al. 1999-2000)

period (Misra et. al. 2009) (Fig. 17). Another site, Hetapatti (Lat. 25o 29' 0'' N and 81o 55' 31'' E), located on the left bank of Ganga, has also recorded a Neolithic horizon in which cord-impressed ware occur along with other rusticated, red and burnished red ware (Pal 2007-08: 273).



Fig. 15: Cord-impressed pottery, period II, Malhar (after Tewari et. al. 1999-2000)

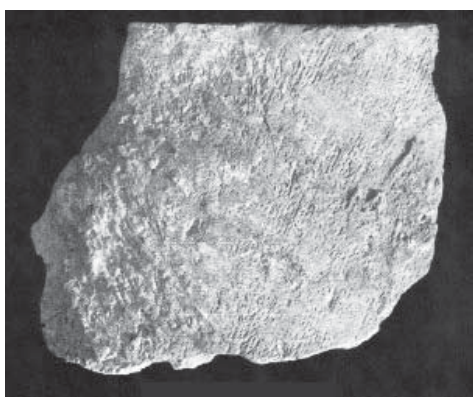


Fig. 16: Cord-impressed Pottery, Dadupur (after Tewari et. al. 2001-02)

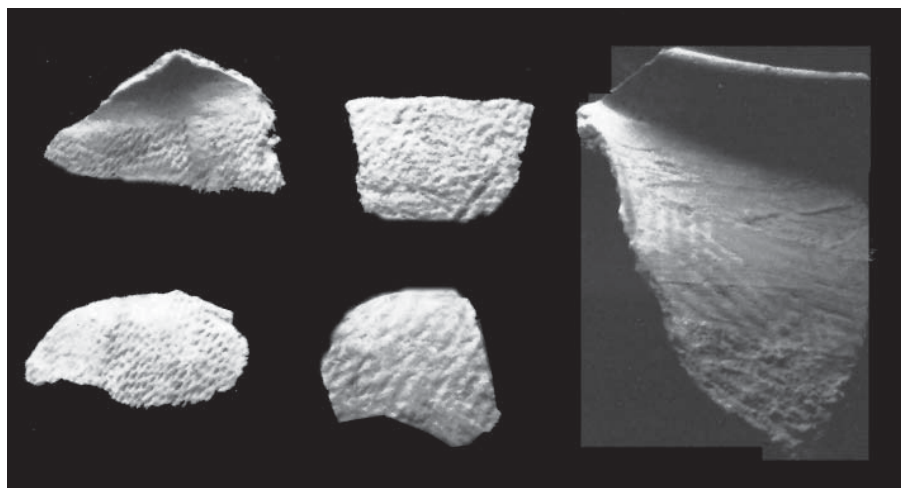
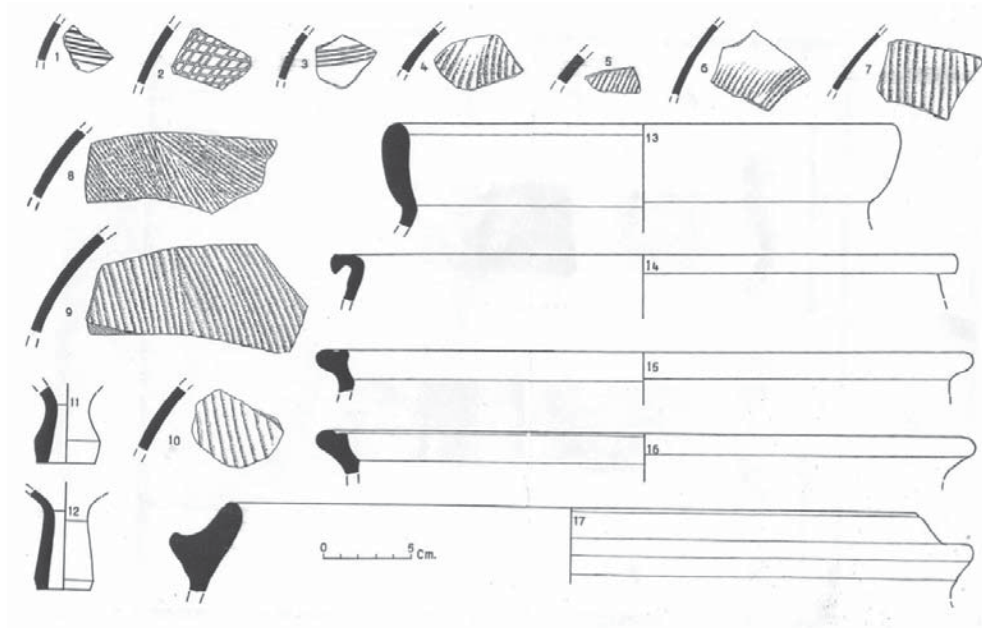


Fig. 17: Cord-impressed pottery, Jhusi (after Misra et. al. 2009)



**Fig. 18:** Cord-impressed red ware from Pakka Kot (after Dubey et. al. 2010: 202)

Recent investigations (Dubey et. al. 2010: 200-204) at the site of Pakka Kot (Lat. 25° 45' 10" N and Long. 84° 0' 30" E), situated in the ancient bed of Chhoti Sarayu river of Ballia district, Uttar Pradesh yielded cord-impressed red ware along with red ware (Fig. 18). The pottery types are bowls, vases and basins which are comparable with Imlidih Khurd, Lahuradewa and Bhunadih.

### MEGHALAYA PLATEAU AND ITS ADJOINING REGIONS

Numerous potsherds were recovered from the excavations at Sarutaru, a Neolithic site in Assam-Meghalaya border (Rao 1977: 41), found in association with stone axes. The pottery is handmade and made of clay, mixed with quartz particles, which show up on the surface. Three ceramic types, on the basis of colour, are recognized, i.e. brown, buff and grey. The ceramic is sometimes decorated with cord-impressions or basket-impressions on the exterior in the form of either parallel or criss-cross lines. No complete shapes were present. The coarse fabric with thicker walls fired at a low temperature, and hence is not well baked. The ceramic can thus be classified into two groups – brown and grey- on the basis of the surface colour attained due to the varying degree of firing. The brown ware predominates over the grey ware (Rao 1977: 191-205). The exterior decoration on most of the potsherds from Sarutaru is in the form of impressed patterns such as (a) simple cord-impressions, (b) twisted cord-impressions, (c) herring bone patterns and (d) zig-zag patterns.

Further, the site of Marakdola, excavated by Rao (1977), at a distance of 1 km from the Neolithic site of Sarutaru, revealed a single cultural stratum of 1 m thickness with wheel turned pottery of fine kaolin clay. The exterior decorations of the pottery include, among others, cord-impressions on some of the vessels from shoulder to the base. The excavator assigned the site to the Neolithic period due to the occurrence of a shouldered celt among the pottery.

Pottery found at several sites of Khasi and Jaintia hills are mostly handmade, fired in low temperature and have cord-impressions, a common characteristic feature of Neolithic pottery of Northeast India (Mitri 2009). Rao (IAR 1992-93, Taher and Rao 2005), during a trial trench measuring 2 × 1 m at Pynthorlangtein (Lat. 25° 22' 26" N; Long. 92° 06' 07" E) in Jowai Tehsill with a view to ascertain the nature of the habitation deposit during 1992-93, unearthed a cultural deposit of 1 m comprising Neolithic cultural milieu. Besides the lithic artifacts, a few potsherds of handmade, coarse red ware pottery with cord-impressions were collected at a depth of 60-80 cm (Fig. 19).

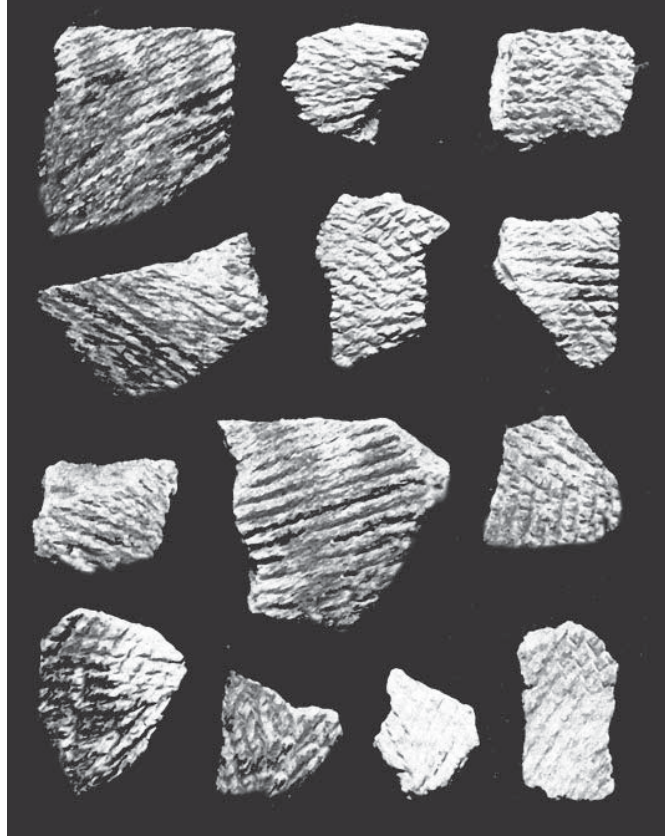
Pottery recorded during the exploration by Rabha (IAR 1965-66) in the Kamakhya Hills in Guwahati is distinguished by cord and basket impressed designs on the exterior (Fig. 20). Similar pottery was also found from the adjoining localities of Navagraha and Sarania Hills. However, this pottery could be of later period as well.

### **MANIPUR VALLEY**

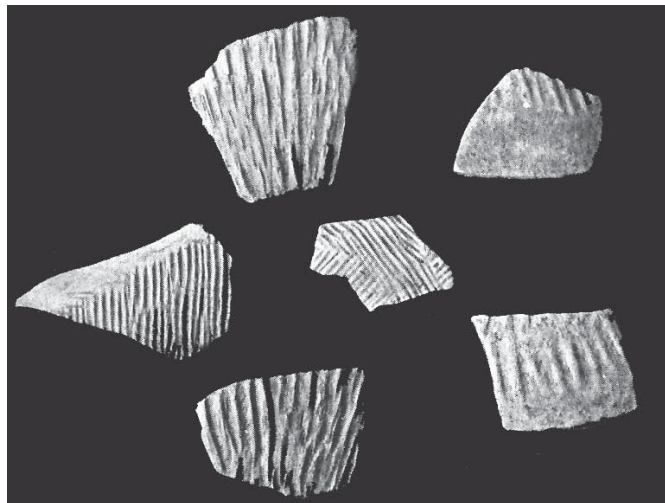
Handmade corded ware pottery has been found in the Neolithic level overlying the Hoabinhian stratum in the cultural sequence at the site of Nongpok Keithelmanbi (Singh 1993) of Manipur which is ill fired and heavily weathered and in many cases, the corded surface is also eroded. These cord-marks demonstrate linear and criss-cross patterns. The pottery is made of fine clay and tempered with sand and a few quartz particles and, specifically, fine sands were used as tempering material for the plain pottery. The colour of the potsherds includes various potsherds of red and brown, of which light red and reddish brown are the dominant colours. In thickness, the potsherds ranges from 2 mm to 8 mm, the common is being 4 to 5 mm. From the rim fragments, the vessel appears to be a shallow bowl with flatly carved base and globular pot with constricted neck.

The site of Napachik (Singh 1993) in Manipur has yielded 893 pieces of cord-marked ware besides 748 pieces of plain ware, 4 pieces of ring footed ware, 64 pieces of tripod legs ware, etc. The ceramic industry is handmade, fragmentary and fired under low temperature and the decoration is done by beating with cord-wrapped paddle. Most of the potsherds are of fine texture and tempered with sand, vegetables or powdered charcoal. Reddish brown is the dominant colour of the pottery and also of grey, dark grey and whitish colour.

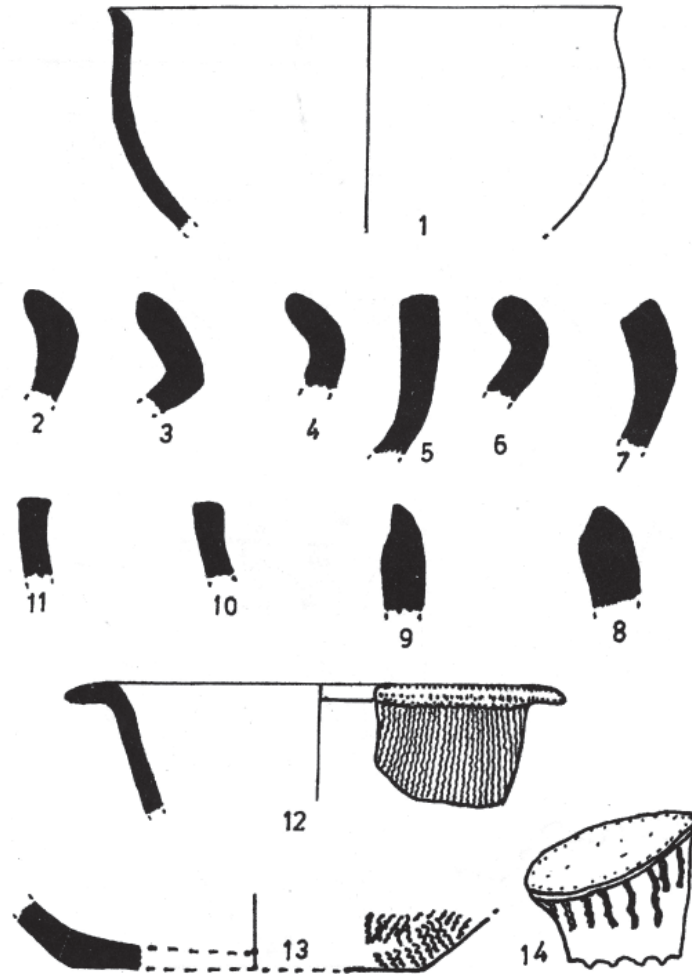




**Fig. 19:** Pottery from Pynthorlangtein (after IAR 1992-93)



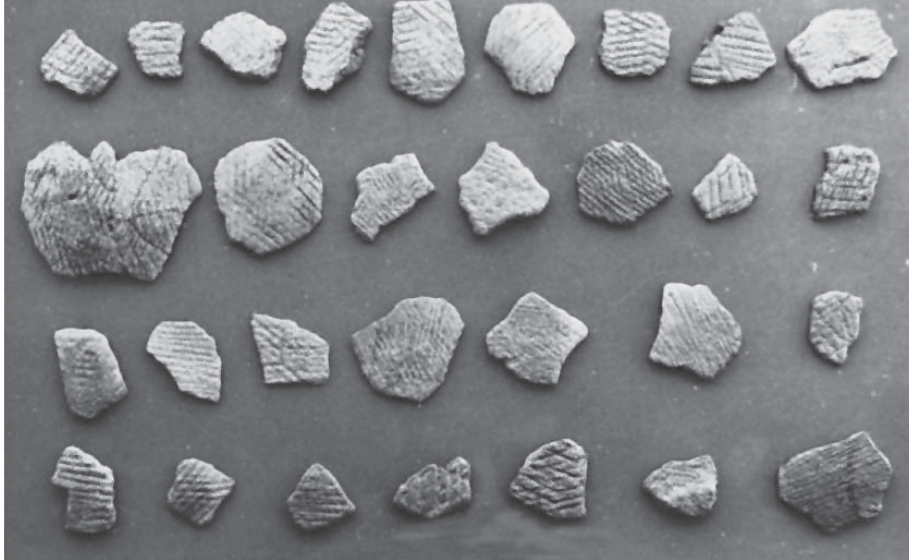
**Fig. 20:** Pottery from Kamakhya Hills (after IAR 1965-66)



**Plate 21:** Cord-impressed pottery from Napachik I (after Singh 1993)

The pottery from Phunan (Singh 1993) is also handmade and tempered generally with coarse sand and quartz. Some pottery has been made of fine paste. Besides the plain sherds, the decorations were made by incising, impressing and applying, in which the impressed wares include surface decoration with cord-wrapped paddle and circular spots.

Mostly three types of impressions are obtained by using (i) single strand cord, (ii) double strands twisted cord and (iii) knots of thick cord in Maipur. The cords are wrapped around a paddle in case of the first two types, while the paddle is covered with a net made by tying knots in series of thick cord in the case of the third type (Singh 2008: 103-104).



**Fig. 22:** Cord-marked pottery from Archaeological sites of Manipur (after Singh 1998-99)

### **NAGA HILLS**

Not much is known about the cord-impressed pottery in the Naga Hills sites except a few sites like Chungliyimati (Nienu 1974) which has yielded handmade pottery associated with ground stone tools; Sachema, located 25 km. northwest of Kohima at a height of 1500 m; at Kiruphema, 6 km. northwest of Sachema at a height of 1400 m and Kigwema, 16 km south of Kohima (Sharma 1996). Recent explorations and excavations carried out by Jamir (see his paper in this volume) has brought to light several hidden aspects of the Neolithic cultures of Nagaland. The sites have yielded pottery with distinct cord-impressions.

### **SOUTHERN ASSAM HIGHLANDS**

The pottery from Daojali Hading are classified by Sharma (1967) into three varieties, i.e. 595 pieces of cord-impressed variety, 19 pieces of stamped dull red variety, and 11 pieces of brick red variety, of which majority of the potsherds are heavily weathered and broken into small fragments which prevent identifying the shapes and forms of the vessel. The cord-impressed coarse grey ware is made of coarse and unevenly mixed clay, heavily tempered with large quartz particles which were prepared by coil-building method. The colour of the cord-marked and incised pottery is predominantly grey and the other colours are dull red and chocolate brown (Sharma 1967: 126-28).

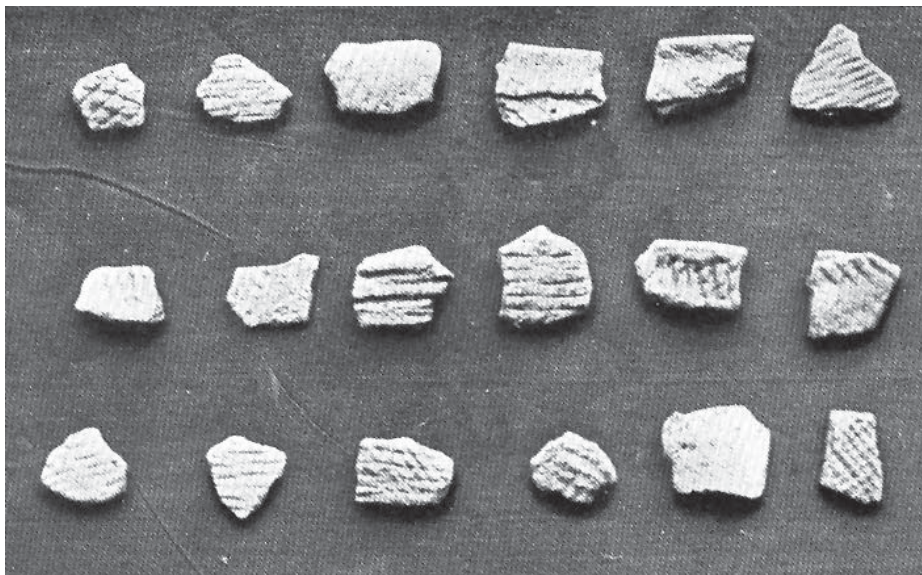
Cord-marks on the pottery from the site of Daojali Hading show parallel grooves occurring in rows. Although it is a common pattern, other conspicuous pattern is probably produced

by a double threaded, twisted cord. There is no evidence of burnishing, tooling or slip on the potsherds. However, possibly some potsherds may have been affected by a deposition of iron slat which imitates a brown slip. These are ill fired. The Incised pots show herring-bone and cross-hatched or diamond designs. Some potsherds may have been made by beating with a rough wooden slat, without cord-wrapping or engraved designs (Sharma 1967: 126-28).

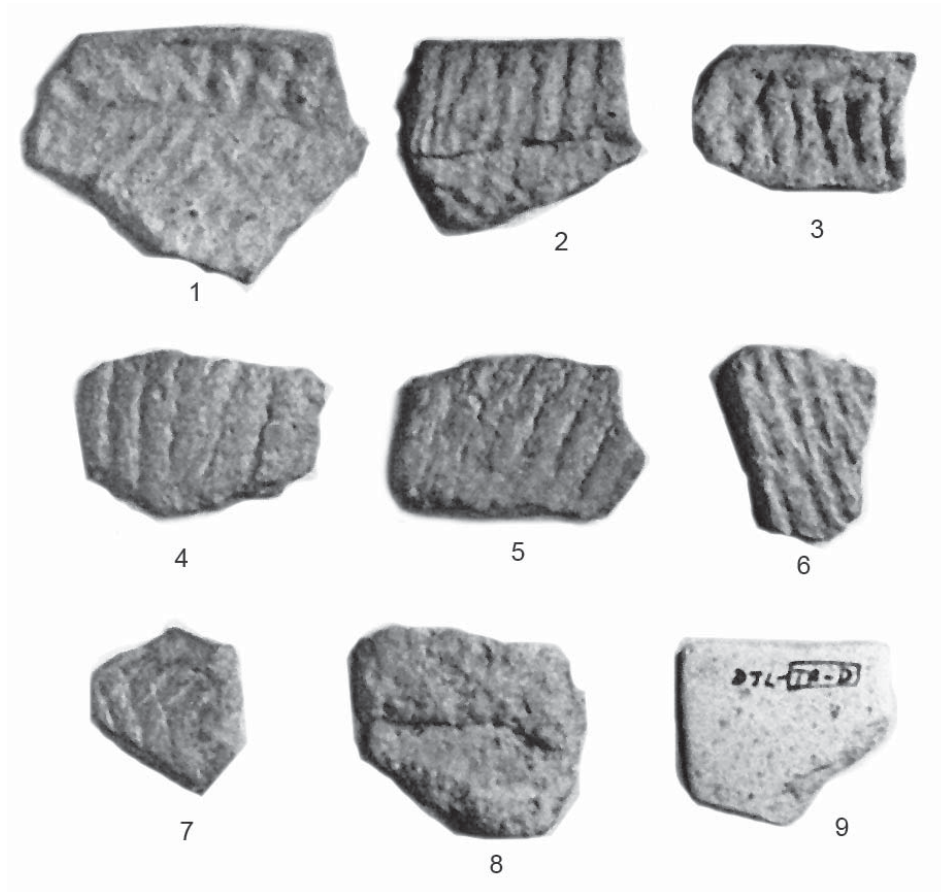
Regarding the technology of the pottery from Daojali Hading, Sharma (1967: 126-28) notes that only the plain red ware is made of well prepared fine clay, whereas all other types are made of coarse and impure clay. In certain cases, the clay is heavily tempered with comparatively large quartz and sandstone grit which are observable on the surface. Coarse sand and some vegetable material are also used tempering material. Except possibly the plain red types, all other vessels are modelled by hand by using various kinds of tools. The coil or ring building method is used for heightening the wall of the pot in some cases in the pottery assemblage of Daojali Hading.

Explorations carried out by Sharma and Ashraf (IAR 1991-92) during 1991-92 revealed a good number of potsherds, predominantly of cord-impressed from the surface as well as from stratified context in the area around Langting and Maibong in North Cachar Hills.

Study conducted by Roy (2004) covered the ceramics traditions of Northeast India from Neolithic to Medieval period including pottery from the well-known site of Daojali Hading, sites of Garo Hills and the Medieval site of Ambari. He pointed out that the pottery collected from Garo Hills is simple and devoid of any design and, on the other hand, the



**Fig. 23:** Cord-marked Pottery from Daojali Hading (after IAR 1962-63)



**Fig. 24:** Cord-marked Pottery from Daojali Hading (after Sengupta and Sharma 2011)

pottery from Daojali Hading is decorated with designs which were of Southeast Asian origin. Typologically the pottery from Garo Hills is also comparable with the Southeast Asian pottery.

### **ARUNACHAL PRADESH**

At the site of Parsi-parlo (Ashraf 1990: 39), a few number of potsherds represent square-grid and honey-comb (web) beater-impressed pottery. The lavigation is poor and contains high percentage of gritty particles. The pottery represents bowl with featherless rim and constricted neck, lipped pot with globular body made for culinary purposes. Again, potsherds discovered at this site of Taba are coarse in texture and were handmade (Ashraf 1990: 16-22), comprising plain (thick and coarse) ware, stamped (grid pattern) ware and irregular corded ware.

## **OTHER REGIONS OF BENGAL PLAINS, CHOTANAGPUR PLATEAU AND SIKKIM HIGHLANDS**

Recent reviews of the Neolithic-Chalcolithic context indicate paucity of cord-impressed ware in West Bengal (Chakrabarti 2002-03: 23-33, Chattopadhyay et. al. 2006-07: 68-93, Chattopadhyay et. al. 2009: 80-95, Chattopadhyay et. al. 2010: 71-93). Pottery is not found in association with Neolithic context in Kalimpong and Sikkim (Lama 2008: 39-49). Sharma (1996: 144) believes that the absence of pottery in Sikkim is due to the absence of desired type of soil for pottery making. Pottery making is not even practised in the twentieth century due to the non availability of suitable raw material (Sharma 1996: 7).

Excavations at the site of Golbai Sasan (Lat. 20° 01' N and Long. 83° 33' E) in Puri district of Orissa during 1991-92 reveals handmade pottery with cord and reed impressions in the Neolithic period; however, some potsherds indicate use of show-wheel and turn table technique. The pots are mostly vases in dull red and grey wares (Sinha 1992-93: 48-50). The Orissan Neolithic/Chalcolithic sites also do not reveal much evidence of cord-impressed ware (Kar et. al. 1998: 107-114, Pradhan 2000: 99-103, Behera 2000: 222-263, Basa 2000: 264-284). Dash (2000: 217) mentions a pottery type of cord-marked tapering body with pointed base, high neck and grey and brown in colour. Sinha (2000: 324) observes cord-impressed pottery in the Period I (Neolithic period) at the site of Golbai Sasan (Lat. 20° 1' 45" N and Long. 85° 33' 22" E). This type of pottery is handmade and decorated with cord or reed impression and comparable to the pottery of Daojali Hading in Assam. Kar (2000: 373) also records cord-marked designs of vertical, parallel and uneven nature in the red ware pottery at the site of Gopalpur (Lat. 20° 01' 52" N and 85° 21' 19" E), also known as Jagati of Coastal Orissa. Sites of Middle Mahanadi valley, Orissa, such as Khameswaripali, Khajeriapali and Hikudi also yielded cord-impressed pottery, though in less amount (Behera 2000-01: 13-34).

Behera (in this volume) reports cord-impressed red ware from the site Neolithic habitation of Hikudi in the left bank of the Mahanadi river. The clay used is heavily tempered with inclusions like crushed quartz and/or sand particles and lime. He records that the thickness of the individual cord-marks on the pottery varies from 1 to 3 mm which are very often deep. The impressions are generally vertical, oblique or slanting. Cord-impressions are done on both inner as well as outer surfaces a large number of pots, particularly the wide-mouthed jars and elliptical handis.

## **METHODS OF OBTAINING CORD-IMPRESSIONS**

As noted in the introduction, the cord-impressions were decorations or a technological aspect while making the pot. Different scholars have attempted to explain the technology of cord-impressions. Rao (1977: 191-205) believes that cord-impressions, the most

striking feature of decoration of the pottery from Sarutaru, were obtained through the process of making a vessel by hand. Two parts of the vessel were moulded by hand separately and then joined together by beating in leather-hard condition with a wooden paddle, which could be wrapped up in rows or cord, either plain or twisted and their impressions lay on the vessel. Beating obliquely on the vessel renders the herringbone pattern; the zig-zag patterns resulted from paddling in irregular fashion.

While commenting on the method of manufacturing the Daojali Hading pottery, Sharma (Sharma 1967: 126-28) narrates that during the final shaping of the pot by the process of beating, commonly known as the beater and pad method, these impressions were produced. The beaters were probably of two types. In some cases, a rectangular piece of wood of 8 to 10 inches long and 3 to 4 inches wide which is used as the beater, is wrapped round with string or cord while, in other cases, the wooden beater may have been made rough by engraving with some kind of designs such as cross hatching or a diamond pattern.

Wu (1938: 32-33), with reference to the cord-marked pottery of China, believes that these engravings on the beater was done in order to prevent the instrument from sticking to the wet clay which depicts impressions of the string or the impressed designs of the grooved beater on their outer surface, while the inner surface bears marks of the pad used to support the wall of the pot while beating. The pad may be pebble wrapped with soft material, such as leather or cloth. In certain cases, the potters may use the back of the free hand for this purpose of supporting the clay from inside the pot. In certain cases, cord-marks extend right up to the edge of the rim of some vessels, while in others they stop a few mm below (Sharma 1967: 126-28).

Sharma and Mandal (1980: 25) observed multidirectional striated and zig-zag dotted designs without forming any recognised pattern in the pottery recovered from Mahagara and Koldihawa. Pal (1987: 63) pointed out two methods of the imparting cord-impressions on the exterior of the pottery. One is by the application of cord-wrapped paddle on the leather hard surface of the pot. Another possibility is that they Neolithic potters used tortoise shell for such impressions. Experimental study (Pal 1987: 63) demonstrates that the impression of a tortoise shell on a wet clay clod show resemblance with the cord-impression of the pottery. Misra (1977) also suggests that the cord-impressed designs were obtained through tortoise shell impressions.

### **CORD-IMPRESSED POTTERY MAKING TRADITION IN THE ETHNOGRAPHIC CONTEXT**

In certain pockets of Northeast India, there are potters' communities whose pottery resembles well with the cord-impressed ware found in archaeological contexts (Hazarika 2011a, 2011b, 2012). Potters of Mizoram apply a cord-wrapped paddle on the wet clay

surface of the pottery. They use thick cotton threads for wrapping the beater which gives an interesting design on the outer surface of the pottery (Saraswati and Behura 1966).

In Manipur, there are certain potters' communities who still practice primal methods for making earthenware. The Tangkhul tribes of Nungbi village use a netted wooden beater, locally known as hamkapi, made of wood and the flat paddle is wrapped with thin cord net made of the fibber from a wild creeper in making various pottery. The Andro, Sekmai and Chairen groups of the Chakpa community as well as potters of the Thongjao village use various kinds of plain and carved wooden beater for shaping and decorating the outer surface of the body of the pot (Singh 2008: 65-96).

Cord-marked pottery making tradition, a living tradition among the Oinam, a Mao Naga tribe in the Senapati district of Manipur, is still in a very primitive technological stage. They make pottery with a very crude technique of moulding and hand-beater methods. The Cord-marked pottery from the archaeological sites of Manipur has similarities in certain processes of the technology. After obtaining the desired shape by beating with plain beater, final beating is done by using cord-wrapped wooden beater, locally known as kha, which leaves impressions on the outer surface of the pottery. These impressions resemble well in both the prehistoric and modern pottery (Singh 1998-99: 60-64). As the impressions are done after the final shaping of the pottery, these can be considered as decorations rather than as process of technology.

In the Naga Hills, earthen handmade pottery is produced by a few villages notably Viswema and Khuzama of Angami tribe; Thenyezuma, Runguzuoma and Kholazumi of Chakhesang tribe, Tseminyu village of Rengma tribe, Peron and Puilua villages of Zeliang, Changki, Japo and Longsemdang villages of Ao tribe, Tokikehimi and a few other villages of Sema tribe, Wokha and several other villages of Lotha tribe, Kongsang, Yali and Nakshao villages of Chang tribe, Wakching, Shiyong, Leangha, Chui, Choshachinguyu, Longkai, Sheanga and Tangjen of Konyak tribe, Nguro and Lungmutra of Sangtam tribe, Noklu, and Sao villages of Khemungam tribe, and a considerable number of villages in Phom area. They use several kinds of sticks for shaping and beating the pottery. One of the shaping sticks is a narrow flat piece of *Mesua ferrae* wood with a smooth surface, rough shaping and the other stick with broader ends like a double paddle made of the same wood is used for fine works. The surface of the paddle of the stick is grooved by producing a pattern of squares and oblique cross-hatching which are imprinted on the surface of the pots at the time of beating the pot. These may be considered as a design of ornamentation. The other method of ornamentation is done by a string pattern, in which a flat stick covered with coarse string binding is applied for patting, while the pot is still in wet condition (Alemchiba 1967).

The Nagas make pottery by using good sticky plastic light brown clay. The potters of the Chagki village in Ao area and Lothas use a mixture of red and grey clay instead of using



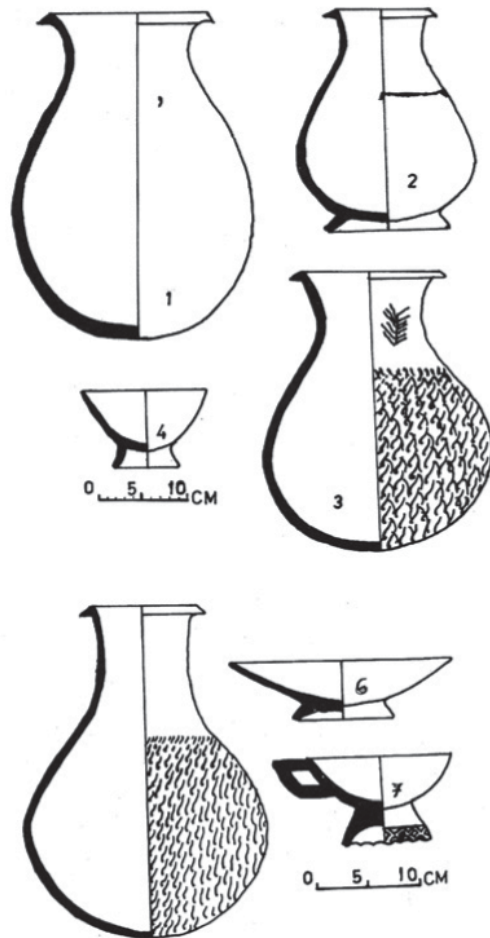


Fig. 25: Oinam pottery and wooden vessels (after Singh 1998-99)

upside down by covering with dried bamboo and reeds (Alemchiba 1967).

one kind of clay with little proportion of the red clay, while the Semas and the Angamis mix the clay in proportion of 3:2 with remains of old pots crushed and powdered into fine dust. The Phom women collect grey clay from near the village and then mix with broken pieces of old pots and grind with a round stone over a flat stone and then the mixture is moistened with water and pounded vigorously to prepare good quality of clay for pot making. Kneading is done by hand for making the clay use ready. Further, the dough is moulded into a more rounded form and size required for the individual pot to be made. This rounded lump of clay is then rammed with hands for giving a definite shape. While shaping, water is often sprinkled to keep the clay moist and pliable. After obtaining a required shape, the pot is left in the sun for getting hard and dry for some time. Then, the final shaping is done with a few tools, i.e. mushroom shaped “stop” made of baked clay and a shaping stick (beater). The Phoms potters as well as a few other tribal potters use a round stone in the shape of the stop. Firing is done on a low rough platform of dried bamboo about 10 cm by placing the layers of pots

Dafla women of Arunachal Pradesh are skilled in pottery making. They pound a specific kind of earth called dekam on a big stone with a wooden hammer into powder, and after mixing with water, again hammer it till it gains the required softness. The women sits with a piece of gunny bag, or old fibre blanket spread over her thigh and takes a lump of clay and shapes it with her finger into a crude pot with a shallow opening at the top and rim around it. After shaping several of such crude pots, these are kept in the topmost tray over the hearth to dry. On the next day, the next process is done by pushing a stone deeper and deeper through the hollow of the mouth to get the right bulge of the sides. The outer surface is beaten with a bamboo stick with a lineal design on it, locally known



**Fig. 26:** Potters and potteries of Nagaland (after Alemchiba 1967)

as kamgi to flatten them thin, which leaves the marks of the design on the exterior of the pot. By this process, the desired round shape, size and finish is obtained. No polishing or burnishing is applied. After drying in shed drying, these are put in a fire though a ditch, upon availability, without any kilns. These are exclusively made for cooking purpose (<http://ignca.nic.in/craft001.htm>).

### CHRONOLOGY

For computing the antiquity and chronology of the cord-impressed ware of eastern India, we need to have a fair idea about the available dates of the earliest levels from which this ware has been recovered. The Neolithic level bearing cord-impressed ware at the site of Koldihawa gives the dates of 6570 + 210 BC (PRL. 224), 5540 + 240 BC (PRL. 100) and 4530 + 185 BC (PRL. 101). Two TL dates for the Neolithic context of Mahagara are reading 2265 BC and 1616 BC while the C14 dates are reading 1440 + 150 BC (PRL 409), 1330 + 120 BC (PRL 408), 1440 + 100 BC (PRL 407) and 1480 + 110 BC (BSIP). C14 date from the site of Kunjun reveals a date of 3530-3335 BC (Possehl and Rissman 1992). Tokwa is dated to reading 6591 BC (BS 2417), 5976 BC (BS 2369) and 4797 BC (BS 2464). The consistent dates obtained from period I of the site of Narhan (Singh 1994: 29) are 1090 + 110 BC (BS 850) and 1100 + 110 BC (BS 852). Chirand yielded two dates reading 1760 + 150 BC and 1680 + 135 BC (Possehl and Rissman 1992: 461) and Senuwar recorded the dates reading 1770 + 120 BC, 1660 + 120 BC, 1500 + 110 BC and 1400 + 110 BC (Singh 1990: 18) which pushed the antiquities of this ware at both this site to around 2000 BC. Period I of Dadupur is dated to 1420 + 80 BC (cal. 1679-1522 BC) (BS 1822), 1530 + 160 BC (cal. 1882-1465 BC) (BS 1759) and 1580 + 90 BC (cal. 1739-1695 BC) (BS 1825) (Tewari et. al. 2001-02: 111). The new dates obtained from the site of Lahuradewa period IA have far-reaching impact as the dates reading 9510 + 100 BP (cal. 8317 - 8555 BC) (PRL 3030), 9570 + 120 (cal. 8340-8696 BC) (PRL 3031) and 9880 + 110 BP (8813-

9171 BC) (PRL 3032) are much earlier than many other sites of the Middle Ganga plain (Tewari et. al. 2007-08: 358). The site of Jhusi has also yielded interesting evidence for deep antiquity of this ware in this area as the dates are reading cal. 5660, 5649, 5642 BC (BS 2524), 5990, 5938, 5932 BC (BS 2525) and 7106, 7105, 7080 BC (BS 2526) (Misra et. al. 2009: 41).

Ramesh (1989) dated the Neolithic tools from Tripura to c. 1500 BC by <sup>14</sup>C method. At the site of Nongpok Keithelmanbi (Singh 1993) site of Manipur with stone tools and cord-impressed pottery, the cord-impressed ware stratum has been dated to 4,460 + 120 years BP. The site of Napachik (Singh 1993) of Manipur gave a TL date of 1450 BCE. The Neolithic site at Dibru valley (Saikia 1988) of Dibrugarh in Assam has yielded celts of different variety with handmade pottery and has been dated to 2210+140 BC. However, more dating attempts are essentially required to establish the origins of Neolithic culture and the cord-impressed ware which is the predominant ceramic of these sites (Hazarika 2011c: 30-55). In a recent review of the archaeological evidences pertaining to the movements of people in Northeast India during the time period from the earliest to the beginning of urbanisation in the Brahmaputra valley, i.e. 5th – 6th century CE, while attempting to understand the dispersals / migrations / interactions of the early population with its neighbouring populations and cultural exchange, it appears that this particular ware can be considered as one of the most prominent evidence for cultural interactions during the Middle Holocene to Late Holocene period in these areas covering China and Southeast India (Hazarika 2011d: 288-305), besides lithic industries (Hazarika 2011e).

De Semone (2009: 1-6), after studying and comparing the cord-impressed pottery from the sites of Imlidih Khurd, Narhan, Bhunadih and a few sites of Ganga valley reports that the chemical composition of sherds of this ware has a high percentage of silica and low percentage of alumina, which results in the production of fine or coarse ware. Firing was done in around 850o- 900o in an oxidising temperature. She believes that this ware can be considered as an index fossil and can be used in building relative chronology of different cultural stages of middle Ganga plain. Singh (2010: 107) considers the cord-impressed ware as distinguishing feature of the Neolithic culture of middle Ganga valley. However, Singh (1987-88: 32), while commenting on this kind of pottery as a chronological marker of the Neolithic, believes that “presumption of Neolithic culture on the mere occurrences of cord-impressed pottery would be misleading ... This pottery is associated with Chalcolithic and in a limited number with Northern Black Polished ware deposits as well”. So, mere discovery of this pottery in a site does not directly indicate a Neolithic context. Considering the absolute dates of the sites bearing corded ware such as Lahuradewa, Jhusi and Koldihawa datable to circa 7th millennium BC, Tewari et. al. (2007-08: 368) opines that this middle Ganga plain has greater antiquity than its adjoining areas of eastern middle Ganga plain, lower Ganga plain and Northeast India.

## CONCLUDING REMARKS

Current distribution pattern of the cord-marked pottery as a dominant ceramic ware in association with polished stone tools, including the shouldered axes, over a wide region of Eastern Asia, comprising China and the countries of the Southeast Asia and also eastern India, indicate the cultural connections of the prehistoric people inhabiting this wide area of Asia. A recent review of the ceramic traditions of middle Ganga plain by Mishra (2010: 147-161) demonstrates the importance of Cord-impressed ware in Neolithic and Chalcolithic period. The earliest evidence of pottery in China and Japan goes back to 21,000-18,000 cal. Yrs. BP (Yasuda 2002). The earliest Neolithic period in China with the evidences of pottery is summed up by Zhang and Hung (2008) which is dated within the time bracket of 16,000 to 10,000 years ago. The potteries of East Asia and Southeast Asia are remarkably alike, and include simple forms of cord-marked, combed, fingertip-impressed or incised vessels, often on tripods and pedestals. The overall homogeneity makes it easy to visualize a common ancestral culture, located quite close in time, from which all the descendent cultures of the Yellow river basin originated (Bellwood 2005). Most of the vessels found at the early Neolithic sites of China are with linear incisions or cord-impressed surfaces (Zhang and Hung 2008). Kharakwal et. al. (2004) discuss about the possibilities of cultural interaction among the early rice growing cultures on the basis of the cord-impressed pottery found in most of the early Neolithic sites in Asia. The Cord-impressed pottery has great antiquity in East Asia (Yasuda 2002) and possibly entered eastern India through the Northeast Indian contact.

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