

PAINTED GREY WARE CULTURE IN UPPER GANGA BASIN

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The period between the end of the Indus Civilization (c. 1500 B.C.) and the beginning of the historical period (c. 600 b.c.) used to be regarded as the 'Dark Ages' of India's past. This veil of darkness was, however, lifted in 1947 with the discovery of Painted Grey Ware culture which was first reported from Ahhichatra its lowest level and its upper limits determined it as pre-NBPW culture. It was Hastinapur where from its complete coloronological position was ascertained. In the area under present,study hundreds of P.G.W. sites were explored and later excavated.

EXCAVATED SITES

Abhaipur

Village Abhaipur falls in the Bisalpur tehsil of Pilibhit district of Uttar Pradesh. The site is further 11.5 km west of the village and to the west of river Deoha. The site yielded the remains of Ochre Colour Pottery culture of land N.B.P.W. culture is locally known as Nakatikhera. The site is now disturbed and only about one hectare is left which is partially intact. The site was subjected to the excavations from 2001-02 to 2005-06 (Mishra and Arora 2006:76-92). The earliest remains (Period-I) at the site are of OCP culture which are comparable with the earliest remains of Hastinapur. Period-II has predominantly Black and Red Ware remains along with associated wares.

Painted Grey Ware culture was the main culture at the site, which made its presence in Period-III. The people in this period lived in wattle and daub houses and later on made mud-wall houses with mud plastered floors. The presence of a large number of pits in this phase is conspicuous. A bones tool making workshop was found where in both finished and unfinished bone tools and beads along with equipments were found. The excavators are of the view that mainly hunting, gathering, fishing contributed to the economy, while iron and copper metallurgy, pottery making and trade played subsidiary role. Beads of agate, carnelian, jasper, crystal, led us to assume the existence of long distance trade. Normal P.G.W. shapes with paintings are common. On some sherds stamped decoration was also noticed. A low bund or dump like structure along with moat is noteworthy another P.G.W. site, which had moat, is Hatt in Jind District of Haryana (Kumar 2010:229-230). Post holes and circular wattle and daub structure give us an idea about their houses. Numerous floors and a few underground storage pits are important structure. Similar evidences have also been reported from Hatt (Kumar 2010:229-230). Circular and oval furnaces with iron objects, slag, bin shaped ingots and a chunk of magnetite ore points to the local manufacturing facilities. Copper metallurgy and gold smelting were well developed. Bone objects making industry was quite proliferated one along with ivory working. Terracotta human, animal, birds figurines and other objects are commonly found in the P.G.W levels. The last period at the site, is represented by the presence of N.B.P.W. ware. The site was finally destroyed by massive floods.

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Ahichchhatra

The site Ahichchhatra is located in the Bareilly district of Uttar Pradesh. It is first reported site which yielded Painted Grey Ware. It was excavated by Archaeological Survey of India from 1940-44 (Ghosh and Panigrahi 1946:37-59). The lowest level here has yielded the sherds of Painted Grey Ware. This period was then dated to pre 300 BCE. The site was again taken up for excavations in 1964-65 under the direction of N.R. Banerjee and four fold cultural sequence was encountered (IAR 1963-64:43-44; IAR 1964-65:39-40).

Like Hastinapur and Abhaipur, the earliest remains here belong to OCP culture which has about 50 cm deposits. Period-II has a deposit of about one meter and belongs to Painted Grey Ware culture. People in this period lived in huts and mud-brick houses. A broken brunt brick is also reported in this phase. The Painted Grey Ware is accompanied here by plain red ware of coarse fabric. Some of the PGW were found over-heated resulting in brownish red colour which the excavator included in a separate category. Different shapes and forms of P.G.W. were found in this category also. Terracotta animal figurines, spindle whorls, beads etc are other important finds. Copper and iron objects points to the metallurgical technology of the people who were mostly agro-pastoral. Period III at the site is represented by NBPW culture, while the Period-IV belongs to the Kushana period.

Alamgirpur

Village Alamgirpur is located at a distance of 25 km west of Meerut. The archaeological site is located close to the village towards south. This site is located about km east of river Hindon and is locally known as Kaltumpur Uphlina. This site was excavated by Archaeological Survey of India under the direction of Y.D. Sharma in 1958 (IAR 1958-59:50-55). The site was recently excavated by R.N. Singh in 2007-08. The earliest period at the site is represented by the Harappan culture, Period-II belongs to Late Harappan-PGW over lap phase, while Period-III is represented by PGW culture which has about 4.5 feet habitational deposit. Iron and copper is found in all the layers of the period. Terracotta animal figurines, toy cart wheels and frames, bone points, spearheads, stylii etc., are other antiquities of this period which also has beads of Jasper and glass. Mud reed houses were made in this period which had thatched roofs. A pottery kiln was also encountered in the latest excavations. Period-IV belongs to early historic period and the last period represented here belongs to the late medieval period.

Ambakheri

Situated in the Saharanpur district (UP) on the bank of Saluni a tributary of Ganga, N. N. Deshpande (1965:129) excavated the site and he reported that the earliest period represented here has red ware and PGW as the main ceramics.

Atranjikhera

This site is situated on the right bank of Kali river in Etah district of Uttar Pradesh and. It excavated by R.C. Gaur (IAR 1962-63:34-36; IAR 1963-64:45-49; IAR 1965-66: 44, IAR 1968-69 : 37-38). This is the most important PGW site in India. Period-I here is represented by OCP culture followed by BRW culture. After that flood deposit was encountered and next period-II belongs to PGW whose deposit is upto 2.20 m. Earlier the excavator had divided the deposits into two phases but in the final report (Gaur 1983) two sub

phases of true PGW and one phase of Late PGW were added. Some sherds of PGW show fabric impression. A good number of iron objects like shaft, axes, clamps, hooks, borers, chisels, knives, needles, bangles and a pair of domestic tongs were found in this period. Use of copper is found in the form of toiletries, ornaments and fish-hook etc. Houses were made of mud and reed, post holes indicates the presence of huts, whose floors were made of yellowish rammed earth. Terracotta beads, toys, discs, along with hand made human figurines were found. Remains of a mud bund were also encountered. Unfortunately this could not stop flood from washing away the final deposits of this period. Agriculture, cattle rearing, fishing and hunting was the bases of economy here. In the final layers of PGW period, NBPW sherds started making appearances which culminated in the full fledged, Period IV.

Batesvara

J.S. Nigam of the Archaeology Survey of India excavated this site in 1974 (IAR 1975-76: 42-43). The earliest period here is represented by the PGW and associated red ware followed by NBP ware period and historical period.

Dadupur

Village Dadupur is situated about 10 km west of Bauthara and is about 23 km south west of Lucknow. The site is further east of the village across Nagwa nullah. U.P. State Archaeology Department, under the direction of Rakesh Tiwari excavated the site. Period-I was marked by the presence of Red ware. BSW and Black and Red ware.

Period-II belongs to the P.G.W. culture and the average deposit is 35 cm. Normal shapes of P.G.W. with painted motifs is the hall mark of this period which has other associated wares like Grey Ware, Black and Red Ware, Black Slipped Ware and associated Red Ware (Tiwari et al :99-116). Three successive floor levels were encountered, which were made of mud rammed, mixed with pot sherds. Brunt clay lumps with reed impression indicate that wattle and daub houses were made. Bone artifacts, terracotta hopscotches, bead along with iron objects were found. A bone tool making workshop was also found at the site from where finished and unfinished produced were found.

Period-III is marked by the presence of NBP ware and associated wares, a few sherds of PGW continued in this period.

Hastinapur

This famous site is located about 96 km north-east of Delhi in Mawana Tehsil of Meerut district . This is a signature site of PGW culture which was excavated by B.B. Lal (1955). Here five occupational deposits were excavated with a definite gap between each.

Period-I: In the lowest level Ochre coloured pottery was found during the excavations.

There was a gap between periods I & II. The PGW is the main ware of the period-II which is of fine fabric and most of the pots were wheel made, though hand made specimens were also encountered. Common shapes are bowls and dishes, painted with black, chocolate and reddish brown pigment. Mud wall or mud brick houses were made. Use of copper and iron was attested by the presence of various objects. Chert and jasper was also used for making beads. Terracotta objects in the form of animal figurines, discs, stamps, pendent,

beads; glass objects mainly beads; bone objects like styli, beads, points etc. were main antiquities of this period (Lal 1955). A huge flood destroyed the settlement of PGW and in the next period, people using NBPW inhabited this site. There is hiatus between this period and next period which belonged to 3rd century AD.

Hulas:

This ancient site falls in the Kakur Tehsil of Sharanpur district and is about 8 km west of Manauta. The site measures about 5.1 hectare and is about 5 m high from the surrounding field level. The Archaeological Survey of India under the direction of Sh. K.N. Dikshit undertook excavations at the site. Which have revealed five fold cultural sequences.

The earliest period here is represented by the typical Late Harappan wares. The PGW people of period-II did not settle on the Harappan deposits but settled on the virgin soil to the north and east of Harappan settlement (IAR 1978-79:60-61, IAR 1979-80:82; IAR 1980-81:75-76; IAR 1981-82: 73-74).

Typical PGW shapes and painted designs were found represented on the pot sherds. The structural activities of the people was attested by the discovery of successive mud floors with post holes. These huts had thatched roofs. Bone stylus, point, copper antimony rods, iron slag; terracotta ghata shaped beads, spindle wheels, discs, bangles. Stone objects were also found. Important finds include iron spear head and a tall bone pin having circular drum like ends decorated with incised design.

Period-III is represented by N.B.P.W and associated wares, while Sunga-Kushana remains are found in Period-IV. Gupta to early Medieval remains were found in Period-V.

Jakhera:

This site is located in Etah district of Uttar Pradesh on the left bank of Kali nadi at a distance of 8 km north-west of Kasganj tehsil headquarter. This site is spread over an area of about 25 hectare and was excavated by MDN Sahi of Aligarh Muslim University in 1988-89. Four fold cultural site was unearthed here.

Period-I is distinguished by occurrence of the Ochre Coloured Pottery pieces (Sahi 1994). Black and Red Ware having the deposit of 30 to 50 cm thickness is found in Period-II along with associated red ware.

Next period IIIA is named as proto PGW. In this period BRW, BSW and Red slipped ware having painted designs were introduced (Sahi 1994, Pl II-V). The slipped red ware's colour ranges from deep brown thorough red to orange. This pottery was labelled as Proto PGW. Similarity of pottery was also reported from Ahichatra of Period-II. The colour of this pottery is due to careless firing as a result of which sherds intended to be of grey colour were reduced red due to reducing heat technique. To call it Proto PGW is just a wild imagination.

Period-IIIB is labelled as mature PGW and has deposits varying from 50 cm to 2 m. This period is characterized by the continuation of BRW, BSW and red ware along with PGW and grey ware. Normal PGW paintings are found on the sherd and, some sherds were found decorated with stamped design.

Kampil

Situated in the Farrukhabad district of U.P. the site was identified by Cunningham with ancient Kampilya capital of South Panchal (CASIR No. 1: 255). In 1976, excavations were conducted here which revealed it to be a single culture site yielding 1.30 to 2 m deposits of PGW and associated red ware. Mud embedment was also noticed here. Other antiquities are terracotta balls, beads, copper pins, balls were also found (Tripathi 2013: 77).

Kaseri

About 2 km north of Mohannagar in Ghaziabad district, this site is located on the right bank of Hindon. The excavations conducted here revealed five fold cultural deposits. This period I (OCP) is followed, after agap, by PGW users. Other associated wares were also encountered. Period III is not much different from period II exempt that main pottery now is plain grey ware. Next period belongs to the early centuries of Christian era. and period V belongs to Gupta and post Gupta period (IAR 1963-64: 92, 1969-70: 43).

Katingara

The excavations conducted here revealed three fold cultural sequence. Period I (1200-800B.C) yielded PGW and associated red ware. Both Iron and Copper were used throughout this period. Other typical PGW antiquities were found here.

Period II yielded NBPW along with a few sherds of PGW. Period III belongs to 200 B.C to 600 A.D.

Khalaua

Village Khalaua is located 16 km from Agra on Agra-Jagner road. The village has an ancient site which is known as *Gwal Khera*. 3.45 m deposit here belongs to a single culture which is PGW. A mud brick platform is the only evidence of structural activity. Painted designs included a new type of motif like criss-cross and leaf filled with parallel hatching. Other antiquities include copper bangles, bone arrow heads, ivory discs, beads; beads of terracotta and carnelian.

Madanpura

This site is situated about 6 km of Pawayan tehsil of Saharanpur. The extensive mound was excavated by D.P. Tewari and D.K. Srivastav in 2005. The mound is reported to be of 369750 sq. mtr. in size (Tewari and Srivastav 2005). This single culture site with deposit of 1.70 m was taken up for excavation in 2002-03. The pottery mainly is PGW and its associated ware includes so called "Orange Red Ware" which is akin to Jakhera pottery.

The only metal object was found here was a piece of iron blade. The inhabitant of the site grew barley, wheat, rice, millet pulses, oil seeds and reared cattle. Hunting and fishing also contributed in the economy.

Mathura

The ancient mounds at Mathura were subjected to excavations in number of seasons starting from 1954-55 and again from 1972-76. The excavation at *Ambarish Tila* during 1975-76 yielded a few PGW sherds in the small area of the huge mound in the northern side. Phase 1A has a few sherds of PGW but bulk of pottery is BSW, GW, B&RW and Red Ware. Out of painted designs, special mention may be made about a ladder design. Normal PGW antiquities were found here.

Phase 1B NBPW started making its presence while period II purely have NBPW. Period-III belongs to the period followed by Kushan period (IAR 1954-55:15-16, Joshi & Aggarwal 1994:89-93).

Musanagar

Located in Kanpur Dehat in Bhoginipur tehsil the site was excavated from 1994-95 and 1995-96 (Tewari *et. al*, 1995-96:67-73). The excavation here was conducted here under the direction of Rakesh Tewari. Five fold cultural sequences were encountered during the excavations.

Period-I is dominated by hand made and wheel made red ware wheel thrown BSW and BRW. Period II with 30 cm thick deposit was characterized by the occurrence of PGW sherds along with BSW, GW, B & R ware and red ware. Through the PGW sherds had black paintings but one sherd has horizontal stroke in white pigment. PGW shapes and designs are normal. Terracotta and bone objects form cultural reportair of the period. Period III is marked by NBPW, though sherds and PGW continued in this period also (Tewari 1995-96, 67-73). Period III has NBPW with grey ware, B & R ware and red ware. Period IV is characterized by the historical period red ware, while period V belongs to still later period.

Sachankot

Village Sachankot is situated on the right bank of river Sai. This ancient site falls in the revenue jurisdiction of Rankot village of Safipur tehsil of Unnao district. Cunningham reported this site (ASIR vol) and the excavations were conducted here by Tiwari (2004-05: 186-190). Consequently three fold cultural sequence was unearthed. The earliest period is characterized by the PGW deposits of 1.50 m thickness. The PGW sherds has black and brown paintings. Associated red ware and grey ware, B & R ware, BSW etc. are also included in the pottery assemblage. The antiquities include terracotta beads, discs along with copper objects and iron slags. Period II is dominated by NBPW while period III has rich deposits of Sunga-Kushana period.

Sankisa

The present village Sankisa is located on a high mound measuring 400x300 mtr. in size with 12 m height. The site falls in the Farrukhabad district of U.P. The excavations conducted here under the direction of B.R. Mani in 1995-96 and a four fold cultural sequence was encountered here.

The layers of period-I have yielded PGW and associated ceramics (IAR 1995-96, 89-97). Red ware is both handmade and wheel made various having coarse to fine fabric. Clay lumps with reed marks give us an idea about their houses. Normal PGW, shapes and painted designs are found here along with some coarse B & R ware sherds. A large number of terracotta discs with a variety of decorations and other antiquities were found in this period along with a few semi precious stone beads and two bone objects.

Period II represented the NBPW period. Normal NBP ware along with grey ware, BSW and associated red ware were also found. Period III yielded remains of Sunga period, while Kushan remains dominate the next period.

Saunphari

This village is located at a distance of 1.5 km from Khutar market in Pawayan tehsil of Sahajahanpur district of U.P. The site measuring 530x430 m was taken up for excavations by Rakesh Tewari in 2002-03 and four fold cultural material was found here. Period IA has

grey ware, "Orange Slipped Ware" and PGW as main ceramics. Houses in this phase have wattle-and-daub structures with dung plastered floors and U shaped hearths. Terracotta beads, bangle pieces, toy cart frames decorated discs are the other antiquities of the period. Noteworthy are the terracotta bird figurines, hubbed wheels and cakes. Period IB is characterized by NBPW along with PGW, BSW, B & R ware. Plain grey ware Period II belongs to Kushana (Tewari 2004)

Sonkh

Located in the Mathura district of U.P, the site was excavated by Hartel (1993). It measures 320x280 m and had 17.20 m thick deposit. The earliest period here belongs to the PGW period followed by Mauryan, Sunga and Kushana deposits.

The lowest deposit here belongs to the PGW using people who lived in thatched huts resting on post holes. A noteworthy fortune here is the parallel running ditches between a small rampart in between. Other ware of the period include BRW, Red Ware and Grey Ware, Iron objects, terracotta figurines, discs, balls, bangles et. Beads of carnelian, agate and copper are the other antiquities found in this phase.

IMPORTANT FEATURES OF PAINTED GREY WARE CULTURE

Defenses

The last phase of the proto-historic period in the sphere of our current study is characterized by the advent of the Painted Grey Ware people. About 408 sites of Painted Grey Ware so far have been reported from the present study area. A number of these have been excavated which have been discussed above. Detailed reports of Hastinapur (Lal 1955) and Atranjikhhera are available, apart from study area Madina(Kumar *et al* 2007) is the single culture excavated site and Bhagwanpur report helps us to understand this culture in holistic perspective.

Available data from excavated site provides us enough information to generate the micro-settlement pattern of this culture. Unlike Mature Harappan period defence walls, PGW settlements were surrounded by a 'V' shaped moat, mud bund. A mud bund has been reported from Atranjikhhera around P.G.W. settlement (Gaur 1983:126). A moat or ditch has been reported from Jekhara but details are not given. At Hatt (personal communication from the excavator) the earliest habitation area was surrounded by a 'V' shaped moat. Similar evidences have been recovered from Kunal (Acharya, M. 2008:23) with its maximum depth and width is 3.45 and 4.15 m respectively. At Jogna Khera (Acharya M and R.S. Dahiya :13) also a moat was encountered but no details are available.. This was filled with water as silt was observed at its bottom and these were probably defences against the wild animal. At Hatt the most is too small and shallow for protection against wild animals but it was for the protection from the reptiles as inner end is vertical enough for reptiles to climb. So far, in the area under present study not even a single site has yielded such kind of evidences and all above discussed sites are located close to study area.

Dwelling Structures

Most of the excavated sites in the area under present study have multi cultural deposits. So our knowledge about the domestic structure is limited. For this purpose, we also studied the important and single culture excavated sites of the adjoining region, specially Bhagwanpura and Madina.

Dwelling structures found during the excavations at various sites can be broadly divided into three types viz, dwelling pits, huts and mud wall houses. Post holes have been

reported from Hulas, Hastinapur, Sonkh, Allahpur, Atranjikhhera and Jekhara. But no detailed plan of the huts has been available from the sites of area under present study. So we have to bank upon the data available from the adjoining area. The huts of this period may have sloping thatched roofs. At Madina evidences of this type of typical huts were encountered, two big postholes for front and back supporting beams and two small postholes (both the sides) were noticed (Manmohan Kumar *et al* 2009:98). A large number of burnt clay lumps having impressions of bamboo, wood and reed were found which indicated that PGW peoples did not construct the mud walls but used mud and reed screen plastered with mud as the side walls (Manmohan Kumar *et al* 2009:96). Evidences of post holes have been reported from Daulatpur (IAR 1977-78:23) but the shape of huts is not given. At Madina even after close examination of the post holes, it was found that no pattern of arrangement of the huts was noticed. These huts were situated at a close proximity to each other and in between the huts the open places were used for cooking purpose *aschulas*, *harae* and hearths were found. These huts were arranged at the site so that near each hut sufficient space for domestic activities is available. Potters clay levigation pits were also found near some huts.

At Jekhhera, a circular hut of 6 m diameter was recovered during the excavations and the interior of this hut was partitioned by mud walls. Apart from this hut, a big hut complex was unearthed which was consisting of three circular huts (Sahi 1994:144).

At Hatt evidences of dwelling pits have been found during the PGW period. These pits were plastered with ocher and the floor of these pits were made up of rammed clay and properly plastered. These pits were cut in the natural soil, having vertical sides. Inside some pits steps were noticed. Postholes were also noticed along with these pits, which indicate that these were covered with wattle and daub structure as roof. These pits dwellings were surrounded by a "V" shaped moat, which acted as a defence wall. No other site has yielded the evidences of dwelling pits during the PGW period.

At Bhagwanpura, a rammed mud walled house was unearthed. This house complex consists of 13 rooms, 5 rooms in the western side and 7 rooms on the eastern side. It is roughly oriented to North-South. The size of the rooms varies from 1.60 x 1.60 m to 3.35 x 4.20 m. There is a corridor in the complex which measures 14.35 m. in length and 2.20 m width (Joshi, J.P 1993:40)

Although some bricks (sun baked and kiln baked) have been reported from Atranjikhhera, measuring 8 x 4 x 4 cm and some extra large size bricks. But so far, not even a single site has yielded bricks house. Some burnt bricks measuring 30 x 24 x 24, 33 x 30 x 10, 30 x 30 x 6 cm were recovered from Jakhera (Sahai 1994). This type of bricks may have been used for preparing platform probably for bathing or ritualistic purposes.

Economy

The economy of the Painted Grey Ware people was based on agriculture and animal husbandry along with hunting. Wheat and rice were the important crops. Apart from wheat and rice, ragi, sawan, Kodon are reported from Hulaskhera (Tiwari *et al* 1995). Moong, urad, massor, moth, kulthi, khesari, wild oat, tulsii and bathua have been reported from Siyapur (Tiwari and Srivastava 2004;2005) apart from the gram, horse gram, pigeon pea, sesame, ber, gular, pakad were also reported. Above mentioned seeds indicate that P.G.W. people were enjoying both Rabi and Kharif crops.

Alamgirpur is the only site which provides us details regarding animals of P.G.W period. The faunal utilisation pattern at the site during PGW period shows that throughout

during this period peoples are depended mainly on cattle and buffalo. The contribution of sheep and goats was more during the Harappan Phase than the PGW Phase. The role of domestic pigs was marginal in all the cultural phases. The horse has been identified only from the PGW Phase. The diversity of the wild animals is interesting as the people of Almagirpur hunted large bovin as the gaur, nilgai, antelopes, deer, wild pigs, fox, panther, hyena and peafowl .

Metallurgy

In the area under present study, iron was first introduced by P.G.W. using people. These people were skilled in the manufacture of iron objects is evidenced by as many as 135 specimens from a relatively small dig at Atranjikhhera and other excavated sites. So far not even a single evidence of iron smelting has been recorded from any site in the study area but in the adjoining region of Rajasthan one site , Jodhpur has yielded such evidences. Two furnaces from an early phase of the Painted Grey Ware period. These furnaces were of the open type and provided with bellows as indicated by the presence of holes. Very little work has been done to identify the sources from which the people obtained iron ore. Source material, however, exists in varying degrees in the neighboring Himalayan regions of Kangara, Mandi Almora, Garhwal, etc., in the Aravalli terrain of Alwar, Jaipur, Bharatpur, etc., in Rajasthan and in the Gwalior region immediately south of the Chambal.

The iron objects used by the Painted Grey Ware people fall under four broad categories: (1) household objects; (2) tools for agriculture; (3) other craft tools; and (4) weapons used for warfare or hunting. Under the first category come such objects as nails, pins, hooks, needles, knives, which are reported from various sites, and a pair of tongs found so far only at Atranjikhhera. Although this site has not yielded any specific agricultural tool, a sickle and a hoe was found at Jakhera (Sahi 1978:103). Chisels, borers, clamps, nails and hooks may have been used in carpentry. Arrowheads, mounted on cane shafts and projected from wooden bows, could have been used in warfare as well as in hunting. The arrowheads are found in simple forms as well as barbed, and have a tang that is sometimes socketed. Spearheads, sometimes as long as 25 cm, were evidently mounted on bamboo shafts. Unlike arrows, which were used for long-distance attacks, whether on an enemy or a wild animal, the spear could be used only at a close range. There is so far no evidence of any defensive armour.

Although iron had come into use during the Painted Grey Ware period, copper was still an indispensable metal. While the two specimens from Hastinapur, which were chemically examined, showed no evidence of any alloy, of the three objects examined from Atranjikhhera, one showed the inclusion of tin, lead and zinc to the extent of 11.68 per cent and another of tin and zinc as much as 20.72 and 16.2 per cent respectively. The third one was unalloyed. Furthermore, iron was present in all the Atranjikhhera samples, varying from 1.23 to as much as 9.7 per cent. The source of the metal could thus be iron chalcopyrite and the retention of iron in the samples should be ascribed to inadequate melting of the ore (Agrawal 1983:490). In this culture, there are no copper swords, such as, we have in the copper hoards. This may perhaps be explained by the fact that weapons of war were by then manufactured from iron, which is decidedly more suitable for the purpose. However, copper arrowheads have been found at Hastinapura and Allahpur. Very likely these were used primarily for hunting, though their use in warfare cannot be excluded. Among tools and other objects of copper, which were used for cutting or in the manufacturing of goods, mention may be made of the axe, chisel, borer, pin and clamp. Toilet objects included the antimony

rod, nailparer, antimony-rod-cum-nailparer and toothpick. The find of a needle indicated stitching, most likely of clothes. Among ornaments, rings and bangles deserve mention. That there was no paucity of copper is attested by the discovery of a dish, with a diameter of 17 cm, from Atranjikhhera (Gaur 1983:231)

Glass Technology

A very remarkable contribution of this period is that of glass technology. The discovery of two specimens of glass bangles from Painted Grey Ware levels at Hastinapura came as a significant addition to our knowledge of ancient Indian glass technology. Of the two glass bangles from Hastinapura, one is brown and the other black, resulting in both cases the presence of iron. In both, the typical conchoidal fracture of glass is unmistakable. Besides bangles, glass beads have also been found. These come from Allahpur and Alamgirpur. From Atranjikhhera comes a piece of glass of dark green colour, which formed a part of a bottle or some other receptacle (Agrawal 1983:490)

Chronology

The dating of the Painted Grey Ware period at Hastinapura had originally to be carried out on the basis of its relative stratigraphic horizon. On the one hand, it overlay the remains of the Ochre Colour Ware and, on the other, it was itself overlaid by Northern Black Polished Ware deposits. There was a break of occupation between each of these three successive periods. The chronological horizon of the Northern Black Polished Ware had been approximately indicated at Taxila where the majority of the specimens of this ware preceded the level yielding coins of Alexander (c. 300 B.C.) and went down to a further depth of 2.15 m below that level. On a rough computation, therefore, the Northern Black Polished Ware was thought to have appeared at Taxila some time in the sixth century b.c. Since there was a break of occupation between the Painted Grey Ware and Northern Polished Ware periods at Hastinapura, with substantial changes in the material culture from one to the other (such as the appearance of brunt-brick structures, a system of coinage, weights, etc.) it was thought that the end of the Painted Grey Ware period at Hastinapura may have come around 800 B.C. In view of the 2.5 m thickness of the Painted Grey Ware deposits, it was estimated that the beginning of the settlement of this culture at Hastinapura may have been around 1100 B.C. It was also postulated that the Painted Grey Ware may have continued later at other sites and may have even overlapped with the Northern Black Polished Ware. Later when the radio-carbon method came into vogue, samples from Hastinapura itself and from other sites like Rupar, Atranjikhhera, Noh, etc., were put to the test. As a result, there is a good evidence to say that the beginning of the Painted Grey Ware at the iron-using sites such as Noh and Atranjikhhera and derivatively at Hastinapura and Mathura too, is in no case later than 1000 b.c. It may well be much earlier. The Painted Grey Ware levels in the iron-using sites of the upper Ganges-Jamuna basin may broadly be dated between the limits of 1100 and 700 b.c. and the Painted Grey Ware/ Northern Black Polished Ware overlap between 700 and 500 b.c. The pre-Iron phase of this culture which has yet to be firmly established may well be antedated 1100 b.c. This archaeological evidence about the Painted Grey Ware Culture may be understood in the background of the Vedic material. The general consensus of scholarly opinion puts the Rigvedic period broadly between 1500 and 1200 b.c. and the later Brahmanic-cum- Upanishadic period between 800 and 500 B.C.

Pottery

The third group of the proto-historic ceramic industry in the region is the Painted Grey Ware (PGW). The PGW or grey ware is usually wheel-thrown. It is made of well-levigated clay which is almost free of impurity. Regarding the technique used for the manufacturing the vessels, the vessel is dried after the primary modelling and then again placed on a wheel to finish the surface modelling like scraping the base portion, trimming and burnishing, hence some sherds of PGW recovered during the course of explorations are of 2 mm in thickness..

Black slipped ware is also fabricated with the help of the same technique. But its final surface treatment using black slip makes this ware different from PGW, common shapes in the BSW are dishes and bowls.

Associated red ware of Painted Grey Ware is of medium to coarse fabric and it is made of carelessly levigated clay, usually mixed with small kankars and husks. The main shapes of this ware include basin, bowl, vase, jar, etc. This ware is both hand made and thrown on slow wheel and decorated with impressed and mud appliqué designs.

DISCUSSION

The last phase of the proto-historic period belongs to the Painted Grey Ware using people. There are about 417 sites, Painted Grey Ware sites are located in the area under present study. Till now we don't know about the origin of the PGW culture. A. H. Dani and Stacul had tried to show typological similarity in the pottery and other antiquities of the Gandhara Grave Culture and PGW pottery. The pottery found from the sites of Gandhara Grave culture is largely represented by tall vases, open mouth cups with flaring rim, narrow and short necked bottles, pedestalled cup, etc. in grey and painted grey ware the fabric of the pottery is coarse and thick but in PGW the most common types are dishes and bowls and the fabric is medium to fine and thin. In the Gandhar region (Gandhara Grave Culture) most of the sites are cemetery sites, but in the PGW culture sites are habitation sites. The only common thing in both the cultures is use of iron and horse. Hence, we can't trace the roots of PGW culture in Gandhara Grave Culture. Shankalia points out some similarities in the PGW and pottery recovered from Shahi-Tump, Baluchistan (Shankalia 1994:40-43). Earlier A. Stein reported some PGW type sherds in southern Baluchistan and Sistan (Stein, A. 1931). Some PGW sites were reported by Mughal in the Cholistan region. Two horses figurine has been reported from Madina (Manmohan Kumar *et al* 2009: figure 131; 42,63), which are exactly similar to the horse figurine found from the Pirak. It indicates that there was some relation between both these Iron Age cultures. In the absence of any proto PGW site in the region or adjoining region it is assumed that these people came here from outside. But from where? This we can't pin point at this juncture. Further excavations and explorations in Indian and Pakistani Punjab, Sind and Baluchistan may yield some clue to this problem. There is a variation in the ceramics of this culture of North India. Grey ware and Painted Grey ware is similar in both the regions but the associated red wares have a lot of variations. In the Anupgarh region of Ganganagar district the red ware is of medium to fine fabric not even a single sherd of coarser fabric was noticed (Dangi 2010; Dangi 2018:50-100). Some of the sherds were found decorated with black bands in the north-west Rajasthan, where as in the Upper Ghaggar basin and area under present study the red ware pottery is largely coarse in fabric and is unpainted (Dangi 2010).

The economy of the Painted Grey Ware people was based on agriculture and animal husbandry. The evidences of rice and wheat, jujube (*ber*) and *bathua* were reported from various sites. Bones of cattle, buffalo, goat, sheep, dog, peacock/fowl, deer, wolf, antelope,

tortoise, horse, pig, bandicoot, etc. were found at a number of sites. Most of these are domesticated species. The evidence of the wild animals was found in the form of bones of wolf, deer and antelope which indicated that hunting also was practiced by the people. No detailed report except a few sites is published and hence, we have little evidence of the economy of PGW people. Some beads of agate and carnelian iron and copper implements give an idea about their trading activities. On the basis of presence of Iron we can divide the Painted Grey ware culture in two phase viz. Pre-Iron and Iron Phase. The study of the remains found from various sites indicates that the Painted Grey Ware using people had rural society with no urban elements. Their antiquities and other artefacts were made of locally available material and the use of semiprecious stones was scarce. The well-to-do people may have had more stably constructed house with terracotta tiles and mud-lined *chulhas* or ovens (*haras*), whereas the ordinary people lived in the thatched huts and their *chulhas* were very simple. These were dug into the soils without any mud lining. The discovery of horse bones from various sites in the area and the terracotta figurine representing horse rider at Madina, points to the fact that the simple clan-based society gave way to a horse centric aristocracy.

References

Agrawal, O.P. 1983. Scientific and Technological Examination of Some Objects from Ataranjikhhera. In R.C. Gaur 1983: 487-498. *Excavation at Atranjikhhera*. New Delhi: Motilal Banarashidass.

Arora, U.P., R.K. Verma, Anup Mishra.2002. Excavation at Abhaipur – A Painted Grey Ware Site *Puratattva* 32: 122-130.

Dangi, Vivek 2010; *A Study of Proto-Historic settlements in Upper Ghaggar Basin*. Ph.D. Dissertation. Rohtak: Maharshi Dayanand University.

Dangi, Vivek 2018. Iron Age Culture of North India. In Akinori Uesugi (Eds). *Iron Age in South Asia*. Archaeological Research Institute, Kansai University, Osaka Japan

Gaur, R.C. 1983. *Excavations at Atranjikhhera*. New Delhi: Motilal Banarashidass.

Gaur, R.C. 1994. Date of Painted Grey Ware Culture. In *Painted Grey Ware*. R.C. Gaur (ed.): 120-124. Jaipur Publication Scheme.

Indian Archaeology: A Review Various volumes

Joshi, J.P. 1993. Excavation at Bhagwanpura 1975-76 and Other Explorations and Excavations 1975-1981 in Haryana, Jammu & Kashmir and Punjab. *Memoirs of the Archaeological Survey in India* 89, New Delhi.

Joshi, M.C. and R.C. Agrawal. 1994. The Painted Grey Ware in Mathura. In *Painted Grey Ware*. R.C.Gaur (ed.): 89-93. Jaipur: Publication Scheme.

Kumar, Manmohan, V. Shinde, A. Uesugi, Vivek. Dangi, Sajjan Kumar and Vijay Kumar 2009. Excavations at Madina, District Rohtak, Haryana 2007-08: A Report, in *Occasional Paper 7: Linguistic Archaeology and the Human Past* (T. Osada and Akinori Uesugi Eds.), pp 77-177. Kyoto: Indus Project.

Lal, B.B. 1951. Further Copper Hoards from the Gangetic Basin and Review of the Problem. *Ancient India* 7: 20-39.

Lal, B.B. 1980. Did the Painted Grey Ware Continue up to Mauryan Times? *Puratattva* 9: 64-80.

Lal, B.B. 1993. *Excavation at Sringaverapura (1977-86)*. Vol. I. New Delhi: Archaeological Survey of India.

Shahi, M.D.N. 1978. New Light on Painted Grey Ware People as Revealed from the Excavations at Jakhera. *Man and Environment*. 2: 101-105.

Shahi, M.D.N. 1994a. Painted Grey ware: Its Origin, Direction of Dispersal and Significance, *Aspects of Indian Archaeology*, Jaipur: Publications Scheme 81-92.

Shahi, M.D.N. 1994b. Excavation at Jakhera (Distt. Etah) – 1986-987, A Brief Report. *Aspects of Indian Archaeology*. Jaipur: Publications Scheme 139-153.

Tewari, D.P. 2004. *Excavations at Saunphari and Explorations in Ganga Plain*. Lucknow: Tarun Prakashan.

Tewari, D.P. and D.K. Srivastava. 2004-05. Excavation at Siyapur District Kanauj. *Puratattava* 35: 182-185.

Tewari, D.P. and D.K. Srivastava. 2005. *Excavation at Madanapur*. Lucknow: Tarun Parkashan.

Tewari, D.P. and D.K. Srivastava. 2005. Excavation at Sanchankot, District Unnao U.P. (2004-05) *Puratattava* 35: 189-190.

Tewari, R., R.K. Srivastava and K.K. Singh. 2003-04. Report of the Excavations at Malhar, District Chandauli (Uttar Pradesh) India: 1998-99, *Pragdhara* 14: 1-112, pl. 49.

Tewari, Rakesh, R.K. Srivastava, K.S. Saraswat and K.K. Singh. 1999-2000. Excavations at Malhar, District Chandauli (U.P.) 1999: A Preliminary Report. *Pragdhara* 10: 69-98.

Tewari, Rakesh and R.K. Srivastava. 1993-94. Exploration along the Ami River and in its Nearby Areas in Districts Sidhartha Nagar, Basti and Gorakhpur, *Pragdhara*, 4: 13-39.

Tewari, Rakesh and R.K. Srivastava. 1995-96. Trail Excavation at Musanagar: 1995 (Preliminary Observations), *Pragdhara* 6: 67-73.

Tewari, Rakesh, Hemraj and R.K. Srivastava. 1995-96. Excavations at Hulaskhera, Lucknow: 1978-79 to 1986-87 (A preliminary report), *Pragdhara* 6: 95-133.

Tewari, Rakesh, R.K. Srivastava and K.K. Singh. 2001-2002. Dadupur Excavations 1999-2000-2001, District Lucknow, Uttar Pradesh: A Preliminary Report, *Pragdhara* 12: 99-116.

Tewari, Rakesh, R.K. Srivastava and K.K. Singh. 2004. Report of the Excavations at Malhar, District Chandauli (Uttar Pradesh) India: 1998-99, *Pragdhara* 14: 1-112.