

# THE PAINTED GREY WARE CULTURE OF THE IRON AGE<sup>1</sup>

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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.) was formerly regarded as the 'Dark Ages' of India's past. The present author undertook exploration of sites referred to in ancient Indian texts, such as Hastinapura, Mathura, Kurukshetra, Indraprastha, etc. Encouraged by the results, he published a paper highlighting the importance of the Painted Grey Ware.<sup>2</sup> Thereafter a systematic excavation was undertaken at Hastinapura during 1950–52, as a result of which the identity of what is now well known as the Painted Grey Ware Culture was established.<sup>3</sup> On the basis of comparative stratigraphy, the Painted Grey Ware settlement at Hastinapura was dated to 1100–800 B.C.

As a result of exploration as many as 650 sites of this culture have so far been discovered. While the main concentration of sites is in Indian Punjab, Haryana, north-eastern Rajasthan and the upper Ganges-Jamuna basin in Uttar Pradesh, the occurrence of some sites has been reported from as far west as Lak-hiyo Pir<sup>4</sup> in Sind and Harappa<sup>5</sup> in southern Punjab, both in Pakistan. Sites along the dry bed of the Ghaggar in the Bahawalpur region of Pakistan have already been referred to and it is likely that Painted Grey Ware

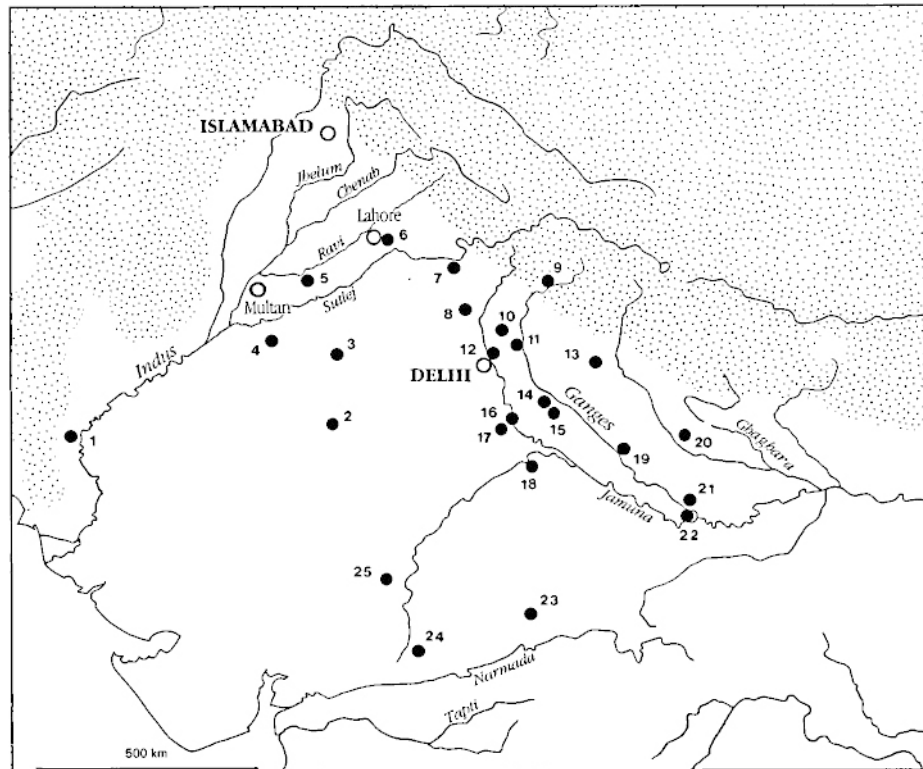
<sup>1</sup> See Map 13

<sup>2</sup> Lal, 1950.

<sup>3</sup> Lal, 1954/55.

<sup>4</sup> The material is in the Central Antiquity Section, Archaeological Survey of India, New Delhi.

<sup>5</sup> Allchin and Allchin, 1968 p. 210.



|               |                 |                   |
|---------------|-----------------|-------------------|
| 1 Lakhio Pir  | 10 Hulas        | 19 Pariar         |
| 2 Jodhpur     | 11 Hastinapura  | 20 Sravasti       |
| 3 Sardargarn  | 12 Alamgirpur   | 21 Sringaverapura |
| 4 Satwali     | 13 Ahichchhatra | 22 Kausambi       |
| 5 Harappa     | 14 Jakhera      | 23 Besnagar       |
| 6 Gharinda    | 15 Atranjikhera | 24 Ujjain         |
| 7 Rupar       | 16 Mathura      | 25 Gilund         |
| 8 Bhagwanpura | 17 Noh          |                   |
| 9 Thapli      | 18 Kotwar       |                   |

Map 13 Distribution of Painted Grey Ware sites.

may also be found in the Ravi-Jhelum valleys of Pakistan Punjab, since Gharinda<sup>6</sup> near the Indo-Pakistan border has yielded it. The easternmost site to have yielded this pottery is Sravasti<sup>7</sup> in Uttar Pradesh, where, however, it is intermixed with the Northern Black Polished Ware. Ujjain<sup>8</sup> in Madhya Pradesh is the southernmost site, though, here again, the ware did not occur in an independent horizon. However, the most interesting is the recent discovery at Thapli<sup>9</sup> on the bank of the Alaknanda in District Tehri, Uttar Pradesh. It takes the Painted Grey Ware Culture right into the Himalayas, the significance of which will be discussed later. To bring into a sharper focus the extent of distribution of this ware, it may be pointed out that from Lakhio Pir in Sind to Sravasti in Uttar Pradesh it is about 1,400

<sup>6</sup> Joshi, 1977.

<sup>7</sup> Sinha, 1967.

<sup>8</sup> Banerjee, 1957 p.24.

<sup>9</sup> Nautiyal, 1981.

km, and from Gharinda in Punjab to Ujjain in Madhya Pradesh, about 900 km, a span which compares with that of the Indus Civilization.

The sites of this culture are located along river-banks, the average distance from one site to another being about 10 to 12 km. However, in a favourable ecological environment it could be as little as 5 km.<sup>10</sup> These settlements were mostly small villages. In northern Haryana where an intensive survey has been made, they have been found to cover as small an area as 1, 570 m<sup>2</sup> and as large as 96, 193 m<sup>2</sup>.<sup>11</sup>

Another very interesting feature emerges from Mughal's survey in Bahawalpur.<sup>12</sup> Of the fourteen sites discovered by him, as many as seven range between 1.1 and 2.1 ha, which would be regarded as the normal run of the sites. Further, while three are less than 1 ha, three others fall between 3 and 4 ha. However, the most noteworthy point is that only one of these fourteen sites is unusually large, namely 13.7 ha. This clearly shows the emergence of a chief town amidst smaller villages – a pattern which in due course gave rise to local 'capitals'.

It is proposed first to discuss the factual data about house construction, agriculture, technology of iron, copper, etc., and then to reconstruct the life-style of the Painted Grey Ware period. To date, the only site where a reasonably large portion of the settlement has been dug horizontally is Bhagwanpura and thus we shall deal with it in detail, supplementing the information from other sites.

At Bhagwanpura, J. P. Joshi reports three kinds of construction. One of these is a round hut, indicated by the arrangement of twenty-three post-holes. It covered an overall area of 4.25 × 6.85 m. On its floor lay four saddle-querns and a variety of pestles. Joshi is inclined to think that the hut belonged to a corn-grinder.<sup>13</sup> If this is so, it would indicate that some people were specially engaged in this activity and not that each family ground its own corn. Although further details have not been given about the nature of the construction of the hut walls, evidence from other sites, such as Hastinapura, Atranjikhera, etc., throws valuable light on it. In these post-holes were inserted wooden poles or, more probably, thick bamboos, charred fibres of which have been met with at several sites. Furthermore, at most of these sites we come across mud plaster bearing impressions of the material over which the plaster was applied. An examination of samples of the plaster has revealed the use of wild cane which was evidently put in between the posts, both horizontally and vertically. The cane-frames and bamboos must have been tied with string, of which some impressions (though not very clear) have been noted. This framework of cane-and-bamboo

<sup>10</sup> Agrawala and Kumar, 1976 p. 240 (map).

<sup>11</sup> Suraj Bhan and Shaffer, 1978 p. 62.

<sup>12</sup> Mughal, 1981 p. 38.

<sup>13</sup> Joshi, 1977.

was then plastered over on both the inner and outer surfaces with mud, strengthened with the addition of rice-husks. R. C. Gaur states that he found fine sand in some of the post-holes and suggests that this was deliberately put there to protect the posts from white ants.<sup>14</sup> On the basis of the disposition of the post-holes Gaur thinks that some of the wattle-and-daub houses were also rectangular or square in plan.

At Atranjikhera domestic hearths have been identified. These were U-shaped in plan. The sides had a slight inward taper and further curved in at the top. The size of these hearths (sometimes as much as 50 cm in length and 25–35 cm in height) indicates that large cooking vessels were placed on them, which in turn, suggests the existence of large families, evidently joint families, as has long been the pattern in India.

Attention here may also be drawn to certain circular pits discovered in the early and middle phases of the Painted Grey Ware period at Atranjikhera. These contained ash, charcoal, grains and a few small fragments of animal bones. Gaur suggests that these might have been sacrificial fire-pits.<sup>15</sup>

The second kind of construction was that of mud walls. Sometimes mud-bricks have also been reported; but not their size. At Bhagwanpura a house plan has been identified. The occurrence of Painted Grey Ware dishes and bowls on the floor of this house leaves no doubt that it belongs to this period. It had as many as thirteen rooms, their sizes varying from 1.6 × 1.6 m to 3.35 × 4.2 m.<sup>16</sup> The smaller rooms may have been stores, while the bigger were evidently meant for living. In between two sets of rooms a corridor was noted, and on the eastern side a courtyard. Maybe the person owning this big house in a central part of the settlement was the village chief.

The third kind of constructional material encountered at Bhagwanpura relates to kiln-burnt bricks. It is said that owing to the subsequent ploughing away of the site, no clear-cut structures were identified, but bricks of the following sizes were met with: 20 × 20 × 8 cm; 12 × 12 × 8 cm; 20 × 30 × 8 cm; 16 × 12 × 4 cm; and 29 × 22–12.5 × 7 cm.<sup>17</sup> The first two sizes represent clear squares, while the last one is wedge-shaped. It is known that bricks used in walls are generally rectangular not square. On this basis, it would appear that the square bricks had been used in some other kind of construction – maybe a squarish ritualistic altar or some similar structure. The wedge-shaped bricks may have been used in a circular structure. Evidence of burnt bricks also comes from Dadheri where the sizes are 12 × 12 × 7 cm and 25 × 20 × 5 cm.<sup>18</sup> Use of burnt bricks is also attested at Hastinapura,

<sup>14</sup> Gaur, 1983, p. 127.

<sup>15</sup> Ibid.

<sup>16</sup> Joshi, 1978, p. 98.

<sup>17</sup> Ibid., pp. 99–100.

<sup>18</sup> Gaur, 1983, p. 100.

Atranjikhhera, Ahichchhatra, Noh, etc., but the pieces are too fragmentary to indicate the complete size.

Although no idea of the lay-out of a settlement can be had from the available meagre data, interest is attached to the construction of a mud bund at Atranjikhhera to protect the settlement from the flooding of the river. Its surviving height and length, evidently reduced owing to subsequent erosion, were 1.45 and 35 m respectively. At Jakhera, too, a mud embankment, with a basal width of 4.8 m and extant height of 1.2 m, was observed. Sahi feels it may have circumscribed the settlement.<sup>19</sup> Such constructions as these would evidently have involved community effort.

The credit of bringing the upper Ganges-Jamuna valley under large-scale cultivation goes to the Painted Grey Ware people. They could achieve this mainly because of their iron technology to which a detailed reference will be made later. They cleared the heavy jungle with the help of iron axes. Of the ploughshare no example has so far been found from this period, though the subsequent period has yielded examples. However, a hoe has been reported from Jakhera. Very scanty evidence is available regarding irrigation. Gaur refers to unlined wells in the vicinity of Atranjikhhera, which he thinks were used for irrigation.<sup>20</sup> Sickles found at Jakhera, for example,<sup>21</sup> may have been used for reaping the harvest.

The excavations at Hastinapura brought to light the remains of rice (*Oryza* sp.); the same was the case at Noh. Thus, it was thought for some time that the people did not cultivate wheat. However, Atranjikhhera has made the position very clear. Here, besides rice (*Oryza sativa* L.), wheat (*Triticum compactum* Host.) and barley (*Hordeum vulgare* L., hulled, six row) have been found.<sup>22</sup> The presence of both rice and wheat, which are, respectively, summer and winter crops would indicate that the people had begun to grow two crops a year as is the practice even today.

Although pollens of *Pinus* were found at Hastinapura, actual wood was not. K. A. Chowdhury and his colleagues have now identified the remains of Chir wood (*Pinus roxburghii*) in the Painted Grey Ware levels at Atranjikhhera.<sup>23</sup> The occurrence of this wood is significant, since it does not grow on the Ganges plains but in the Himalayan region. Thus the inhabitants of Atranjikhhera in particular and of the Painted Grey Ware people in general, must have been in contact with that region. This has indeed now been established with the discovery of the Painted Grey Ware site of Thapli in District Tehri in the Himalayan region of Uttar Pradesh. The site of Thapli contains a fairly thick deposit of the Painted

<sup>19</sup> Sahi, 1978 p. 102.

<sup>20</sup> Gaur, 1983, p. 123.

<sup>21</sup> Sahi, 1978, p. 103.

<sup>22</sup> Chowdhury et al., 1977.

<sup>23</sup> Ibid., p. 66.

Grey Ware, indicating that it was not a case of mere contact but actual occupation by the Painted Grey Ware people themselves, who in the course of their expansion must have penetrated this Himalayan region either along the Ganges valley from Hardwar upwards or through some other convenient pass on the south.

Some charcoal from Hastinapura has been identified as that of sissoo (*Dalbergia sisso*).<sup>24</sup> It is one of the important varieties constituting the deciduous forest and is found in the sub-Himalayan region but not far from Hastinapura and even grows down along the large rivers in north-western Uttar Pradesh. It is good timber and is likely to have been used for household furniture etc. though for climatic reasons no articles of furniture have survived. Interest is also attached to the identification of wild cane (*Saccharum spontaneum*),<sup>25</sup> which, as mentioned above, was used for constructing wattle-and-daub houses.

Next to agriculture, the people depended for their subsistence on domesticated animals. Cattle (*Bos indicus* Linnaeus) accounted for the largest number among the domesticated animals. While the cows supplied milk, from which curds, cheese and butter were made, the bullocks were used as draught animals and for ploughing. The other animals identified at Hastinapura were sheep (*ovis vignei* Blyth, race *domesticus*), buffalo (*Bos (Bubalus) bubalis* Linnaeus), pig (*Sus cristatus* Wagner var. *domesticus* Rolleston), and horse (*Equus caballus* Linnaeus).<sup>26</sup> A large number of bones of cattle, sheep, buffalo and pig had incision marks made with a sharp instrument, and were charred, indicating that these animals were slaughtered for food. From Atranjikhhera comes additional evidence in regard to the domestication of the goat (*Capra hircus aegagrus* Erxleben) and the dog (*Canis familiaris* Linnaeus) of which the former added mutton to the diet. Besides, fish, river-turtle, varanus, bivalves and fowl were also consumed.<sup>27</sup> Special interest is attached to the presence of the horse, evidence of which has been found not only at Hastinapura, but also at Atranjikhhera<sup>28</sup> and Bhagwanpura.<sup>29</sup>

There is enough evidence to show that the Painted Grey Ware people engaged in fishing and hunting, for which the surroundings were quite suitable. Most of the Painted Grey Ware sites were located on river-banks and, as new ground was cleared, jungle was left in the neighbouring areas. Fishing was done with the help of fish-hooks of which examples both of copper and iron have been found. Ramie-fibre nets were also used, to which terracotta sinkers were attached to make them effective.

<sup>24</sup> Chowdhury and Gosh, 1954/55 p. 134.

<sup>25</sup> Ibid.

<sup>26</sup> Nath, 1954/55 pp. 107–20.

<sup>27</sup> Gaur, 1983, p. 124.

<sup>28</sup> Ibid.

<sup>29</sup> Joshi, 1977.

While Hastinapura reveals evidence of the presence of the stag (*barasingha*) from Atranjikhhera comes additional evidence of the *nilgai* and leopard, indicating that hunting of wild animals was resorted to. Spear- and arrowheads of iron, copper and of antler itself, of which ample examples have been found, must have been used for hunting.

The most distinctive pottery of the period is the very one on the basis of which the culture itself has been christened, namely the Painted Grey Ware. As the name indicates, it is a grey ware with designs painted on it, usually in black pigment. Made of well-levigated clay, the pots are usually fine-grained, though somewhat coarser and thickish examples are not lacking. By and large the pots were wheel-thrown, though a few hand-made examples also occur. On the exterior of the bottom of some pots a series of indentations can be seen. How exactly these came into being is difficult to say. After the pots had been dried in the sun, they were painted. K. T. M. Hegde, who has re-created samples of this ware under laboratory conditions, states that red ochre ground in water was the pigment used for these decorations. The painted designs range from a simple band round the rim through a variety of oblique and criss-cross lines, to more specialized designs such as a row of sigmas, a chain of short spirals, concentric circles and semi-circles, intersecting circles, maltese squares, swastikas, etc. (Fig. 1). There are, however, no human or animal figures.

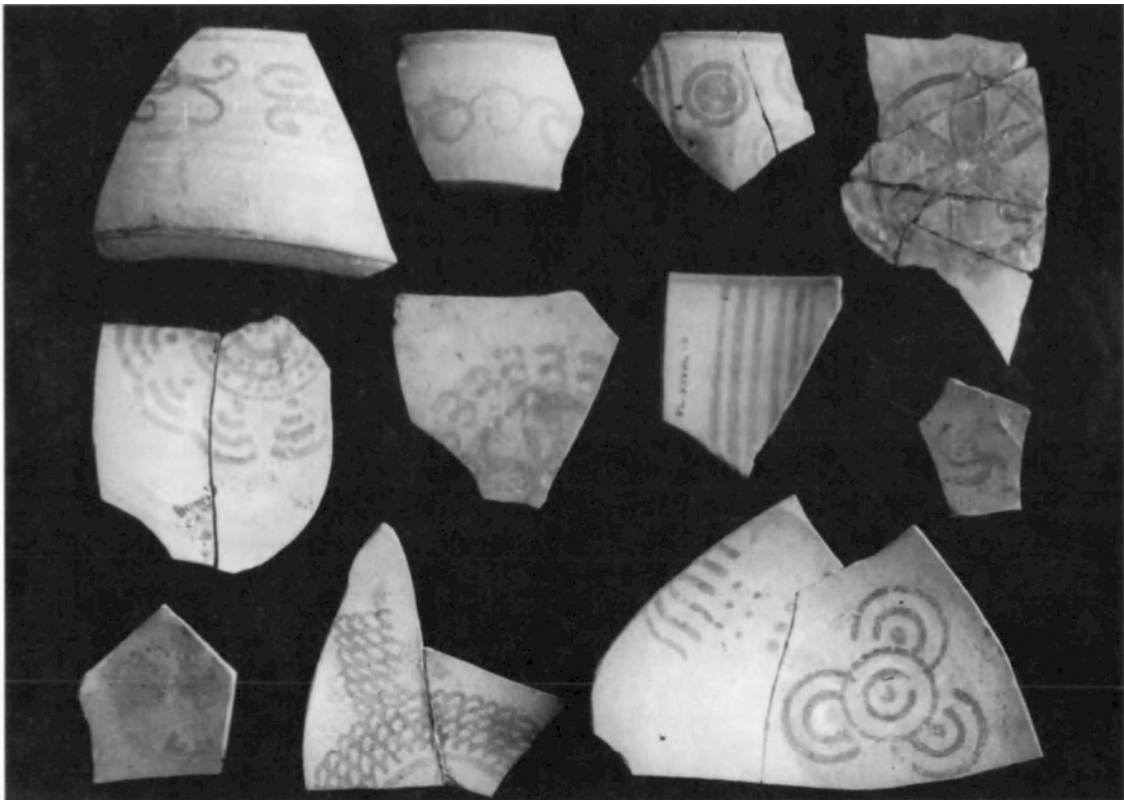


Fig 1 Some designs on the Painted Grey Ware. (Courtesy of the Archaeological Survey of India.)

The more common shapes in this ware are the dish and bowl, the former usually with convex sides and base, and the latter with either vertical or convex sides or even a flat base. Besides bowls and dishes, there are examples of vases for holding drinking water. Among vessels special mention may be made of the following: corrugated stems, from Hastinapura, Ahichchhatra, etc., which constituted the lower part of a dish-on-stand or cup-on-stand (unfortunately no complete example has yet been found); a strap handle with painting on it from Sardargarh, which, judging from a handled pot in dull-red ware, would appear to have formed a part of a vase with a flaring rim, and somewhat bulging body.

Although the culture is designated after the Painted Grey Ware, it should be mentioned that this pottery constituted only about 10 to 15 per cent of the total ceramic assemblage. It was evidently highly valued as a luxury ware.

But by far the majority of the pottery was of red ware, some slipped but mostly unslipped. In most cases husks and mica ware were used as *degraisants*. It is the red-ware pots that met most of the people's needs – for fetching and storing water, for storing cereals and for cooking.

At Atranjikhhera a kiln has been discovered.<sup>30</sup> Oval in plan, it was about 1m deep, with the longer axis measuring 2.35 m. Within it were encountered alternate layers of pots and fuel, the latter consisting primarily of cakes of animal dung. Towards the top were placed heaps of reeds and twigs and the kiln was finally sealed with mud-plaster.

Those who preceded the Painted Grey Ware people in the upper Ganges valley did not use iron; for example, the Harappans at Alamgirpur and Hulas; the Ochre Colour Ware people at Hastinapura and the black-and-red ware people at Atranjikhhera and Jakhera. However, since the Ganges valley has hard alluvial soil and there is evidence suggesting that in ancient times it was deeply forested, substantial use of iron would appear to be a logical necessity to overcome these ecological handicaps in order to put the region under large-scale sedentary occupation.

That the Painted Grey Ware people were skilled in the manufacture of iron objects is evidenced by as many as 135 specimens from a relatively small dig at Atranjikhhera. From Jodhpur, comes the evidence of 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 neighbouring 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.

<sup>30</sup> Gaur, 1983, p. 128.



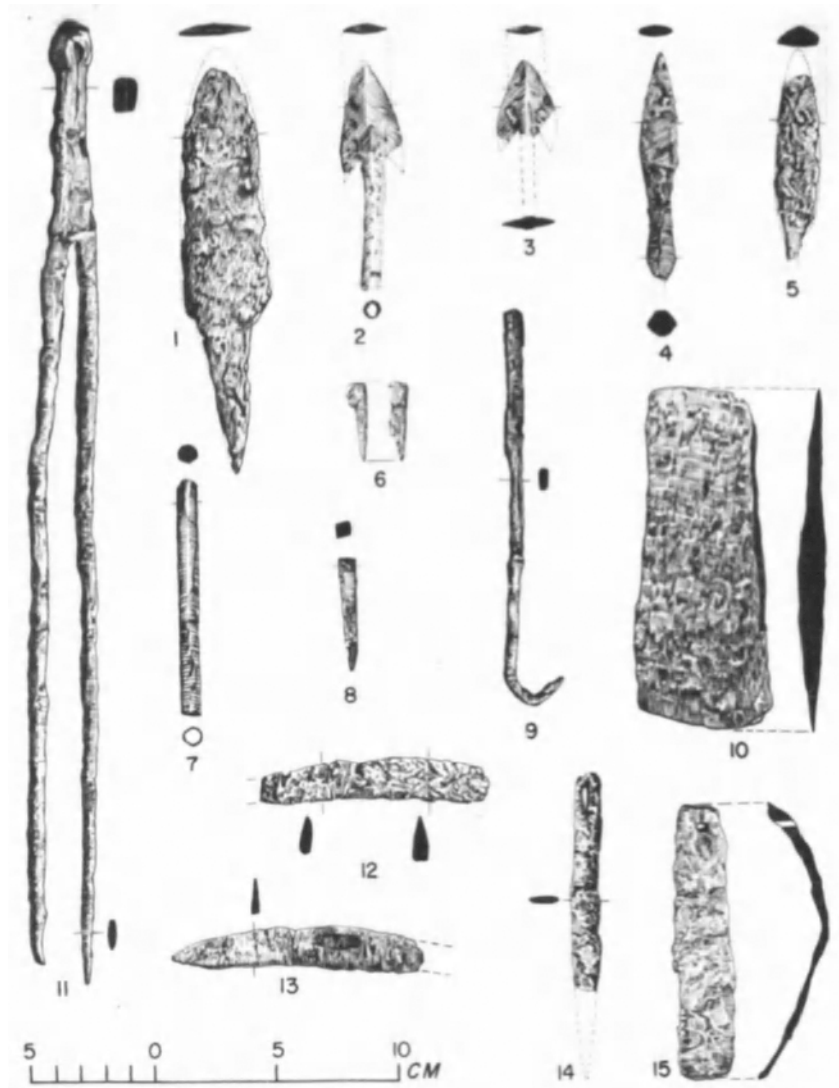


FIG. 2 Atranjikhhera: iron objects: 1 – spearhead; 2–5 – arrowheads; 6 and 8 – nails; 7 – shaft; 9 – hook; 10 – axe; 11 – pair of tongs; 12–13 – knives; 14 – large needle (?); 15 – clamp.

Later, however, when the Northern Black Polished Ware stage was reached, the Bihar ores, very much richer in content, were exploited, which gave a great boost to the iron industry, resulting both in profusion and new varieties of implements.

The iron objects used by the Painted Grey Ware people fall under four broad categories: (a) household objects; (b) tools for agriculture; (c) other craft tools; and (d) 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 (Fig. 2). Although this site has not yielded any specific agricultural tools, a

sickle and a hoe was found at Jakhera.<sup>31</sup> 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.

While discussing the use of iron, it should be mentioned that at Bhagwan-pura, Dadheri and Nagar, Joshi found no iron at all in the levels of this culture, though copper objects were met with.<sup>32</sup> Such evidence tends to suggest that during Painted Grey Ware times, there may have been an early stage when only copper was used but no iron. However, before the point can be taken as fully established, evidence from a few more sites would be a desideratum.

Although iron had come into use during the Painted Grey Ware period, copper was still an indispensable metal. While the two specimens from Hastinapura 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.<sup>33</sup>

In this culture, there are no copper swords such as, for example, 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

<sup>31</sup> Sahi, 1978, p. 103.

<sup>32</sup> Joshi, 1978, pp. 98–100.

<sup>33</sup> Agrawal, 1983, p. 490.

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.<sup>34</sup>

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 from 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.<sup>35</sup>

By far the majority of the bone objects found in the levels of this culture are made of antler. The objects include arrowheads, both barbed and unbarbed, the tang being with or without a socket. Some of the barbed arrowheads from Atranjikhhera and Jakhera bear the design of an incised circle with a central dot. Some of the specimens are pointed at both ends and may have been used for knitting or weaving. A long spacer from Jakhera, with a hole at each extremity, may also have been used in weaving. Sometimes the pointed tools are taken as styluses for writing. Since, however, no inscription has so far been recovered from the Painted Grey Ware levels, there is little to confirm the hypothesis. There were also bone ear-studs, usually cylindrical in shape, and combs (Fig. 3), and from Jakhera comes a carved hollow handle, in which the tang of a polished copper mirror may have been inserted.

Jakhera has brought to light three human terracotta figurines. Made of well-levigated clay, they are all hand-modelled. Of these figures, two, depicting a male and a female, were found together. These have an ovalish-to-circular hollow behind the head, stumpy arms, relatively thin waist and broad hips (Fig. 4). A characteristic feature of these figurines is the incised decoration over the body which in one case is rather heavy. The third figure, found separately in a lower level, is somewhat different in its execution. The face is pinched and the disposition of the nostrils leads one to suspect that it may be of some animal (Fig. 5). The body, however, is human. Could this figure be of some animal-headed female deity? The position, however, is uncertain, and the case can be established only if clearly identifiable examples of the kind are obtained in future.

Dull to bright red in colour, the terracotta animal figurines are also handmade. These include the humped bull, horse and ram. While the bull and horse are not decorated, the ram invariably bears incised lines on the body. The ram has been found not only at

<sup>34</sup> Gaur, 1983, p. 231.

<sup>35</sup> Agrawal, 1983, p. 490.

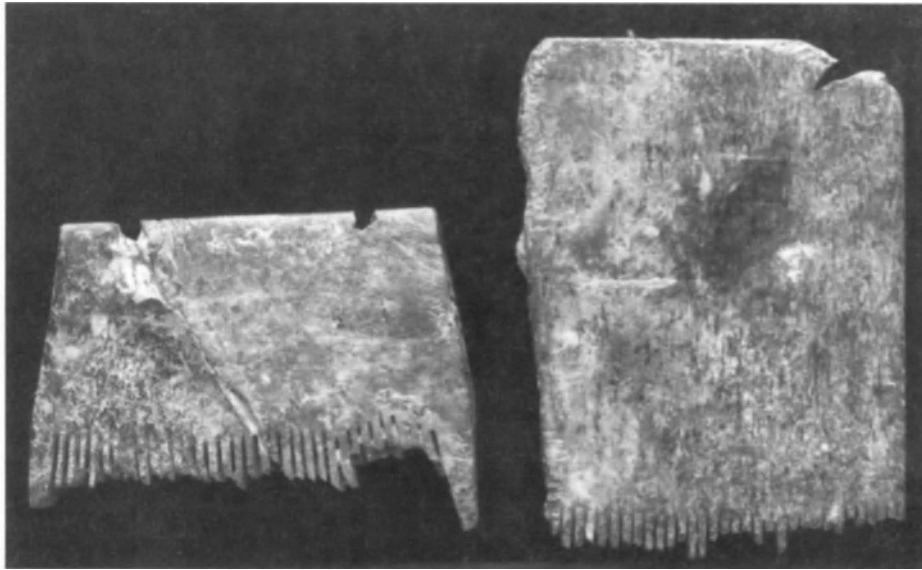


FIG. 3 Jakhera: Bone combs used by the Painted Grey Ware people. (Courtesy of Aligarh Muslim University.)



FIG. 4 Jakhera: Grey terracotta figure of the Painted Grey Ware people. It is to be noted for its archaic features and notched decoration. (Courtesy of Aligarh Muslim University.)

Alamgirpur and Bhagwanpura, where some Harappan ‘mix-up’ might be suspected, but also at Jakhera where there is no Harappan or even late Harappan substratum. The



FIG. 5 Jakhera: Grey terracotta figurine, with female human body and animal (?) head. (Courtesy of Aligarh Muslim University.)

occurrence of the terracotta horse, in addition to the presence of skeletal remains, reinforces the belief that it was one of the favourite animals of the Painted Grey Ware people.

That these people were skilled in various branches of technology – ceramics, iron, copper, glass, bone, etc. – must be amply clear from the foregoing pages. There are, however, some objects that throw valuable light on their knowledge of geometry. From Jakhera come four flatfish pieces of terracotta, which may be classified under two categories. In one case there are three sides of which two are straight, joining each other at a right angle, while the third one (i.e. the hypotenuse) is an arc of a circle. In the other case, there are four sides, of which three are straight with intermediary angles of 90 degrees, while the fourth one is an arc of a circle. All these demonstrate some knowledge of the concept of the circle, quadrant, rectangle, etc. That these people also used scientific instruments such as the divider is clearly indicated by the intersecting circles incised on a potsherd found at Jakhera. The point where one of the arms of the divider was fixed to draw the circles concerned is clearly visible as a pin-hole.

Although it may entail a partial repetition of some of the data given above, it would be well worth while to visualize how the Painted Grey Ware people actually lived.

The settlements were mostly along the rivers, the average intermediary distance being 10 to 12 km. To begin with, these settlements were small but, as time passed, they increased in size, but at no stage did a 'city', with all that it implies, come into being. Because of

the lack of horizontal excavation it is not known whether there was any apportioning of areas for craftsmen of certain categories, such as potters, ironsmiths, etc., though such a possibility cannot altogether be ruled out. The economy, however, was essentially rural. Agriculture was the mainstay of the people who produced wheat, barley and rice. Iron axes helped in felling trees and making the land cultivable, which must have been ploughed with the help of bullocks.

Agriculture was supplemented by cattle-breeding which provided the people with milk and its derivatives, namely curds, ghee, buttermilk, cheese, etc. Several other animals, such as the buffalo, dog, pig, ram, horse, etc., were also domesticated. Dogs would have kept watch over the fields, farms and even the houses, pigs would have done the scavenging while horses would have been used for riding, and perhaps for drawing chariots, though admittedly no evidence of this has yet been found.

The nature of the houses varied: while the lowlier members of the community lived in round or rectangular huts of modest size, constructed essentially of wattle-and-daub, the more well-to-do lived in sizable houses with mud-walls, sometimes having as many as a dozen rooms. Burnt bricks do not appear to have been used for house construction, though their presence is duly attested. Generally squarish, these may have been used in religious structures like altars, etc.

Vegetarian as well as non-vegetarian food was consumed. While rice may have been boiled and eaten, wheat and barley were ground with mortar and pestle. From the ground floor, one may imagine, *chapatis* were prepared on a U-shaped hearth as is done today. To the diet were also added mutton, pork, beef and venison. Likewise, fowls, river-turtles and bivalves were also consumed. The food was eaten from the luxury Painted Grey Ware dishes and bowls (Fig. 6).

Very little evidence is available about the dress of the people. That cloth was woven is indirectly attested to by the impressions found on potsherds. But whether the cloth was just draped around the body or sown into garments is a matter for conjecture. The discovery of needles, however, suggests that certain garments were indeed stitched.

Women bedecked themselves with jewellery which seems to have included necklaces made variously of beads of semi-precious stone like agate, jasper, etched carnelian, etc. From Atranjikhhera comes a soapstone mould in which probably gold jewellery was cast (Fig. 7). There is evidence of the use of bangles, finger-rings and ear-studs. The hair was duly combed and collyrium applied to the eyes.

Hunting and fishing may have been resorted to partly for augmenting food supplies and partly as a sport. But one of the pastimes of the adults seems to have been gambling. This is attested to by the discovery of a die from Alamgirpur and of gamesmen from Noh and

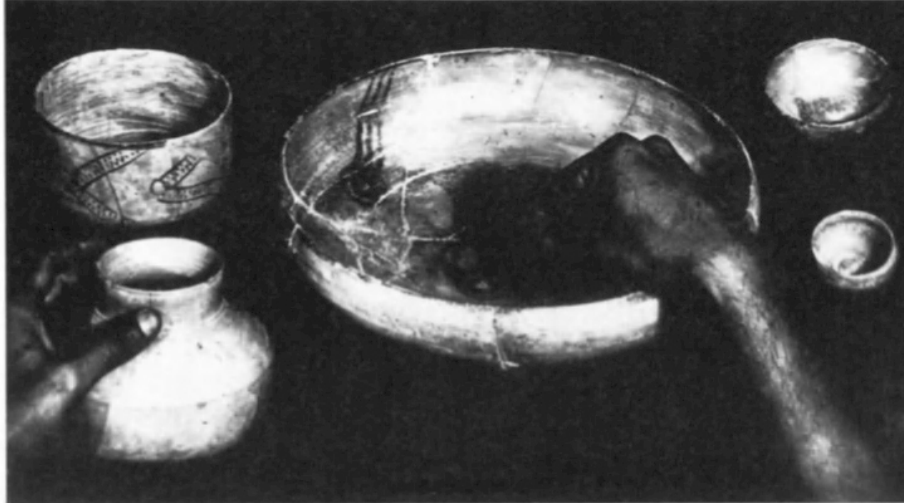


FIG. 6 A typical dinner set in the Painted Grey Ware consisting of the *thali* (dish), *katora* (bowl) and *lota* (drinking vessel). It highlights the tradition followed, even today, in an average Indian household.

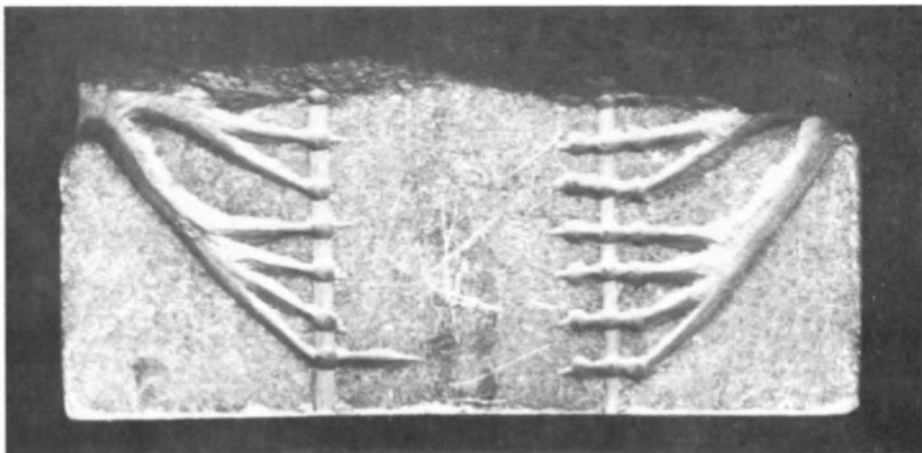


FIG. 7 Atranjikhera: Soapstone mould used by the Painted Grey Ware people probably for making jewellery. (Courtesy of Aligarh Muslim University.)

Mathura. Made of bone (or some kind of wood – the material has not been thoroughly examined), the die is oblong, the cross-section being rectangular. On its four faces there are broad pin-holes numbering 1, 2, 3 and 4, in an arrangement in which 3 is opposite 1 and 4 opposite 2. Flat at the bottom and having a somewhat parabolic elevation, the Noh gamesman is of the same material as the Painted Grey Ware one, and it even bears black paintings. The Mathura specimens are in two wares, grey as well as red, and may be assumed to have been used by two opposite parties. The dice and gamesmen are similar to those used in the game of *chaupar* even to this day (Fig. 8). Horse-racing could have been another diversion.

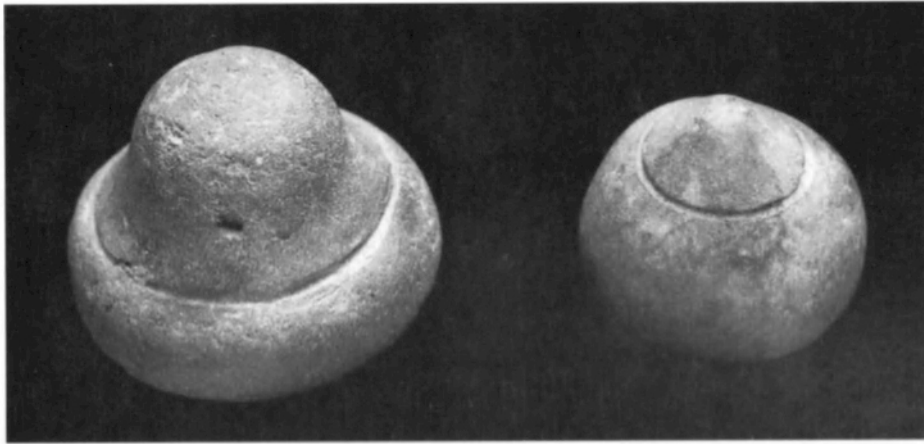


FIG. 8 Mathura; Terracotta gamesmen used by the Painted Grey Ware people. The one on the left is in red ware and that on the right in grey ware, the colour difference being for allocation of two opposite parties. These gamesmen are similar to the ones used in the game of *chaupar*. (Courtesy of Archaeological Survey of India.)

The children played hopscotch with circular pieces made by trimming broken pottery. Sometimes these circular pottery pieces have one or two holes. It is likely that, as at present, the children then put a thread through the holes and played by twisting the thread backwards and forwards. The terracotta ram found at Alamgirpur has holes in the lower part of the legs. This would indicate the use of wheeled toys by children.

The fireplaces at Atranjikhhera found associated with charred rice and bones may indicate some kind of sacrifice. Terracotta discs with a variety of incised designs have also been found at most of the sites (Fig. 9). Gaur believes that these may have had some religious significance.

There is not much evidence of large-scale trade and commerce. None the less iron ores, of which tools were manufactured locally at various sites, must have been brought through trade. Likewise, semi-precious stones for beads would imply some sort of trade. However, barter must have been the means of exchange of goods and services, since there was no system of coinage.

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 overlain 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



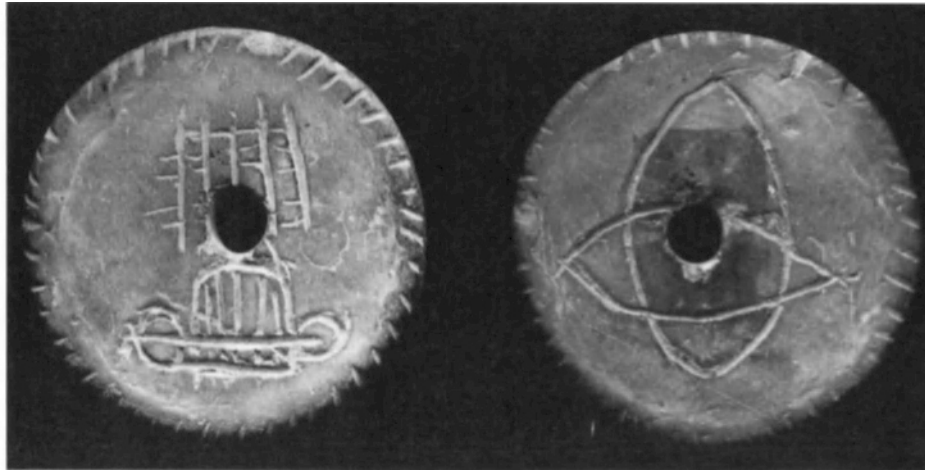


FIG. 9 Atranjikhhera: A terracotta disc. On its two sides are incised designs which may have had some religious significance. (Courtesy of Aligarh Muslim University.)

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 burnt-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, Atran-jikhhera, 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 antedate 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.

Then there is the 'space' factor. From the geographical data available in these texts, it would appear that the Rigvedic locale was primarily that of the Sap tasinidhu, that is, the rivers of the Indus system including the easterly ones such as the Sarasvati and Drishadvati, though Jamuna and Ganges are also referred to. In terms of modern political division, this would cover the northern part of Pakistan as well as Punjab, north-eastern Rajasthan and contiguous parts of Haryana in India. During the later Vedic-cum-early Brahmanic period the main focus was on what was known as the Madhyadesa, corresponding to the upper Ganges-Jamuna valley, to which could be added some areas west of the Jamuna itself. Finally, during the later Brahmanic-cum-Upanishadic period the scene shifted to eastern Uttar Pradesh and even northern Bihar.

Put together, the 'time' and 'space' factors would seem to indicate a fair amount of concordance between the three periods of Vedic literature as propounded by Max Muller, i.e. the Rigvedic, the late Vedic, and the period of Sutras (Velit I-III) on the one hand, and Painted Grey Ware (PGW I-III), on the other. Indeed, it would be too much to expect more than that, for literary changes need not necessarily keep full pace with changes in the material culture or vice versa.

We may now go into some details of the 'content' factor. To recapitulate, people in both Velit I and Velit II were essentially at a rural stage and so were those in PGW I and II. It is only towards the end of Velit III that the signs of urbanization become discernible, and the same is the situation towards the end of PGW III. In Velit I and II the houses were made of wattle-and-daub, as were the houses in PGW I and II. While no data are available regarding the cereals of PGW I, those of PGW II, namely rice, wheat and barley, compare well with the cereals of Velit II.

The horse, making its appearance right from Velit I, occurs in PGW I (Bhagwanpura) and PGW II (Hastinapura and Atranjikhhera). Knowledge of iron in Velit I is doubtful; and neither has PGW I yielded any iron so far (Bhagwan-pura, Dadheri, etc.). Iron occurs in Velit II as well as in PGW II. Likewise, glass referred to in Velit II, is also found in PGW II.

Writing seems to have been unknown to Velit I and II, as it was in PGW I and II. It is only towards the end of Velit III that a knowledge of writing is indicated. More or less the same may be the position towards the end of PGW III.

The evidence regarding the use of dice from Velit I onwards compares positively to that obtained so far from PGW II (the Alamgirpur specimen bears 4, 3, 2 and 1 markings).

Finally, we come to the disposal of the dead. Although negative evidence should never be overstressed, it may well be that cremation was the practice in PGW II as it was in Velit II. The burials at Bhagwanpura may be of either Harappan or of Painted Grey Ware people,

because it was a period of overlap. Thus, it is difficult to say anything positive about the disposal of the dead in PGW I, much less to compare it to the *anagnidagdha* method of Velit I.

From the foregoing it becomes amply clear that there is an overall concordance between Velit II and PGW II; namely between the later Vedic-cum-early Brahmanic period, on the one hand, and the upper Ganges-Jamuna valley stage of the PGW culture, on the other.<sup>36</sup> Likewise, new features such as urbanization, writing, etc., discernible towards the end of Velit II (i.e. later Brahmanic-cum-Upanishadic period), are also met with towards the end of PGW III (i.e. towards the end of the Painted Grey Ware/Northern Black Polished Ware overlap<sup>37</sup>).

The equation between Velit I (the Rigvedic period) and PGW I (the northern Pakistan to north-eastern Rajasthan stage of the Painted Grey Ware Culture) is, however, not so secure. What is needed now is more evidence of the pre-Iron stage of the culture in this area. In this context we may pin some hope on what A. H. Dani says when discussing the Aryan problem in relation to the Gandhāra Grave Culture and the Painted Grey Ware Culture:

But we have seen in our region how there had been two main periods of invasion of these Grey Ware people. While the earlier date of Lai tallies with the first invasion in our region, we have so far no evidence for extending this invasion into East Pan-jab and the upper Ganges valley. But the second invasion came about the same time when the Painted Grey Ware Culture is seen in upper India. Could we, therefore, not see the spread of this latter culture as a result of the second invasion from the West? *A definite answer to this question will be provided only when our investigations are extended into Panjab east of the river Indus.*<sup>38</sup>

This is, however, not to say that the Painted Grey Ware Culture alone would fill the bill for the entire Rigvedic stage. There could be other cognate cultures too, for the terrain from the Sarasvati in Rajasthan back to the Kubha (Kabul) in Afghanistan is a long and varied one.

## Conclusion

In the foregoing pages we have presented the characteristic features of a protohistoric culture. No doubt the Indus Civilization was great in many respects, but not much of it

<sup>36</sup> Here we may draw attention to a very good paper by Sharma (1978). The date adopted in this paper for the Painted Grey Ware Culture was c. 800–400 B.C., presumably on the basis of the date suggested by Agrawal and Kusumgar (1974). However, Sharma (1980 p. 48) has accepted 1000–500 B.C. as the date of the iron-using Painted Grey Ware sites.

<sup>37</sup> Although to-date no inscription prior to the Mauryan times has been found, there is a reasonable possibility of writing having come into being somewhat earlier.

<sup>38</sup> Dani, 1967 pp. 54–5 (my italics).

ultimately survived. For reasons still not fully known to us, the Indus Civilization withered away. But the authors of the Painted Grey Ware Culture, clearly identifiable with the later Vedic Aryans (if not yet with the Rigvedic Aryans as well), are the ones who provided the seeds of philosophic thought for which India is known all over the world. And it was not mere spirituality that they bequeathed. Their contribution to material life is no less significant. The Painted Grey Ware people, with their iron technology, are the first to have brought about a revolution in the settlement pattern in the Ganges-Jamuna basin – the Madhyadesa of old. Their predecessors in this region, namely, the copper-hoard people, seem to have been merely sporadic occupants, leaving hardly any mark on the civilization to be. Further, it is the Painted Grey Ware period that brought northern India to the threshold of what is known as the second urbanization. The glory lost through the fall of the Indus Civilization was regained after a lapse of nearly 1, 000 years by the immediate descendants of the Painted Grey Ware people, namely the Northern Black Polished Ware people. On the solid foundation laid by the Painted Grey Ware people arose the superstructure in which during the sixth and fifth centuries B.C. there flourished not only the legendary Mahajanapadas ruled by kings like Udayana, Prasenjit and Bimbisara, but also the great religious teachers, Mahavira and Buddha.