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C. Margabandhu

A. K. Sharma

R. S. Bisht

Re-evaluation of the pottery sequence in north India during the first millennium BC

Akinori Uesugi

1. Location of problem and aim of this paper

Since the report of the pottery from the excavation at Ahichchhatra in Uttar Pradesh¹, in which the stratigraphical excavation method was introduced for the first time in a strict sense in India, the pottery sequence in north India during the second and first millennia BC has been discussed by many scholars and elaborated by numerous excavations conducted in the region². The outline of the sequence including the rise and decline of several characteristic fine wares, such as the Painted Grey Ware (PGW) the Black Ware (BW) the Black-and-red Ware (BRW), Black slipped Ware (BSW), and the Northern Black Polished Ware (NBPW), have been confirmed and their time-bracket has also been almost established so far³.

However it has tended to be likely that only the sequence and the antiquity of each fine ware focussed upon without giving any evaluation for the sequence, as a material for the reconstruction of the past society. Regardless of the fact that the pottery evidence of this period in north India has been recognised as one of the crucial material for speculating on the "Dark Age" between the Indus Civilization and the Historical period, they have not been fully utilized as such.

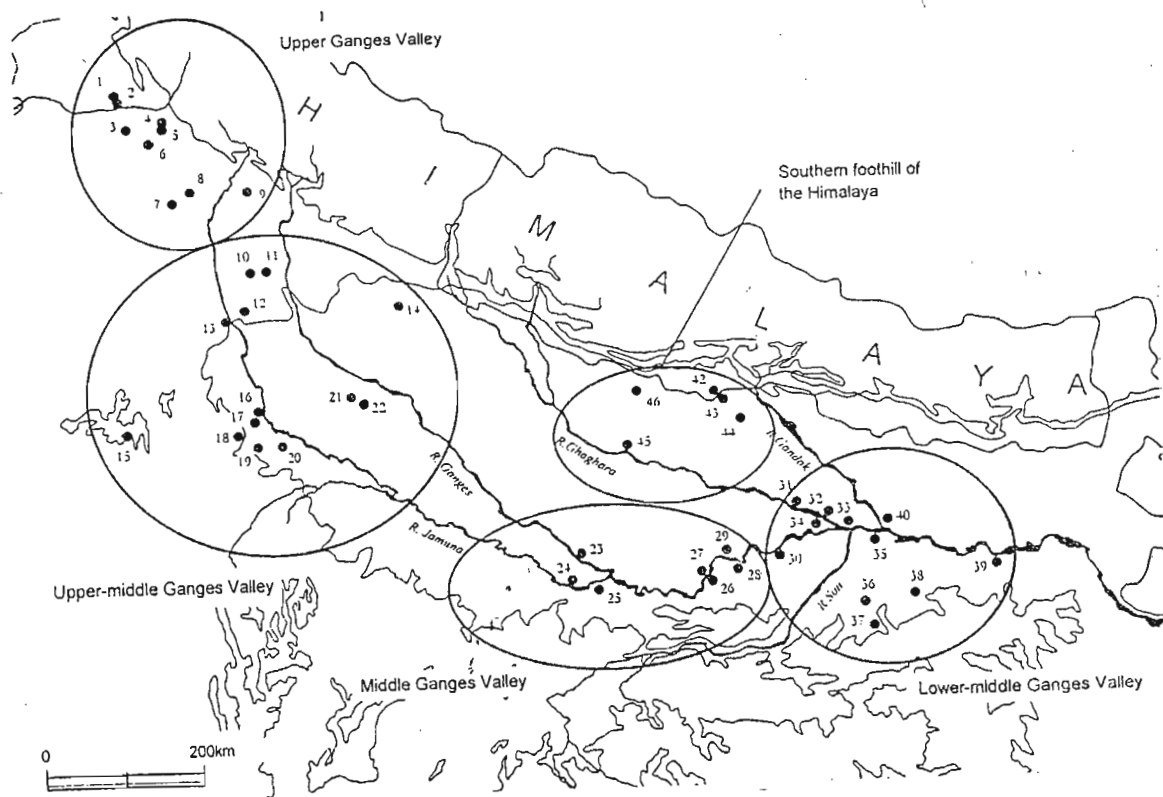
A consistent picture of the pottery sequence has not been developed, though it has been dealt with fragmentarily in several excavation reports, and any kind of social background and meaning behind the pottery sequence has not been fully discussed.

In this paper, I shall attempt to discuss the pottery sequence under an assumption that the study can provide not only the chronological framework, but also, more important, some clues for evaluating the social change in north India during a given period. Especially, in terms of the distribution of the fine wares, it can be expected that an interregional relationship of social or cultural groups could be reflected in the pottery evidence, showing some movement of groups and the interactive relationship between the groups which created pottery industry due to their cultural orientations. This process would be an aspect of the social transformation of the urbanisation of north India which seems to be based on the development

of interregional relationships. The main aim of this paper is to discuss the pottery sequence in terms of the interregional relationships in north India.

2. Analysis of the regional pottery sequence

Whole of north India will be divided for this purpose into five sub-regions in order to draw a more concrete picture of the pottery sequence. This regional division enables one to examine the sequence and to establish the parallelism among these regions so that dynamic regional relationships in the pottery sequence could be well understood.



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|----------------|--------------------|--------------------|-----------------|-----------------------|
| 1. Nagar | 11. Hastinapura | 21. Jakhera | 31. Narhan | 41. Maheth |
| 2. Katpalon | 12. Allahpur | 22. Atranjikhera | 32. Manjhi | 42. Tilaura Kot |
| 3. Dadheri | 13. Purana Qila | 23. Sringaverapura | 33. Chirand | 43. Piprahwa-Ganwaria |
| 4. Rupar | 14. Ahichchhatra | 24. Kausambi | 34. Khairadih | 44. Sohgaura |
| 5. Bara | 15. Jodhpura | 25. Bhita | 35. Pataliputra | 45. Ayodhya |
| 6. Sanghol | 16. Mathura | 26. Sarai Mohana | 36. Sonpur | 46. Sravasti |
| 7. Bhagwanpura | 17. Sonkh | 27. Rajghat | 37. Taradih | |
| 8. Dhaulatpur | 18. Noh | 28. Prahladpur | 38. Rajgir | |
| 9. Hulas | 19. Fatehpur Sikri | 29. Masaon | 39. Champa | |
| 10. Alamgirpur | 20. Batesvara | 30. Buxar | 40. Vaishali | |

Fig. 1. Distribution of the sites mentioned in the text and the division of sub-region of north India.

1) Upper Ganges Valley

This region is almost equal to the eastern Punjab, including the sites of Bhagwanpura, Dhadheri, Rupar, Sanghol, Daulatpur, Nagar, Katpalon, Manda, etc., in some of which the interlocking of Late Harappan ware and Painted Grey Ware has been confirmed⁴. The general sequence of this region from the latter half of the second millennium BC to the first millennium BC is (1) Late Harappan, (2) Painted Grey Ware and (3) Late Northern Black Polished Ware.

The main feature of this regional sequence is that the PGW made its appearance during the survival of the Late Harappan, without any evidence of iron, and that it continued consistently down to the middle first millennium B.C. This indicates that the PGW appeared in this region prior to any other region and had its long existence as a predominant fine ware. The forms of the PGW of this early phase is represented by a simple composition of a bowl with straight sides and a shallow dish⁵. This phase in the Upper Ganges Valley can be termed as the Early PGW phase.

However, in the late first millennium BC, approximately equal to the third to second centuries BC, the Painted Grey Ware declined quite suddenly and then the degenerated Northern Black Polished Ware came to be over other wares.

2) Upper-middle Ganges Valley

This region includes the Doab with the sites of Hastinapura⁶, Ahichchhatra⁷, Alamgirpur⁸, Allahapur⁹, Purana Qila¹⁰, Mathura¹¹, Atranjikhhera¹², Noh¹³, Jakhera¹⁴, Jodhpura¹⁵, etc. The pottery sequence of this region shows (1) Ochre Coloured Pottery, (2) BRW/BSW, (3) PGW, and (4) Early/Late NBPW.

The characteristic feature of this sequence is the existence of the BRW/BSW industry prior to the appearance of PGW. At Atranjikhhera, Noh, Jakhera, and Jodhpura located in relatively southern part of this region, the BRW/BSW industry has been confirmed independently as one cultural stratum, while in the northern half of this region, where Hastinapura, Ahichchhatra, Allahapur, and Purana Qila are located, the BRW/BSW has been observed in coexistence with PGW side by side from one stratum. These facts indicate that the BRW/BSW were predominant wares before the appearance of the PGW and were replaced by the PGW as a main industry, though the BRW/BSW survived in a subsidiary position. By this time, iron was introduced. This phase of the PGW in coexistence with the BRW/BSW is termed as the Late PGW phase.

In relation to this relationship between the BRW/BSW and PGW, it is worthwhile noting that some forms of bowl and dish of the BRW/BSW are seen among the PGW, which are not represented in the Early PGW Phase. This fact indicates that in the course of coexistence and transition of BRW/BSW and PGW, some interactions had occurred between them. This further suggests that the transition from the BRW/BSW to PGW was not an unilateral phenomenon but an interactive process of transition.

Regarding the appearance of BRW and BSW since these wares were not indigenous in this region with a gap with the earlier industry of Ochre Coloured Pottery (OCP), the origin of these wares should be sought for in other region. Although some scholars argue that they came from southern Rajasthan, i.e., the Banas Culture¹⁶, the Lower-middle Ganges Valley should be in mind. For recent excavations in the Lower-middle Ganges Valley, such as the site of Narhan, have revealed formal similarities between the BRW/BSW in the Upper-middle Ganges region and that in the Lower-middle Ganges Region. This observation will become more clear in the discussion of the following sub-regions.

It seems likely that the introduction of the NBPW was relatively later than the middle, Middle-Lower Ganges Valley and the southern foothill region of the Himalayas. At the best documented site of Atranjikhhera,

a more or less straight transition from the Late PGW to Late NBPW can be observed. Based on this, the PGW had a strong tradition in this region also down to the middle first millennium BC.

3) Middle Ganges Valley

This is represented by the middle part of the present Uttar Pradesh, including the sites of Kausambi¹⁷, Sringaverapura¹⁸, Rajghat¹⁹, Prahladpur²⁰, etc. The pottery sequence in this region is as follows: (1) BRW/BSW, (2) Early NBPW, (3) Late NBPW.

In the region, the chalcolithic culture which might go back to the second millennium BC has not been fully attested, the process of the appearance of BRW/BSW is quite unclear. At Rajghat and Prahladpur, the BRW is outnumbered by the BSW, indicating that the BSW was the predominant industry showing a contrast with the situation in the Upper-middle and Lower-middle Ganges Valley. The composition of BSW consists of bowl and dish which show formal similarities with those of the BRW/BSW at Atranjikhhera, indicating that the BSW as well as the BRW in this region existed under a relationship with those of Upper-middle Ganges Valley. However, since the predominance of BSW has been recently recorded in the later half of the BRW/BSW phase at several sites in the Lower-Middle Ganges Valley and the southern foothill region of the Himalayas, as described below, the predominance of BSW in the Middle Ganges Valley was not a regional, but a wider phenomenon which occurred in the Middle and Lower-middle Ganges Valley and the southern foothill region of the Himalayas. The phenomenon is quite important for speculating on the emergence of the NBPW, as the BSW can be considered as a precursor of the NBPW in some respects²¹.

In this region, the PGW had not come into predominance, but occur in limited number²². However, some formal influence from the PGW are observable in the BSW, indicating that it had some relationships with the neighbouring Upper-middle Ganges Valley. Instead of the PGW, the NBPW became predominant following the BSW during the middle first millennium BC. The NBPW has no clear influence from the PGW but showed some strong similarities with the BSW in term of forms, shapes and its characteristic black surface. This indicates that the NBPW had been created over the foundation of the BSW. During the later first millennium, the NBPW became coarser in fabric and characteristic treatment of the surface.

4) Lower-middle Ganges Valley

Lower-middle Ganges Valley is equated with the region of present Bihar and the eastern fringes of Uttar Pradesh. The pottery sequence is well attested by the sites of Chirand²³, Narhan²⁴, Khairadih²⁵, Vaishali²⁶, Maner²⁷, Pataliputra²⁸ (city of Patna), Sonpur²⁹, Taradih³⁰, etc., showing the following sequence: (1) BRW/BSW, (2) early NBPW, and (3) late NBPW.

The BRW/BSW phase can be divided into two phases, that is, early (chalcolithic) and late (iron). The early BRW/BSW is best recorded at Chirand, Sonpur, and Narhan, where the BRW is more frequent. In the BRW during this phase, several forms which are not available in the BRW/BSW phase in other sub-regions are represented, consisting of dish-on-stand and shallow dish. In addition, the consistency in the composition of forms and shapes in each form is less attested, showing wider variety of shapes and site-wise composition. Another feature of the BRW is the paintings on the body portion of bowl.

In the late BRW/BSW phase, the composition of forms became constrained into a relatively deep dish with straight sides and a hemispherical bowl, and the consistency in shapes through several sites became clear; in other words, the simple composition of bowl and dish was established in this phase, though the exact date of the establishment of the composition has yet to be clear. It also witnessed the predominance of the BSW in the later part of this phase.

The BRW/BSW phase was followed by the occurrence of the NBPW during the middle first millennium BC, and then degeneration of the NBPW in the late first millennium BC. Although there is no firm ground at present, this region has been considered generally the homeland of the NBPW³¹.

5) Southern foothill region of the Himalayas (Ghaghara Valley)

In this region, relatively far away from the Ganges Valley, the following pottery sequence is attested at Sravasti (Maheth)³², Piprahwa, Ganwaria³³, Sohgaura³⁴, (1) BRW/BSW, (2) early NBPW, and (3) late NBPW.

In this region, there is no evidence showing that the BRW/BSW could go back to its early phase. At Piprahwa-Ganwaria, the predominance of the BSW is attested, indicating that this region took the same path as that in the Middle and Lower-Middle Ganges valleys. Following the BSW, the NBPW came into existence with predominance in the fine ware industries. It is noteworthy that during the early NBPW phase a few sherds of PGW are found from the excavation at Sravasti, suggesting that this region had a relationship with the western region, viz., either the Upper-middle or the Upper Ganges valley.

This region also witnessed the degeneration of fine wares during the first millennium BC.

3. Evaluation of the Pottery sequence in north India

On the basis of the examination of region-wise pottery sequence, it is understood that north India is not on a single line of the pottery sequence, but shows regional pictures of the sequence; on the basis of this study four phases can be proposed for the pottery sequence. It is likely that each phase had its own social background behind its pottery distribution and transition from one phase to the another.

1) Early PGW-early BRW phase (the late second millennium BC)

In this phase, the PGW made its appearance in the Upper Ganges valley, where there was still a faint tradition of the Late Harappan Culture. The appearance of PGW was totally a new cultural trait in this region without any clear relationship with the late Harappan Culture. In this sense, we should suppose an arrival of a new different cultural group for the emergence of the PGW. However, it is worthwhile mentioning that the PGW had a similar composition of forms consisting of bowl and dish with the BRW/BSW which spread over from the Lower-middle to the upper-middle Ganges valley. This suggests that the PGW using people and the BRW/BSW using people had an interactive relationship developing mutually for the creation of a similar composition of forms. This point is quite important because as early as the later part of the second millennium BC at least two cultural groups represented by their own fine wares came into coexistence in north India with an interactive relationship possibly would have been a stimulus to the social change in north India subsequently.

On the other hand, the BRW/BSW which seemingly originated in the Lower-middle Ganges valley spread over north India ranging from the Lower-middle to Upper-middle Ganges valley by the end of the second millennium BC. In this course, the original composition of forms which was relatively diversified including dish-on-stand became restrained to bowls and dishes with the simplification of shapes. Evidence at Atranjikhera shows an ultimately simplified composition. This simplification of the composition of forms is parallel to the composition of the PGW in general terms, suggesting that the simplification of the composition in the BRW occurred as a result of this interaction.

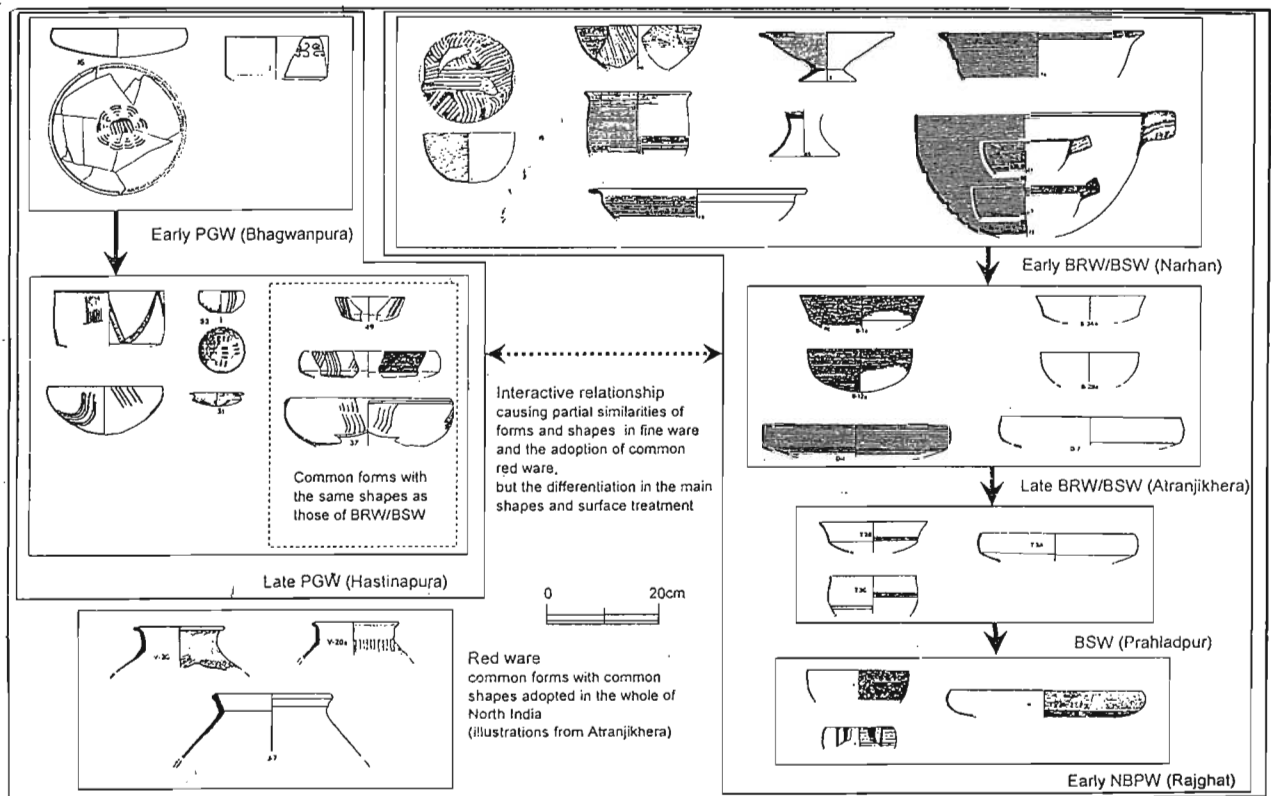


Fig. 2. Diagram of the sequence and relationship of the fine wares

More importantly regarding the BRW/BSW, though this point has not so much attracted the attention of scholars, this industry had a character of spreading its distribution zone as early as the later part of the second millennium BC prior to the expansion of the PGW industry. This indicates that some population movements, probably in the form of migration, though not confirmed occurred with a dispersal of the BRW/BSW. Although this observation should be further investigated and examined in future, it is worthwhile keeping in view that towards the end of the second millennium BC north India came to witness an active expansion of the people with certain cultural traits. Such an active expansion of cultural group/groups causing an interregional interaction would have played crucial roles in the social transformation towards the urbanisation in north India.

2) Late PGW-Late BRW/BSW Phase (the early first millennium BC)

In this phase, the PGW came to expand its distribution zone and to become predominant over the existing earlier industry of BRW/BSW in the upper-middle Ganges valley. However, enough attention should be paid to the fact that the interactive influences between the PGW and the BRW/BSW occurred through the process of establishment of predominance of the PGW industry.

In relation to the interactive relationship between the two industries, it is interesting to note that the red ware industry associated with both the PGW in the Upper-middle Ganges valley and the BRW/BSW in the further east during this phase is totally similar between the two fine ware distribution zones in terms of its composition and the manufacturing technique. This indicates that in spite of the regional differences in the fine ware industry, a common red ware industry was introduced all over north India during this phase. This contrast aspect of distribution between the fine ware and red ware industry further suggests that two independent distribution theories coexisted side by side within the whole ceramic industry of north India; on the one hand differentiation mechanism developed in the fine ware industries between the PGW and the BRW/BSW, and on the other hand a unification mechanism made the distribution of a single red ware industry over two regions of the fine ware industries possible.

Evaluating this phenomenon of the distribution of these wares it appears that the whole ceramic industry in north India became more complex through the interactive relationship between the PGW and the BRW/BSW. It is likely that the cultural groups with each fine ware industry formed their own cultural orientation through the differentiation and unification in the process of the cultural interactive negotiations. By this phase, north India became integrated as one cultural entity in which several, at least two in terms of the fine ware industry, different culturally-oriented groups built up their interactive relationship system, ultimately promoting the social transformation in north India.

3) Late PGW-early NBPW phase (the middle first millennium BC)

Although this phase witnessed no clear change in distribution zones of the different fine ware industry, a big change occurred in the BRW/BSW region. That is the creation of the NBPW through the predominance of the BSW in the later half of the late BRW/BSW phase. As stated above, the NBPW can be considered as a developed form of the BSW with some innovations and changes in the treatment of surface and shapes. Thus, there seems to be a clear continuity between the BSW and the NBPW, indicating that the NBPW was created by the people using the BRW/BSW. This observation would be reinforced by the fact that the NBPW

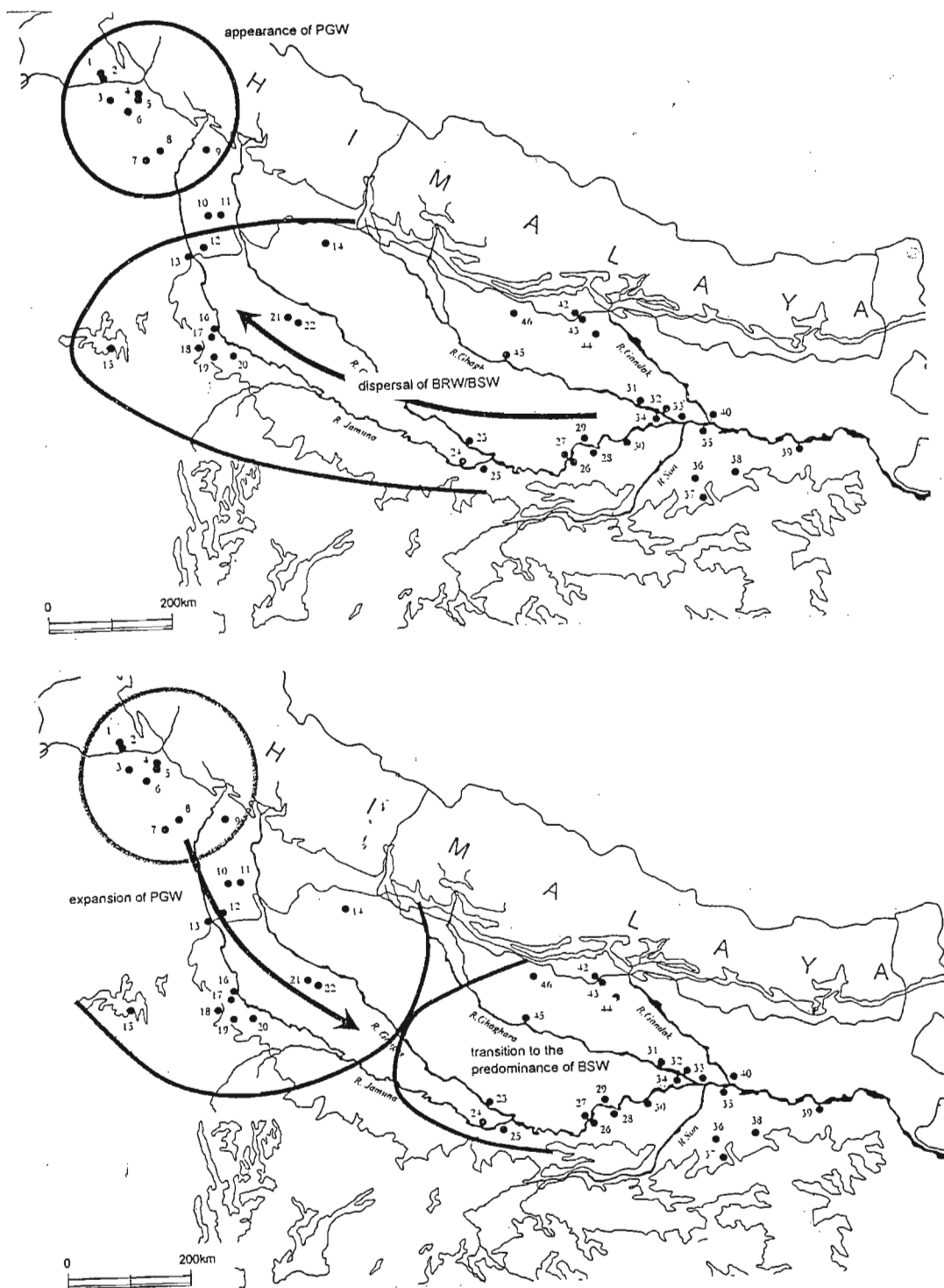


Fig. 3. Phase-wise distribution zones of the fine wares (1)
 (above: Early PGW-Early BRW/BSW, below: Late PGW-Late BRW/BSW)

had spread almost simultaneously over the sub-regions in which the BRW/BSW ware formerly distributed.

Since it is logically supposed that the interactive relationship between the PGW region and the BRW/BSW, now the NBPW region continued during the middle first millennium BC, the creation of the NBPW was also a product of the interactive relationship between the two regions. This does not necessarily mean that the PGW people was directly associated with the creation of NBPW, but that some cultural and even social atmosphere which was created by the PGW people and the BRW/BSW people bore influences on the emergence of the NBPW. Although it goes beyond the author's ability and the present stage of the archaeological data to specify the cultural or social situation concerned, some social background should be taken into consideration for evaluating the transition of ceramics in this period.

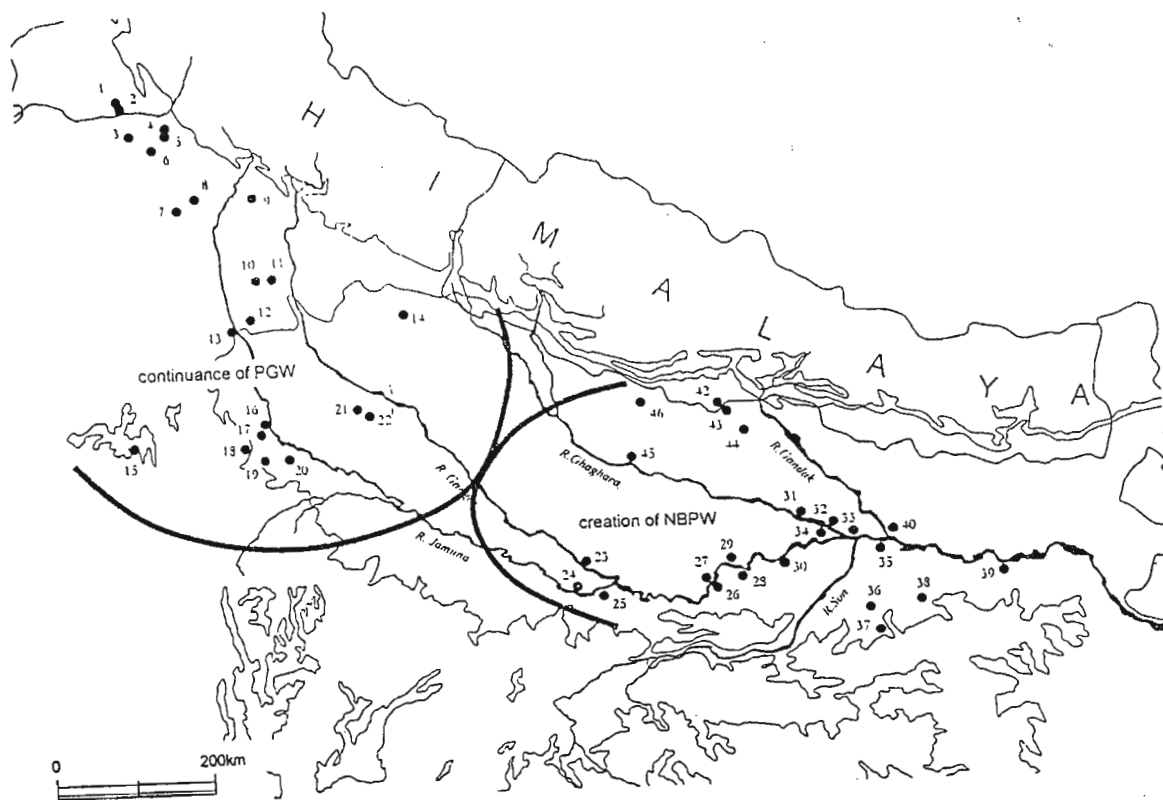


Fig. 4. Phase-wise distribution zones of the fine wares (2) (Late PGW-Early NBPW)

Regarding the PGW during this phase, the archaeological data makes it difficult to infer any change from the preceding phase, but it could be possible that no big change took place in the PGW industry itself in spite of the emergence of the NBPW in the neighbouring region. However, it should be emphasised that as early as this phase, the newly born NBPW might have penetrated into the PGW distribution zone in some part.

4) Late NBPW phase (the late first millennium)

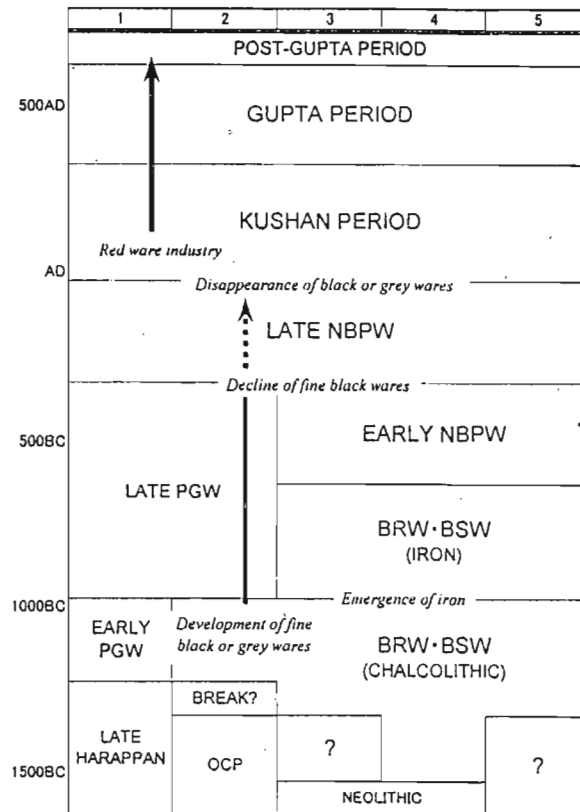
The change in this phase is extremely prominent, not only in the fine ware industries but also in the red ware industry associated with it. Regarding the fine ware, it declined in general sense, including both the PGW and NBPW. In the case of the PGW, it disappeared quite suddenly, while the NBPW became coarse. The wall of the NBPW tended to become thicker and its characteristic surface treatment was inclined gradually towards disappearance.

This phase has been termed as the period of degeneration of the NBPW. However, the actual situation of this phase is the general decline of the fine ware industry in the whole of north India. Since, by the beginning of the Christian era, the fine ware industry almost disappeared, the late NBPW phase can be considered as a transitional phase from the earlier tradition dominated by the fine ware industry to the later tradition of red ware industry without the fine black/grey ware industry.

The red ware was also subjected to total change in this phase. The earlier forms and shapes as well as the manufacturing techniques came to a decline; instead, several new forms and shapes were created, spreading over all the sub-regions of north India. Wheel-made bowls, pear-shaped vase and carinated *handi* are the representative types among new forms. Taking changes in both the fine ware and red ware into consideration, it can be said that this late NBPW phase shows the total decline of the earlier ceramic tradition.

This total change in the pottery tradition has several implications in the social transformation. Firstly, the decline of the fine ware tradition indicates the cultural orientation in the cultural groups with the differentiation in the fine ware industry has also disappeared. This means that the necessities among the different cultural groups to express their cultural orientations through the differentiation of fine wares had been exterminated due to some reasons associated with social backgrounds. Secondly, the decline of the fine ware tradition suggests the extinction of the techniques which was necessary for manufacturing the fine wares. Especially, the NBPW demanded its producer with high-level techniques with a knowledge of technology, indicating that the NBPW was manufactured by specialised potter groups as well as the social demands which would control its production. It is probably that the same situation is true of the case of the PGW. Thirdly, the change in the red ware industry implies that the social change gave its influence not only towards the fine ware but also towards the red ware industry. It appears that some social factors during this phase required the pottery complex to totally change, in terms of the functional aspect of pottery, the change in the composition of forms with transition from the earlier one to the newly introduced ones, suggest the change of way of using wares which is represented by the composition of forms, and in terms of the social and economic aspect of pottery, the cultural orientation which found its expression in the fine ware in the earlier phase either collapsed or modified its way of expression, and the total decline of the earlier pottery complex required a considerable modification in both manufacturing and in the circulation system.

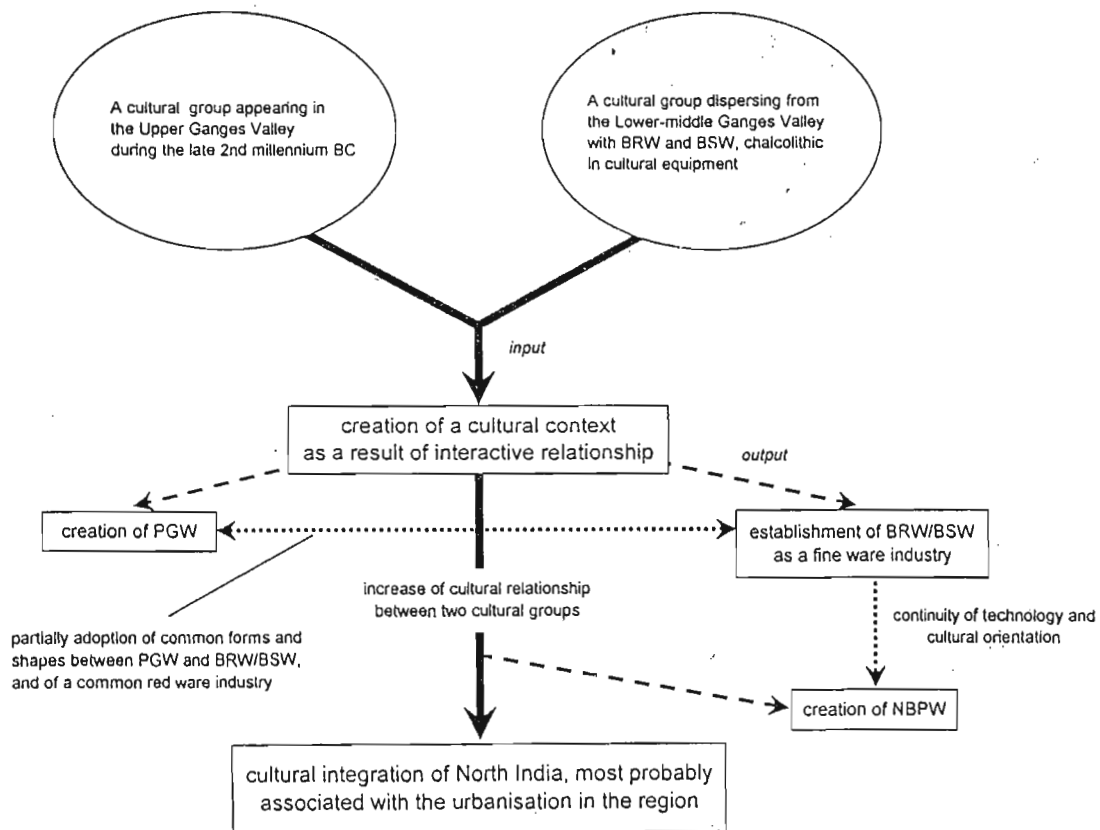
Thus, the change in the pottery complex during the Late NBPW phase is not just a degeneration in the fine ware industry, but a drastic and dynamic change with some social change. Then, the problem should be focussed upon the factors which cause the change of the pottery tradition. Although it is quite difficult to draw a concrete picture, such a drastic change should have been caused by some large-scale social transformation in a general sense. I would propose tentatively the social change caused by the urbanisation in the north India for the background of this drastic change in the pottery complex. It is generally believed that by the middle first millennium BC, the urbanisation in north India had quite developed with the emergence of cities and states. One of the culmination of the urbanisation in north India should be found around the fourth to third centuries



Tab. 1 Pottery sequence in north India

(Number in the top line: 1. Upper Ganges Valley; 2. Upper-middle Ganges Valley; 3. Middle Ganges Valley; 4. Lower-middle Ganges Valley; 5. Southern foothill of the Himalayas)

BC, when the state formation reached its peak with the integration of the states towards the formation of the Mauryan empire. Although theoretically and hypothetically not by available evidence, such an integration of states should have included various associated social transformations in its process. In other words, such various social transformations themselves had caused the formation of a large-scale state. It is possible that the change of the pottery complex during the late first millennium was also caused by such a social transformation. That is, it could be likely that the cultural orientation or social code which were given to the pottery industry, especially to the fine ware industry, by the middle first millennium BC was subjected to be changed by the society in north. Since the cultural orientation or social code referred above were expressed as the differentiation of the fine wares by at least two cultural groups, the disappearance of such cultural orientation visible in the fine ware industry can be considered as the result of integration of these cultural groups to form a large cultural group which no longer had a necessity to materialise their cultural orientation in the form of fine ware industry.



Tab. 2. Diagram of social transformation in north India

4. Conclusion

Through the discussion above, some characteristic aspects of the pottery sequence in north India during the late second millennium BC and the first millennium BC have become clear.

1) This distribution of the fine wares is the result of vigorous expansive movement of cultural groups.

2) Through such expansions, different cultural groups came into contact, having mutual interactive relationship with each other. The whole pottery complex consisting of different fine wares and a common red ware in north India was formed in the process of this interaction.

3) In the late NBPW phase during the late first millennium BC, the whole pottery complex changed with the decline of the earlier wares and the appearance of the new pottery industry. It would imply that the cultural orientation or social code given to the pottery complex by the society became meaningless with a formation of new cultural and social groups by this time.

As quite clear in the discussion above, the pottery sequence in the temporal and spatial axis can provide us with evidence of some social aspects in a given period, especially, the process of differentiation and integration of the cultural orientations by different cultural groups is considerably obvious in the pottery sequence, implying a cultural integration in north India. The process of cultural integration cannot be discussed without taking social transformation into consideration. I propose here that the social transformation which promoted the cultural integration manifested in the pottery evidence is in general sense the urbanisation of north India based on the interregional cultural interaction.

As a whole, the urbanisation process in north India seems to cause great influences on the formation of the material culture in a given period. I believe that the archaeologist can approach to the urbanisation and social transformation by examining the temporal and spatial distribution of cultural traits and building up logical and theoretical theories to interpret the evidence. This field of research should be further attempted and discussed. I would be satisfied if this short paper has shown the potentiality of this field of study.

Notes and references

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2. The detailed discussions made by the scholars include Dikshit, K.N., "The Allahapur evidence and the Painted Grey Ware chronology" in Agrawal, D.P. and A. Ghosh (ed.), *The Radio-carbon and Indian Archaeology*, Bombay, 1973, pp. 148-53; Lal B.B., "Excavations at Hastinapura and other explorations in the upper Ganga and Sutlej basins, 1950-52", *AI* 10-11, 1954-55, pp. 5-151; Roy, T.N., *The Ganges civilization : A critical archaeological study of Painted Grey Ware and Northern Black Polished Ware Periods of Ganga Plains of India*, New Delhi, 1983; *A study of Northern Black Polished Ware culture*, New Delhi, 1986; Mishra, A.K., *The Indian black Wares*, Delhi, 1989; Sahay, S., "Origin and spread of Northern Black Polished Ware" in Sinha, B.P. (ed) *Potteries in Ancient India*, Patna, 1969, pp. 146-54; Sahi, M.D.N., "Stratigraphical position of the NBP ware in the upper Ganga basin and its date," *Puratattva*, 7, 1974, pp. 91-94; Sinha, K.K., 'The NBP ware-fresh hypothesis in the light of Sravasti evidence,' in Sinha, (ed) *op. cit.*, 1969, pp. 174-84; Tripathi, V., *The Painted Grey Ware culture, An iron age culture of northern India*, Delhi, 1976.
3. However, the date, especially, of the PGW, is quite controversial, B.B. Lal, the excavator of Hastinapura placed the time-bracket of the PGW between 1100 BC and 800 BC on the basis of the date of NBPW at Taxila and Kausambi. However, the date of the NBPW has been modified since Lal's dating, causing the date given to the NBPW at Hastinapura to be modified. The introduction of C14 dating has also given several points in the chronology of the PGW. While many scholars have assigned the main period of the PGW between 800 BC to 500 BC, R.C. Gaur argues on the basis of C14 dates that the appearance of PGW at Atranjikhhera could go back to 1200 BC. Besides, thermoluminescence date from Bhagwanpura pushes back the date of the PGW to the fifteenth century BC, when the PGW coexisted with the late Harappan ware. In this paper, I would like to follow the opinion of A.K. Mishra who divides the PGW into the early and late phases, but regarding the absolute date I have no confidence that the appearance of PGW could go back to the fifteenth century BC. Further research is awaited.

In this paper I will not pay much attention to the date of each phase because the C14 dates or any other scientific determinations which are partly available at some sites tend to indicate just one point of the whole duration of one cultural stratum at a site; thus the scientific dates cannot be considered to reveal the whole duration of each ware, so that we should be much careful to deal with the scientific dates. However, I shall admit the approximate duration and date of each ware has been established; therefore, I shall use terms of 'early', 'middle' and 'late' for one millennium, dividing one millennium into three parts; the present stage of the discussion on the date of each fine ware approximately corresponds to these three divided periods. I believe that discussion on the absolute chronology should be further made not only by the C14 dates but also by the detailed analysis of pottery by which we can sub-divide each fine ware in order to establish detailed relative chronology, Mishra, *op. cit.*, 1989; Dikshit, *op. cit.*, in Agrawal and Ghosh, (ed.), 1973; Lal, *AI* 10-11, 1954-55; "The Painted Grey Ware Culture of the Iron Age", in Dani. A.H. and V. Masson (ed.) 1992, *History of civilizations of Central Asia Vol. 1 The dawn of civilization: earliest times to 700 B.C.* UNESCO Paris, pp. 421-440; Gaur, R.C.,

- Excavations at Atranjikhhera*, Delhi, 1983; Gaur, R.C. (ed.) *Painted Grey Ware: Proceedings of Seminar on Archaeology held at Aligarh Muslim University, Aligarh, Jaipur, 1994.*
4. The interlocking of the Late Harappan ware and PGW was first attested at Bhagwanpura by Jagatpati Joshi, raises many questions about the relationship of two cultural groups, viz., those of the earlier tradition of the late Harappan and those with new cultural elements of the PGW. Further excavations are to be awaited in order to reveal the relationships between the extinction of the Late Harappan Culture and the PGW complex; Jagatpati Joshi, *Excavations at Bhagwanpura 1975-76 and Other Exploration and Excavations 1975-81 in Haryana, Jammu and Kashmir and Punjab*. Memoirs of the Archaeological Survey of India, no. 89, (-MASI) New Delhi 1993; "Interlocking of late Harappan Culture and PGW Culture in the Light of Recent Excavations", *Man and Environment*, II, 1978, pp. 98-101.
 5. The straight-sided bowl peculiar to the PGW already appears during this phase; the shape of dish during this phase is shallower than that of the late PGW phase which is observed in the Upper-middle Ganges valley. There is a possibility that the demarcation between the early and late PGW phase could be made in terms of shapes of each form, although there has been no study which pertains to the formal change of the PGW through its existence.
 6. Lal, *AI* 10-11, 1954-55.
 7. Ghosh and Panigrahi, *AI* 1, 1946.
 8. *Indian Archaeology—A Review*, (-*IAR*), 1958-59.
 9. *IAR*, 1970-71; Dikshit, in Agrawal and Ghosh (ed.) *op. cit.*, 1973.
 10. *IAR*, 1969-70, 1970-71, 1971-72, 1972-73.
 11. Joshi M.C. and R.C. Agrawal, "The Painted Grey Ware in Mathura", in Gaur R.C. (ed.) *op. cit.*, 1994, pp. 89-93.
 12. Gaur, *op. cit.*, 1983.
 13. *IAR*, 1963-64, 1966-67, 1968-69, 1970-71, 1971-72.
 14. *IAR*, 1974-75, 1975-76.
 15. *IAR*, 1972-73.
 16. R.C. Gaur points out similarities between the BRW at Atranjikhhera and that of Ahar of the Banas Culture, suggesting a cultural affinity between the two regions. Against this Gaur's hypothesis, K.N. Dikshit argues that the origins of BRW in the two regions should be considered independently; Gaur, R.C., "Nature of Pottery Complex of Black-and-Red Ware Phase at Atranjikhhera", in Sinha (ed.) *op. cit.*, 1969, pp. 112-117; in (ed) Agrawal and Ghosh, *op. cit.*, 1973.
 17. Sharma G.R., *The excavation at Kausambi (1957-59)*, Allahabad, 1960.
 18. *IAR*, 1974-78, 1978-79.
 19. Narain A.K. and T.N. Roy, *Excavations at Rajghat*, pt. II, Varanasi, 1977.
 20. Narain A.K. and T.N. Roy, *Excavation at Prahladpur*, Varanasi, 1968.
 21. Lal, *op. cit.*, *AI* 10-11, 1954-55, the idea of the BSW is the precursor of the NBPW was first proposed by Lal at Hastinapura excavations.
 22. Some sherds from Kausambi were once considered as those of PGW, but they seem to be not PGW but painted sherds. It seems likely that the genuine PGW had not been introduced in this region and further east; at least, they never became the predominant ceramic in this region.
 23. *IAR*, 1962-63, 1963-64, 1964-65, 1968-69, 1969-70, 1970-71, 1971-72, 1980-81, 1981-82.
 24. *IAR*, 1984-85, 1985-86, 1986-87; Purushottam Singh, *Excavation at Narhan (1984-89)*, Varanasi, 1994.
 25. *IAR*, 1980-81, 1981-82, 1982-83, 1983-84, 1985-86.

26. *IAR*, 1957-58, 1958-59, 1959-60, 1960-61, 1961-62; Sinha, B.P. and S.R. Roy, *Vaisali excavations, 1958-62*, Patna, 1969; Krishna Deva and V. Mishra *Vaisali excavations-1950*, Vaisali, 1961.
27. *IAR*, 1984-85, 1985-86, 1986-87, 1987-88, 1988-89.
28. *IAR*, 1955-56; Altekar A.S. and V. Mishra, *Report on Kumrahar Excavations, 1951-55*, Patna, 1959; Sinha, B.P. and L.A. Narain, *Pataliputra Excavations, 1955-56*, Patna, 1970.
29. *IAR*, 1959-60, 1960-61, 1961-62, 1970-71; Sinha, B.P. and B.S. Verma, *Sonpur excavations (1956, 1959-62)* Patna, 1977.
30. *IAR*, 1981-82, 1982-83; 1983-84, 1984-85, 1985-86, 1986-87, 1987-88, 1988-89.
31. It has been claimed that the amount of the NBPW is most numerous in this region compared to other regions, and that the surface treatment of the NBPW is also superior than those in other regions. It will be expected in the future excavations that the statistical analysis on the amount of NBPW from sites in each region and on the percentage of golden or silver sherds among the total number of the NBPW could be a criteria for evaluation; Sahay, *op. cit.*, in (ed.) Sinha, 1969, pp. 146 ff.
32. Sinha, K.K., *Excavations at Sravasti-1959, Varanasi*, 1967; further excavations have been conducted by the joint team of the Archaeological Survey of India and Kansai University, Japan, confirming the pottery sequence which was revealed by K.K. Sinha and yielding further evidence on the pottery as well as the structural remains and material artefacts of the ancient city.
33. *IAR*, 1970-71, 1971-72, 1972-73, 1973-74, 1974-75, 1975-76, 1976-77; Srivastava, K.M., *Discovery of Kapilavastu*, New Delhi, 1986; Excavations at Piprahwa and Ganwaria, *Memoirs of Archaeological Survey of India, no. 94*, ASI, New Delhi, 1996.
34. *IAR*, 1961-62, 1974-75.