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E. Morigi / P. Bianchetti

New Evidence on the Pottery Sequence of Ghālegay (Swāt, Pakistan)*

Amongst the numerous archeological missions conducted in the Swāt Valley (North-West Pakistan), in the years 1967 and 1968 G. Stacul excavated the famous rock-shelter of Ghālegay situated on the left Swāt river bank, near the road from Mingora to Barikot.

The excavations extended over an area of about 320 m² and the deposit was formed by an alternation of anthropic layers separated by layers of alluvial nature, mainly composed of clay and gravel. The anthropic layers were rich of pottery, pebble-tools and animals bones dated from about 3000 BC to historic and medieval periods and included paved floor levels, hearths, post-holes and remainings of a stone wall (Stacul 1967; 1969). Ghālegay, so far, is the only excavated site in the valley we may confidently consider occupied in the 3rd millennium BC and its information, together with the excavation of the Swāt pre-Buddhist graveyards (Loebanr I, Katelai I, Butkara II) (Silvi Antonini/Stacul 1972) allowed, mainly on the basis of pottery, to build a reliable archaeological sequence supported by radiocarbon datings.

The Swāt Valley is situated in a suture zone between the Indo-Pakistan Plate (in the north) and the Kohistan Island Arc (in the south). Almost all site excavated, Ghālegay included, are in the south of the region, in the middle-southern side of the river Swāt. This area consists of two different geological units named the Jambil Unit and The Saidu Unit¹. "The lower - Jambil - unit consists of various types of granites, augen-gneiss and other types of gneiss of medium-high metamorphic grade. The upper - Saidu - units consists of phyllites, greenschists, prasinities, marbles, calceschists, ophiolites, amphibolites and mica schists. The tectonic contact between the two units consists of muscovite, tourmaline leucogranites and granodiorites"² (fig. 1).

Amongst the periods found in Ghālegay, only the first four belong to the pre-protolithic phase of the region, while it is followed by a temporal hiatus, well-grounded in the graveyards, that will reappear only in the late early historic period (1st

century BC-2nd century AD). The Ghālegay pottery associated to the First, Second, Third and Fourth Periods, together with some historic fragments, were preliminary studied by the means of simple archaeometric analyses (petrographic observation in thin sections and X-rays diffraction (XRD), having the sole goal to test the relative uniformity of the clay mixture used to produce the pottery of the various Periods.

Fig. 2 shows the sequence of ceramics forms recovered in the first four periods of Ghālegay, partially sampled for the present study. In Period I (3000-2400 BC) the pottery is hand-made, tempered with sand with the effect of making the surfaces rough and the product, at least after deposition, somehow friable. The colour is red-brown in the outside surfaces, while the inside is gray. There are biconical or carinated shapes built in separate pieces, jars, and cups or bowls-on-stand. Some fragments show traces of slip on the external surface and some others have the rim burnished (Stacul 1967; 1969; 1987).

In Period II (2400-1900 BC), we can observe a greater variety of shapes associated to an apparently drastic rise in the care applied in manufacturing. The more accurate preparation of the clay mixture, resulting into a levigated, fine paste is visible to the naked eye; the colour varies from pink to red-brick. In layer 19 there are both globular and ovoidal jars, of small and middle sizes, probably used to contain liquids, decorated with black horizontal bands. Other forms are carinated bowls with the same decoration, bowls-on-stand, forms without rim, and deep dishes. In layer 18, instead, together with the jars (some having a decoration of incised wavy lines) and with

* We are very grateful to Prof. G. Stacul for the permission to work on the Ghālegay material, to Prof. P. Calieri, director of the Italian archaeological mission to Pakistan for his support, and to M. Vidale for his advice and suggestions to our study.

¹ Faccenna/Lorenzoni/Olivieri/Zanettin Lorenzoni 1993.

² Olivieri 2003, 14.

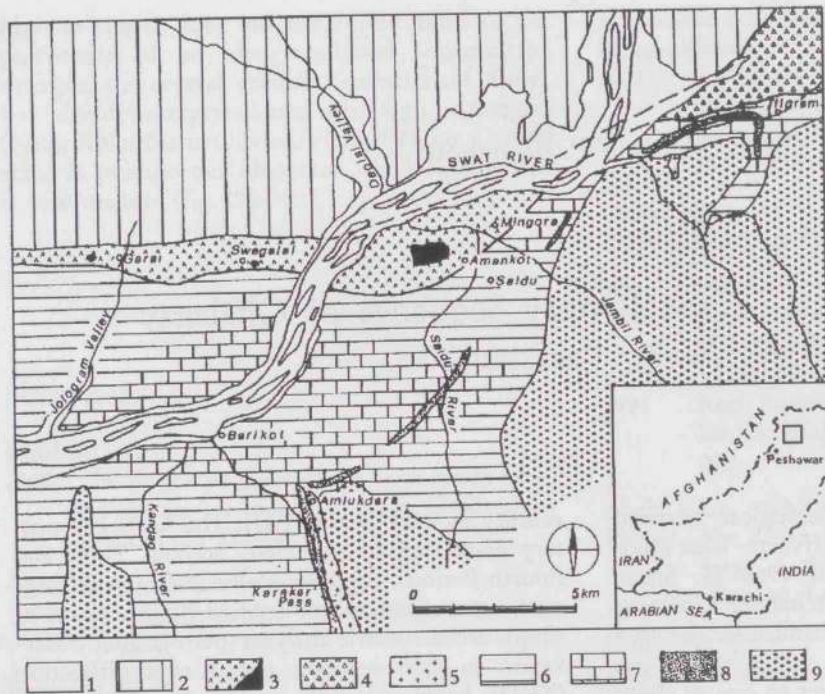


Fig. 1. Geological sketch of Middle Swat area: 1 = Quaternary terrains; 2 = Khoistan Island Arc; 3-4 = Suture Zone; 5 = Tourmaline granite; 6 = Chloritoid-phyllites and garnet-kyanite-staurolite-gneisses; 7 = Marbles; 8 = Amphibolites (6-7-8 = Saidu Unit); 9 = Augengneisses (Jambil Unit) (Olivieri 2003).



Fig. 2. Swat Pottery of protohistoric periods (Periods I-IV) (after Stacul 1969).

deep dishes, there are cups with conical pedestals, decorated with burnished vertical stripes (Stacul 1967; 1969; 1987).

The pottery of Period II, based upon a careful scrutiny of the sherds' surfaces and fracture patterns, was made with coils later thinned and soldered on the potter's wheel, the basic technique used in the Indus valley in the same centuries for constructing large restricted vessels (Vidale 2000).

The shape of the coils is still perfectly identifiable observing the fracture forms of the sherds. Thin section analysis confirms this reconstructed manufacturing technique, revealing the heavy iso-orientation of the pores and of the phyllosilicates (fig. 3 a-b) caused by an intense use of the wheel for the smoothing of the surfaces: in fact, the alignment of pores and elongated inclusions, in the walls, is a direct function of the amount of time spent in finishing on the wheel. The paste is made with an homogeneous clay, fine and tempered with quartz sand made of grains of standard size (fig. 4).

In Period III (1900-1700 BC), there is an apparent sharp decline in the standards of ceramic technology and a narrowing of the forms repertory. The pottery is gray or brown, without decoration (with the exception of few fragments with decorative rows obtained with finger tips impression). The forms include jars with elongated bodies and thick everted or vertical rims, small bowls with round bases and deep dishes. Significant is also the presence, underneath the base of many vases, of a distinctive mat-impression, with a spiral woven pattern (fig. 5, 2-3. 5) (Stacul 1967; 1969; 1987). This characteristic has not a decorative purpose but it is the mark of a fabrication technique that uses small woven bases as potter's bats, aiming at a better manipulation of the object during its forming. The picture of fig. 5, 4 shows some ovoidal jars walls sections, where it is possible to note the sequence coils of the joined by a partial overlapping. The external surface is covered by a thin layer of clay that hides the points of junctions, and later it is smoothed with a tool, while the inner surface is only regularized with the

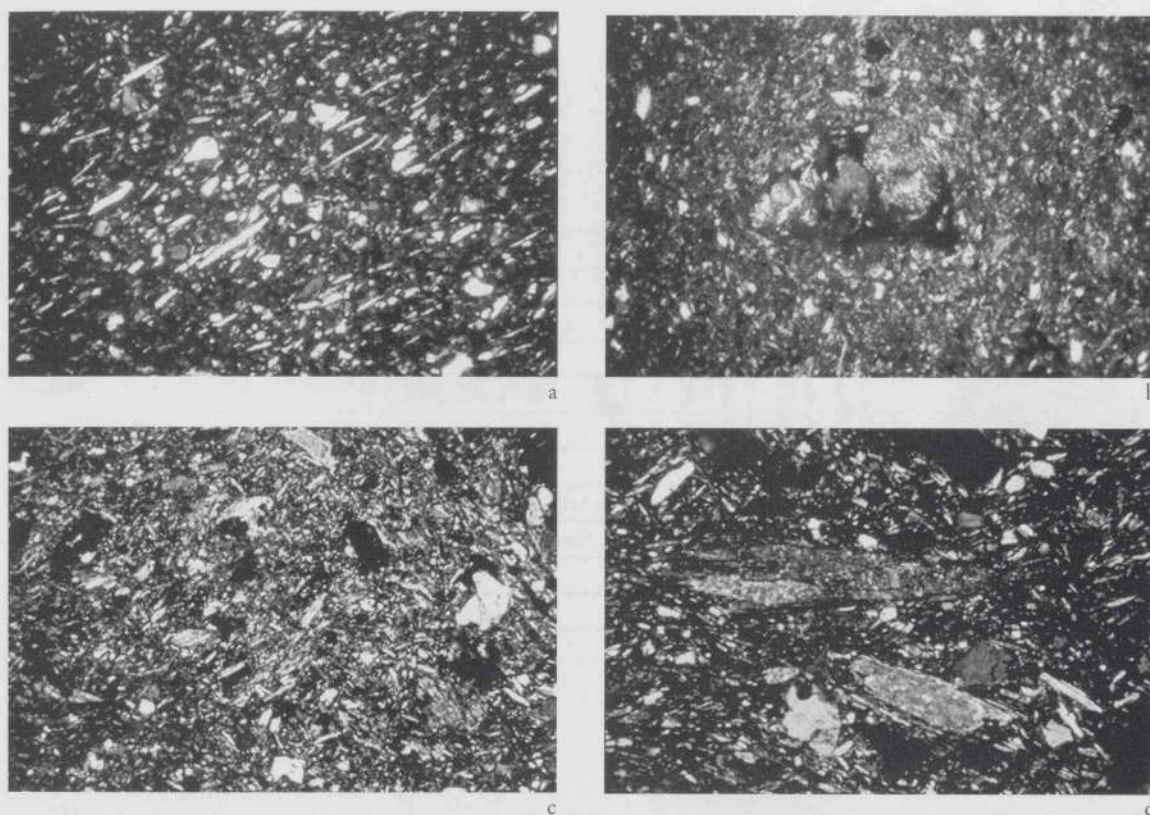


Fig. 3. Thin sections: a. sample 11; b. sample 12; c-d. sample 6.

Sample	Context	Skeleton size		Skeleton shape		Skeleton orientation	Skeleton distribution	Color of matrix	Structure of matrix	Skeleton rate on matrix	Porosity
		Size evaluation	Degree of homogeneity in size class distribution	Sphericity	Rounding						
1	US 9 (early history)	2 classes: 1.Sandy coarse 2.Sandy fine to very fine	low	low	angular to subangular	Phyllosilicates iso-oriented	homogeneous	red, oxidized	homogeneous	medium (30%)	low
2	US 9 (early history)	Sandy, fine to very fine	high	medium to high	angular to subangular	Phyllosilicates iso-oriented	homogeneous	red, oxidized	homogeneous	medium to high (40%)	low
3	US 9 (early history)	Silty, from coarse to medium	high	low to medium	subangular	Phyllosilicates iso-oriented	homogeneous	red, oxidized	homogeneous	high (50%)	low
4	US 12 (early history)	Silty, coarse to medium	high	low to medium	angular to subangular	Phyllosilicates iso-oriented	homogeneous	greyish-brown uncompletely oxidized	homogeneous	high (50%)	low
5	US 13 (early history)	Silty, coarse to medium	high	low to medium	angular to subangular	Phyllosilicates iso-oriented	homogeneous	dark grey, reduced	homogeneous	high (50%)	low
6	US 16-17 (Period III)	2 classes: 1.Sandy, very coarse 2.Sandy, medium to fine	low	very low	angular	Phyllosilicates oriented around main inclusion	homogeneous	light greyish-brown, uncompletely oxidized	homogeneous	very high (>50%)	low to medium
7	US 16-17 (Period III)	2 classes: 1.Sandy, coarse to medium 2.Silty, fine	low	high to low	angular to strongly angular	Phyllosilicates non-iso-oriented	homogeneous	greyish-brown to reddish, uncompletely oxidized	homogeneous	low (from 10% to 20%)	low to medium
8	US 19 (Period II)	2 classes: 1.Silty, coarse to medium 2.Sandy, very fine	high	high to low	angular to subangular	Phyllosilicates iso-oriented	homogeneous	red, oxidized	homogeneous	high (50%)	low
9	US 19 (Period II)	Silty, coarse to fine	high	low to medium	angular to subangular	Phyllosilicates non-iso-oriented	homogeneous	from grey, reduced to red, oxidized	homogeneous	medium (30%)	low
10	US 19 (Period II)	Silty, coarse to fine	high	low	angular to subangular	Phyllosilicates partially iso-oriented	homogeneous	red, oxidized	homogeneous	medium (30%)	low
11	US 19 (Period II)	Sandy, coarse to fine, margining into silty, coarse	high	low	angular to subangular	Phyllosilicates strongly iso-oriented	homogeneous	red, oxidized	homogeneous	medium to high (40%)	low to medium
12	US 19 (Period II)	Sandy, coarse to fine, margining into silty, coarse	high	low	angular to subangular	Phyllosilicates partially iso-oriented	homogeneous	red, oxidized	homogeneous	medium (30%)	low

Fig. 4. Skeleton and matrix features.

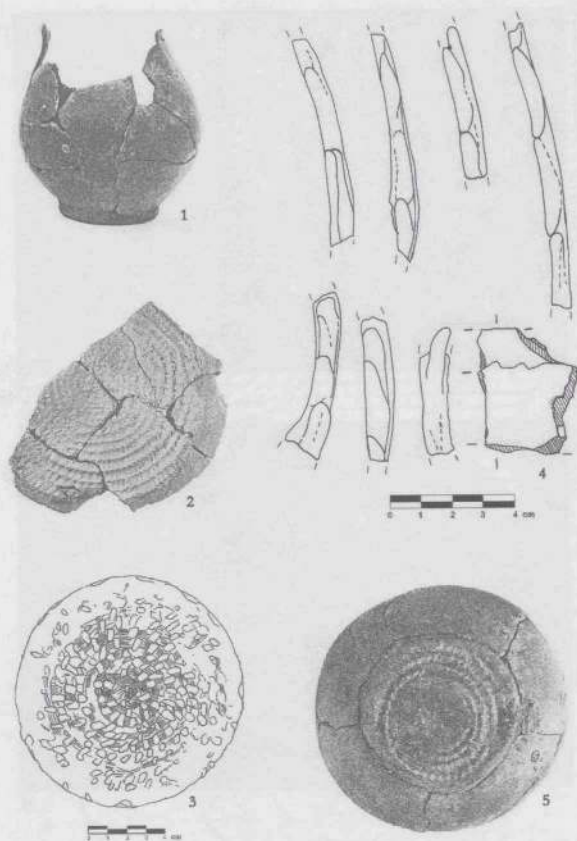


Fig. 5. 1-2, 5. Vases with mat impressions (after Stacul 1967); 3. Mat impressions with spiral weaving of Period III; 4. Ovoidal jars: wall sections of Period III.

use of the hand or a tool. The picture of fig. 6 shows again the attempt to regularize the surface by hiding the points of junction while smoothing the entire surface, as shown by the rubbing signs left on the external surface. The mat was used as a rotating base so to help the craftsman in his movements. In fig. 7 the inside of the bottom of a vase presents a concentric spiral-line pattern which can be interpreted as an attempt of surface finishing associated to a rotating movement. On some vase bottoms, the point of the vertical axis of symmetry of the vase and the centre of the mat are off-centred, and this can exclude any phase of forming using such mats or bases for generating centrifugal force. The contrast with the material of the period before could not be more evident.

In these fragments, as well, the study confirms the presence of coils, but, in contrast with previous periods, the sections show how phyllosilicates (mica particles) and the other elongated inclusions are chaotically oriented or pressed locally parallel to the coarser and larger lithoid inclusions (fig. 3 c-d) thus reflecting a rapid building-up by coils. Also the techniques of preparation of the paste are different: the skeleton, with angular forms and hard non-homogeneous granulometry, is clearly

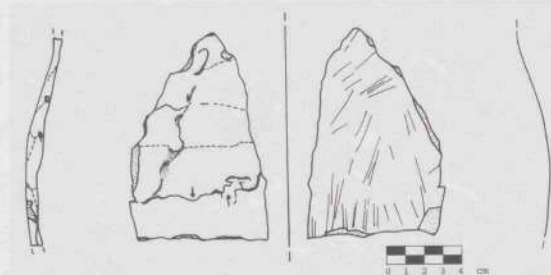


Fig. 6. Jar with regularize external surface (Period III).

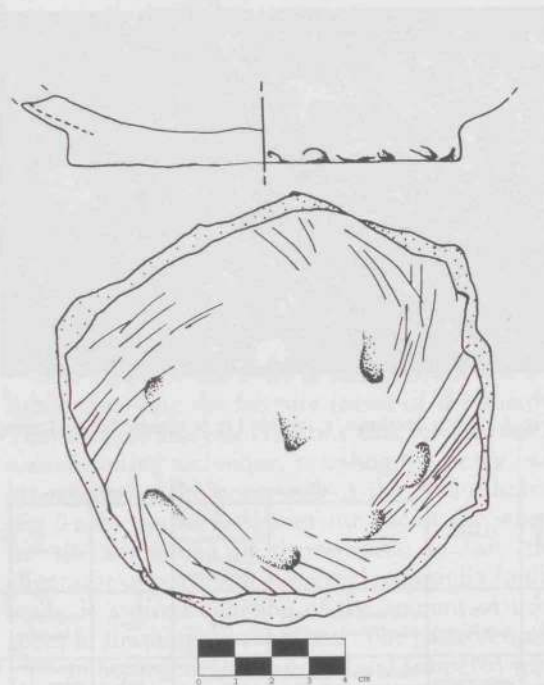


Fig. 7. Bottom with concentric impressions on the inside (Period III).

made by mechanical fragmentation of local metamorphic rocks, mostly schists (fig. 4). This circumstance might also be confirmed by the find, in the Ghālegay layers, of many coarse crystal of black garnet evidently separated during fragmentation and grinding from their original schist gangue³.

In Period IV (1700-1400 BC) the pottery reflects a basic continuity with the previous periods due to the presence of rudimental jars and ceramics with mat-impressions. There are also new classes and types of pottery like the grey buff-burnished ware, with a very fine paste and frequently with horizontal black painted bands, and black-on-red wheel-thrown wares. The forms include bowls, bowls-on-stand, jars and carinated vases (Stacul 1967; 1969; 1987).

³ M. Vidale, personal communication after inspecting the Ghālegay materials in the mission's house.

SAMPLE	CONTEXT	DESCRIPTION	QUARTZ	ALBITE	ANPHIBOLE	MUSCOVITE	BIOTITE	HEMATITE	INCLUSIONS OF SCHIST	OTHER
1	US 9 (early history)	red-slipped fine bowl	X	-	X	X	?	X	X	
2	US 9 (early history)	black-on-red ceramic	X	X	X	X	?	X	-	Glasses Sferulait
3	US 12 (early history)	fine red Kushana potsherd	X	X	X	tr.	-	X	-	
4	US 13 (early history)	grey burnished ware	X	X	-	X	-	-	-	Bonhertz
5	US 13 (early history)	grey burnished ware	X	X	-	X	-	-	X	
6	US 16-17 (Period III)	basket-marked sherd	X	-	X	X	-	-	X	Sind Stone Garnet
7	US 16-17 (Period III)	basket-marked sherd	X	-	X	X	-	-	X	
8	US 19 (Period II)	large coil-built and wheel finished jar	X	X	X	X	-	X	-	
9	US 19 (Period II)	midium size red-slipped vessel	X	X	X	X	-	X	-	
10	US 19 (Period II)	black-on-red burnished	X	X	X	X	-	X	-	
11	US 19 (Period II)	black-on-red	X	X	X	X	-	X	-	
12	US 19 (Period II)	burnished red ware	X	X	X	X	-	X	-	

Fig. 8. Mineral composition by thin sections.

SAMPLE	CONTEXT	QUARTZ	ALBITE	MUSCOVITE	HEMATITE
1	US 9 (early history)	X	X	X	X
2	US 9 (early history)	X	X	X	X
3	US 12 (early history)	X	X	-	X
5	US 13 (early history)	X	X	X	-
6	US 16-17 (Period III)	X	-	-	-
7	US 16-17 (Period III)	X	?	-	tr.
8	US 19 (Period II)	X	X	-	tr.
9	US 19 (Period II)	X	?	-	-
10	US 19 (Period II)	X	X	-	X
11	US 19 (Period II)	X	X	X	X
12	US 19 (Period II)	X	X	X	X

Fig. 9. Mineral composition by XRD.

In all fragments analysed, including the fragments of the early historic periods, the paste of the fine wares, in particular for what the sand skeleton is concerned (showing a constant presence of quartz, albite, amphibole and muscovite, minerals compatible with the geological formation outcropping in the basin crossed from the Swāt river) is nearly homogeneous. If we compare the samples of Period II with those of Period III and IV, and with the pottery of early historic times, one hardly notes major macroscopic difference (fig. 8). Albite is absent in the sherds of Period III while hematite does not occur in the samples of Period III and IV; in all the samples, at any rate, calcite is totally absent. The thin sections of the large jars of Period II, similar to some products

of the late Regionalization and Integration Eras of the Indus Valley, are very similar to the fine pottery, probably directly wheel-thrown, of early historic times. The diffractometric spectra likewise realised (fig. 9; 10) show a rather homogeneous mineral composition with the exclusive presence of four identifiable components: quartz, albite, muscovite and hematite, this latter obviously formed while firing in highly oxidizing atmospheres. What are radically different, in other words, are the logical technical approach and the modelling techniques, while the base material used in the manufacturing sequences appear to have been the same.

It is well known that the locally produced pottery of Ghālegay (local in the sense of a microregional area), in particular that of Periods

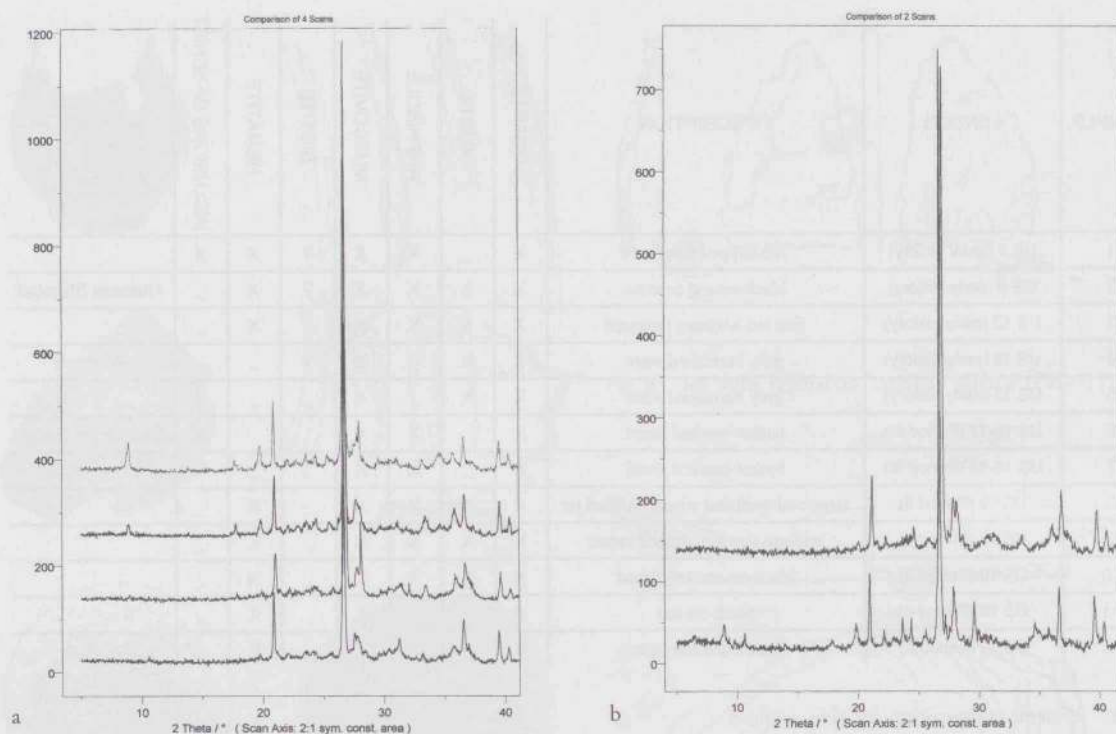


Fig. 10. Diffractometric spectra: a. samples 9–12 (Period II); b. samples 6–7 (Period III).

II and III, shows some similarities with the pottery discovered in the sub-Neolithic sites of the sub-Himalayan area like Sarai Khola, Burzahom and Gufkral (Sharif/Thapar 1982; Dikshit 1981). In Period I (about 3300–3000 BC) of Sarai Khola, about 3 km south-west of Taxila, the pottery is made of coils, the external surface is burnished with pebbles and in some cases is slipped with a dark-red colour. The external base of the body shows mat-impression very similar to the ceramics of Period III of Ghālegay and the Period IV specimens found by Stacul in the Swāt semi-subterranean dwellings. The pottery is not painted and the shapes are ovoidal jars and truncated cone shapes or hemispherical bowls (fig. 11 a). In Sarai Khola Period II (2800–2400 BC), instead, we see globular vases with vertical rim made with coils and then wheel-thrown or wheel-finished, decorated mostly with vegetal motifs, bowls on stand and globular jars painted black-on-red. These pottery is clearly of Kot-Dijan style and potters' marks incised before firing are common. Some vases show the addition of a coarse gritty sand to the outer surface while the clay was still soft (Sharif/Thapar 1982; Halim 1972).

Very similar is the pottery of Burzahom (16 km north-east of Srinagar) and Gufkral (41 km south-west of Srinagar) in Kashmir. Period IB (c. 2850–2550 BC) shows a type of gray or red pottery made with coils on woven mat bases (fig. 11 b). The forms are globular and ovoidal jars and bowls, both with burnished surface, rubbed with twigs or

grass bundled together. Close to this pottery are two other hand-made classes: a fine gray ware and a gritty dull red ware. The dwellings are pits excavated in the natural soil and they are very similar to the pit-dwellings found in layers datable to Period IV in the Swāt Valley, associated with grey-burnished pottery with mat-impressions. Although, the pottery of Period IB continues to be produced in later times, in the following phase (Period IC, c. 2550–1700 BC) another fabric labelled as burnished grey ware is on record (bowls, bowls-on-stand and globular jars with vertical rims)⁴. The shapes are similar to those of the Kot-Dijan tradition and it is from the late phase of Period IC that comes the famous Kot-Dijan jar containing hundreds of carnelian beads, decorated with horizontal thick grooving and painted with a buffalo-divinity image (Sharif/Thapar 1982). The pit-dwellings leave place to large huts built with mud-bricks and wooden poles.

The pottery with mat-impressions and the technique of finishing or scratching the external surface with a straw brush, has been traditionally compared with the Neolithic pottery of the Yangshao horizons in northern China. Further elements of cultural uniformity would be provided by the presence of bone instruments and perforated celts, found also at Sarai Khola, in the Neolithic sites of Kashmir and in some Swāt dwellings like Kalako-deray and Aligrāma. We should not forget,

⁴ Sharif/Thapar 1982; Dikshit 1981.

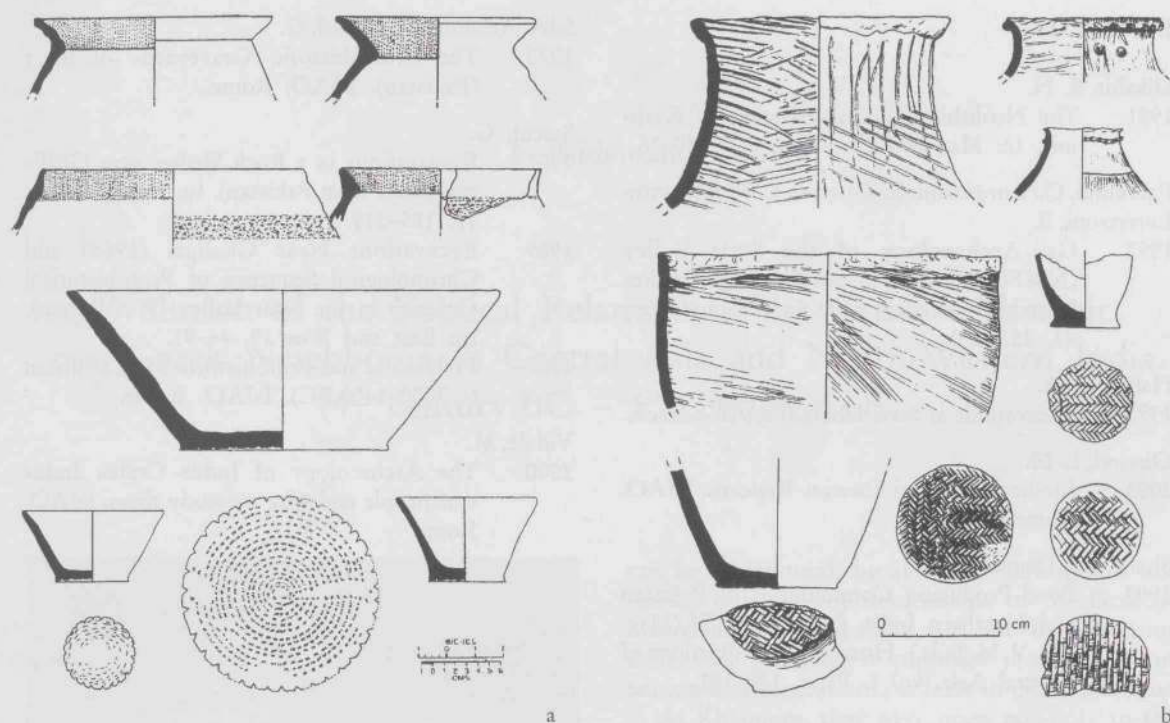


Fig. 11. Mat-impressed pottery: a. Sarai Khola; b. Burzahom (after Sharif/Thapar 1982).

however, that the comparison based on individual archaeological elements such as ceramics, housing typologies, and the like, would trace floating cultural boundaries and might be not significant in terms of reconstructing ancient social processes. The presence of different distributions of shared elements of material culture might be an index of contact and movements of human groups and of shared ideas into large areas, with different results according to specific contexts and needs. Particular functional needs may produce similar results. We are probably in front of a cultural interaction sphere including as a core area the Neolithic Kashmir region, the Swāt region, and the Peshawar plains (Sarai Khola).

If for the large globular and ovoidal jars painted with black lines and bands of Period II, we can talk of a common, but generical, Kot-Dijan affiliation shared by different and remote areas, for the mat-impressed pottery we should better identify the reasons of its diffusion in a particular unknown form of socio-cultural adaptation. As seen from our preliminary analysis of the Ghālegay samples, the ceramics, including those of Period II, are most likely local products, and most probably, with the development of the research, we will conclusively discard the hypothesis that the Kot-Dijan-related vessels were imports by merchants or nomadic groups coming from south. This evidence, together with the evidence of the use of the potter's wheel, likely used in permanent settlements, would point to the existence of a stable settlement into the Swāt

Valley and near the rock-shelter of Ghālegay datable from middle to the end of 3rd millennium BC, that has not yet been identified. On the other hand, if the fundamental pottery forming techniques – various forms of coil building – remained unchanged across Periods II–IV, what did change was the technology of secondary forming and/or finishing of the vases: careful, systematic and laborious in Period II, faster, expedient and less standardized in Period III.

The hypothesis of the presence of one or more unidentified permanent settlements of the late 3rd millennium BC in the Swāt valley poses new questions. In Period II, the Ghālegay shelter might have been the seat of a small permanent camp, rest station or settlement; the large wheel-thrown jars found on the spot, considering their large size and their probable function as water containers, as well as the other vessels having generic Kot-Dijan features should have been locally produced and used by people familiar with the ideas and the formal styles of the south. In this light, such ceramics would be indirectly referable to the economic interests linking Swāt and the sub-Himalayan valleys further north to the Indus lowlands, such as the export to Harappa and Mohenjo-Daro of timber from big cedars trees (*deodar*) coming from northern forests and then employed in the construction of houses (Stacul 1987, 117), and perhaps the export of other traditional northern products such as honey, valuable wool and semiprecious stones.

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