

Mehrgarh Neolithic

Jean-François Jarrige

From 1975 to 1985, the French Archaeological Mission, in collaboration with the Department of Archaeology of Pakistan, has conducted excavations in a wide archaeological area near to the modern village of Mehrgarh in Balochistan at the foot of the Bolan Pass, one of the major communication routes between the Iranian Plateau, Central Asia and the Indus Valley.

Mehrgarh is located in the Bolan Basin, in the north-western part of the Kachi-Bolan plain, a great alluvial expanse that merges with the Indus Valley (Fig. 1). The site itself is a vast area of about 300 hectares covered with archaeological remains left by a continuous sequence of occupations from the 8th to the 3rd millennium BC.

The discovery in the course of the third season of field work (1976-1977) of a Neolithic occupation beginning probably in the 8th millennium BC, in the northern sector of the archaeological area of Mehrgarh - sector MR.3 in the general grid-plan of the site (Fig. 2), has led to a complete reassessment of the archaeological sequence of the north-western regions of the Indo-Pakistani subcontinent. The publication of "Mehrgarh, Field Reports 1974-1985 - From Neolithic Times to the Indus Civilization"¹

had already provided a summary of the main results brought by the excavations conducted from 1977 to 1985 in the Neolithic sector of Mehrgarh.

From 1985 to 1996, the excavations at Mehrgarh were stopped and the French Mission undertook the excavation of a mound close to the village of Nausharo, 6 miles South of Mehrgarh. This excavation showed clearly that the mound of Nausharo had been occupied from 3000 to 2000 BC. After a Period I contemporary with Mehrgarh VI and VII, Periods II and III (c. 2500 to 2000 BC) at Nausharo belong to the Indus (or Harappan) civilisation. Therefore the excavations at Nausharo allowed us to link in the Kachi-Bolan region, the Indus civilisation to a continuous sequence of occupations starting from the aceramic Neolithic period.

From 1997 to 2000, the French Archaeological Mission, after completing its archaeological project at Nausharo, resumed work in the Neolithic sector of Mehrgarh (MR.3). Such a work allowed to redefine in a much more accurate way the internal stratigraphy of the whole aceramic Neolithic sequence, as it has already been summed up in two contributions published in *South Asian Archaeology 1997*² and in *South Asian Archaeology 2001*.³

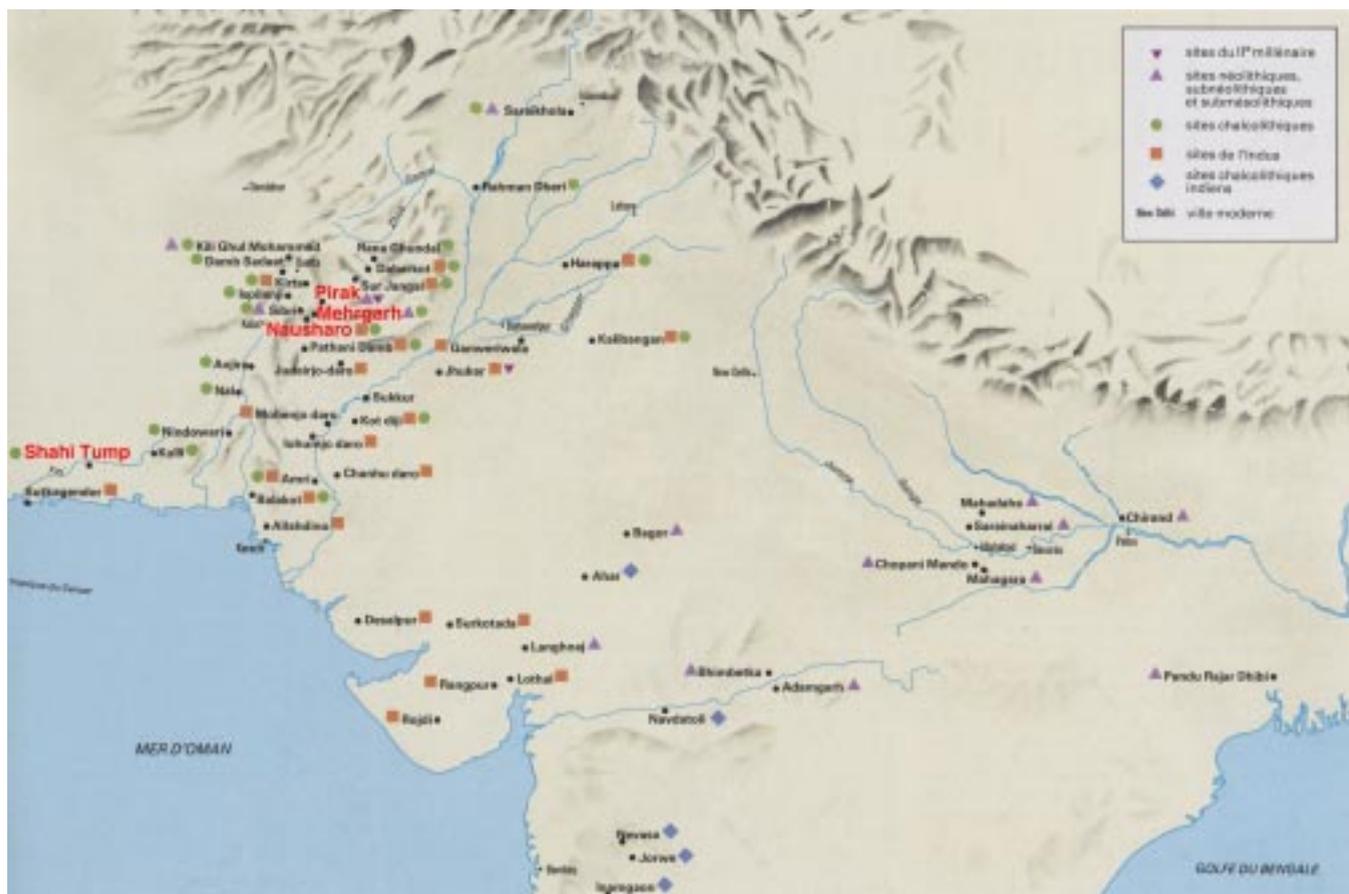


Fig.1 : Map of prehistoric sites in the North of the Indian subcontinent. H Encyclopedia Universalis

The total excavated areas for Period I (the aceramic Neolithic settlement) has been extended to a total surface of 1700 m² and the deepest levels, 7 meters below the surface, have been exposed over a surface of 200 m². In the reports published before 2000, the numbering of the aceramic Neolithic levels went from top to bottom. After completing the excavation in the Neolithic sector, it became possible to renumber the levels starting with level 1 just above the natural soil, about 7 meters below the surface, up to level 9, the last building level of Period I just below the present surface (Fig. 3). The 16 buildings previously excavated during the 1978-1985 field seasons have been integrated in the updated sequence and can be studied within more

extensive plans, including the 46 buildings which have been cleared out in the course of the 1997-2000 excavations.

The natural environment of Mehrgarh

One of the major contributions of Mehrgarh has been to provide us with the so far earliest evidence of an incipient farming economy in South Asia, in a region whose geographical location is of a high significance. The Bolan Basin is situated at the south-eastern limit of the distribution area of the wild ancestors of the elements which, later on, were to be predominant among the domesticated species - goats, sheep, cattle, barley and wheat -

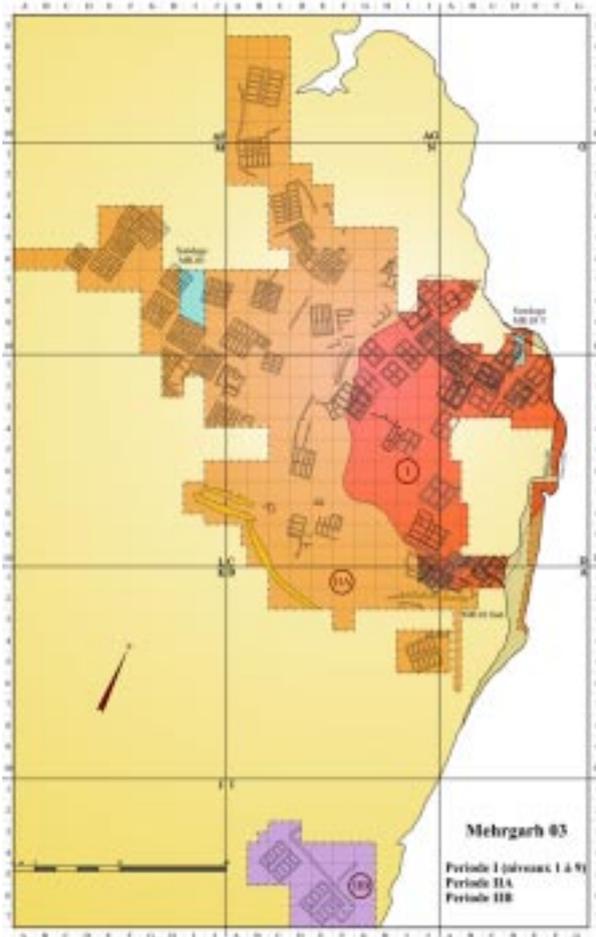


Fig. 2 : Mehrgarh: map of the Neolithic settlement (periods I and II) © CNRS-MAI

exploited in the course of the Neolithic and Chalcolithic periods. The site of Mehrgarh stands on the margins of foothills, in an alluvial and riverine environment (Fig. 4). From the hills culminating at about 2000 meters above the sea level to the alluvial plain less than 100 meters above the sea level, successive ecosystems provide different resources, which can be exploited within a limited mobility. Seams of flints and springs of bitumen have been located in the Bolan Pass. For instance, near Gokhurt, almost at the foot of the Bolan Pass, the ground around the bitumen spring is strewn with flints.

When in the 1920's Sir Aurel Stein conducted his surveys in Balochistan, he spotted so many prehistorical sites that he concluded that the region must have enjoyed better climatic conditions in the past than today. Such an assumption was later on discarded by most of the specialists who thought that the present arid situation must have prevailed since the prehistorical periods. But more recently several studies, including pollen analyses in sediments from lakes, have shown that in many parts of the world the climatic conditions have

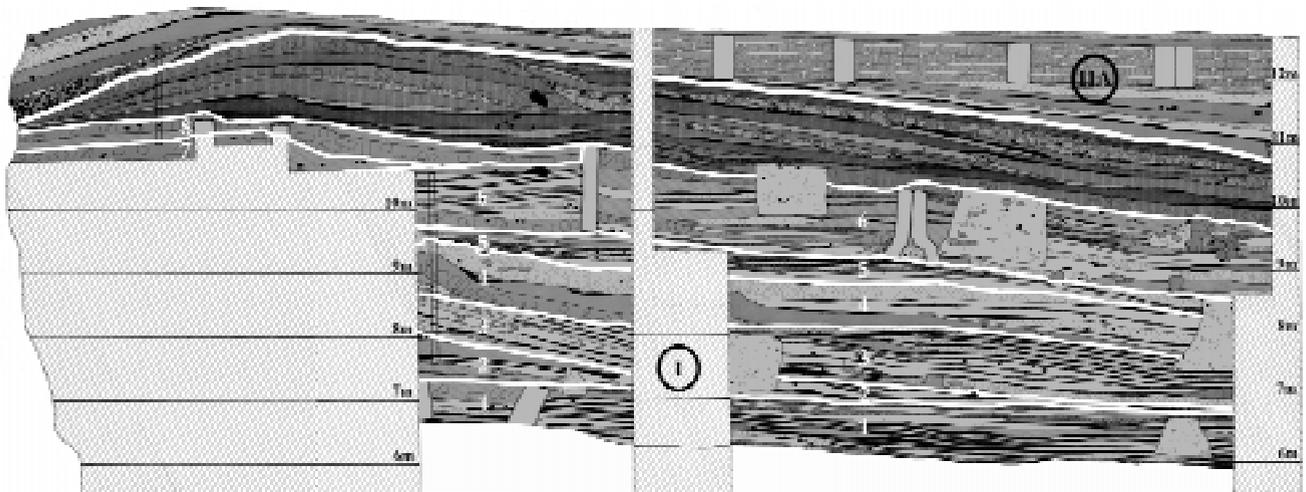


Fig. 3 : Mehrgarh, Period I: section of trench MR3 S. © G.Quivron



Fig. 4 : The Brahui Range seen from the site of Mehrgarh. © C. Jarrige

been subjected to changes in the course of the last 10.000 years. In the case of the Bolan area, Lorenzo Costantini and Alessandro Lentini have carried out palynological investigations at Mehrgarh

and at Nausharo. They collected samples from several columns in the Neolithic deposits (Period I) (Fig. 5).

The preliminary results of their work have been

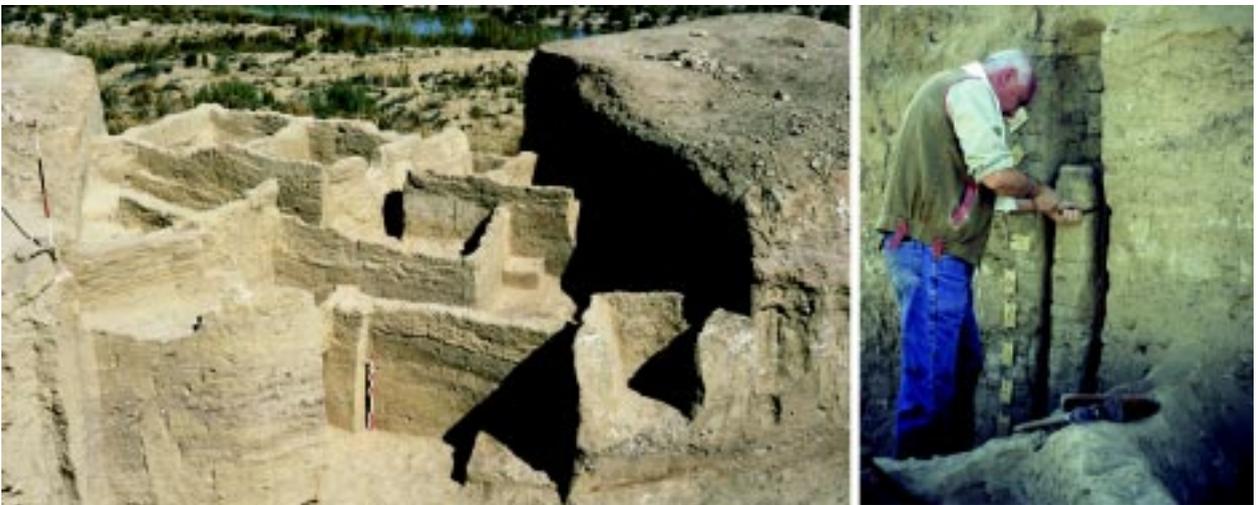


Fig. 5 : Trench MR3 S and L. Costantini collecting samples from the section. © C. Jarrige

published in a contribution for *South Asian Archaeology 1997*.⁴ Their conclusion is that “in the Mehrgarh pollen record there is a great deal of evidence which might be interpreted as relevant data for wetter environmental conditions.” The results of the pollen analysis show that, from the beginning of the Mehrgarh occupation till the 4th millennium BC, “the region was probably dominated by a semi-lacustrine or humid environment with a riparian vegetation, characterized by *Populus*, *Salix*, *Fraxinus*, *Ulmus* and *Vitis*, associated in a typical hydrophitic complex, arranged in dense gallery forests.”

For the time being, other pollen records from Balochistan or from the Indus valley are lacking. Nevertheless, the evidence from Mehrgarh is, to some extent, consistent with the Holocene environmental changes noticed in the sediments from the Lunkaransar, Didwana and Sambhar paleolakes in the Thar Desert. Such lakes kept permanent water from 10.000 to 4.800 BP, before desiccating when the water table went down.⁵ We can recall here that V.N. Misra assumed that the set up of a rather dense network of Mesolithic settlements in North India took place probably in a context marked by wetter climatic conditions than today.⁶

The updated sequence of the Neolithic occupation

In the earlier publications, the Neolithic sequence had been divided in Period IA, Neolithic aceramic, followed by Period IB when the first coarse chaff-tempered ceramics began occurring, and then by Period IIA associated with an increasing use of the same coarse ceramics. But the extension of the excavations and of the different sections have clearly shown that some of the buildings previously assigned to Period IB belong to the final occupation of the aceramic settlement and that pottery starts occurring

for the first time in Period IIA. This is the reason why phases IA and IB have been suppressed and the sequence of the aceramic mound simply renamed Period I.

The formation of the mound and the layout of the Neolithic settlement.

The aceramic deposits (Period I) are approximately 7 meters thick. They have been divided in 9 main levels. Each level has its distinct internal stratigraphy and an obvious variable length of time. But as a whole, each of them is marked by a similar course of main episodes starting first with the edification of mudbrick houses. Such buildings often show modifications in the course of time and there are also cases of houses still being occupied when an adjoining one was already abandoned. The next stage evidenced in each of the 9 major episodes, both in the northern and southern trenches, occurred when another area was selected to build new houses. While the abandoned buildings of the left over area were collapsing, they were progressively filled up with dump thrown by people living in another more or less adjacent area. After a span of time difficult to evaluate, burials were dug in the accumulating waste mixed with the debris of the collapsing walls of the abandoned houses. It has also been noticed that in most cases the graves pits had not cut through the walls of the ruined houses, therefore it can be assessed that the crumbled upper parts of the walls were still visible when the area was turned out into a graveyard. After a time of unknown duration, the burial activity, possibly due to the density of graves, came to an end. Then, the former graveyard became an open space until levelling operations were carried out in preparation for the edification of a new set of domestic dwellings. The same process would occur again when, after possibly

more than two generations, the inhabitants of the area would decide to build their houses in a new location. When the walls of the abandoned buildings had crumbled down and were progressively buried in dump and layers of mudbrick debris, the area was again used as a graveyard, following the process already described. It is difficult to assess the total duration of Period I, but according to the number of superimposed occupational levels and graveyards, the formation of the mound could easily have lasted for about a millennium.

The layout of the Neolithic settlement

All the excavated buildings are multi-roomed structures. Four different plan-types have been recorded: two-roomed, four-roomed, six-roomed and ten-roomed buildings.

Most of the walls of these buildings were composed of two rows of hand-moulded mudbricks longitudinally arranged. These long and narrow bricks measured 62 x 12 x 8 cm with generally on their upper faces a herringbone pattern of impressions of the brick-makers thumbs to provide a keying for the mud-mortar in which they were set (Fig. 6). The earliest

buildings (level 1), resting directly on the natural soil, include a two-roomed building. Seven other structures of this type have been unearthed (two in Level 3, two in level 4 one in Level 6 and two in level 8) By their size, the five buildings found in levels 3, 4 and 6 seem to be dwelling places. Seven structures of this type have been unearthed (two in Level 3, two in level 4 one in Level 6 and two in level 8). The best-preserved and completely excavated ones measures 6,25 x 4,50 meters (House XXVII Level 4) and 5 x 4,20 meters (House XXV level 4) and are composed of two long rectangular rooms.

The four-roomed buildings represent the most popular plan used by the inhabitants of Period I. Such structures were uncovered in all the levels from levels 3 to level 9. The mud-brick walls are approximately 30 cm wide (two rows of bricks) and the average size of the structures is 5,50 by 3,75 meters. The four rooms have more or less the same size and often small openings connect the rooms between themselves and to the outside.

In level 7, two structures with 6 symmetrical rooms have been recorded (Fig. 7). The six-roomed buildings



Fig. 6 : Superimposition of 4 rooms and 2 rooms houses in MR3 N, with an example of a mud brick. © C. Jarrige



Fig. 7 : A 6 rooms house in MR3 N. © C. Jarrige

revealed no fireplace or significant groups of remains connected with domestic activities, contrary to what we have often noticed in the case of the houses divided into four rooms. This supports well the assumption that the six-roomed buildings are the prototypes of the compartmented buildings of Period II A for which there is good evidence that they were used as granaries or storage facilities.

The walls of the clay houses were plastered inside and outside with a 2 cm thick clay mortar. There are evidences that the coatings of the external walls of several houses were coloured in red or even adorned with paintings. A portion of a collapsed wall from level 1 was coloured in plain red ochre. In the upper levels, similar traces of red paint were found on several walls. Quite sizeable fragmentary impressions of external plaster fallen on the ground show red V-shaped motifs and in one case a complex geometrical pattern of red lines and red and black dots (Fig. 8). Some floors made of packed and rammed earth were also covered with red ochre. Some roofing fragments have also been discovered in the building debris. They consisted of fragments of chaff-tempered mud with several impressions of fibrous stems of reeds.

Traces of fireplaces were found in many rooms. In the open spaces between houses, many circular



Fig. 8 : Wall plaster with a polychrome pattern of red lines and red and black dots from a house in MR3 N. © C. Jarrige

fire-pits have been uncovered. Their diameters range between 40 and 60 cm and their maximum depth is about 35 cm. Most of them contain heavily burnt cracked pebbles (Fig. 9). But in one case many ovoid heated clay balls filled the fire-pit. It is obvious that the burnt pebbles and the clay balls were used for indirect heating. Even today in Balochistan, heated stones are used for cooking bread. It is interesting to mention that in the Harappan levels of Nausharo, near Mehrgarh, hundreds of ovoid clay balls as well as many triangular t.c. cakes were found in the fillings of fireplaces.

The rather large scale of the excavated areas indicates that the layout of the houses follows a rather regular



Fig. 9 : Hearth filled with pebbles. © C. Jarrige

pattern. They are divided into two groups, one having its main axe East-West oriented and the other North-South. Between houses, open spaces allowed an easy circulation. This layout with its symmetrically disposed houses, with rather regular open spaces in-between, forms a marked contrast with the plans of several Neolithic settlements from Western and Central Asia, where the houses cluster tightly together and where there is no evidence for alleys, doorways or large open spaces. The plans of the houses from early villages so far recorded in the Neolithic of Western or Central Asia often show rather irregular combinations of small cubicles of various sizes.

The subsistence pattern

Though the exact dating of the beginning of the settlement is still difficult to assess, we can say that the first levels of the Neolithic period at Mehrgarh provides us, as early as the 8th millennium BC, with the first evidence of the progressive setting of a farming economy in the north-western part of the Indo-Pakistani subcontinent.

Lorenzo Costantini has shown that the plant assemblage of Period I is dominated by naked six-row barley which accounts for more than 90% of

the so far recorded seeds and imprints.⁷ He has also pointed out the sphaerococcoid form of the naked-barley grains with a short compact spike with shortened internodes and small rounded seeds. According to him, such characteristics in the aceramic Neolithic levels can be ascribed to probably cultivated but perhaps not fully domesticated plants. Domestic hulled six-row barley (*H. vulgare*, subsp. *vulgare*) and wild and domestic hulled two-row barley (*H. vulgare* subsp. *spontaneum* and *H. vulgare* subsp. *distichum*) have also been recorded, but in much smaller quantities. According to Zohary⁸ quoted by R.H. Meadow,⁹ the distribution of wild barley extends today to the head of the Bolan Pass. It is therefore likely that local wild barleys could have been brought under cultivation in the Mehrgarh area. Costantini has also identified a small amount of domestic einkorn (hulled: *Triticum monococcum*), domestic emmer (hulled: *T. turgidum* subsp. *dicoccum*) and a free-threshing form which can be referred to as *Triticum durum* (Fig. 10). So far no morphological wild wheat has been identified in South Asia. Therefore the small amount of wheat seeds at Mehrgarh, Period I, needs further explanation since obviously wheat has not a great significance in the agricultural activities of the aceramic period.

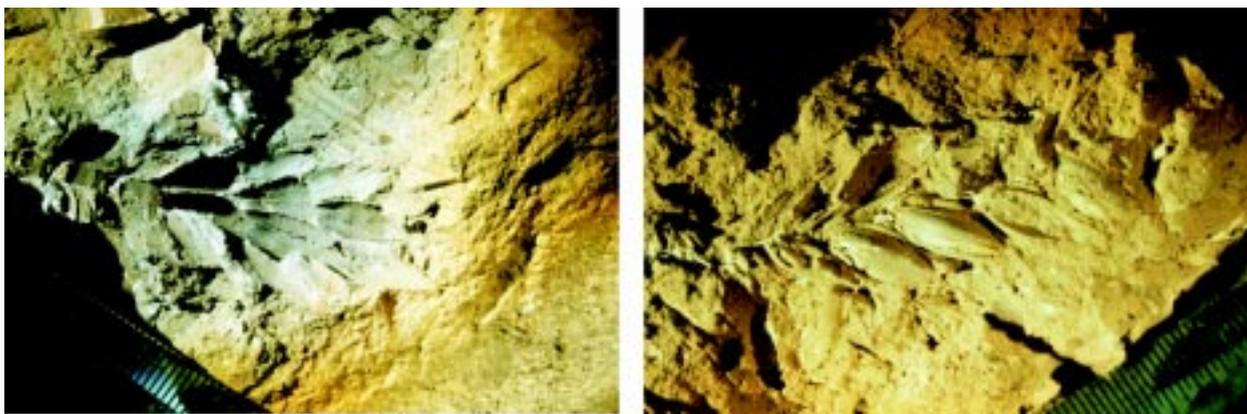


Fig. 10 : Period I: Imprints of barley (*Hordeum vulgare*)(L) and wheat (*Triticum dicoccum*) (R). © L. Costantini

In the early levels of Period I, hunting activities provide most of the meat.¹⁰ As we have already mentioned it, Mehrgarh is situated on the margins of foothill, plain and riverine environments. Quoting Meadow¹¹ “the wild animal remains that dominate the earliest levels of the “aceramic Neolithic”.....reflect this situation with 12 forms of “big game” represented: wild sheep (*Ovis orientalis*) and goats (*Capra aegragrus*) from the hills, gazelle (*Gazella bennetti*) from the foothills and plain (Fig. 11), wild asses (*Equus hemionus*) and blackbuck (*Antilope cervicapra*) from drier plains, and nilgai (*Boselaphus tragocamelus*), large deer (*Cervus(?) duvauceli*), smaller deer (*Axis(?) axis*), boar (*Sus scrofa*), water buffalo (*Bubalus arnee*), wild cattle (*Bos namadicus*), and possibly elephant (*Elaphas maximus*) from better-watered areas.

Besides hunting activities, there is also evidence of pastoralism first limited to goat. In a few graves from the earliest levels (2 and 3), five complete skeletons of kids had been disposed in a semi-circle around the legs of young women, a fact which may have

some implication to understand the social context of the beginning of pastoralism. The presence of bones of relatively small subadult and adult animals in the trash deposits of the early levels confirms, according to R.H. Meadow, the domestic status of at least some of the goats. Meadow has also clearly shown that “ though in the course of Period I at Mehrgarh, the remains of sheep and cattle became to increasingly dominate the faunal assemblages of the successive strata, at the same time, the animal represented grew smaller in body size”.¹² By the end of Period I, cattle bones amount for over 50% of the faunal remains. Osteological studies as well as clay figurines indicate that zebu cattle (*Bos indicus*) is well attested in Period I and became most probably the dominant form (Fig. 12). Mehrgarh provides us therefore with a clear evidence of an indigenous domestication of the South Asian zebu. We know today that *Bos indicus* and *Bos Taurus*, the non-humped bull from the Middle-East, have a different genetic origin. Therefore the assumption that farming economy was introduced full-fledged from Near-East to South Asia needs to be questioned.



Fig. 11 : Period I: Bones of gazelle (L) and of sheep-goat (R). © C. Jarrige



Fig.12 : Period I: Bones and fragments of clay figurines of bovines. © C. Jarrige

The finds

In this short presentation of the aceramic Neolithic period of Mehrgarh, we can only give a summary of the main finds. Several studies concerning the flints have already been published.¹³ Let us just recall that Vincent Marcon¹⁴ has been able to point out some obvious changes in the flint assemblage from the earlier levels to the later ones (Fig. 13). In levels 1 and 2, the use of pressure debitage is not clearly attested and the tools are made either on blades or on flakes, the flakes being more numerous than the

blades. Level 3 is a transitional period when flakes are still used to make tools but much less than the blades which show now clear evidence of the use of the pressure debitage which from level 4 is more and more attested. The most characteristic tools from level 1 to level 4 are lunates, trapezes, borers, and scrapers. In the upper levels, from 5 to 8, the dominant tools are truncated blades, drills and trapezes with a concave back. From level 4, the length of the blades also increases in a marked way. From level 7, the material utilised shows a more specific selection of the raw flint which seems consistent with a higher degree of craft specialisation supported by many other evidences from the activity areas as well as from the grave goods.

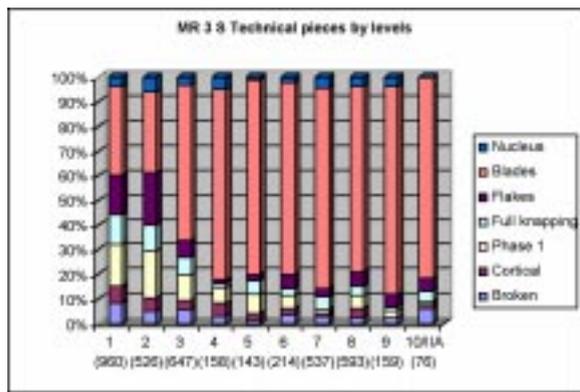


Fig. 13 : Period I, MR3 S: evolution of the lithic industry from Period I, level 1 to period IIA. © V. Marcon

Several sickles made of microliths set slantwise in bitumen attached originally to a wooden handle have been recovered (Fig. 14).

As regard the heavy-duty tools in stone, the specimens from the earlier levels - big chisels, picks, polishers - are usually rougher than in the later ones. The first stone axes have a very rough



Fig. 14 : Period I: flint microliths set in bitumen. © C. Jarrige

picked surface and it is only in a later stage (level 7) that the axes are polished, the finer examples coming from the graves of Cemeteries 8 and 9 (Fig. 15).



Fig. 15 : Period I: Polished stone axes. © C. Jarrige

The remains of several workshops of beadmakers with beads in calcite or steatite in various stages of processing have been found in different levels (Fig. 16). The gravegoods have also provided us with a rich corpus of information about the craft activities in the course of the aceramic Neolithic period of Mehrgarh. They include a wide range of ornaments made predominantly of seashells, but also of lapis lazuli, turquoise, black steatite and several other stones. The quality of such ornaments implies a level of specialisation that was not expected in such



Fig. 16 : Period I: remains of a steatite beads workshop showing stages of manufacture. © C. Jarrige

an early context and also the use of resources from often far away regions.

The graveyards

Alternating with the nine building levels, nine levels of graveyards have been recorded. A total of 318 graves have been exposed, among which, from level 1 to level 9, 179 have yielded gravegoods. At the bottom of an about 1 m deep pit, a small space dug on one side of the pit was used as a small burial chamber. Then the burial chamber was, after disposal of the dead body always in flexed position, blocked by packs of hard clay or by brick walls, and the pit was filled with earth. More than 75% of the graves have an East-West orientation. The heads are in many cases looking toward South, but also towards East and more seldom towards North. Other graves are mostly oriented North- South.

The most characteristic graves from the lower levels are single pits or tombs with a funerary chamber in which the dead was placed along with offerings of young goats disposed in a semi-circle around the legs (Fig. 17). The existence of funerary chambers during this earlier period was provided for the first time by several graves partly cut by the section wall



Fig. 17 : Period I: Graves with young goats associated with the skeletons of young women. © C. Jarrige

of the MR3 South trench. A thin layer of red ochre was found, just below the dead and the baby goats, on the floor of the funerary chamber which was closed by a small wall made of seven courses of mud bricks. A young female buried in tomb 276 was wearing a necklace made of seashells and lined up vertebrae from the tail of a bovine were near the bones of the hand. The tail may have been used originally as a flyswatter. The four young goats also placed along with the dead at the time of the inhumation are worthy of mention.

In level 3, two young female were buried with five young goats; one of them was wearing ornaments in lapis lazuli, turquoise and seashells and two anklets in calcite. In many cases, the intermediate graveyards

are characterized by the diversity and by the richness of the ornaments placed with the dead at the time of the inhumation. Exceptional grave deposits are dentalium headbands found on the heads of several females like for example in Tomb 573. In Burial 274 (Fig. 18) the headband was made up of woven rows of small dentalium segments and was closed by two straps used as a clasp. Each of them was ornamented with four perforated natural shells. Around the neck was a thin necklace made of shell beads and at the waist, a belt-like ornament was made up of cylindrical shell beads and of one flattened polyhedral shell bead. Hanging on the belt, an interlacing of numerous threaded dentalium beads was found in front of the pelvis of the individual.



Fig.18 : Headband and waist ornament in Grave 274 (cemetery 5). © C. Jarrige

In Burial 281 the headband is even more spectacular. The numerous dentalium segments have been woven in a netting way (Fig. 19).

A belt-like ornament was also uncovered around the waist of a male in Tomb 279. It consisted of

23 long cylindrical shell beads and of a lozenge-shaped mother-of-pearl pendant. Another most spectacular discovery in this grave was a rather large rounded lapis lazuli bead found near the chin of the decease.

A very young child was also uncovered adorned with necklaces made up of dentalium shell and steatite beads as well as anklets in polyhedral shell beads. Two heaps of red ochre were placed on each side of the skull in Tomb 578. The large size of the ornaments indicates that originally they



Fig. 19 : Grave 281 (cemetery 4) and detail of headband. © C. Jarrige

belonged to an adult. They had not been put around the limbs of the small deceased but simply disposed on his body. Another infant in Tomb 508 was also richly adorned with numerous ornaments with beads made of diversified material including red stone.

The structures of the graves from this phase are of the usual type with a funerary chamber closed either by a small wall made of long bricks laid in alternate headers and stretchers or with fragments of mudbricks put in the grave so as to fill about half the pit.

In the upper graveyards, the funerary chambers of the tombs are still blocked up by a small mudbrick wall and the dead bodies are very often associated with numerous grave-goods and ornaments. In Tomb 234, an adult was buried with a display of stone and bone tools carefully placed in one of his hands and probably linked to the activity of the deceased during his lifetime. A very interesting cluster of tools and ornaments made of bone as well as a small piece of galena was uncovered in the burial chamber of another female adult (Tomb 290).

In two graves of level 9, copper beads were found. The imprints of a cotton thread have been identified inside the holes of the copper beads found in one

of the 2 graves (Fig. 20). It is so far the earliest evidence of the use of copper and of cotton in the subcontinent.¹⁵

In one grave a female was holding a clay figurine. But the implication of this discovery as well as the question of the human figurines is dealt in this volume by Catherine Jarrige.

In this short summary concerning the graveyards, it is not possible to discuss in details the implications of the burial practices for our understanding of the social organization of the Neolithic. It is worth noticing that the association of gravegoods in each grave is almost never the same, even if we can note some sexual distribution of some of the ornaments. But such diversity does not suggest that the society was not yet divided in well-marked social categories. Nevertheless, the huge amount of beads and various ornaments made of materials coming from far away areas and the quality of the craftsmanship imply a very significant investment of the society in connection with the dead. The diversification of the shapes and the miniaturization of the beads in the upper levels, as well as the occurrence of techniques of transformation of black steatite into white steatite by a heating process



Fig. 20 : Grave 153 of cemetery 9, showing the remains of the wall sealing the pit as well as a basket offering. Copper beads were found around the waist of the skeleton, in which remains of a cotton thread was identified. © C. Jarrige & C2RMF (R)

reveal an increasing level of craft specialization. The production of white steatite beads in the final phase of the aceramic Neolithic marks the beginning of a local craft tradition which will lead to the production of glazed white steatite beads in the course of Period III at Mehrgarh, in the last part of the 5th millennium BC.¹⁶

The anthropological project conducted by several Italian colleagues has already provided major results, which cannot be detailed here.¹⁷ Let us just mention the fact that the average stature of the males was about 170 cm and 160 cm for the females, though among the female individuals, several were characterized by tall stature, some of them as tall as 175 cm. This may be an indicator of overall good health, good diet and low exposure to developmental stress.¹⁸ The Neolithic graveyards provide us also with the earliest evidence of dentistry in the archaeological records. Eleven drilled molar crowns from nine individuals (four females, two males and three unidentified) have been recorded. One individual has three drilled teeth, another one has the same tooth drilled twice. Experimentation shows that a bow-drill tipped with a flint head required less than a minute to produce such holes in human enamel.¹⁹

The end of Period I

The last episode of burials, cemetery 9, of Period I took place when the mound formed by the accumulated remains of successive occupations had been deserted by its inhabitants. The positions of some of the graves on the already eroded slopes of the Neolithic mound, and of several others, which were obviously dug on an uneven surface where ruins formed small hillocks, indicate that there was a rather long span of time between the last level of occupation (level 9) and the setting of the last graveyard (cemetery 9) of the same Period I. The

abandonment of the Period I mound corresponds to a period of alluvial terrace formation. In the profiles of the sections throughout the Period I mound, one can see clearly successive alluvial strata that came to rest at a slant against the sides of the mound. This rather impressive alluvial process marked by several episodes has slowly buried the mound and raised by several meters the level of the surrounding plain before the inhabitants of the following Period IIA began to build their settlement.

Period IIA.

This contribution is limited to the aceramic Neolithic of Mehrgarh. Let us just recall that probably around 6000 BC, crudely made potsherds with a heavy shaff temper are found in a limited quantity. In Period I, the containers so far recorded were baskets coated with bitumen. A few stone vessels have also been found in the last stage of Period I, mostly in levels 8 and 9. In Period IIA the pots, mostly bowls and basins, are constructed by assembling pieces of clay, the sequential slab construction well attested at several Near-Eastern sites at about 6000 BC²⁰ (Fig. 21).



Fig. 21 : Period IIA: fragments of a large fired container assembled with the technique of 'sequential *slab construction*'. © C. Jarrige

The setting of the Period II buildings over the ruins of Period I and on the alluvial terrace which had buried the lower half of the Period I mound has implied the construction of a rather impressive system of platforms and retaining walls in mud bricks on the edge of the slopes of the earlier mound. The excavations have mostly exposed a large number of quadrangular buildings divided geometrically in narrow compartments. Some of these buildings, which have been raised several times, were still preserved to a height of 3 meters. The compartments were filled with fallen bricks and a huge quantity of imprints of cereals, mostly barley (*Hordeum vulgare*). Such buildings were obviously granaries for storing cereals (Fig. 22).

The number and the sizes of these storehouses for barley and wheat provide us with an idea of the scale of the agricultural efficiency of the inhabitants

of the Period IIA settlement and of the social organization. The impressive plans of compartmented buildings of Period IIA can be compared with buildings with similar plans from Mesopotamian sites such as Tell el Oueili or Umm Dabaghiyah at the end of the 7th millennium BC. It is probably not a mere chance if one notices the occurrence at Umm Dabaghiyah²¹ and at Mehrgarh, Period II A, of some potsherds not only built according to the same sequential slab construction but also bearing similar applied designs.

As a whole, most of the finds associated with Period IIA show a great continuity with those from the upper levels of Period I. Nevertheless one notices that most of the graves exposed for Period IIA are no longer associated with any ornament or object except, but very seldom, for a few beads.



Fig. 22 : Period IIA: superimposed compartmented *buildings used for storage*. © C. Jarrige

The nature of the Neolithic settlements of Mehrgarh

Traditionally the early Neolithic sites are considered as small villages, with a limited number of inhabitants. The scale of the excavations conducted in the Neolithic sector of Mehrgarh provides us only with a partial view of the Neolithic settlement. But there are enough indications to assess that the aceramic settlement cannot be defined as a small village. It has already been mentioned that the Bolan river has cut a wide portion of the settlement. By doing so the river has also provided us with a complete profile of the Neolithic settlements, showing, on each side of the central core made of the ruins of accumulated buildings, wide expanses of archaeological deposits with fire-places and fire-pits, associated with burnt pebbles and grinding stones over an estimated surface of 15 hectares. For the following period (Period II) the total area of archaeological remains must have originally covered about 45 hectares.

The dating

In some of our previous publications we have already pointed out that several radiocarbon dates were not in accordance with the stratigraphy of the site.²² But we have also indicated that, for Period I, a series of dates are as early as 7928+/-173 BP, 9385+/-120 BP, 7115+/-290 BP, 8440+/-250 BP. Such dates when calibrated are therefore for some of them well before 7000 BC or for some others around 7000 BC. For Period IIB, the late Neolithic period associated with a fine lustrous red pottery, we have a date of 7115+/-120 BP (c. 6000-5800 BC) and for Period III, the early Chalcolithic, our only date is 6900 BP (c. 5300 BC). As regard the other samples which, as we already said it, have provided erratic datings, it should be recalled that the studies of the sections

have shown that the Neolithic deposits have been flooded many times and were, until recently, buried under a dense network of irrigated fields used also as grazing lands. From top to bottom the archaeological deposits revealed the existence of a very dense and ancient network of more or less fossilized roots as well as holes and galleries made by rodents and insects. Such dense circulations of organic matters throughout the deposits in the course of several millennia have to be kept into account to explain some of the discrepancies between dates from samples often collected in the same level. Though it is difficult to date precisely the beginning of Period I, it can be rather securely assessed that the first occupation of Mehrgarh has to be put in a context probably earlier than 7000 BC.

Conclusion

In spite of some obvious differences, for instance the progressive predominance of the breeding of zebu (*Bos indicus*), the full setting of farming economy at Mehrgarh displays evident similarities with what had been noticed in the case of the early Neolithic settlements in the hilly regions forming the eastern border of Mesopotamia. The circular houses of the earliest Neolithic villages have not been found at Mehrgarh. But quadrangular houses built with about 60 cm long narrow bricks with a herringbone pattern of impressions of thumbs to provide a keying for the mud-mortar, have been uncovered at several aceramic Neolithic sites in the Zagros, such as Ganj Dareh or Ali Kosh in the Deh Luran region of Iran, where, like at Mehrgarh, traces of red paint have also been noticed on the walls. Circular fire-pits filled with burnt pebbles are also associated to all these early settlements. The lithic industries also show evident parallels, which cannot be developed in this

contribution. Nevertheless it can be pointed out that the polished-stone axes begin occurring at several sites of the Deh Luran area, such as Ali Kosh, only in the later phases of the aceramic Neolithic along with an increasing number of stone vessels.²³ It is the same at Mehrgarh where the polished stone axes in black diorite are found only in the upper levels of Period I, mostly as gravegoods. From Period II at Mehrgarh, the polished or ground stones are no longer found in the Kachi-Bolan area and elsewhere in Balochistan.

No graveyards have been exposed on a large scale like at Mehrgarh, either in the Zagros or Del Luran area, making comparison difficult. But, for instance, the few graves exposed at Ali Kosh show skeletons with positions rather similar to those of Mehrgarh. Among the gravegoods one notices ornaments made of seashells and semi-precious stones such as turquoise, a few beads in copper. Baskets coated with bitumen and oblong-shaped cakes of red-ochre strengthen the parallels. Catherine Jarrige in her contribution has also dealt with the similarities between certain types of figurines. We have also seen the strong parallels between the first occurrence of ceramics built according to the same sequential slab construction and the setting of big multi-cellular granaries at Mehrgarh at the beginning of Period II and at several sites in Mesopotamia, among which Umm Dabaghiyah before and around 6000 BC.

The similarities noticed between Neolithic sites from the eastern border of Mesopotamia to the western margins of the Indus valley are highly significant. A sort of cultural continuum between sites sharing a rather similar geographical context marked with an also rather similar pattern of evolution and transformation becomes more and more evident. But the Neolithic of Mehrgarh displays enough original

features to imply an earlier local background which has so far not been documented. Nevertheless the cultural dynamism shown by the inhabitants of Mehrgarh as early as level I of Period I indicate that the Neolithic of Balochistan cannot be interpreted as the “backwater” of the Neolithic culture of the Near-East.

One of the major contributions of Mehrgarh is to indicate clearly the existence of a very impressive Neolithic background as early as the 8th millennium BC in the north-western regions of the Indo-Pakistani subcontinent. Further East, we progressively enter other geographical contexts, in particular those affected by the monsoon. As early as 1867, A.C.L. Carlyle, of the Archaeological Survey of India, discovered in Uttar Pradesh and in Madhya Pradesh (dist. Mirzapur and Rewa) many sites with microliths and rock shelters, some decorated with paintings. Since then, thousands of “Mesolithic” sites have been recorded as well as many “Neolithic” settlements close to lakes left by ancient meanders of the Ganges, in areas of distribution of wild cereals such as rice. Several contributions published in this volume attest of the dynamism of archaeological research related to the Mesolithic and Neolithic horizons of regions belonging to the Ganges system. As well as for Mehrgarh, there are sometimes some problems with the radiocarbon dates from such sites, but there is no reason to discard systematically early datings. Let us recall that, before the discovery of Mehrgarh, the first settlements in Balochistan and the Indus valley were thought not to be earlier than 4000 BC and were interpreted as the result of an eastern diffusion of an Iranian or Central Asia model. Therefore the Mesolithic and Neolithic sites of the Ganga system with their specific aspects such as the availability of wild rice were often studied within

a purely “Indian” context. But we have now evidence that, in the north-western part of the subcontinent, communities were involved as early as the 8th millennium BC in more or less incipient farming activities, based on the domestication of cereals such as barley and of local wild animals.

This conference held in Lucknow on the “first farmers” at the instigation of Dr. Rakesh Tewari is very important in promoting a more global approach of the archaeology of the whole subcontinent. Ongoing work in Uttar Pradesh, in particular at Lahuradewa providing early evidence of rice

exploitation, and at several other sites expanding to the North of the Vindhya hills, has greatly extended our knowledge of the early more or less incipient farming communities of the Middle Ganga Plain.²⁴ Due to the data collected in the course of the last twenty years, our analyses of the Neolithic settlements of the Greater Indus system, as well as the Mesolithic and Neolithic sites of the Greater Ganga system, will provide a more comprehensive understanding of the interaction between groups of hunter-gatherers, incipient farmers or early farmers all over the northern part of the subcontinent from Balochistan to the Middle Ganga Plain.

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Jean-François Jarrige

CNRS-UMR 9993

Musée guimet

19, av. d'Iina

75116 Paris, France