Field investigations over four seasons in parts of Odisha and Chattisgarh have led to the discovery of 61 prehistoric sites including both isolated scatters as well as rich clusters of stone tools belonging to various techno-chronological periods. These sites have been mapped, documented and their various contexts described. In addition, remote sensing data have been intensively utilised to understand spatial and geographic patterns of occurrence. The stone tool assemblages from all the sites have also been studied in detail including their dimensions and technological attributes. This has helped to understand the patterns of regional prehistory. The work certainly indicates possibilities for further Palaeolithic and geoarchaeological studies in the Jonk River basin and adjacent areas. The present research shows the potential of the isolated and neglected areas of the western highlands of Odisha. The prehistoric significance of the Jonk valley was little known in the Indian Palaeolithic previously but this investigation has been successful in establishing that the area was one of the significant areas for prehistoric occupation and adaptations.

The majority of the prehistoric sites in the study area were found on the foothills. Older surfaces, pediments are exposed on the river bank sections of Jonk and hill slopes due to actively undergoing erosion. The tributaries of the Jonk were also intensively surveyed for Palaeolithic sites but not a single artefact was found there except the evidence of a few microlithic cultural deposits. This is provisionally attributed not to the absence of humans but the absence of exposures of older sediments as the tributaries of the Jonk have extensive deposits of Holocene alluvium which has covered the older geological units. The presence or the absence of Palaeolithic artefacts in any given area is primarily determined by geological formation processes. For sites to survive these geological (and anthropogenic) processes, they require burial in undisturbed contexts as soon as possible following artefact discard. The contexts for sedimentary burial are the river alluvium or in locally transported regolith. In the hillslope contexts, artefacts are found overlying untransported weathered bedrock and form part of an erosional lag deposit. This may
have been covered by transported weathered material, which is currently being stripped off. Most of the artefacts have been exposed to weathering over a long time and are poorly preserved although they may be very close to the place they were originally discarded by the early hominins. The artefacts from the alluvial context on the other hand appear to have been rapidly buried after discard and are generally in a better condition than the ones in regolith context. The area in which older alluvium is found and is exposed, however, is minuscule compared to the regolithic and therefore associated sites are rare.

The conclusions about the research of the Jonk river study area, culturally as well as chronologically, are discussed below.

### 4.1 Acheulian

The local, geology, geography and ecology, environment has greatly influenced the early hominin groups in the Jonk River for organisation of sites, associated assemblage compositions and technologies of the Acheulian period.

No bifacial elements are smaller than eight cm in the lithic assemblages collected from the Jonk area. Most of the Acheulian artefacts are well-shaped handaxes, cleavers and flake tools. At the site of Senbhatta, the centripetal techniques are the most commonly observed for manufacturing the handaxes and cleavers.

The size range of the handaxes that were found in the study area falls within the 8.5 - 18.8 cm. Their averages in terms of length, breadth and thickness were 12.2 cm, 7.9 cm and 4.3 cm, respectively. A number of bifacial artefacts (1.31%) were used as both handaxes and cleavers. Probably the entire sides of these edges were used for cutting or ‘cleaving’ purposes. The handaxes were made in variety of shapes and are made both on nodules and flakes. Ovate shaped (32%) and almond shaped (39%) handaxes dominate within all the lithic assemblages. The weight range varied significantly (79-1144 gm) depending on the types of blanks, nodules or flakes used (Table 3.18). The handaxes made on nodules were heavier and thicker than those made on flakes.
The higher number of handaxes suggests that these types of bifacial tools were extensively used and made on variety of raw materials (quartzite, quartz, pegmatite, sandstone) modified into different forms and also abandoned at different stages in the reduction sequence. Use of different raw materials for making handaxes may have been a major factor in the variation of their size, shape and morphology and also technology.

Cleavers show less variability than the handaxes. Their length ranged between 8.9 - 16.2 cm with an average length of 12.9 cm; average breadth is 9.1 cm and average thickness is 4.3 cm (Table 3.23, Fig nos. 3.10, 3.11, 3.12). The cutting-edges of 56% of the cleavers were broken possibly due to the intensity of use. Straight and oblique cutting edges are the most common. Cleavers were primarily made on large flakes: 38% cleavers were made on end-flakes while 41% cleavers were found on possible Kombewa flakes and 20% of the cleavers were made on side-flakes. Most of the cleavers are rectangular in shape with very few found in a high backed shape. All cleaver butts are generally ‘U’-shaped, square or round in shape, and there is a complete absence of the ‘V’-shaped butt usually known from other sites in India.

The weight of cores ranges between 105.60 - 3921.45 gm with an average weight of 958 gm. Acheulian core assemblages are mostly of cobbles size with an absence of boulder-sized cores or giant cores on the study area’s landscape. Generally there is a lack of typical large flake cores except a sporadic presence at Chipajhar -2. Boulder-sized cores would be too large to transport any significant distance. However, cobble sized cores for manufacturing a few flakes or for use as chopping tools do occur. It was observed that some hammerstones were converted into choppers as shown by the presence of both battering marks as well as unifacial flake scars at the opposite areas (Plate 3.3). Alternatively, the flakes got detached when in use as hammers. The assemblages are generally dominated by finished tools. Most of the flakes found at the sites were devoid of retouch but were used since some use-wear was observed. A large number of cores from the site of Bhajipala are made on river cobbles and many cobbles bear only one or two flake scars.

It was observed that most of the bifacial tools or flakes were carried in from outside because no evidence for production activities occurs at any of the documented sites.
Some utilised cobbles were noticed at most of the sites and these appeared to be transported into the sites for breaking hard objects such as bone, hard shelled fruits, and so forth.

**4.2 Microlithic**

The comparatively wider distribution of microlithic sites in the Jonk river valley possibly reflects better preservation due to patterns of stratigraphic exposure. Population density during the microlithic times might have also been greater. Microlithic people had a mobile lifestyle moving across the landscape in search of various resources starting from raw material procurement to hunting-gathering and collecting food items. The microlithic assemblages in the Jonk area are completely devoid of ceramics, Neolithic-type ground stone tools, ringtones and any other types of heavy duty tools. This indicates that the sites discovered were inhabited prior to the beginning of agriculture and those sites were exclusively occupied by microlith producing hunter–gathers.

A wide range of artefact types were noted such as a large numbers of blades and backed blade tools and scrapers of various types, a few borers, points and tanged points were marked with variability within the sites (Table 3.36). Retouch is, in general, irregular and very rarely found on blades and flakes except those of scrapers, and large number of flakes have been utilised and blades appear to have been utilised without retouching (see Table 3.55 and figure 3.31). Retouching was observed only in a few blades at the sites of Dharmabandha, Haldi-1, 2 and Mahuabhata. Blunting/backing on certain types of tools is a common phenomenon on backed blades. There is no uniform pattern of retouch. Bipolar, crested-guided ridge, and steep retouch on the marginal-edge types of backing are observed on the all the backed tools. In cases of the quartz cores, the identification of cortex is difficult as most the cores are made on chunks whose surface is similar to the flaked surface. Cores with larger numbers of blade scars also produced a larger number of rejuvenation flakes. Scrapers are mostly made on flakes and side scrapers and end scrapers types are commonly found. The reduction sequences of cores, core morphology, variance in blade size, retouch pattern, blunting techniques, notched tools various hafting purpose shows the gradation and evolution in the organisation of the microlithic blades and few flakes tools in various ways. The metrical compilation
of blade assemblages shows a large range of variability. Blade length range varies between 12.02-63.5 mm, the average length of blades varies from site to site between 16.94-37.84 mm and the median is also found similar, 16.49-38.01 mm. The standard error found varies between 1.78. - 20.87mm. Blade width range varies from 4.34-31.38 mm. Thickness of blades found varies between 1.37-15.58 mm.

4.2.1 Classification on the basis of Technology

Use of different types of microlithic technologies were observed among the assemblages of various sites. These technologies, for a proper understanding, can be provisionally distinguished among three different types: Early, Middle and Late microliths. These technologies can be differentiated on the basis of types of techniques used, preference for raw material, stratigraphic context, typology and so forth. One can see a clear difference between the Early and Late microlithic technology, discussed in detail below:

4.2.1.1 Early Phase of Microliths

The earlier phase of technology seems to have relied both on hard hammer and indirect percussion techniques for core reduction. The technology of this phase yielded non-geometric backed blades. These were larger in size (both in length and breadth) and also in thickness. Both of these techniques do not produce a large number of blades from a core. The cores from this period are larger, mostly irregular and elongated in shaped, the hard hammer techniques resulted in numbers of steep fractures. Double or multiple platforms are common. At the same time, it was observed that exploitation of a core results in a limited number of scars. (Plate 3.36) While we see a continuation of indirect percussion technique in the middle phase of the technology, occasionally blades prepared by using undeveloped pressure technology were noticed during the middle phase. Finally it was the pressure technique which was used during the evolved or late stage of microlithic technology.
4.2.1.2 Middle Phase of Microliths

The research carried so far, however, did not throw much light on the occurrence of the microliths belonging to the middle phase of technology mentioned above. But the microliths associated with calcrete may be categorised in the middle phase of microlithic industry. It is suggested that cores in this phase appear more refined. Hard hammer techniques used earlier continued with use of punched techniques and the initial appearance of pressure techniques. Even it is possible that for removing different types of blades, both small stone hammers and pressure techniques were used successively. One does not notice a major difference among the blade types of the earlier one and the middle one. However, a gradual decrease in the sizes of blades has been noticed in the middle phase. A systematic excavation at one of the sites in the future may shed more light in this regard.

4.2.1.3 Late Phase of Microliths

Geometric microliths such as small-sized crescents, triangles, and trapezes, tanged points and so forth, appear in the later phase of microlithic technology. For example, the sizes of the blades further decreases from the earlier assemblages. Non-geometric microliths also continued being made but in very small numbers. While ceramics have also been reported by different scholars from the later phase of microlithic technology, no such find was noticed by the investigator in the study area. However due to the use of specific pressure techniques, platforms are refined and very limited numbers of steep fracture can be noticed. The blade cores contained a large number of blade scars and found to be more reduced or exhausted. Cores belonging to the late microlithic period are cylindrical fluted cores with one or more platforms, and in single direction are dominating. Double directional and multidirectional cores are rare. Those core which have an absolutely conical distal end (‘bullet shaped’) show the use of pressure techniques.

The earlier classification system (Bordes 1961) of blade and microblade/bladelet concept does not quite apply to the present assemblages. On the basis of the microlithic assemblages of the Jonk, the researcher suggests that an average blade size above 30 mm, breadth of 12 mm and thickness of 5 mm may be categorised in the earliest microlithic tradition. It should be noted that the thickness may not be taken as a criterion because its frequency was fluctuating randomly depending upon the nature
of the assemblages. However, those below the mentioned sizes can be considered as micro-blade industries. According to the suggested model, in the Jonk river valley the criteria of early microlithic periods are fulfilled by only eight sites: Mahabhata, Haldi both localities, Patharpunji, Bherha-2, Dharmabandha and Pancharpur. The remaining microlithic sites may be considered to belong to the late period (see figure 3.17). Besides suggesting the early and later phases, there might be a possibility of the existence of an intermediate phase. However, absolute dates are needed to support this idea.

Here it is also noted that regional variations in terms of stone tool types, technology affected by several factors such as raw materials, changes in types of hammer stones, local fashioning styles or even the regional styles of hunting technology can affect a lot, the modification of different shapes, sizes and forms of the stone tools.

4.3 Raw Material

The locally available raw material was exploited since the Acheulian period in the Jonk river valley. The Acheulian groups have extensively used the quartzite river cobbles, boulders and pebbles, except in the cases of Bherha locality -2 (12.90%) and Bherha-3, which show the use of sandstone (5.03%) as raw material mixed with quartzite. The Gima site lying in the middle Jonk was observed exclusively with the use of pegmatite as the raw material due to its abundant availability nearby. The same also can be seen in the cases of Devsoral where few artefacts are prepared on banded chert and one artefact on a white sedimentary rock was also noticed. The chert bed is located within 5-10 km from the site. This shows that the Acheulian population in the Jonk basin were very specific about the labour and transportation of finer quality of raw material but they also were well aware about the various knapping properties of the various types of rocks available in the area. The size, shape and thickness of the finished tools were decided on the basis of the blanks chosen.

The microlithic sites located in upper Jonk close to the river were dominated by chert as the main raw material (see Table 3.96). Use of quartz as a raw material dominates at the sites located away from the river and near to the granitic rocks, bedrock or hills. It is observed that quartz is used most abundantly in the developed microlithic phase. In cases of chalcedony it was the major source of raw material sites found in the lower Jonk. Its use gradually decreases as one comes to the sites found upstream. Jasper,
opaline silica, limestone and quartzite are occasionally used at some sites but their number is negligible in comparison to the chert and quartz (see figure 3.62).

Chalcedony blades were found narrow and thinnest breadth wise compared to other raw materials. However, chert blades were found to be the largest, widest and thickest blades. After the cluster analysis of blade it suggests that there was a standardisation in blade length, making a separate cluster but width wise, homogeneity was observed (see figure 3.17). Chert was the most preferred raw material during the earlier microlithic phase. However, quartz was also occasionally utilized for making blades. It appears as a raw material and was obtained from large chunks and hillslope pebbles and chert outcrops while small river pebbles were generally avoided. In the middle phase, one sees the use of both chert and quartz, with occasional use of chalcedony. The major raw material sources of this phase were river pebbles and hill slope nodules. During this phase, people seem to have preferred the river nodules instead of chert outcrops as the later one requires not only an understanding of the ways of quarrying the source but also efforts to transport the material from its source region. The evolved blade technology involved manufacturing very thin blades mostly on chert or chalcedony. While chert seems to be preferred earlier, in the developed industries chalcedony and quartz were given more preference. The blades made on quartz show advancement and efficiency of the technology as quartz is very difficult to produce blades on. Quartz involves risk of breaking while manufacturing blades more than those made on chert and chalcedony. Therefore, the use of quartz for making blades not only shows a preference towards the locally available material but also avoidance towards the distant available material.

Chalcedony blades were found to be narrower and thinner in terms of breadth. However, chert blades were found to be the largest, widest and thickest blades. The cluster analysis of blades (see figure 3.17) suggests that there was a standardisation in blade length, making a separate cluster, but width wise, homogeneity was observed. Chert blades are larger than any of the materials used from the river such as chalcedony, quartz and opaline silica. In addition, lateritic encrustation can be seen on some of the artefacts of Dharmabandha. Patination on artefacts varies from site to site and is distinctive for a particular site.
4.4 Discussions on Relative Chronology of Acheulian and Microlithic Periods

In the absence of absolute dating at this stage of the work, it is difficult to assign any exact chronology for the studied Acheulian industries of the Jonk river basin. However, on typo-technological grounds, it can be suggested that the assemblage belong to the large flake Acheulian (LFA) group. Moreover, the Acheulian assemblages do not appear to be early Acheulian but more similar to the late Acheulian. Therefore, the relative chronology of Jonk Acheulian evidence might belong to the Middle Pleistocene period if not older.

The Acheulian sites are mostly found within the sloping pediment surfaces where the weathered bedrock regolith is being eroded as well as, less commonly alluvial contexts. In order to establish its precise chronological framework, further investigations and absolute dating is needed.

The Middle Palaeolithic evidence is comparatively scanty as only few diagnostic artefacts were found. The Middle Palaeolithic in the Jonk river basin can be associated with the orange mottled clay in alluvial context exemplified from the Chikhili river section. Despite this scarcity, the clay context suggests that absolute dating may be possible in the future using various luminescence methods.

4.4.1 Calcrete

In the Jonk river basin, calcrete does not occur with any of the Middle Palaeolithic or Acheulian sites, but only with some of the microlithic sites. This means that only certain time periods were favourable for the formation of calcrete. As the region is presently in the sub-humid zone with average rainfall of 1200-1500 mm. only significantly more arid periods would have been conducive to calcrete formation. It could be suggested therefore that the calcrete horizon associated with microliths could belong to a phase of Late Pleistocene aridity, most probably the Late Glacial maximum between 18-22 kyr. This hypothesis was earlier suggested for microliths in the Tarafeni valley of West Bengal (Basak 1997a; Basak 1997b; Basak 2005; Basak et al. 1998) but requires absolute dating and detailed paleoenvironmental studies to accurately confirm this correlation.

The relative dating for the microlithic industry in Odisha can be suggested on the basis of the stratigraphical data observed from the river sections.
The importance of calcrete in the lithic assemblage is very significant and may serve as an easy reference in terms of the relative chronology for the later Pleistocene palaeo-climate and chronology. There were three different sequences observed during the investigations of the Jonk River. The units were not only distinct in lithic technology but also in their stratigraphic sequence. The sequences observed are:

(1) Pre-calcrete horizon
(2) Microliths associated with calcrete
(3) Post-calcrete horizon

The older unit or the pre-calcrete horizon appears to be distinctly Acheulian. Acheulian artefacts are not associated with calcrete and usually found with regolith. This kind of situation is correspondingly opposite to the Acheulian sites of more arid parts of the country where calcrete is very common in Acheulian contexts. The absence of calcrete in Acheulian sites in the study area is interesting as it could either indicate in situ weathering or non-arid, present day climatic conditions.

The microlithic periods in South Asia associated with calcrete suggest aridity, and the same is true for the microlithic sites of the Jonk where dates could overlap with the terminal phase of the last Ice Age, at around 22000-18000 BP. The microlithic horizons associated with calcrete might belong to the intermediate phase i.e. middle microlithic phase in the study area. The post-calcrete horizon in the river is the younger microlithic (Holocene) period, associated with brown sandy silt that was observed with few pellets (see figure 2.2).

The only evidence of calcrete associated with a lithic assemblage neither belonging to the Acheulian or microliths comes from Chipajhar-2 that could possibly be Middle Palaeolithic. Typo-technologically, the absence of bifaces, the dominance of chert scrapers and the absence of blade tools could support this classification. This would suggest that the Chipajhar-2 assemblage belongs to an arid phase, earlier than MIS 2 which would be MIS 4 or 6, dating to ~75 ka or ~160 ka.

There appears to be a chrono-stratigraphic gap (devoid of calcrete) between possible Middle Palaeolithic and microlithic phases which does not appear with the early
microlithic industry at the sites of Dharmabanndha, Bherha and Panchampur, and Haldi locality-1, 2.

Calcrete reappears in middle phase of microlithic adaptations after the Chipajhar-2 sequence in the areas surrounding the Jonk, e.g. at Banka, Gauria, Beltukri, Bhajipala-2, Sarabong-1.

The absence of calcrete in the later microlithic horizon (Bolangir trial trench, Lukupali, Jagdala, Chuhhia) is combined with a significant number of geometric microliths (triangles, tanged points and small sized crescents).

Two different sizes and shapes of calcrete were observed. One is rounded and oval and the other is irregular in shape. The calcrete is also different in terms of colour as they are found in white and yellow colours. The different colours, shapes and sizes may indicate varying formational processes and climatic conditions. The survey and field observations also reveal that during the period of calcrete formation, the area had gone through severe aridity but during that time also, the prehistoric humans settled in the area. In other words, these groups were able to cope with the most severe conditions of the Pleistocene in the Jonk valley.

The study has also brought to light the Quaternary alluvial processes operating in the past. The preliminary study on palaeo-channels shows that the river had changed its course several times. The traced palaeo-channels (see Map:2.12) appear to be younger where the possibilities of discovering Protohistoric and Early Historic sites are greater than discovering Paleolithic evidence. The channel shifting might have been affected by the local bedrock geology, high or low rainfall or possible tectonic activity, although the area does not fall under the active tectonic zone. Here also, it is noted that the present Jonk channel has severely been affected by the high current of recent release of water from the nearby dams.

The post microlithic localities in the region shed some light on the continuity in terms of cultural developments. The presence of Neolithic and Early Historic sites in the study area suggests succeeding cultural development and growth in the area. The interpretations, after processing the primary data put forth inferences for understanding and comparing the regional nature of prehistoric past of Odisha and Chhattisgarh with the larger frame work of the Indian Acheulian and microlithic
traditions. The author believes that the studies certainly will help in understanding questions related to early humans and environmental adaptations, associated settlement patterns and migrations and dispersals within South Asia.

4.5 Limitations of the Research

As is generally the case with all scientific field research, this time-bound project also had some limitations. While the present research has thrown light on many new and untouched features of the prehistory of the Jonk basin, the work was affected due to many factors such as availability of time, money and resources. For instance, it was felt that the inclusion of additional scientific techniques was necessary for more precise and accurate results. Initially the research was also intended to include experimental archaeology and use wear analysis, and dating select sites through optical luminescence dating methods. However, these goals could not be met because of several factors such as the lack of easy access to such facilities and the lack of funding to outsource the laboratory work needed for the dating. In addition, some of the regions such as the extreme upper Jonk and the Nupada hill ranges could not be properly surveyed due to dense forest vegetation. Furthermore, the author was initially trained to understand all these contexts and probabilities in the beginning of this research. By the time the potentiality of the study area was realised, the area was seriously affected by the Naxalite influence. Therefore, the author was not able to conduct a systematic survey in these specific regions within the overall study area. Hopefully, future attempts will make such areas more accessible to comprehensively complete our knowledge of the entire Jonk region.

The important thing to take into consideration is that the present research, by no means, should be considered as complete and the interpretations presented here can be either strengthened or weakened by doing further multidisciplinary research including surveys and excavations at select sites. Such further objectives in the area will certainly provide a clearer picture about the past human activities and paleoclimatic fluctuations in the region.
4.6 Future Prospectives

While the present research has shown the archaeological potentiality of the region, the area still bears enough scope for further research in order to understand the prehistoric cultural sequence of the Jonk river valley. The following points highlight some of the future directions which can be taken:

- There are some well-preserved river sections in the Jonk where stone tools are found in situ. For instance, there is the site of Devsoral which yielded two cleavers in primary context on the eroded river section. This site can be taken for a small scale excavation or trial-trenching in the future to understand pinpoint the artefact horizon and associated sediments can also be sampled for absolute dating.

- Large-scale excavations at key sites to obtain better stratigraphic and chronological control are essential in order to situate these industries within the broader context of terminal Pleistocene lithic industries of South Asia.

- The lithic typo-technology also has enough scope to carry out systematic scientific analysis of the use wear and traceology on the stone tools to understand the functional use the particular types of tool. Even proper experimental archaeology is required for the reconstruction of reduction sequences and the process of stone tool manufacture.

- The microlithic sequence in the Jonk river valley comes from a variety of contexts. However, the key sites such as Gauria, Khudmudi, Haldi locality-2, Banka and Patharpunji and some others occur within the main river section and there are a few hillslope sites. Dharmabandha can also be taken into further investigation by taking small or large excavations at the site. This site can inform us about the microlithic occurrences in the region and also help dating the regional stratigraphy as related evidence has been reported from very few areas in the study region.

- The foothills of Manikgarh and the small valley present between the Lodra Reserve Forest and the Manikgarh Forest can also be taken for further survey.

- In addition, a survey of the limestone sources and chert beds near Sankra in Chhattisgarh can be taken for intensive exploration in future for finding new lithic factory sites.
While a few animal fossils have been reported from the Upper Mahanadi area, the precise geological and chronological details of the occurrences of these fauna is still missing. Although looking into the faunal remains was not an aim of this research, the present research revealed that the black sediment patches occurring on the river sections near Beltukuri can be a potential area for finding additional vertebrate fossils to complement the evidence from the Mahanadi area.

The lower Jonk area close to the Arjuni area and hillslope of the Nuwapada hills range can be taken up for further intensive surveys as this area has yielded enough evidence of quartzite cobbles and boulders as abundant raw materials. A variety of wild flora and fauna can still be seen in the region and must have played an important role during prehistoric habitation.

Recent discovery of tephra or ash belonging to the 74 Ka Toba volcanic super eruption in Middle Mahanadi valley also confirms the extent of ecological and geological impact in this part of India. However, understanding the precise nature of its effects on the local ecology and human occupation requires further studies.

The nearby ‘sister’ rivers of the Jonk have also shown enough potentiality for prehistoric research. For instance, the Jirariver has already revealed evidence of a large number of Acheulian sites. However, the river Ong and Sukha Nala river valley are yet to be systematically examined and surveys and geological fieldwork can be undertaken for future research topics. These rivers have great potential for paleoanthropological research and will help in understanding the settlement pattern and adaptation of prehistoric groups on the local landscapes. This will, in a way, provide a complete picture of one of the corners of the Chota Nagpur plateau, an important geographic region for human evolution in India.

Studies conducted on the lines suggested above will give us a broader understanding and a clearer picture of the prehistory of the area. Additionally, the Jonk is also one of the ideal river valleys to carry out explorations for protohistoric and Early Historic remains. During the course of exploration, the author had designed an exploration strategy specifically suited for prehistoric sites and not for sites of later periods.
Therefore, new field methodologies can be designed to understand these protohistoric and Early Historic cultural phases to complete the entire sequence of human occupation in the region.