CHAPTER 6

Conclusion

The systematic studies of settlement patterns in different parts have increased archaeological awareness of regional diversity and complexity. The concept of settlement-pattern-studies in archaeology consists of spatial distribution of human activities and occupation, which ranges from location of activities from single site to the arrangement of sites in the region. An understanding of settlement-patterns requires a proper understanding of the geological, geomorphic and environmental features of the region. It is an attempt to provide a comprehensive geological and ecological framework for delineating settlement-patterns in the research area.

To the best of my understanding none of the previous studies in the research area has given sufficient information on the geomorphic features and their relationships with the archaeological evidence. Thus the present study enunciates the position of prehistoric to early historic settlement-patterns in the research area. The research brings forth structure-inference concerning settlement location, function, distribution and trend in settlement density at regional scale with a view to understand ecological adaptation and cultural changes through prehistoric to early historic periods. The method of regional analysis has developed models for explaining economic and functional relations between settlements. Economic development is understood through analysing variations in style and technologies used for certain artefacts like ceramics, lithics and metals. Functional differences in terms of raw material resources, smelting sites, processing sites and possible interaction between these are adequately looked into. Exploration was undertaken in the region between North latitude 27° 15' to 28° 15'; East Longitude 75° 30' to 76° 00', which falls within the limits of Sikar and Jhunjhunun districts of Rajasthan.

Paleolithic Culture:

Rajasthan saw the beginning of Palaeolithic research in 1950s, which has revealed numerous sites that provide us with a broader and better picture of this culture. The distribution of Palaeolithic sites in Rajasthan is mostly concentrated on the
southern, central and western Rajasthan. The Lower Palaeolithic sites are largely confined to southern and central Rajasthan and partly to the western Rajasthan whereas Middle Palaeolithic sites are largely confined to central and partly to the southern and western Rajasthan. The Upper Palaeolithic sites are largely confined to central and partly to the western and northeastern Rajasthan.

In spite of all these collective works done by different agencies, the present research area was shown devoid of any Paleolithic findings. In the light of above resolution, a fresh survey was conducted, which has revealed three Lower Palaeolithic secondary sites discovered in the research area at Laluda ki Dhani, Payga Kundalia and Pir Baba ki Bani. The tool collected from these sites comprises handaxes, cleavers scrapers and hammer stones made from quartz and quartzite raw materials. Typo-technologically, these tools have been designated as Lower Paleolithic tools. All the above mention sites are located on the denudational hills and rocky ridges on deposit 2 of the research area consists of quartzite, schist, conglomerate, gneisses, dolmitic marble and phyllite deposits. The sites are located on the nearby streams and nallas. This infers that Paleolithic people have preferred hilly and rocky ridges for their settlements near to the small streams and nallas instead of main rivers. The findings of these sites has given lead for the future research in the central and northeastern part of Rajasthan known as Shekhawati region where Middle Palaeolithic and Upper Palaeolithic sites are still not discernible in the research area.

Mesolithic Culture:

Generally lithic assemblages are taken to predate the use of metal. So the Mesolithic of Rajasthan is believed to be necessarily earlier than the Chalcolithic. However, there is some, as yet insufficient evidence to suggest that sometimes the technological transition from lithic to metal was not as total as one had previously been led to believe, nor sudden and universal. However, the Mesolithic site of Bagor indicates that microlithic using hunter-gatherers inhabited Bagor even when Chalcolithic stage had been firmly established in parts of the region. This implies that some degree of hunter-gatherers' lifestyle continued to be in existence even when a more advanced technological skill had come into use. "So it is assumed
that Agriculture neither dies nor begins everywhere at the same time and hence Mesolithic phase also expands or shrinks in a particular region depending on how late or early agriculture economy begins”.

Following the above-mentioned direction, present survey on Mesolithic research was carried out to find sites showing single culture having microliths with or without pottery and multi-cultural site having microliths with other cultural materials. In the light of these assumptions 12 Mesolithic sites reported from the research area, which has given single culture site with microliths and lithicdebitages; multi-cultural sites with Chalcolithic and Early historic materials and few sites near to the mining areas.

The significant feature observed in the research area is the earliest Mesolithic site at Payga Kundalia in Sohanpura village. The site revealed Mesolithic rock shelters with paintings, which represents in ochre color depicting animal figures, hunting scenes and group rituals. The site has also revealed cup marks on the boulders, which were used for preparing colors.

The finding of shell bangles as extraneous material from Hot in Sunari village and Biharipur indicate trade contacts with nearby coastal people i.e. from Gujarat coast or these shells may have came in exchange from the regional Chalcolithic people. This has to be looked in more detail in future.

The research area also gives evidence for primary Mesolithic sites from Gidhali # 1 & 2 in Haripur village. The site is located on the stabilized sand dunes and reveals microlithic cores, blades and lithic debiatage in large quantity, which is made from different raw materials.

The other important feature observed at Beed ki Dhani in Dariba village and in Kakrana that these sites are located near to the ancient mining areas, which indicate that Mesolithic people were also involved in mining that has been established in the research area.
The Mesolithic sites in the research area are mainly distributed on the aeolian plains and few of them are spread on the denudational hills, rocky pediments and alluvial plains. This point out that Mesolithic people has preferred their seasonal settlements on sand dunes, which lie in-between the hills and rocky ridges.

It is observed from the above facts that Mesolithic people in the research area have developed two phases of culture development and changes. The first phase demonstrates general lithic assemblages of microliths and lithic debitage whereas second phase shows continuation of lithic assemblages of the previous phase along with the Chalcolithic and Early Historic materials. This indicates that Mesolithic people in the research area were semi-nomadic microlithic using hunter-gatherer. Later they came in contact with copper using people from southern and northern Rajasthan and providing copper ore, which was readily available in the research area. Simultaneously they also involve in smelting copper ores and providing copper ingots. Subsequently this phase was continued for longer period in the research area, which was reflected in their material culture. With the bygone of time their economy has also change to copper using semi-nomadic culture having hunter-gatherer life style and developed to copper using Chalcolithic culture.

Chalcolithic Culture:
Chalcolithic is the term synonym for the late Neolithic to recognize the beginning of metalworking, it is a technical step that led smoothly into Bronze Age metallurgy. The word Chalcolithic signifies copper-stone age, a transitional step between Late Neolithic and Bronze Age. A discussion on Chalcolithic stage in India as a chrono-cultural phase becomes difficult because of the acute incongruencies recorded between various regions within the country.

The cultural distribution of Chalcolithic sites in Rajasthan on northern region along the Ghaggar – Hakra river and its associate water courses recognizes as Harappan culture sites whereas southeastern zone beyond south of Luni River identified as Ahar culture sites while central and northeastern part on the Shekhawati region known as Ganeshwar–Jodhpura culture sites. In the present survey, 33 Chalcolithic
(Ganeshwar related sites) were discovered in the central and northeastern region of Rajasthan, i.e. Ganeshwar culture sites, which is known from a typical kind of pottery called as “OCP” (Ganeshwar), which emanate as an archaeological entity in its earlier stages of development. The term “OCP” for Ganeshwar pottery was a misnomer which has also been misunderstood. Ganeshwar pottery is defined as red slipped painted pottery with profuse incised design, executed with the help of a sharp, comb like instrument. Due to the sketchy availability of information on Ganeshwar pottery, hitherto nothing much has been said or understood about the culture as a whole. In the present study, an attempt has been made to examine the explored pottery with the aim to present corpus of Ganeshwar ceramics types.

The distribution of Chalcolithic related Ganeshwar sites in the research area are by and large spread on denudational hills and rocky ridges and on aeolian plains and partly on the rocky pediments and on alluvial plains. The research area is paramount by Aravalli ranges running diagonally from northeast to southwest with the intervention of Kantli River flowing in south-north direction in the gap between the Aravalli ranges. The available data from research area indicates that Chalcolithic people have preferred their settlements mainly on hills and rocky ridges adjacent to the Aravalli ranges on the east. The other areas opt by Chalcolithic people were the aeolian plains, which lies in between the hills and rocky ridges and few settlements are rarely scattered on the rocky pediments and alluvial plains. This also imply that Ganeshwar people have preferred the nearby area where there is also availability of raw material for mining and smelting the ores into ingots.

From the above data, it shows that Ganeshwar culture form an individual entity in the central and northeastern region of Rajasthan that is known as Shekawati region, which marked the influence from both the Chalcolithic Culture from northern Rajasthan and Semi-Nomadic Copper using culture from southeastern Rajasthan. In the light of all these notions, it shows that Ganeshwar people have some trade affinities with the Harappans from north Rajasthan, which is reflected in the copper objects found during the excavation at Ganeshwar (Reference). While the site of Bagor and Gilund from southeast Rajasthan and Kalibangan from north...
Rajasthan shows resemblance in ceramic tradition with the Ganeshwar incised ware e.g. the incised pottery from Bagor phase 2 (Misra, 1973, Fig: 22-23), incised pottery from Gilund in Chalcolithic level (IAR 1959-60, plate: XLIV) and fabric D from Kalibangan (Madhu Bala, 1997, plate: 13.11). Along with this, the finding of graffiti sherds and reserved slip wares from Ganeshwar during exploration has thrown more light on contact with the Harappans or regional Chalcolithic people from southern Rajasthan.

Thus Ganeshwar culture appear as an individual entity in Shekhawati region as a regional Chalcolithic culture, whose main economy is based on metallurgy - mining and extracting copper and supply this material to the neighbouring regional Chalcolithic people. This has been supported by lead isotope analysis on Ganeshwar and Singhana copper samples, which have further, strengthen the argument of Ganeshwar contacts with the Harappans. Hence, Ganeshwar people identified as regional Chalcolithic people using more advance technological skill of metal technology that had come in use.

Early Historic Culture:

After Painted Gray Ware culture, all inhabitants in northern Rajasthan seem to have deserted perhaps due to the desiccation of Saraswati River (Reference). Then in the early centuries of the Christian era saw the rise of flourishing Rang Mahal Culture in northern Rajasthan. The scenario of eastern Rajasthan during Early Historic period seems a continuation of Painted Gray Ware Culture as exemplified at Noh and Bairat as at many sites in northern India.

An Early Historic site of Noh, Bairat, Rairh, Jodhpura, Nagar, Sambhar, Nagari, Rang Mahal and Ahar from Rajasthan form four stages, which furnishes some ideas of the material culture of the Early Historic period. In the research area, Early Historic period is designated into two phases; Early Historic – I represent unpainted PGW
(plain gray ware), unpainted black and red ware and NBPW and Early Historic - II represents Rang Mahal ware sites.

The only sites in the research area Kakadiyo in Thikriya village and Kot in Sunari village have shown Early Historic - I culture material. The remaining 22 early historic sites identified as Rang Mahal ware. The significance of Rang Mahal sites from Ganeshwar shows human head in black schist stone, which is dateable to Sunga - Kushana period around 3rd century BC to 2nd – 3rd century AD. The important finding of terra cotta seal with Brahmi letters from Kot has also established the early date to the site. The site has also revealed terra cotta anvil and iron bangles. The important findings of stamped pottery from Jogi Badh; terra cotta beads from Payga Kundalia and Jasi ka Bas; and iron bangles from Gidhal # 2 has further enhance the material culture of the Early Historic period in the research area.

The research in early historic period was carried out to identify the distribution of sites in the research area. The distribution of Early Historic sites formed in the same fashion as formed during the Chalcolithic period. Most of the early historic sites were scattered on the denudational hills & rocky ridges and on the aeolian plains and remaining few sites are found on the rocky pediments and alluvial plains.

The available data from research area indicates that Early Historic people have preferred their settlements mainly on hills and rocky ridges adjacent to the Aravalli ranges and few of them scattered on the Aravalli ranges. The other areas prefer by the Early Historic people were the aeolian plains in between the hills and rocky ridges and few of them are scattered on the rocky pediments and alluvial plain. This implies that Early Historic people have preferred the same area, which was previous occupied by the Chalcolithic people.
Chapter 6: Conclusion

Ancient Mining and Metal Processing Activity Area:

Ancient mining and metallurgical research was carried out to probe its relation with the archaeological sites. In the present survey 18 ancient mining-areas and 14 metal-processing activity areas have been identified from the research area. Hence, this region gives the evidence of exploitation of metals by the inhabitants in different periods. Most of the mining and processing areas have been found on the denudational hills and rocky ridges and few have been scattered on the aeolian plains.

In the Aravalli’s, Chalcopyrite is the main source of copper ore deposit, which is spread over the entire terrain from Singhana in the north to Ragunathgarh in the south at the stretch on 80 Kms. It is in this stretch most of the ancient mining areas are located and exploited for the copper ores. In the adjacent hills on the east of the Aravallis there are also few deposits, which were exploited for copper ores. It is in these adjacent hills nearby the small streams and nallas, there are number of metal processing activity areas were identified.

A preliminary investigation of lead isotope analysis was carried out by Hoffman, Randal and Raghubans (2005) to determine the provenance of copper ore during Harappan period. The copper sample were derived from Harappa and were compared with seven regional copper source areas i.e. Ganeshwar and Singhana in Rajasthan, Chagai hills in Baluchistan, Shin Kai copper deposit in Waziristan, Iran and Oman. The analysis resulted that Harappans perhaps acquired most of copper ore from the west of Harappa and some of its copper ore was also obtained from Rajasthan. This information has given a lead for further metallurgical research in the study area.

Majority of the archaeological sites in the research area are distributed on the denudational hills & rocky ridges and few of them are on the rocky pediments and
on the alluvial plains. Similarly ancient mining and processing areas have been found on the same geomorphological settings. This implies that settlement patterns in the research area have preferred denudational hills, rocky ridges and aeolian plains for their settlements and for their metal processing activities. Another important feature observed in the research area is the archaeological sites, which are spread on the nearby small streams and nallas rather than on the main rivers and their tributaries. This shows that prehistoric to early historic people have preferred water bodies where water is stored for longer period than the rivers and their tributaries where water is available seasonally because all the rivers in the research area are seasonal. Another important feature observed is about Aravalli ranges, which has formed as a major geomorphological feature in the research area. Aravallis has also played major role in human colonization and dispersion, which is reflected in the archaeological sites. Aravalli has also formed as a natural barrier for cultural and ecological dispersion. For instance the rainfalls in Rajasthan rely on the depression form in the Central India by southwest and northeast monsoon and moves towards Rajasthan. So the Aravallis running diagonally in Rajasthan block the major rainfall on the western Rajasthan that Marwar region or the west of the Aravalli. This barrier is reflected in archaeological sites also, where major archaeological sites are flourishing on the east of the Aravallis.