APPENDIX
RIM FORMS
PREHISTORIC AND HISTORIC SETTLEMENT PATTERNS IN SIKAR AND JHUNJHUNUN DISTRICTS OF RAJASTHAN

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PREHISTORIC AND HISTORIC SETTLEMENT PATTERNS
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The systematic studies of settlement-patterns in different regions 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 and adequate analysis 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. 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:
A fresh survey was conducted to perceive the position of Paleolithic culture, which was shown devoid of any Paleolithic findings in the research area. The exploration has revealed three Lower Palaeolithic secondary sites on the small streams and nallas on hills and rocky ridges. The finding of these sites has
given lead for the future research in the Shekhawati region where Middle Palaeolithic and Upper Palaeolithic sites are still not discernible.

**Mesolithic Culture:**

A 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 have been discovered from the research area, which have given single-culture sites with microliths; multi-cultural sites with Chalcolithic and Early historic materials and few sites near the mining areas.

The significant feature observed in the research area is the earliest Mesolithic site in the rock shelters at Payga Kundalia in Sohanpura village. The finding of shell bangles as extraneous material from Kot in Sunari village and Biharipur indicating trade contacts with the regional Chalcolithic culture of Gujarat. Along with this, it also gives evidence of primary Mesolithic sites from Gidhali # 1 & 2 in Haripura village, which has revealed microlithic cores, blades and lithic debitage made from crypto-crystalline-siliceous rocks. The site of Beed ki Dhani and Kakrana has the Mesolithic sites located near the ancient mining areas that indicates that Mesolithic people were also involved in mining that has been established in the present study. Here Mesolithic people seem to have preferred their seasonal settlements on the sand dunes lying between the hills and rocky ridges. Mesolithic people in the research area appear to have developed two phases of culture development. The first phase demonstrates general lithic assemblages of microliths whereas second phase shows continuation of lithic assemblages along with the Chalcolithic and Early Historic materials. This indicates that Mesolithic people in the research area were semi-nomadic microliths-using hunter-gatherers. With the time their economy also seem to have changed to copper using semi-nomadic culture while continuing hunter-gatherer life style that further developed into copper using Chalcolithic culture.
Chalcolithic Culture:
Chalcolithic stage in India as a chrono-cultural phase becomes difficult because of the acute incongruencies recorded between various regions within the country. Chalcolithic people in this area have preferred their settlements mainly on hills and rocky ridges while sometimes preferring aeolian plains lying between the hills and rocky ridges. A few of them also settled on the rocky pediments and alluvial plains. With all these geomorphic settings they also looked for the areas where there was availability of raw materials for mining and smelting the ores. The above data shows that Ganeshwar culture forms an individual entity in the central and northeastern region of Rajasthan known as Shekawati region. The main economy of the culture was based on metallurgy – mining and extracting copper and supplying this material to the neighbouring regional Chalcolithic people. This has been supported by the lead isotope analysis on Ganeshwar and Singhana copper samples further strengthening the argument of Ganeshwar contacts with the Harappans. Hence, Ganeshwar people who have been identified as Chalcolithic people used more advance technological skill of metal technology that had come in use.

Early Historic Culture:
The only sites in the research area Kakadiyo in Thikriya village and Kot in Sunari village have shown Early Historic-I culture material while the remaining 22 early historic sites have been identified as Rang Mahal ware. The significance of Rang Mahal sites as compared to Ganeshwar shows human head in black schist stone, which is dateable to Sunga – Kushana period around 2nd century BC to 3rd century AD. The important finding of the terracotta seal with Brahmi letters from Kot has also established the early date to the site. The site has also revealed terracotta anvil and iron bangles. The important findings of stamped pottery from Jogi Badh; terracotta beads from Payga Kundalia and Jasi ka Bas; and iron bangles from Gidhali # 2 has further enhanced the value of material culture of the Early Historic period in the research area. The research in the early historic period was carried out to identify the distribution of sites in the research area. This distribution of sites is formed in the same fashion as formed during the Chalcolithic period. Most of the early historic sites are scattered on
the 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 the hills and rocky ridges adjacent to the Aravalli ranges and a few of them scattered on the Aravalli ranges. The other areas preferred by the Early Historic people were the aeolian plains 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 preferred the same area which was previously occupied by the Chalcolithic people.

Ancient Mining and Metal Processing Activity Area:

Research on ancient mining and metallurgical activities 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. This region offers ample 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, 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, a stretch of 80 Kms. It is on this stretch most of the copper-ore-mining areas are located. In the adjacent hills on the east of the Aravalli there are also few deposits, which were exploited for copper ores. It is in these hills a number of metal-processing activities were identified along the small streams and nallas.

A preliminary investigation of lead isotope analysis was carried out by Hoffman, Randal and Raghubans (2005) to determine the provenance of copper ore during the 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 in an understanding that Harappans probably 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.

Most of the archaeological sites in the research area are distributed on the
denudational hills and rocky ridges and few of them are on the rocky pediments
and on the alluvial plains. Similarly ancient mining and metal processing areas
have also been found on the same geomorphological settings. Another
important feature observed in the research area is the archaeological sites,
which are distributed 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 settlements where water is stored for longer period than
along the seasonal rivers and their tributaries. The Aravalli range which is a
major geomorphological feature in Rajasthan has played a major role in human
colonization and dispersion best reflected in the archaeological sites. Aravalli
has also formed as a natural barrier for cultural and ecological dispersion where
most of the archaeological sites have flourished on the east of the Aravalli.
References


