

Chapter 1

INTRODUCTION

Lucky is he who has been able to understand the causes of things

Virgil, *georgics* Book 2

Chipped stone tools have been associated with man since the beginning of human evolution. They are one of the few artefacts to have withstood the inroads of environmental and human perturbation, such as erosion, decay and landscape development due to which lithic artifacts represent one of the most important clues to understanding prehistoric/protohistoric lifeways (Andrefsky 2005: 1).

This research deals with the lithic assemblages belonging to the Holocene period of Gujarat. Holocene is marked by the beginning of agriculture and settled way of life/villages. These villages went on to form part of (directly or indirectly) one of the world's first major civilization, The Indus/Harappan Civilization. The beginning and spread of this civilization over a vast geographical area is still a puzzle and a lot of new research is being carried out to understand this aspect. The aim of this research is to study the lithic assemblages belonging to the Mesolithic period preceding Harappan civilization as well as the different phases of Harappan civilization to better understand this civilization and other contemporary Chalcolithic cultures which flourished during the third millennium BC in Gujarat to understand the evolution of lithic technology. This research is based primarily on studying lithic assemblages belonging to four carefully selected sites, namely, Loteshwar, Datrana, Shikarpur and Pithad that would cover the Mesolithic, the Chalcolithic and the Harappan periods. Specific aspects of technology and raw materials are explored in order to distinguish between regional adaptations, resource areas and trade/exchange network associated with these.

The environmental setting of Gujarat

The environment plays an important role in the formation and change of various cultures. Knowledge of the present natural environment is necessary to reconstruct past environments (Marathe 1981:7, Rajesh 2012). The sites which have been selected under this study belong to different regions of Gujarat. Loteshwar and Datrana are

situated in North Gujarat, Shikarpur is situated in southern Kachchh while Pithad is situated in northern Saurashtra (figure 1.1). However, though these sites are situated in different geographic regions they are not located very far from each other and more or less fall under similar environmental settings. A brief description of the environmental settings of different regions of Gujarat is presented below.



Figure 1.1: The selected sites of study along with other major excavated sites of Gujarat (Courtesy: Francesc Conesa and Ritvik Balvally)

State of Gujarat lies on the western flank of peninsular India between $20^{\circ} 10'$ and $24^{\circ} 50'$ north latitudes and $68^{\circ} 40'$ and $74^{\circ} 40'$ east longitudes. The total area of the state is 197841 square kilometers. It furnishes an interesting example of a terrain endowed with geologic, physiologic and climatic diversities. The geomorphic diversity is a reflection of the various combinations of geologic and climatic factors. The long

coastline, the extensive alluvial plains, the vast saline waste lands, the rocky table lands and hill ranges have their own distinct geomorphic characters (Mehr 1995:3).

Gujarat has been divided by Geological survey of India (2001) into six geomorphic units: the southern Aravallis and the adjoining hilly tract, the Deccan Plateau and the adjoining track of southeastern Gujarat, the central plains of Gujarat, the Saurashtra peninsula, the Kachchh peninsula and the Rann of Kachchh.

Gujarat constitutes three distinct zones physiographically: the mainland Gujarat, Saurashtra peninsula and Kachchh. The mainland of Gujarat has two divisions: the eastern rocky highlands and the western alluvial plains. The eastern rocky highlands are the extensions of the major mountains of western India- Sahyadri, Satpura and Aravalli. The hill ranges are flat topped and the valleys are shallow and wide. The western alluvial plain comprises a thick pile of unconsolidated sediments deposited by a combination of fluvial and Aeolian agencies. These form the western half of the mainland including coastal plains. Across these plains flow the major rivers of Gujarat such as Sabarmati, Mahi, Narmada and Tapi.

The peninsula of Saurashtra (also known as Kathiawad) forms the rocky tableland fringed by coastal plains, a major portion of which is occupied by the Deccan lava flows. The central part of it is made up of an undulating plain broken by hills and considerably dissected by various rivers flowing in all directions. Shetrunji, Bhadar, Kalubhar, Sukhbhadar and Bhogavo are the main rivers of Saurashtra.

The soils of Kachchh are mixed as a result of the parent rock from which they are formed. The outcrops of Kachchh face sea to the southwest while in other parts they are bordered by desolate salt flats known as Rann. The Ranns of Kachchh were originally shallow bays connected to the sea. These bays have been gradually filled with clay and sand carried down from the minor rivers of the adjacent highlands of Rajasthan and western Nara of Sindh.

North Gujarat is the narrow corridor which connects the mainland of Gujarat with Kachchh. It is bordered in the northwest by the Rann of Kachchh and in the southeast by the river Sabarmati. North Gujarat is traditionally known by the name "Anarta" (Majmudar 1965: 13). This region is a semiarid, sandy plain dotted with fossil sand-

dunes. North Gujarat extends in the north from the southern Rajputana and gradually merges into the alluvial plains of Saurashtra and Central Gujarat. Sabarmati is the only perennial river in this region, yet during the monsoon, rivers such as Banas, Sarasvati, Rupen and their tributaries drain a large volume of water into the Rann. Most of these rivers and their tributaries contain brackish water for the major part of the year at present. The Mesolithic and Chalcolithic sites are situated in the estuaries of the rivers mentioned above. This area is covered by a thick deposit of sandy loams and appears dead flat except for a few stabilized sand dunes and the attendant shallow blow-outs. These inter-dunal depressions accumulate rainwater and many a time retain water throughout the year. The climate in the region is dry during most part of the year. Rainfall is sparse and irregular and droughts are recurrent phenomenon. The soil is poor and saline and the subsoil water is brackish, the salinity rises up in summer and does not go back to the original low level because of low and scanty rainfall and at many places such lands have developed into rich pastoral fields (Ajithprasad and Sonawane 2011).

Gujarat being located on the Tropic of Cancer falls in the sub-tropical climatic zone. The rainfall is moderate. It forms a transitional zone between the heavy monsoon area of Konkan in the south and the arid area of Rajasthan in the north. Climatic conditions vary within the state. South Gujarat (south of Narmada) is considered to be humid while central Gujarat (between Narmada and Sabarmati) experiences moderately humid climate. The same way, parts of north Gujarat (north of Ahmedabad) and part of central Saurashtra remain dry while western parts of North Gujarat and Kachchh fall into the category of arid and semi-arid zone (Mehr 1995: 10).

Cultural developments in the region of Gujarat during Holocene

Mesolithic/Microlithic Cultural Development

Robert Bruce Foote in 1893 discovered microliths from Aeolian origin fossil dunes of North Gujarat (Foote 1916: 146). After him, Sankalia was one of the first scholars to describe the microlith using people, most of which even stands true today. He had said that, “northern and central Gujarat but particularly the former are covered by a thick mantle of sandy silt (approximating the European loess in its composition), formed during the sub-recent period. At a number of places the sand is collected in the shape of dunes or hillocks having their direction south-west to north-east. Later owing

to climate changes small hollows or blow outs were created, which were filled up by seasonal rains. A characteristic feature of the landscape, viz. an inundation lake surrounded by three or four hillocks, was thus formed. People using microliths (tiny stone tools) came to occupy these sand dunes as well as the banks of the rivers Sabarmati, Mahi and the Orsang and their tributaries all over Northern and Central Gujarat” (Sankalia 1965:6).

The term ‘Mesolithic’ in Indian context has been used to describe a post-Pleistocene Stone Age culture characterized by the presence of microliths which succeeded the Palaeolithic and preceded the stone, ceramic and metal using cultures of the Neolithic/Chalcolithic period. Microliths have been considered as the most diagnostic characteristic tools to identify a site as a Mesolithic. As a result a number of such sites have been identified from archaeological records almost all over the sub-continent occupying a large time period from the early Holocene to the beginning of Iron Age and in places even later. In a country of the size and environmental diversity like India, it is impossible to postulate a uniform development of culture in time and space. The Mesolithic phase of Indian prehistory is no exception to this important understanding of cultural diversity caused by different populations in different regions developed during this period (Sonawane 2002b: 104).

Bhan (1994) has also argued that, “To reconstruct the chronology of this phase in Gujarat is difficult in view of the small number of radio-carbon dates and of the means to differentiate typologically between the tool types of various phases. However, what appears from the archaeological data is that the microlithic tradition in western India has a very long history extending into the early historic period”. He further states that “it is surprising that none of the sites have indicated domestication of plants, but the inhabitants seem to have used wild seeds or practiced rudimentary cultivation, which is reflected in the presence of a small number of ‘grinding’ stones from the excavated sites of north Gujarat” (Bhan 1994).

Raczek has correctly described this problem of Mesolithic/microlithic when she said that, “The term Mesolithic has been defined variously by different researchers but frequently understood to refer to Holocene hunter-gatherers and sites are sometimes identified in the field as such through the identification of microlithic scatters. As a result, early Holocene sites and those of microlithic using hunter gatherers from any

time period are frequently collapsed into one category-Mesolithic-with evolutionary implications” (Raczek 2007).

The Mesolithic period in Gujarat can now be understood in a better light with various chronometric dates coming from different excavated sites. The beginning of the Mesolithic period at the site of Loteshwar situated in North Gujarat has been dated to 7000BCE by AMS estimation (Ajithprasad 2004: 121, Sonawane and Ajithprasad 1994, Patel 2008). The otoliths belonging to the Mesolithic period found from the site of Datrana also situated in North Gujarat range between 7550 CalBC to 7600 CalBC by AMS estimation (Ajithprasad et al 2010). These two are the earliest dates for the beginning of Mesolithic cultural development in Western India. The site of Loteshwar was occupied seasonally by the hunter-gatherers and thus later dates such as 4912calBC (Patel 2009, Ajithprasad and Sonawane 2011) have also been obtained by carbon dating. The site of Vaharvo timbo situated 4km away as the crow flies from the site of Loteshwar has given dates ranging between 5640-5000 calBC for the Mesolithic period found at the site (courtesy NoGAP). Thus it can be clearly observed that the Mesolithic period had a very early beginning in the region of Gujarat and continued for a considerable amount of time.

Chalcolithic Cultural Development

The discovery of the Indus civilization in the 1920's doubled the recorded age of civilization in Indian subcontinent at one stroke, shifting it from the imperial inscriptions of Ashok in 250 BC back to about 2500 BC (Robinson 2002: 268). Indus civilization was found to have a geographical spread which was twice the size of that controlled by Sumerian city states or Dynastic Egypt (Kenoyer 1997). The Indus civilization also known as the Harappan civilization ranged over all of today's Afghanistan, Pakistan and India. In India, the states of Punjab, Haryana, Rajasthan and Gujarat represent the major regions from where evidence of this civilization has been found extensively.

This civilization possessed the most well planned and maintained cities of its era, a system of writing and standardized weights and measures, technologically advanced craft industries and other aspects of a distinctive material culture that, because they were so remarkably similar across a broad geographical expanse, indicated the

existence of a widely shared ideology maintained through extensive trade and communication networks (Law 2008). As can be expected this widespread standardization did not take place miraculously over a day, extensive excavations and studies have resulted in the acceptance of a new model by scholars in recent years which describes Harappan urbanism as the culmination of a process started much earlier than its final manifestation (Ajithprasad 2002: 130).

The Harappan concept, derived from the findings at major sites in the Indus Valley significantly influenced the interpretations of the discoveries in Gujarat. Initially M.G.Dikshit's (1950: 3-55) work recognizing the Chalcolithic (late phase of the post-Harappan period) and B.Subbarao's (1958: 130) categorization of Chalcolithic sites of Gujarat into regional Harappans were neglected (Sonawane 2005/06). S.R.Rao was the first to report the possible existence of an indigenous Chalcolithic population at Lothal prior to the Harappan occupation (Rao 1979: 23). New research has led scholars to believe that there existed a regional Non-Harappan Chalcolithic tradition contemporary with or predating the Harappan culture in Gujarat (Sonawane 2000). However, the Pre-Urban Harappan picture that emerges from research is still somewhat of a jigsaw puzzle, some parts of which are missing or not understood properly to comprehend the whole.

The Pre- Urban Harappan phase in Gujarat

Two broad distinct groups of Chalcolithic assemblages predating the Urban Harappan occupation can be seen in the land of Gujarat.

The first group comprises an assortment of Chalcolithic village farming communities in diverse geographical regions. They show a certain amount of individuality at least in their ceramic industry and at the same time show remarkable adaptive flexibility. It is noticeable that none of these Early Chalcolithic settlements, in fact, anticipates an urban way of life. In contrast these were small rural farming settlements affording flimsy structures mostly of wattle and daub or similar nondescript materials. However they did have the knowledge of copper metallurgy and produced pottery vessels and lapidary stone beads (Ajithprasad 2002:154). The earliest amongst these regional Chalcolithic village farming communities is the Anarta tradition reported from Loteshwar and other sites in North Gujarat (Ajithprasad and Sonawane 2011). The

spread of this tradition can be seen even in the south-eastern parts of Kachchh. The beginning of this tradition has been dated to 3700/3600 BCE by conventional radiocarbon and AMS estimation (Ajithprasad 2004: 121, Patel 2008). Contemporary to Anarta was the Padri Ware/Padri Culture reported from Saurashtra region (Shinde 1992a, 1992b; Rajesh 2012). Pre-Prabhas is the third important early Chalcolithic ceramic assemblage reported from the Saurashtra coast and North Gujarat which has been dated to 2900/3000 BCE (Ajithprasad 2011).

The second one is a set of ceramic assemblages forming the Early Harappan reported from Dholavira and to some extent the ceramic assemblages from Moti Pipli and several burials including Nagwada and Santhli in north Gujarat and Surkotda in Kachchh. These have a general resemblance with the Early Harappan ceramics reported from sites in Sindh and Baluchistan and therefore indicate the extension of the Early Harappan communities of that region into Kachchh and parts of north Gujarat prior to Urban Harappan (Ajithprasad 2002: 154). Cultural assemblage similar to these occurring in the Period II at Harappa has been designated to the Early Harappan (Kot-Diji Phase) and dated between c. 2800-2600 BCE (Kenoyer and Meadow 2000, 20008; Meadow and Kenoyer 2008, Ajithprasad 2011)

The Urban Harappan Phase in Gujarat

Recent advances have drastically changed the earlier interpretations about the Urban/Mature Harappan phase in Gujarat. Possehl and Raval (1989:1) claimed that regionality existed during this phase after a systematic analysis of the excavated material from Rojdi. As a result two distinct categories of settlements can be identified in Gujarat: (1) Sites with Classical Harappan traits and (2) Sites showing regional manifestations of the Harappan or Sorath Harappan (Sonawane 2000).

While looking at the Urban/Mature phase of the Harappan civilization the existence of small settlements representing rural aspects of this civilization should not be overlooked. It has been observed that these are far more in number than the urban centers. It is a common knowledge that urban centres cannot exist without a strong rural base. A glance at the settlement pattern reveals that even during the Mature Harappan phase, village or rural settlements existed in clusters around the primary

urban settlements demonstrating a symbiotic relationship between the two (Sonawane & Mehta 1985).

The Post-Urban Harappan Phase in Gujarat

There is no abrupt end to the Urban phase and continuity into the Post-Urban phase is seen in Gujarat. Among the distinctive features of the Post-Urban Harappan settlements in Gujarat, the first and foremost is the general economic decline in material culture and a gradual process of de-urbanization. Increase in the frequency of pottery types like Lustrous red ware, painted Black and Red ware and Course red ware is also seen (Bhan 1992). Deterioration in urban settlement pattern is very explicit. A gradual shift toward subsistence farming and herding towards the closing of the millennia is also seen at many of the sites.

The Chalcolithic period sites based on chronometric and relative dates from various excavated and explored sites situated in North Gujarat and Saurashtra are datable between c. 3700-1400 BC, the sites in Kachchh between 3200-1400 BC and the sites of South Gujarat between c. 2600-900 BC. Thus the Chalcolithic phase in Gujarat can be dated between c. 3700-900 BC (Rajesh 2012).

It can be clearly seen that the land of Gujarat was inhabited by hunter-gatherer settlements during the beginning of Holocene epoch. These settlements slowly developed either on their own or by coming in contact with people from outside (especially the Indus Valley) into settled villages, though there are evidences that some of them remained in the same economy. These villages were then incorporated into the Harappan civilization through trade and exchange networks either directly or indirectly. There are evidences of settlements which appear to have been set up specifically on strategic geographical locations or to exploit nearby local raw material sources. The people of these settlements might also have acted as the middle-men between big cities of the civilization and the regional villages/settlements.

The Hunter-gatherers, the Agro-pastoralists and their Subsistence Economy

In Mesolithic times humans thrived through a mixed hunting, gathering and fishing lifestyle. Some studies have shown that early forms of horticulture may have begun

during this time period. It has also been suggested that during the Mesolithic period people transported seeds and shoots to new areas in a form of incipient horticulture. It appears that people experimented with forms of a “walking larder” or capturing and raising some animals instead of killing them immediately for food (Clutton-Brock 1989). The initial transition from hunting to herding did not require major changes in mobility or daily practices (Donahue 1992). The Mesolithic then was a phase where humans experimented with domestication to varying levels of success (Raczek 2007). Transition to agriculture was “long and slow”. It is clear that in most areas some form of hunting and gathering remained an important part of subsistence strategies. In addition, with a broader range of subsistence choices that became available, different groups pursued separate paths, which ranged from nearly exclusive agriculture to nearly exclusive pastoralism, to nearly exclusive hunting and gathering or fishing. However, few groups pursued one strategy exclusively instead incorporated diverse regimes into their economies. Agriculturalists still fished or pursued annual hunts or annual nut gathering trips, for example. Pastoralists and hunter-gatherers sometimes planted crops. In order to offset the deficiencies in any one subsistence strategy, or to offset environmental shortcomings people most likely exchanged food items with others during this time (Raczek 2007).

Archaeological records point to the existence of various forms of trade and exchange relationships between those whose primary form of subsistence is hunting and gathering and those who primarily farm. Though identifying archaeological sites as pastoral and locating pastoral people in archaeological record has been challenging (Raczek 2011). Possehl has pointed out that, “sites of this type are not represented in the inventory of Harappan settlements is probably due to a number of reasons, the most important of which are that archaeologists have not specifically looked for this kind of site and the fragility of this aspect of the archaeological record” (Possehl 1979:547). Allchin has also noted the difficulty in distinguishing between pastoral and hunting camps because many pastoralists also hunted (Allchin 1977:139).

A number of excavated temporary habitational sites in Gujarat have given evidence of being in contact with their settled neighbours, the most famous examples are of Langhnaj (Possehl 1992, 2002; Possehl and Kennedy 1979) and Oriyo Timbo (Reddy 1991; Rissman and Chitalwal 1990). At these sites the presence of metal artifacts as

well as distinctive pottery or beads was taken as evidence of interaction since these items are presumed to be manufactured in contemporaneous nearby villages (Raczek 2007). Guha (1994) has argued that the contribution of hunter-gatherers to broader Harappan society should not be underestimated or ignored. Allchin (1977) has pointed out that "... nomadic herdsmen form an important element of rural life in India and Pakistan today, including the old province of the Harappan culture. There is every reason to suppose that they did so in Harappan times and that they played an important part in the economy and organization of the Harappan world".

Lithic Assemblages

Lithic assemblages form a very important group of material objects during Mesolithic-Chalcolithic periods that have been inadequately studied in most of the work till now. The importance of these lithic tools can be better understood by taking the economical backgrounds of these periods into consideration. During the Mesolithic period a hunting-gathering economy was followed which changes to agriculture/pastoralism during the Chalcolithic period. The continuation of lithic tools over these diverse economical conditions is one of the main points which make the study of these tools of significance. Lithic artefacts have been most of the time put into categories such as "other antiquities, minor antiquities, small finds or miscellaneous objects" (Rao 1963; Nanavati et al 1971; Possehl and Raval 1989; Dhavalikar *et al* 1996; Joshi 1990; Hegde et al 1992; Lal et al 2003; Shinde et al 2011a, 2011b; Kharakwal et al 2012) in most of the excavation reports.

The Department of Archaeology and Ancient History, The Maharaja Sayajirao University of Bardoa, Vadodara has carried out many explorations/excavations at Mesolithic/Chalcolithic sites situated in Gujarat since its commencement half a century ago. But only a few master's dissertations and no doctoral thesis have been carried out regarding specific lithic tools studies belonging to afore mentioned periods. (Patel 1969, Mirchandani 1975, Brahmhatt 2000, Mohite 2002, Leishangthem 2003, Gadekar 2006, Dwivedi 2009). Moreover, most of them are basic typological studies describing lithic tool collections belonging to either excavated or explored sites of Gujarat.

There have, of course, been a few exceptions where notable work have been carried out especially about Chalcolithic stone tools by scholars such as Sankalia (1967), Cleland (1977, 1986), Allchin (1979), Kenoyer (1984), Pelegrin (1993), Inizan and Lechevallier (1990, 1997), Raczek (2007), Endo et al (2012) . The Italo-Pakistan joint project (Biagi and Shaikh 1994) has worked exhaustively on the Rohri hill quarries situated in central Pakistan. They have brought to light new information about the technology behind the mass production of lithic tools, have looked into other quarry areas and have also worked on the Palaeolithic sites situated into the region. (Biagi and Cremaschi 1988, Biagi and Cremaschi 1991, Negrino and Starnini 1995, Negrino and Starnini 1996; Negrino et al 1996; Biagi et al 1995, Biagi et al 1997, Shaikh and Biagi 1997, Biagi 2004a, Biagi 2004b, Briois et al. 2005, Biagi 2006, 2007; Starnini and Biagi 2006, Starnini and Biagi 2011, Biagi and Starnini 2012).

The Lithic Assemblages Associated with Mesolithic/Chalcolithic Periods and their Problems

The microliths (geometric as well as non-geometric tools) represent the Mesolithic tool-kit. However, since microliths are also found from Chalcolithic sites, it is not clear whether all the microlithic tools found in the Chalcolithic context were produced for local consumption or for trading with the neighbouring hunter-gatherers. Or whether all the so called “Mesolithic” sites really belong to the Mesolithic hunter-gatherers or are there a few indicating functional adaptation of the Chalcolithic communities and, therefore, belonging to the Chalcolithic settlement system (Ajithprasad 2004).

Pre-Urban Harappan lithic assemblages belonging to sites situated in Gujarat have shown lack of crested guiding ridge technique. Loteshwar, a site belonging to Anarta Chalcolithic tradition, has produced hundreds of lithic tools without the use of this particular technique (IAR 1990-91). It is generally believed that the lithic implements of Chalcolithic period of the Indian subcontinent were generally produced by crested guiding ridge technique (Subbarao 1955:129). Recent discoveries especially from sites situated in Gujarat have challenged this information.

The lithic assemblages associated with the Urban phase of the civilization incorporate different kinds of long ribbon blades made of Rohri chert as well as blades made of

'locally available' crypto crystalline silicas. The technique used to produce these blade tools was generally believed to be that of crested guiding ridge. The tool-kit also includes geometric tools as well as non-geometric tools made on 'locally available crypto-crystalline silicas'. Rohri chert blades, one of the characteristic stone tools of this period, are generally missing from the lithic assemblages of sites belonging to the Sorath Harappan tradition, such as the site of Pithad (Ajithprasad 2008). The distribution of Rohri chert blades differs a lot between sites belonging to Urban Harappan period. This fact makes for an interesting study about the economy of different sites and their place in the larger trade and exchange network associated with the civilization. The tool technology of small rural settlements also appears to be different as no evidence of crested guiding ridge blades have been found from them. The tools of rural sites belonging to this phase need an in-depth analysis before anything further can be concluded about them.

The most distinctive feature of the stone implements of post-Urban Harappan phase is the lack of long ribbon blades of Rohri chert. These were substituted by smaller blades of locally available chert and chalcedony (Sonawane 2000). An increase in the use of flake tools and scrapers is also seen during this phase (Rao 1963:52). A gradual shift in the subsistence strategy from farming to herding towards the closing of the century is seen at many of the sites and thus a study of lithic assemblages belonging to such sites can provide important information regarding the same.

In this background the present research is an attempt to determine whether the regional diversity generally found in ceramic assemblages is reflected in the lithic assemblages that are associated with each of the various Chalcolithic cultures of Gujarat. Gujarat has a number of regional Chalcolithic cultures. As is apparent the Urban-Harappan culture developed and spread amongst these. The study of stylistic and technological continuity/discontinuity observed in the lithic assemblages associated with these is an important objective. Further the study aims to examine if the economic changes associated with the changing cultural pattern (beginning of agriculture, its subsequent sustenance and its continuation) are reflected in the lithic assemblages. As mentioned earlier raw materials are very important. Thus an attempt is made to look into the availability of raw materials for tool making. This will help to understand the existence of networks for procurement and trade of raw materials and

will also throw light on the initial processing and subsequent distribution of the finished product. Over all, the study focuses on the role of lithic blade implements in the cultural development in Gujarat and how well the result of this study could be used for a comprehensive understanding of the Harappan cultural ethos in general.

This thesis has been organized as following:

Chapter 1 includes an introduction of Mesolithic and Chalcolithic cultural development in Gujarat. It briefly reviews the evolution from hunters-gatherers to pastoralists and finally to farmers and the transformation associated with them. Here is discussed the beginning of settled way of life and the beginning and spread of one of the major civilizations of the world, namely the Harappan civilization. A discussion about the geography of the region and its environmental setting has been carried out in this chapter.

Chapter 2 deals with methodology and site selection. This chapter incorporates the methodology carried out for the study and site selection. The method adopted in this study comprises of analyzing carefully selected lithic assemblages from cultural periods spanning from Mesolithic to the end of Chalcolithic phase in detail.

Chapter 3 is the core of this research. This chapter consists of the analysis and results of lithic assemblages found from the four sites which have been selected for study, Loteshwar, Datarana, Shikarpur and Pithad.

Chapter 4 reviews raw material exploitation patterns adapted by different sites. The patterns of exploitation and distribution of raw material sources in the region of Gujarat are examined in this chapter.

Chapter 5 includes the results, discussion and the final conclusions about the objectives dealing with the role of lithic tools in a diachronic perspective.