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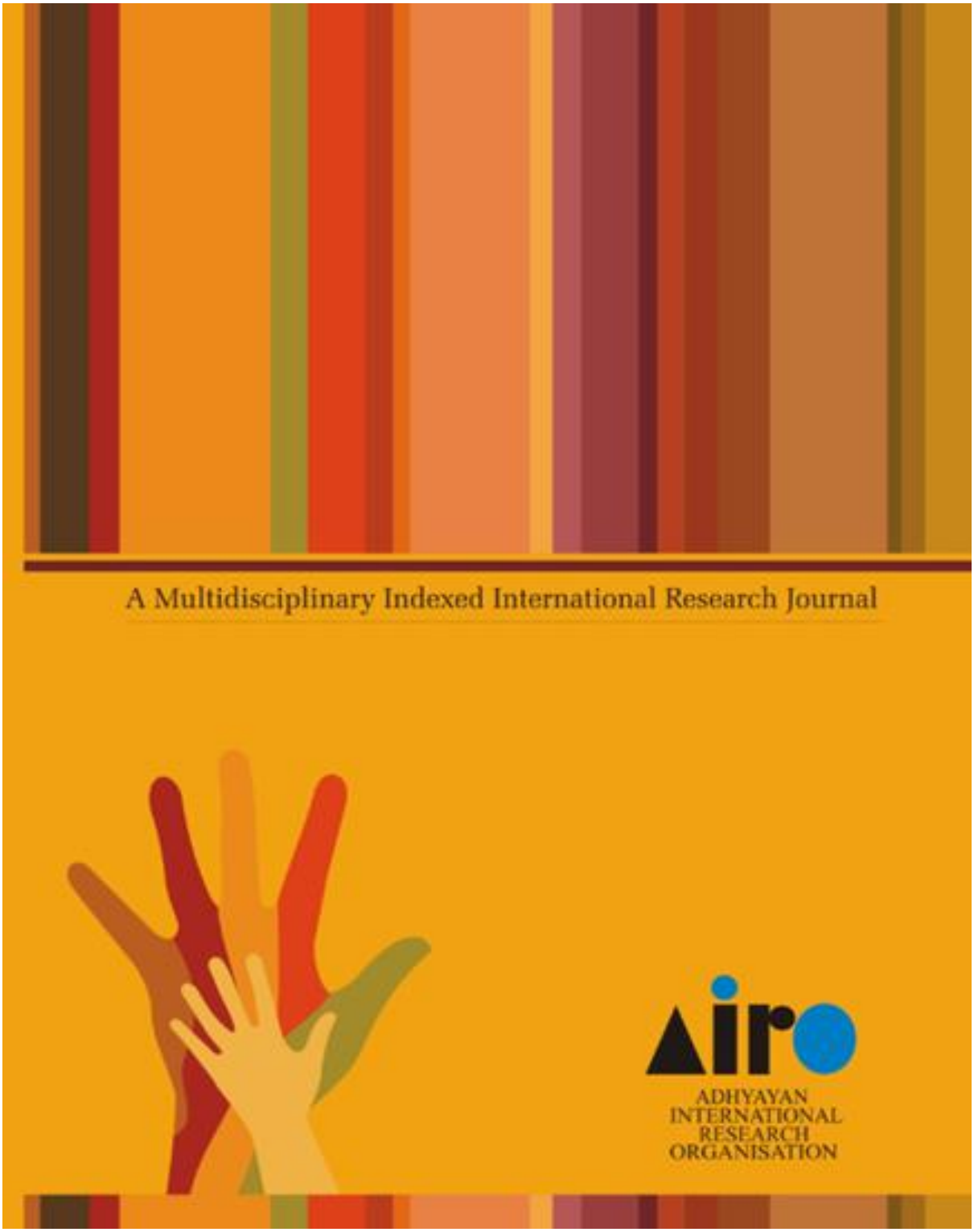

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A CASE STUDY OF CHALCOLITHIC CULTURE IN INDIA

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ABSTRACT: Technology forms an important aspect of any culture as it is a gauge for assessing economic and social developments during the various phases of history. The rate of technological change until the Chalcolithic phase was slow. However, around 6500 years ago during the Chalcolithic period, a momentous cultural transition began, generating new needs and resources and led to high level of technological development. This paper is a review of both pyro and non-pyro technologies as is evidenced from different chalcolithic sites throughout India which could help us in reconstructing the scientific knowledge and their practical application by Chalcolithic Cultures.The Chalcolithic cultures of India are characterized by attributes of the agro-pastoral economy, trade, social-political and economic stratification, specialized crafts and highly developed technology. Technology forms the most important aspect of any culture, as it is the measure for assessing economic and social developments. It is the systematic study of techniques (craft) for making and doing things that helps us to understand the fabrication and use of artefacts.

KEYWORDS: Chalcolithic, social developments, Technology, Agriculture, Transport, Architecture.

INTRODUCTION

The comparative strati graphical position of this culture, however, was determined in our excavations at Nasik; Subsequent explorations and excavations of selected sites in western India and the Deccan have shown that the Jorwe culture, named after the type site in the Pravara valley, was well distributed in time and space. Its nuclear zone can be said to be the Pravani. and the Godavari. Valleys whereas the peripheral zone of the culture extends from the Tapti valley in the north to the Krishna-Tungabhadra basin in the south. Excavations at Prakash, Bahal, Tekwada, Daimabad, Nevasa, Son,egaon, and Chandoli have .no doubt brought to light several new aspects of the culture, but all these were vertical excavations, and no complete settlement pattern of this culture has been exposed so far. The writers were, therefore, in search of a suitable site of the Jorwe culture which, unencumbered by later accretions from the historical period, could provide solutions to the many questions which have so far remained unanswered. Thus, we did not know the genesis of this culture nor was its terminal date clear. Evidence at several sites showed that the culture came into being by the middle of the second millennium B.C. and suddenly died out by the beginning of the first millennium B.C. without leaving any trace. At several sites a weathered layer separates the chalcolithic culture from the later early historical cultures, thus pointing to the desertion of the sites for about four centuries. Therefore, in order to know more about the beginnings and the end of the J orwe culture, excavations were undertaken at Inamgaon, District Poona, Maharashtra; The excavations are still in progress, but the first season's work can be said to have shed a welcome light on the problem of dating the end of the Culture.

The Neolithic economy was followed by the Chalcolithic one mostly in South Asia. In generic way, the Chalcolithic period is defined as the one postdating Neolithic Age, and it has the pottery and copper: the technology-based definition. Subsistence-wise it comprised the sedentary farming communities: the adaptation-based definition. There are specific definitions of the Chalcolithic period by the few Indian scholars. These are as follows: The Chalcolithic stage implies learning agriculture, making pottery and using copper; the early farming communities of Deccan and Central India have been referred to as the Chalcolithic, and those of the South India as the Neolithic.

DEVELOPMENT OF CHALCOLITHIC CULTURAL

The Indian subcontinent has all the favourable ecological conditions necessary to give birth to the early farming communities, which, with growing technological complexities, evolve into the first cities. The region witnessed two independent streams of origin of village economies with the associated technologies, which evolve and develop through the early phases of village societies into the developed and mature complex villages and the early cities hence it is important to trace the ongoing cultural process in the region. On the basis of material culture and technologies in use, the Chalcolithic of South Asia has been sub-divided into Early, Mature and Late phases. The earlier (7000 BC) beginnings are seen in the northwest regions of Afghanistan and Baluchistan while the later (4500 BC) but independent of the former is seen in the southeast Rajasthan on the Banas River. In the rest of India the development of village- based culture started in the later part of the Mesolithic phase and continued into the Neolithic and Chalcolithic between 3500 and 1000 BC.

In the Ganga valley, though the site of Koldihwa has produced an early date (6000 BC) there is a lack of other corroborative C14 dates, hence this date cannot be used for generalisation. The declined phase of the Chalcolithic has been properly studied at the site of Inamgaon in the Bhima basin of the lower Deccan region. Of the early farming communities that came into existence in different parts of South Asia, the Chalcolithic phases in Central India, the Deccan and the South India have been systematically studied, thanks to the pioneering work by Deccan College under the leadership of H.D. Sankalia. Unfortunately, the eastern and north-eastern part has not been subjected to systematic archaeological research and therefore very little is known about these regions. The large numbers of Chalcolithic cultures identified in the subcontinent have been classified into twelve regional:

1. Baluchistan and adjoining regions (beginning from fifth millennium BCE)
2. Padri and PrabhasPatan traditions of Saurashtra (fourth millennium BCE)
3. Neolithic/Chalcolithic cultures of North India
4. Ganeshwar-Jodhpur of Northwest and western Rajasthan (fourth millennium BCE)
5. Anarta tradition of North Gujarat (fourth millennium BCE) 6. Ahar tradition of Mewar (fourth millennium BCE)
6. Neolithic Kashmir
7. Kayatha and Malwa traditions of the Malwa Plateau (third millennium BCE)
8. Ochre colour pottery/copper hoard tradition of North India (third millennium BCE)

9. Savalda and Jorwe traditions of the northern Deccan (third millennium BCE)
10. Neolithic/Chalcolithic traditions of Eastern India (third millennium BCE)
11. South Indian Neolithic

CHALCOLITHIC CRAFTS AND TECHNOLOGIES

The introduction of various technologies is considered to be one of the important contributions of the Chalcolithic of the subcontinent. The material culture of the Chalcolithic society of the subcontinent was varied and rich with developed socio-economic and technological features. The presence of a developed craft specialization is an important indicator of the diverse technological milieu present. Craft specialization, as a particular phenomenon may be present in almost any culture, however, it matured in the Chalcolithic period world over. A number of finds that should be expected if craft specialization was present include:

1. Workshop: specialized areas for craft activities
2. Tool kits: specialized tools for craft activities
3. Storage facilities and/or hoards: delimited locations for storing completed craft products
4. Resource exploitation: regular exploitation of particular resource
5. Exchange and trade: distribution of resources or craft products

There is ample evidence in the Chalcolithic levels for pyro-technology (pottery, bricks, terracotta, lime, paste and faience, copper, gold metallurgy, etc.) and non-pyro-technologies (architecture, agriculture, hydraulics, lapidary, flint knapping, and products made of bone/antler/wood, shell, stone, ivory, etc.). Many of these technological aspects that the Chalcolithic people introduced in the 5th millennium BC have continued to the present with minor or no changes.

PYRO-TECHNOLOGY

Pottery Manufacture: The earliest evidence of pottery manufacture comes from the site of Mehrgarh in Baluchistan, dated to 6500 BCE. One of the characteristic features of the Chalcolithic period is a well-developed ceramic industry, including fine painted, plain and coarse pottery for a variety of purposes. Ahar, an early farming community of Mid Ganga, and Narhan cultures also produced Black-and-Red wares. Pottery manufacturing was an important craft of the Chalcolithic period and all the three techniques (handmade, slow turned table and fast wheel) were in use simultaneously. Fine pottery was made from fine and pure well levigated clay whereas the coarse variety was made from tempering materials, such as fine sand, chopped grass, rice husk, cow or donkey dung, et cetera mixed into the fine clay. The fine ware was treated with various shades of red colour slip, and then painted with decorations in black or other dark colours and fired at 750° C.

Burnt Brick: The earliest evidence of the use of burnt brick for construction comes from the site of Gilund, dated to the beginning of 4th millennium BCE, which was excavated by the authors. This building material was not common in the Chalcolithic period in South Asia. At Gilund most of the structures on the southern part, identified as a craft manufacture area, have been made of burnt bricks. The Chalcolithic people at Gilund also introduced the header and stretcher construction method. Similar burnt bricks are being manufactured in the rural parts of India by using the same technique as that of the Chalcolithic.

Terracotta: In the subcontinent terracotta art is associated with settled life. A large number of terracotta objects were manufactured and used by the Chalcolithic people for domestic and religious purposes. The domestic objects included spoons, ladles, ornaments, such as beads, bangles, ear-studs, et cetera. A number of sites have yielded animal figurines, such as the bull, tortoise, a variety of birds, human (male and female) figurines and a variety of miscellaneous objects, most of which have been associated with the religious beliefs of the people. Most of the sites producing the evidence of pottery manufacturing will be ideal ones to study for the terracotta manufacturing techniques. There are ample ethnographic parallels in modern western and eastern parts of the country where such techniques can be studied.

NON PYRO-TECHNOLOGY

Architecture: The Chalcolithic period in general is characterized by simple to complex structures made of mud, wattle and daub, stones, mud bricks or burnt bricks. In addition, multi-room complexes, public architecture and well-planned settlements were also built. Architecture of different categories, such as dwellings for common and elite classes, workshops for various craft manufacturing, and public buildings, such as fortifications, granaries, irrigation canals, jetties, religious structures, et cetera have been identified at a number of excavated Chalcolithic sites. The simple dwelling structures included subterranean or over-ground circular huts and single or double- room square and rectangular units. These structures had low mud walls and wattle and- daub construction over them. Most of the structures had well-made plastered floors and walls, while cooking and storage areas exist inside. There is no direct evidence for the manufacture of these architectural features in the archaeological context. Similar types of structures are being built till today and a study of these structures has yielded ample information about their construction method. The structural complexes excavated at a number of sites, including Mehrgarh, Balathal and Gilund were made of mud bricks or stone, depending upon the availability of raw material in the vicinity. These complexes had stone foundations and mud brick walls. Some of the complexes excavated have over a dozen rooms of different sizes, and on the basis of contents it was noticed that each room of the complex served different function including dwelling, storage, craftmanufacture, cooking, et cetera. In addition, multi-room complexes, public architecture, such as fortifications and granaries and well-planned settlements are also found. The site Balathal had a stone fortification wall, whereas Gilund, Eran andNagda had mud brick fortification walls. Mud walls fortified Inamgaon and Daimabad. The stones and mud bricks were set in mud mortar, whereas the mud walls contained stones at places for strengthening purposes. These walls, broad at the base and narrow towards the top, have survived to a considerable thickness. One of the aims of this research will be to study their exact function and method of construction. A surrounding ditch also protected sites like Inamgaon and Nagda and this technique introduced by the Chalcolithic people continued through the Early Historic into later periods in India.

CONCLUSION

Early farming or Neolithic/Chalcolithic cultures flourished almost all over the Indian subcontinent mainly in the proximity of fertile arable land. This phase bridges the gap between the Stone Age and Early Historical age and provides an important clue to the missing link in the history of mankind in the subcontinent. Systematic research carried out in various parts of the subcontinent on the

Chalcolithic phase has enabled reconstruction of social-economic and religious life of the people of that period. The presence of large-scale manufacturing activities within some of the settlements is a clear indicator of craft specialization and this is considered to be one of the characteristic features of a chiefdom society. The long distance hinterland trade for acquiring basic raw materials required for the craft manufacture and distribution of finished goods and chiefdom social organization are also important features of the Chalcolithic culture in India. Many traditions and technologies developed by the Neolithic/Chalcolithic communities continued though the ages and have survived in India even today. Rural India has preserved these traditions and it proves to be a very useful source for the reconstruction of various aspects of the Chalcolithic lifestyle, including technology. There is a major scope in such Ethnoarchaeological work which might help us in reconstructing these various technologies in more details. Besides, for the analyses of artefacts and ecofacts most of the important scientific methods such as Microware, X-Ray Diffraction, Chemical Trace Element (including Nitrogen and phosphate), metallurgical, botanical, zoological, physical anthropological, etc., should be brought in frequent use to understand the process more clearly. This article is an attempt to summarize the technologies used in the Chalcolithic period India based on the evidences found from major excavated Chalcolithic sites in India.

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