SEAFARING IN THE CONTEXT OF THE MATERIAL CULTURE OF EARLY HISTORICAL ORISSA (3RD C.B.C- 4TH-5TH C. A.D.)- AN ETHNO-HISTORICAL APPROACH

Dissertation submitted to the Jawaharlal Nehru University in partial fulfilment of the requirement for the award of the Degree of

MASTER OF PHILOSOPHY

UMAKANTA MISHRA

CENTRE FOR HISTORICAL STUDIES
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110067.
INDIA
1997

जवाहरलाल नेहरु विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110067

SCHOOL OF SOCIAL SCIENCES
CENTRE FOR HISTORICAL STUDIES

2 January, 1996

CERTIFICATE

This is to certify that this dissertation entitled **"SEAFARING IN THE CONTEXT OF THE MATERIAL CULTURE OF EARLY HISTORICAL ORISSA (3RD C. B.C.-4TH-5TH C. A.D.) - AN ETHNO-HISTORICAL APPROACH"**, submitted by **Mr. Umakanta Mishra** in partial fulfilment of the requirements for the award of the degree of **Master of Philosophy**, has not been previously submitted for any degree of this or any other University and this is his own work.

We recommend that this dissertation may be placed before the examiners for evaluation.

HIMANSHU PRABHA RAY
SUPERVISOR

MADHAVAN K. PALAT
CHAIRPERSON

GRAM : JAYENU TEL. : 667676, 667557 TELEX : 031-73167 JNU IN

CONTENTS

ACKNOWLEDGEMENTS

A large number of people have helped me prepare this dissertation. I am profoundly grateful to my supervisor Dr. Himanshu Prabha Ray, who guided at every stage of this work. It is she who has initiated me to the nuances of historical research. The dissertation owes much to her guidance.

I am indebted to Professor Sean McGrail, University of Southampton, Dr. Eric Kentley, National Maritime Museum, Greenwhich and Dr. Lucy Blue, Institute of Archaeology, Oxford who have taught me `Ethnography of Boats'.

I am grateful to Professor J.F. Salles, Maison de l'Mediterraneen, Lyon, who had provided an opportunity to attend the `Seafaring Conference' held at Lyon, 1996. Interactions with many scholars in that seminar have broadened my horizon on several aspects of seafaring. I am thankful to Dr. G.C. Panda, Department of Geography, Utkal University, Bhubaneswar who clarified my doubts on the Geomorphology of the Orissa coast.

I used the library facility of Central Archaeological Library, New Delhi, National Museum, New Delhi, I.C.H.R., New Delhi, Orissa State Museum and Utkal University, Bhuba-

neswar. I express my sincere thanks to the staff of these libraries for their cooperation.

I am thankful to Mr. Om Prakash for typing this dissertation.

I express my gratitude to my friends, seniors and well-wishers without whom this work could not have been completed. I owe a great deal to them.

Umakanta Mishra.

UMAKANTA MISHRA

ABBREVIATIONS

B.D.G.	-	Bengal District Gazetteers
E.I.	-	Epigraphia Indica
I.A.R.	-	Indian Archaeology - a review
I.E.S.H.R.	-	Indian Economic and Social Historical Review
I.H.R.	-	Indian Historical Review
J.A.I.H.	-	Journal of Ancient Indian History
J.B.O.R.S.	-	Journal of Bihar and Orissa Research Society
J.I.O.S.	-	Journal of Indian Ocean Studies
J.N.S.I.	-	Journal of Numismatic Society of India
J.O.H.	-	Journal of the Orissan History
M.D.M.	-	Madras District Manuals
O.D.G.	-	Orissa District Gazetteers
O.H.R.J.	-	Orissa Historical Research Journal
S.A.A.S	-	South Asian Archaeology Series (in book form)
S.A.S.	-	South Asian Studies
S.J.H.	-	Srilankan Journal of Humanities (A University of Peradeniya Publication)
U.H.R.J.	-	Utkal Historical Research Journal

CHAPTER I

INTRODUCTION

The antiquity of seafaring and maritime traditions of Orissa is often attributed a hoary past. However, there are very few writings which deal with this aspect of the history of Orissa and even there the perspective is largely restricted to trade only. A study of the writings on maritime trade of Orissa in the ancient period reveals three strands constructed on the basis of the different `sources' utilised.

The first group of historians reconstructed the maritime trade of ancient Orissa on the basis of strong cultural traditions and practices associated with boats and sea-voyages. B. Kar, in his book discusses the sea voyages of Orissa by using folklore, literature, the *Brata* literature and cultural practices associated with boats.[1]

---

1. Kar, B., Pracina Odisara jalajatra (Oriya) (sea voyages in Ancient Orissa), Cuttack, 1925. For other writings on the basis of folklore, see Singh, J., Pracina Utakala (Oriya) (reprinted), Bhubaneswar, 1982, 140-155; Ray, S.N., `Sea in Folklores of Orissa', Prachi II, 1932, 43-77; Mohapatra, K., `Description of Sea & Sea Voyages in Ancient Literature of Utkala', Jhankara (an Oriya monthly magazine), XXV, 3, 1973, 273-77; Gani, S.M., `Kalinga Sadhavas on the High Sea', Orissa Review, XXI, 4, 1964, 17-23.

The folklore and literature of the region often refer to voyages of sea-borne traders (Sadhavas) to Singhala and Yavadvipa and riches associated with sea-trade. But this evidence is based on traditions of 18th-19th centuries which have been used by scholars in constructing the maritime trade of `ancient' Orissa without enquiring into the antiquity of these traditions. The folklore and literature are an important source for the construction of maritime history, but it would be ahistorical to assign their origin to the early historical period without establishing the ethnography of folklore which still remains an unexplored field.

A second focus that emerges relates to the identification of ports of ancient Orissa mentioned in Greek, Chinese and Buddhist literature.[2] Most of the writings on the maritime history of Orissa refer to various coastal establishments mentioned in the Buddhist, Greek and Chinese texts. Buddhist literature refers to Dantapura, the capital of Kalinga which was a port-city.[3] Similarly, the Greek geographer, Ptolemy referred to many of the coastal estab-

---

2. Patra, B., `Ports of Ancient Orissa', J.O.H., XIII, 1994, 54-60.

3. Levi, S., `Location of Dantapura', J.B.O.R.S., XXI, 1933, 137.

lishments of Orissa. He referred to a city on the coast of Orissa called Paloura, from the south of which ships sailed for Khyrse (south-east Asia).[4] Similarly, Yuan-Chwang referred to the port-centre Che-li-ta-lo south-east of Wu-ta (Odra) which had been a `resting place for seagoing traders and strangers for distant lands.[5] However, works on ports and their identification suffer on account of two pitfalls: a) No exploratory work is done to identify the coastal site; b) Further the origin of port and its nature was never dealt with. The emergence of a port was intrinsically related to its hinterland and therefore, any study on a port must take into account its location and nature of the relation with the hinterland.

Other historians have looked at the maritime trade of `ancient' Orissa from the perspective of trade with Rome and south-east Asia. They have used epigraphic records of Java which refer to Kling, architectural and archaeological remains to explain Orissa's contact with the western world and with south-east Asia.

---

4. Oldham, C.E.A.W., `Dantapura and Paluru in North Ganjam', J.B.O.R.S., XXII, 1936, 1-12.

5. Walters, T., Yuan Chwang's Travels in India (A.D. 625-645), Vol.II, Delhi, 1967, p.194.

Roman coins found from Bamanghati, Mayurbhanj District, Rouletted ware etc. have ben taken as evidence of "brisk trade relations with the Roman Empire".[6] Further they postulate a diffusion of culture from Orissa to southeast Asia on the basis of frequent reference to Kling (Kalinga) in old Javanese inscriptions (9th-12th C. A.D.). They allude to the close stylistic similarity in art motifs between Orissa and Indonesia, similarity in cuisine, language, etc. as evidence of strong maritime trade between Indonesia and Orissa in the `ancient' period. Recent scholarly writings have argued against the excessive importance given to Roman trade. They postulate that `maritime trade in the western Indian Ocean developed in several chronological and geographical segments.[7] Arguing against direct sailing with the Mediterranean and Indianisation of south-

---

6. Behera, K.S., `Maritime Trade in Ancient Orissa' in M.N. Das (ed.), Sidelights on the History and Culture of Orissa, Cuttack, 1977, 117. Other writings which reconstruct maritime trade on the basis of literary and epigraphic evidence are the following: Behera, K.S., `Ancient Orissa/Kalinga and Indonesia: The Maritime Contact', U.H.R.J., IV, 1993, 122-132; Chattopadhya, S., `Orissa in the Non-Asiatic Sources', J.A.I.H., II, 1-2, 1968, 1198; Mishra, P.P., `Contact between Orissa and Southeast Asia', J.O.H., 1, 2, 1980, 16-21; Jena, M., `Orissa and Indonesia - A trading of cultures', Orissa Review, LI, 9-11.

7. This is evident from the deliberation of two international seminar held at Delhi, 1994 and Lyon, France, 1996. The papers of Delhi Seminar is published. See Ray, H.P. and Salles, J.F. (eds.), Tradition and Archaeology: Early Maritime Contacts in the Indian Ocean, Delhi, 1996.

east Asia, the recent focus has been on the internal developments of various trading networks that had participated in the evolving Indian Ocean system.[8]

In the context of Orissa there have been some attempts at studying the importance of socio-economic institutions in the construction of maritime history especially based on archaeological evidence. In one of his recent writings, Sahu has underlined the importance of studying maritime trade in the context of social processes and political formations of early Orissa.[9] He pointed out to `material' progress, technological growth, spread of settlements, monetisation of society and the expanding networks of contacts in early Orissa. Further, he referred to the fact that the artefacts are more impressive in the 1st-4th C. A.D. However, Sahu has concluded that the ports of Orissa were merely `hopping ports'. His conclusion seems to be based on lack of exotic goods in hinterlands which could have come through ports. This conclusion is based on the professed bias in historical writing about the nature of

---

8. Ray, H.P., The Winds of Change: Buddhism and the maritime links of South Asia, New Delhi, 1994, 1-47.

9. Sahu, B., `Situating Early Historical trade in Orissa' in K.M. Shrimali (ed.), Indian Archaeology since Independence, Delhi, 1996, 95-105.

maritime trade. Scholars view maritime trade only in exotic items and ignore many perishable and subsistence goods which formed an important part of early historical trade.

Nevertheless, Orissa has not received the attention it deserves in the maritime historiography of India. In the development of the east coast network in the early historical period, the internal developments of Bengal and the south have been highlighted while Orissa is loosely woven into this discussion.[10] Similarly, scholars have constructed the inland network - uttarapatha and dakshinapatha on the basis of Buddhist sources.[11] However, the numismatic evidence (the distribution of imitation Kushana coins), the accounts of `Navi Gaya in the Bhagavata Purana' as also geographical location of Orissa suggest communication routes from Gaya to coastal Orissa through the uplands of Chotanagpur and Keonjhar.

---

10. For the internal developments in early historical Bengal, see Chakrabarti, D., Goswami, N. and Chattopadhyaya, R.K., `Archaeology of Coastal West Bengal: Twenty Four Parganas and Midnapore Districts', S.A.S., 10, 1994, 135-160. For the development in eastern Deccan, see Ray, H.P., Monastery and Guild, Delhi, 1986. For societal transformation in the far south, see Senaviratne, S., `From Kudi to Nadu: A Suggested Framework for the Study of the Pre-State Political formations in Early Iron Age South India', S.J.H., XIX, 1-2, 1993, 58-77.

11. Chandra, M., Trade and Trade Routes in Ancient India, New Delhi, 1977.

Scholars have taken the early historical period as a chronological marker without analysing the different phases in it. For example, N. Lahiri has discussed trade and trade routes of the early historical period along with developments in the 1st millenium B.C., thus discounting the importance of Mauryan rule in historical developments of Orissa. While concentrating attention on mineral resources, she has neglected the inputs from the sea.[12] Fish and salt remained subsistence items throughout the historical period, as also tradable goods from across the ocean which played an important role in the evolution of the social and political institutions of the early historical period.

A review of the historical literature on maritime `trade' of the early historical Orissa shows an excessive emphasis on the Roman and south-east Asia trade. Instead of looking at seafaring as an ongoing economic activity by social groups, seafaring has been looked at as brief interludes by groups from across the Bay of Bengal. Trade - both regional and long distance - is merely one sub-system of the economic system of a `region' in the historical epoch and should be studied in the context of other historical proc-

---

12. Lahiri, N., The Archaeology of Indian Trade Routes, Delhi, 1992, 320-323 also, 373-374.

esses of the period. However, scholars have studied trade or maritime trade in isolation of the historical context in which it arose.

Further, most works construct maritime `trade' without disaggregating in scalar terms the data of the earlier from that of the later period. The evidence of the earlier period - archaeological evidence from Manikpatna and Palur - the historical sites on the coast in Puri and Ganjam district[13] -, literary references to the coastal establishments of Orissa have been dealt at length along with the epigraphic evidence from Java to justify `ancient' sea-trade of Orissa. It is worthwhile to disaggregate the data of the early historical from that of the early medieval period for, the two periods are distinguished by the attributes. While in the early historical period, one finds the emergence of settlements - some fortified, in different parts of Orissa, growth of political elite, emergence of an `inchoate' state, coinage and communication networks, the latter period is distinguished by land grants to brahmanas, emergence of local kingdoms and temples acting as institutional foci inducing changes at several levels and other processes which

---

13. The excavation of Palur is under way. The excavation has yielded early historical pottery as also sherds with Kharosti script, personal communication from the excavator, Dr. D. Pradhan.

are characterised as cultural.[14]

The present work deals with seafaring in the context of the material culture of the early historical period for, in traditional societies, economic forces are largely conditioned by existing social interaction or, what Polyani calls the `embeddedness of economic life in a social context'.[15] The role that the sea and its products and seafaring as an economic activity were likely to have played can be better appreciated by discussing the levels of social, economic and political developments of the period. The work deals with the settlements, their locations, artefacts and their nature found from various archaeological and other contexts. The historical evidence documents the expansion of settlements in coastal plain vis-a-vis the upland in the early historical period whereas in the neolithic period most of the settlements were concentrated in the upland. The early historical Orissa witnessed the emergence of fortified settlements increase in manufactured products, coinage and other elements which were characteristic of a complex socie-

---

14. Development in early medieval period is discussed in Eschemann, A., Kulke, H. and Tripathy, G.C. (eds.), The Cult of Jagannath and Regional Tradition of Orissa, Delhi, 1978.

15. Polyani, K. et.al., Trade and Markets in the Early Empires, Glencoe, 1957, 243-70.

ty. The visible form that early Orissa took was an outcome of coalescence of several processes which were in operation from protohistoric period onwards. The social formation and institutional development in the early historical period was the result of interplay among various elements which influenced the contours of early historical Orissa. It is assumed that seafaring as an economic activity in the early historical period resulted from the other processes - emergence of state structure, expansion of settlements, craft specialisation, coinage, etc. At the same time, it also facilitated in the consolidation of the same processes. In that sense it was product as well as a part of a complex society which emerged in early Orissa.

The internal development in early Orissa synchronised with the developments in other regions on the east coast of India in the post-Mauryan period. In the lower Ganga delta, we find proliferation of a number of settlements where Northern Black Polished Wares occurred in plenty. The terracotta plaques, sherds with kharosti script, sherds with ship symbol indicate transformation in the early historical period in lower Bengal. Similarly, the Godavari-Krishna delta prospered under the Satavahanas, and their feudatories. In the far south the Sangam literature referred to "Big chiefs" (Velir), redistributing the wealth.

The archaeological evidence of the post Mauryan period documents the shift of settlements to agriculturally fertile Kaveri basin in coastal plain. It is these internal developments that facilitated the emergence of an east coast network as also transoceanic contact across the Bay of Bengal. The distribution of Rouletted ware from Tamluk all-along the east coast upto Anuradhapur indicates the existence of an east coast network. These and other issues relating to the material culture of early Orissa would be discussed in Chapter III.

The work also deals with the resources found from different archaeological contexts, their provenance and possible routes along which they reached different centres. The development of coastal establishments and seafaring is intrinsically linked to the transportation of goods from inland to the coast. What made the movement of goods from one region to another or, between the coast and inland possible was the emergence of a network of routes which linked different places within Orissa and outside.

The possible network of routes which were likely to have developed in the early historical period would be analysed in Chapter III, on the basis of the location of archaeological sites and resources found from them; the

possible provenance and the distribution of imitation Kushana and punchmarked coins as also the information gleaned from the epigraphic records.

The historical evidence on the nature of the seafaring and social group associated with it are lacking. Moreover the nature of interaction between the coast and inland is not to be found in archaeological context but were important items of the trading network. The maritime archaeological potential of Orissa's coastal lowland is now largely obscured from detection by sedimentary deposition due to a combination of factors like tectonic uplift, monsoonal flood, alluvial deposition, and northward flowing long shore currents which resulted in the present isolation of coastal sites on river mouths from their hinterland. It is only through a comprehensive analysis of the paleo-channels and their divagation as outlined by Sambasiva Rao et. al.[16] and by Mahalik,[17] coupled with data extracted from satellite images and geological and historical maps of Orissa that a thorough understanding of the paleogeography of Orissa may

---

16. Rao, S., Nageswara Rao, M.K. and Vaidyanadhan, R., `Morphology and Evolution of Mahanadi and Brahmani-Baitarani deltas' in K.R. Dikshit (ed.), Geomorphology Contribution to Indian Geography, Vol.2, Delhi, 1983, 261-267.

17. Mahalik, N.K., `Evolution of Mahanadi delta and relations to human history', U.H.R.J., 3, 1992, 125-129.

be obtained.

The records of the 18th-19th centuries, as also ethnographic evidence provide vital information on coast-inland interaction, social groups involved in seafaring, boat-types etc. The ethnographic evidence does not establish a continuity from the early historical period but does provide insights to certain facets which are relevant to historical situations. These may be summarised as follows: (a) the coast-inland relations; (b) why do different boats ply on coastal waters and can the factors responsible for diversity in boat-types be isolated? (c) the relationship between the structures of the boats and the physical, economic and cultural environments; (d) fishing settlements, their location and bearing on ownership pattern and economic differentiation. These aspects have been covered in Chapter IV.

* The ethnographic/demographic study will also discuss possible co-relation between concentration of marine fishermen in each district and the availability of arable land.

* It will deal how the nature of the coast of north and south Orissa has influenced the location of settlements of each district. The settlements, in turn, have

influenced the number of fishermen and ownership pattern of each district. In Balasore, fishing settlements are a part of the extended village and therefore, well-to-do men often own more than one boat while in south Orissa the settlements of fishermen are situated on the sandy beaches and are separated from the agricultural village. Therefore the fishermen themselves own boats & nets, especially since fishing is also the only means of livelihood.

The demographic data on distribution of boats and nets in south Orissa suggests concentration of ownership which may be due to operational and managerial skill. One finds economic differentiation on the basis of ownership pattern. Economic differentiation finds equivalents in the domain of social status, role in political leadership of community, role in cultural functions, marriage pattern and settlement pattern. Labourers not owning any assets live in different streets and in smaller houses than owners of boats and nets. Marriages are usually arranged within groups of labourers, small owners or big owners respectively. Can one postulate similar process in the emergence of different fishing castes? In Orissa there are intermediary castes associated with boat who are superior to other fishing castes. Could their elevation in social hierarchy be ascribed to their

economic mobility? This requires further study.

The records of 18th and 19th centuries refer to numerous rivers which connected the sea with the inland and acted as arteries of communication in the past whose mouths developed into animated centres of trade are today silted and thus, virtually disconnecting the inland from the sea. In the rainy season the rivers of coastal Orissa are navigable throughout their lengths while in other seasons they are navigable upto 20-25 km upstream under tidal influence. Lake Chilka was used by pilgrims who used to come from the south to cross over the lake to reach Puri. In hot weather boats may be seen along the banks of the Bhargavi and the Daya, the distributaries of the Mahanadi, at least 16 km. above the points where they enter the lake. The boats belong to Ganjam traders who bring loads of bamboos and other goods and in return, carry back surplus rice of the southern Parganas.[18] The river Mahanadi was the main communication link between western and coastal Orissa. The river was in the 17th-18th centuries, the main outlet for the trade of Sambalpur and Bolangir. In the rainy season boats took five days to reach Cuttack while the return journey in

---

18. Senapati, N., Orissa District Gazetteers: Puri, Cuttack, 1977, 298.

July took Indian boats 25 days.[19]

An issue that would need to the addressed is what had made Orissa a distinct unit in the early historical period? The present boundary of the state of Orissa does not coincide with a historical or cultural region. The cultural processes that make Orissa a distinct region today evolved quite late. There is no specific ceramic variety in the early historical period which was regional in nature and distribution. In the absence of any special attribute, it is quite difficult to define the geographical limit of Orissa in our period of study, though several contributing factors may be discussed. In this regard the distribution of the imitation Kushana coins can be taken as an attribute to define the limit of Orissa as a sub-region in the subcontinent.

The imitation Kushana coins are found in several districts of the state except in the area termed as daksina Kosala and the typological similarity in iron assemblage at different sites of the coastal plains such as Sisupalgarh and Jaugarh and Manmunda in Phulbani district, Kharligarh in Bolangir and Asurgarh in Kalahandi district suggest close

---

19. O'Malley, L.S.S., Bengal District Gazetteers: Sambalpur, Calcutta, 1907, 161-63.

connection between these sites. Further, knobbed-ware is also found at these sites, e.g. at Sisupalgarh, Jaugarh, Manmunda and Lalitgiri. The distribution of imitation Kushana coins thus indicates that in the early historical period the geographical limit of this "economic zone" had extended upto south Medinipur, Chotanagpur plateau, Srikakulam district in Andhra Pradesh and some parts of Raipur in Madhya Pradesh. The problem of defining the region and its resources has been dealt with in Chapter II.

Finally, few words about the sources used in the construction of the material culture of early Orissa. The dissertation mainly relies on the archaeological evidence. However, the excavation report of not a single early historical site is published. The dating of artefacts found at the different archaeological sites is based on B.B. Lal's dating of the findings of the Sisupalgesh excavation undertaken in 1948. Moreover, no serious attempt has been made to identify the coastal sites and establish their nature of interaction with the inland centres. The findings of Manikpatna, an early historical coastal site situated on the mouth of lake Chillika were never reported. The excavation of Palur, identified as port of Paloura of Ptolemy is under way. Similarly, the archaeological context of coins of the early historical period is not known, since these have been

accidental found in hoards. The literary and epigraphic records are very scanty also. Apart from the Rock Edict of Asoka at Dhauli and Samapa and the Hatigumpha Inscription of Kharavela, the other important inscription is the Bhadrakali Inscription of Java, documenting the donation of a local rule of Bhadrak region of Balasore to a Buddhist Sangha. This is the first record that points out the emergence of the phenomenon, which in the context of the early medieval Orissa is known as the emergence of local kingdom. Other than these, the terse donative records at the complex of Khandagiri-Udaygiri are not informative.

This paucity of archaeological and epigraphic data is sought to be overcome in this dissertation by utilizing the ethnographic record for fishing communities. Fieldwork is undertaken to record various boat types along the coast of Orissa. The census of fishermen made in 1984 by the Bay of Bengal programme has been used to discuss the relation of the coast and fishermen with the coastal inland. The records of the 18th and 19th centuries are also referred to show that the geomorphology of the mouths of rivers and inland riverine traffic were different in the past.

REGION AND HISTORICAL GEOGRAPHY

Most works on historical geography of Orissa agree over the point that historical boundaries do not coincide with the present political one. The major thrust of these writings are two: (a) to identify various place names occurring in different temporal content and, (b) to show how even same nomenclature tends to denote different areas over a period of times. For instance, they opine that Kalinga denoted entire Orissa in the early hisorical period, while the term had united spatial connotation from 5th century A.D. onward and applied to territories beyond Mahendragiri mountain in Srikakulam and Mukhalingam districts of Andhra Pradesh.[1] Scholars extend the geographical boundary of Orissa in ancient time to include, apart from present Orissa, Srikakulam, Mukhalingam and Vishakhapattanam districts of Andhra Pradesh, south Medinipur of Bengal, Singhbhum district of Bihar and Raipur districts of Madhya Pradesh.

Why and how did such a vast landscape assume a distinct identity has never been discussed by historians. However,

---

1. For historical geography of Orissa, see Ganguly, D.K., Historical Geography and Dynastic History of Orissa, Calcutta, 1975:1-97.

scholars have indirectly discussed this question while studying state formation, stabilisation of state structure and the emergence of `regional' kingdom in the early medieval period.

Referring to the emergence of regional kingdom in 13th century A.D. under the Imperial Gangas and Gajapatis, H. Kulke opines that the problem of the rise of regional kingdom `was not merely a question of military conquest. The crucial point always was to what an extent the victorious conqueror succeeded in newly conquered areas and in unifying them permanently with their homeland'.[2] Kulke has studied integration of different geographical units and the emergence of regional kingdom in the `integrative polity' model which stresses on interrelation between kingship and religion.

Kulke has shown that the emergence of regional kingdom and integration of different geographical units were achieved by three pronged policy of cult appropriation, construction of temples and expansion of brahmanical settlements. The whole process of regional kingdom has been

---

2. Kulke, H., `Early State Formation and Royal Legitimation in Late Ancient Orissa' in M.N. Das (ed.), Sidelights on the History and Culture of Orissa, Cuttack, 1977:104-114.

studied in the context of `Jagannath cult' by Kulke who has effectively shown, the role Jagannath cult played in the integration of different principalities and people of Orissa.[3]

Other scholars also share the same view. U. Singh who has studied the local and sub-regional kingdoms of Orissa between 5th-11th century A.D. opines that the emergence and stabilisation of state structure was a complex process based on a variety of factors operating at several level and which could be broadly characterised as cultural.[4] Chattopadhya suggests that the emergence of historical regions with distinct personalities in the early medieval period was a product of cultural matrix, the elements of which are to be identified and understood in particular spatial and temporal contexts.[5]

The above discussion emphasizes the distinct personality of this vast geographical tract, which was known as an Oriya speaking tract as a product of its cultural `at-

---

3. See Eschemann, A., Kulke, H. and Tripathy, G.C. (eds.), The Cult of Jagannath and the Regional Tradition of Orissa, Delhi, 1978.

4. Singh, U., Kings, Brahmanas and Temples in Orissa, New Delhi, 1994:13.

5. Chattpadhyay, B.D., The Making of Early Medieval India, New Delhi, 1994:17.

tributes' - the Jagannath cult and Oriya language are the two most important elements. The question then, arises how were different geographical units related to each other in our period of study? Or, did they remain isolated entities throughout our period of study? If not what were the factors which gave an identity to this vast tract and which was never identified with other historical `regions' of the early historical period.

H. Kulke studied the process of integration of different geographical unit with nuclear areas as the base. These areas according to him was seats of Brahmanical culture and were situated in the upper delta regions of the various rivers flowing into the Bay of Bengal or are situated in the valleys of upland plain, especially on the upland plains of the Mahanadi, the Brahmani and the Baitarani. Kulke, thus, emphasized upon the Brahmanical culture of the nuclear areas and their geo-physical base. The emergence of nuclear areas and utilisation of their geophysical base occurred in our period of study for the process of the growth of local kingdoms started around 4th-5th century A.D. This becomes more clear when one studies the location of nuclear areas. The seats of regional kingdom were those areas which saw the emergence of important early historical sites. For instance, Sonepur which was the capital of various local

kingdoms of Orissa is situated opposite of Manmunda, an early historical site; Sitabhinji and Khiching, two important early historical sites became capitals of Khijinga mandala in 9th-10th century; Kongada over which the Sailodbhavas ruled in 7th-8th century A.D. were near to early historical sites of Bhubaneswar, Puri and Ganjam districts.

Thus, the growth of nuclear areas in different parts of were an early historical development. The material evidence found from early historical sites reflects the interaction between different geo-physical `zones'. The resource imperative of each `zone' led to exchange relationship with other `zones'. The nature of resultant interaction in the process of exchange relation as well as in other contexts under the Mauryan Empire and state system in the early centuries of the Christian era seemed to have given a cohesion to this geographical tract which is today known as an `Oriya speaking tract'.

However, historical evidence on attributes which gave a unity to different geographical units of early Orissa is not easy to distinguish from the historical records. The literary evidence are silent on this aspect. Buddhist and other literary texts of the early historical period refer to Kalinga frequently though Utkala and Odra find occasional

mention. However, Kalinga found frequent reference though its geographical location was never precisely delimited in the literary texts.

The Asokan edict (R.E. XIII) as well as Khoravela's Hatigumpha Inscription refer to Kalinga alone. However from 3rd century onward different historical regions appeared in Orissa. The Allahabad Prasasti of Samundra Gupta evidenced the presence of different regions in western and southern coastal Orissa. The Bhadrakali Inscription refers to Utkala while the Raghuvamsam of Kalidasa referred to regions beyond river Kagisa (Kasia in Medinipur) as Utkala.[6]

The archaeological evidence are not helpful in identifying attributes of early Orissa. There is no specific ceramic type which was regional in character and distribution. However, the imitation Kushana copper coins (also called as Puri-Kushana coin) can be aken as one of the attributes to define the boundary of Orissa.

The imitation Kushana coins are crude cast copper coins, which were in circulation from 1st to 5th century A.D. (the coin has been found from 1st century A.D. level from Manikpatna and, the `tanka' of 4th-5th century A.D.

---

6. The Raghuvamsam, IV, 38.

inscribed on some coins are found from different places of Orissa). The imitation coins were cast in batches with the help of clay mould (having a four side-opening channels connected with four moulds of coins) and one can see where the coins were broken from the mould and the adjoining piece. Some twin coins, which turn into two individual coins when broken, are still to be seen in some of the hoards discovered in Orissa.[7]

The distribution of these coins, method of fabrication and their finding in hoards indicate that they were used as currencies in early historical Orissa. The Puri-Kushana coins are found in all coastal districts of Orissa, south Medinipur, Srikakulam district of Andhra Pradesh, Keonjhar and Mayurbhanj districts of Orissa (see the Map on distribution of the punchmarked and Puri-Kushana coins in early Orissa). The distribution of the imitation Kushana coins can be taken as evidence to suggest for a loose `economic zone' in early Orissa. Though sites of western Orissa have yielded genuine Kushana coins, the Puri-Kushana coins are conspicuous by their absence in western Orissa.

---

7. Tripathy, S., Early and Medieval Coins and Currency System in Orissa, Calcutta, 1986.

The discussion focused on the problem of defining region in the context of early historical period. The following sections deal with different physical zones, their resources and how human interaction have taken place in the respective physical environments.

The state of Orissa is situated on the east coast of India with the north-west shore of the Bay of Bengal forming its eastern boundary. Bounded by Medinipur district on its northeast, Chotanagpur plateau in north, Srikakulam district on its south, Raipur on its west and the sea-board of the Bay of Bengal being its eastern limit, the present state of Orissa had been a distinct zone in the subcontinent throughout the historical period. Situated south of the Vindhyas, the state of Orissa lies between the fertile Gangetic Brahmaputra doab on its northeast and the Godavari-Krishna delta on its south and thus, always acted as a connecting link between the two fertile zones of the east coast. Being part of the Eastern Ghats, its highland connected the state with the minerally rich belt of South Bihar and Bastar region of Madhya Pradesh. And finally the river Mahanadi almost throughout her major part of her journey, is the only peninsular river which was navigable throughout the year. The river acted as an artery of communication between the coast-

al plain and highland in the west throughout the historical period transmitting goods and ideas. The records show that till the first half of the 20th century the river was the main outlet for the trade of western Orissa with that of the coastal plain.

This brief review shows its distinct identity as a `region' within the subcontinent. Its very location within the subcontinent, her physiographical features and the river Mahanadi have made Orissa a distinct unit.

Orissa presents a picture of complex physiographical diversities. It has a coastline of about five hundred kilometres, the shore of which are characterised by sandy beaches, all along which one finds fishing communities, who live by marine and estuarial fishing. The west-east slope of the Eastern ghats make various rivers, with their catchment at the highland to flow into the coastal plain. The streams bring with them sediments, forming a deltaic arc of Mahanadi-Brahmani-Vaitarani systems which is highly fertile and densely populated. The deltas are of most recent formation and this process started only after the Holocene period.[8]

---

8. Sinha, B.N., "Morphological Regions of Orissa", The Indian Geographical Review, 6(1) 1961:1-20.

The highland is characterised by hills rising above the coastal plain. Plateaus, sharp ridges and the upland erosional plains on river basins of the Mahanadi, the Brahmani and the Vaitarani. The rise of hills with an average elevating 800-900 metres in middle mountain region with deep cut valleys and deep forests, make the region sparsely populated. The density of population is 90 per square kilometre. Though the upland erosional plains are fertile and populated since long. The highland of Orissa is inhabited by tribal population scattered at different pockets of the highland (upland river plains are exceptions), some still live by hunting, fishing, root collection and sometimes with shifting and terrace cultivation. However, the region is very rich in mineral resources.

The different physical zones - the coast, the coastal plain, mountainous region, plateaus and upland erosional plains on river basins - make Orissa a complicated physiographical entity. These diverse physical zones, owing to their respective physical characteristics, did not and cannot advance at the same pace due to the uneven geophysical base of each region.

The various ecozones did not advance at the same pace for the reason enumerated above. Geo-physical areas having

a positive material base, in turn, sustain more developed forms of institutional structures where technology and production-technique advance at a greater pace. As opposed to this, certain other `ecozones' display a greater degree of backwardness vis-a-vis the former while the others are extremely backward. Developed ecozones may be identified as `Areas of Attraction' while the less advanced `ecozones' are graded as `Areas of Relative Isolation', while the extremely backward `zones' are `Areas of Isolation'.[9] It would be worthwile to discuss different physical zones, the resources and the possible way in which human interaction with these environments could have taken place.

The north-east shore of the Bay of Bengal forms the eastern limit of the state. The 500 kilometres long coast-line is characterised by broad sandy-beaches due to the combined action of upliftments of the coast in different phases and the action of northward flowing long shore currents which deposit sediments parallel to the coast. This is the characteristic feature of the whole of the east coast of India except places where the sediments of rivers reclaimed land from the depth of the sea as in the case of the deltaic arc formed by the action of the Mahanadi-Brahmani

---

9. Subba Rao, B., Personality of India, Baroda, 1958.

and the Vaitarani.

The gradual slope towards the sea make the rivers which originate in the highland and their distributaries having their origin at the deltaic head, flow towards the sea. The rivers acted as communication links between the coast and the coastal plains. Whereas in the rainy season the rivers of coastal plains are navigable throughout their entire lengths, in coastal plains in the hot weather they are navigable along the tidal section of the river.[10]

The small country-crafts carrying subsistence items are still found plying on the banks of these rivers. Apart from

---

10. Tidal Section of different rivers in coastal plains.

Some Tidal Channels in Orissa

River	Tidal limit for the month
Brahmani	90
Baitarani	50
Salandi	30
Budhabalang	35
Panchapara	22.5
Subarnarekha	45
Chitrotpala	
Mahanadi	35
Paika	40
Badanai	25
Alaka	20
Devi	45
Rushikulya	

(Ref.: Panda, G., Drainage Pattern and Floods in Orissa Coastal Plain, unpublished doctoral thesis, submitted to Utkal University, Bhubaneswar, 1988.

stand/push technique, rowing and towing of boats by manpower is an usual sight along the banks of these rivers.

The mouths of these rivers provided shelter to ships and boats from the surfs of the sea. They acted as entre-ports, mobilising and transporting goods to and from their hinterlands. These mouths which in the past used to be animated centres of commerce, are now silted, thus almost disconnecting the sea from the inland. Moreover, the off-shore-long currents had deflected the mouths of the rivers into further north. The formation of bay bar under the impact of the offshore long currents, the sediment deposition on the mouth have made the mouths of the rivers unaccessible in neap tide. In spring tide, a skilled navigator who knows the location of the sand bar can use the river-mouth as resting place.

All along the coast is dotted a number of fishing villages, the inhabitants of which today live by marine fishing. The coast used to produce salt before the British imposed restriction on its manufacturing. Salt has remained a subsistence item throughout the historical period and the people of the inland on the sea entirely depended on this product. A record of Chodagangadeva, the Ganga king of the

11th century refers to a `lavana-karadhikari'.[11] The other subsistence product of the sea was fish. The records of the 18th-19th century indicate the existence of trade in sea fish.[12] Apart from these two products, what made the coast a distinct zone is its unique human resources in the form of fishermen who had adapted themselves to coastal environment, mastered the technique of boat-building and seafaring. The fishermen must have played a pioneering role in the venture of oceanic traffic. The records of the early medieval period refers to fishermen as one of the occupational groups.[13] The Census of 1872 also refers to various occupational castes associated with fishing. Some of the castes suggest specialisation in different aspects of navigation.[14]

The coast, for the above mentioned features, constitutes a distinct *macro ecozones'*. The coastal environment, the morphology of the coast, the fishermen, as also its product make this macro ecozone an entity within the physi-

---

11. Produced from Sah A.P., Life in Medieval Orissa, Varanasi, 1986:104.

12. Hunter, W.W., S.A.B., Cuttack and Balasore, XVIII, 1976:253-256.

13. A Sulki rocords refer to fishermen along with the potters, goldsmith, etc.

14. For example, title like Dantachatra Chalaka (Pivot), (Oarmen). Hunter, W., SAB, Cuttack & Balasore, op. cit.

ography of Orissa. There are, however, variations within this ecozone. The coast of south Orissa (River Mahanadi being the dividing line between north and south Orissa) is characterised by borad sandy beaches with little vegetation and few estuaries. The coast of northern Orissa, on the other hand provides vegetation and agricultural land, little inland from the sea. the tidal influence of the rivers provides easy access to the inland. The settlement on the coast of north Orissa is, therefore, situated by a river, some distance from the sea where agricultural land is available. The fishermen inhabit invillages where people of other occupation also live. Although the main occupation of the fishermen is fishing in the coastal and estuarine water, they work as agricultural labourer and often own little land. On the other hand, fishing settlements in south Orissa are situated on the broad sandy beaches separated from the agricultural villages. The fishermen exclusively live by fishing on the coast of south Orissa.

Coastal Alluvial Plain:

Gemorphogically coastal plains are the product of continuing erosional and accretional process through times and are of most recent formation (Holocene period). The 50 metre contour line seperates this alluvial tract from bor-

dering hills of the Eastern Ghats. From the sea towards the highland they rise gently in a series of terraces or flats separated by some scraps or hills with attitude as high as 100-200 metres. Formed of recent alluvium, the deltaic and flood plains tracts of the Baripada, Balasore, Cuttack, Puri and Ganjam districts are fertile and densely populated. The Vaitarani-Brahmani-Mahanadi delta, forming an arc which bulged out into sea in a convex shape, covers Cuttack and Puri districts. It is formed due to the deltaic action of these rivers and their distributaries and is the richest in terms of agricultural fertility. A maze of distributaries of the three rivers began their course where the main rivers start their deltaic action. They interconnect different regions with each other and with the sea. Though the river Rushikulya, rivers of Balasore district--the Budhabalang, the Subarnarekha--have failed to develop characteristics of deltaic rivers, yet the alluvium they deposit on their bank has made the soil fertile.

Apart from its agricultural fertility and riverine network, the coastal alluvial plain is rich in forest resources and rocks like sandstones, khondalites, lateritic which are readily used in construction. Forests of the coastal plain inhabit elephants for which Orissa had been

famous in history.[15]

District Cuttack with its agricultural fertility, the drainage of the Mahanadi-Brahmani-Vaitarani system, its forests and rocks is an attractive zone for habitation and therefore, is densely populated. For its agricultural fertility and location, various places of Cuttack district had developed as capitals of different kingdoms from the days of the Bhaumakaras in the 8th century A.D. upto the shifting of capital from Cuttack to Bhubaneswar in 1946.

The monotony of orography of the coastal plain with vast stretch of paddy-field is, however, interrupted by a number of spurs of the Eastern Ghat which protrude into the coastal alluvial plain. The zone of spurs extends from the low flat, lateritic plateau of the extreme south in Ganjam district, at Chillka, in Puri district, in Jatni-Daya-Bhorjari sector of Bhubaneswar-Khurda region to Delang, in Cuttack district at Chandikhol-Mahybinayak to the Ratnagiri-Udaygiri-Lalitgiri hills.

---

15. The Arthasastra praised the elephants of Orissa, Book II, Ch.II.

Erosional Plains on the river basins of the Highland:

Upland plains on the river basins of the highland are also fertile belts amidst denuded hills, plateaus, sharp ridges and dense forests of the highlands. Higher in elevation (about 150 m.), this zone is scattered in different ports of the highland. Unlike the coastal flood plains, physiographically it is a non-compact zone, as upland plains are situated on different river basins of the highland separated by the hills and forests. But what makes the upland plains a separate category is their location and physiographic characteristics. They are situated on the basin of the Mahanadi, the Brahmani, the Vaitarani and their tributaries, lower in elevation than the areas which surround them and are plain and fertile. The abrupt rise of the Eastern Ghats separate the fertile upland plains from each other. The regions are also rich in precious stones,, topaz, quartz, ruby, etc. and are surrounded by rich mineral resource belts of the plateaus and mountains.

Plateau and Highland Mountainous Regions:

The mountainous region of Orissa covers about three-fourth of Orissa. The region is characterised by hills and mountains, the average elevation being more than 800 metres. The settlement is found on hill slopes where terrace and

shifting cultivation is practised. The density of population is very low. The plateaus reveal all the features of peninsular tableland--the Keonjhar-Sundargarh plateaus. Rairakhol-Debagarh-Khamakhyanagar plateau in Dhenkanal, Dharmagarh plateau in Kalahandi district and Malkangir in Koraput district. They are rich in mineral deposits like iron, copper and precious stones. The settlements in this region is scattered and its undulating topography is not conducive for clustered settlements. The inhabitants of the mountainous regions are predominantly tribal some of whom still live by hunting, root collection, fishing and shifting cultivation. The mountainous and plateaus with their undulating topography, scattered settlements, poor soils and deep cut valleys have developed as the most backward region in Orissa.

Discussion:

The phyhsiography of different regions--their topography, drainage as also their settlement patterns indicate that the coastal alluvial plain has developed into the most `Attractive Areas' owing to its agricultural fertility. The agricultural fertility of the area provided the resource base for a substantial population.

The plain provides easy access to different places of the coastal plain; the numerous arms of the Mahanadi-Brahmani and Vaitarani act as arteries of communication linking different regions of the coastal plains; the lateritic, Khondalites and sandstones of the spurs of the Eastern Ghat provide materials for construction. While the forests of the coastal plain inhabit the elephants and other fauna, which were so prized in ancient times.

Among different regions of the coastal macro-ecozone, Cuttack at the head of the delta is an attractive area for settlement. It is situated at the head of the delta and communication to the highland from Bhubaneswar must pass through it. Though Cuttack is surrounded in all sides by rivers, and therefore, flood always pose a problem, region around Cuttack could provide an alternative and could serve as a strategic centre. This is perhaps the reason why Choudwar, very near to the town of Cuttack or Jajpur further north on the bank of the river Vaitarani developed as important centres in the early medieval period. The capital of the Bhaumaharas (9th century A.D.) was Jajpur, while the Gangas developed Cuttack as their capital, and other centres like Choudwar served as important strategic centres under the Gangas and the Gajapatis from 12th-15th centuries.

Along the coast, the coast of north Orissa is likely to be favoured since the coast has many outlets to the sea. The numerous rivers north of the mouth of the Mahanadi upto the mouth of the Subarnarekha find their outlets at the Bay. These rivers have greater tidal limit than that of the rivers of the south Orissa. The rivers of south Orissa has three outlets--that of the Devi, the Kushabhadra, and mouth of the Rushikulya river. Moreover, the fishing settlements in north Orissa are located in the inland where vegetation and paddy-field are available and thus, are part of agricultural village. Thus, the relation between the coast and inland is more interchangeable where the fishermen of the coast became countrymen and vice-versa. On the other hand, situated on the broad sandy beaches of the coast, the fishing settlements of the south are separated from the agricultural village.

The upland plains on the river basins of the highland are favoured for settlements throughout history. The soils provide an agricultural base to the rise of peasant settlement; settlements on the upland plains are by the side of rivers, the latter acted as life-blood for the people in the past. The plains are separated from the surrounding areas by abrupt rise of Eastern Ghat hills, mountains and forests which are rich in mineral and forest resources. They pro-

vide the required resources for technological development in the upland plains.

The mountainous regions and plateaus are scarcely populated due to its undulating topography, its topography provide an idyllic environment for isolated and simple/primitive life based on hunting, root-collection, fishing and subsistence agriculture. However, the region is rich in mineral resources, the topography and the settlements that have emerged in this macrozones before industrialisation had made it an `Area of Isolation'.

The discussion of the above topographical features of different macro-ecozones, and their resources suggest that the coastal plain of Orissa is likely to have developed as the Most Attractive Zone, followed by the upland plains which are likely to develop as `Areas Relative Isolation' while, the mountainous region and plateaus would develop as the most backward ecozones. Within the coastal plain, it is north Orissa (Cuttack and Balasore districts) which seems to be more favourable for human settlements and activities than the south Orissa.

The various `ecozones' discussed above did not and cannot remain isolated pockets developing independently.

The resource requirement of the people of each ecozone bring them in contact with each other and bind them in an exchange relation. The quantum and pace of the exchange relations depend on the degree of material developments of different societies in the `Primary Region of Orissa' in a particular epoch.

Settlements in the Archaeological Context:

The settlements in prohistoric period are mainly concentrated in the highland. They are situated onthe river basins which provide them easy access to water. The protected environment of the highland provided the resources required in simple subsistence oriented society. However, in the pre-Mauryan period there seemed to be an increasing complexity in the material culture. The archaeological settlements suggest the use of different metals like copper, as known from the excavation of Golbai and Sankerjang. Objects of iron have been found from Golbai (d. 800 B.C.) and other pre-Mauryan sites like Manmuda, Khariar, Asurgarh (details would be discussed in the next chapter). The wheel-turned pottery with floral designs made their appearance in Golbai (Khurda district), Manmuda, Kharligarh and other protohistoric sites.

In the early historical period, one finds a gradual increase in settlements in coastal flood plains vis-a-vis the upland. the expansion of settlements in the coastal plain in Orissa could have been due to several historical processes that took place in the early historical period and will be discussed in the next chapter.

The pattern of the development of settlements as known from the archaeological records suggest that in the pre-Christian era, it was south Orissa with Bhubaneswar as `nuclear region' which rose to prominence. In the highland settlements--some fortified, came up in the upland plains along the banks of rivers. However, we do not have any evidence of the presence of settlement in Cuttack and Balasore district in this period.

Rameswar in Cuttack district has yielded a hoard of punchmarked coins only. However, from the 1st century A.D. onwards, one sees the emergence of settlements in Cuttack and Balasore districts. Namitgiri and Lalitgiri came up. The Bhadrakali Inscription refers to a local ruler, Gana who was ruling in the Bhadrak region of Balasore district. However, Bhubaneswar continued to be the most important centre; the archaeological evidence indicates not only the further reinforcement of fortification at Sisupalgarh but

also, the emergence of a cluster of settlements in Bhubaneswar. New sites in the upland plains emerged in the early centuries of the Christian era, while the old sites continued to prosper (see Map on early historical sites of Orissa).

Resources found from the Literary and Archaeological Records of the early Historical Period

The Arthasastra referred to Kalinga as one of the regions which produced best type of silk (Karpasikas) and also the home of best elephants.[16] The Periplus of Erythrean Sea referred to Dosarne which was famous for ivory product. Dosarne is identified with Orissa. Various materal artefacts are found from the archaeological sites of early Orissa and the table below gives an account of them. The resources of the regions which could have been used in the production of these goods are also discussed. However, it must be said that in the absence of scientific analyses, there is no evidence to point out the exact provenance of the resources which are found from the archaeological contexts.

---

16. Kangle, R.P., Kautilya's Arthasastra, Delhi, 1988 (Reprint): 2.11.92, 2.11.115 and 2.13.21.

Resources found from important Early Historical Sites of Orissa (1st-4th-5th C. A.D.)

	Sisupalgarh (fortified)	Asurgarh (fortified)	Manmunda (fortified)	Jaugarh (fortified)	Lalitgiri	Kharliagarh (fortified)	Manikpatana & Patur
Gold	Coin of Huviska				Gupta coin		
Copper	rectangular uninscribed of Eran punchmarked variety, bead, bangles, antimony rod Kushana coins, pinsen	Coin of Kaniska		Coins, objects of peace and war			Puri-Kushana coins
Lead	Coins						
Silver	Punchmarked coin	Punchmarked coins, finished and unfinished, ornaments	Punchmarked coin	Punchmarked coin			
Iron	Objects-sickle, hoe, dagger, axe caltrop	iron objects-hooks, door hinges, arrow heads, axes	objects like nails, plates, hinges	iron objects (not specified)		artefacts (not specified)	
Semi precious stone	carnelian (one etched) onyx, agate, chalcedony amethyst	beads of chalcedony agate, carnelian crystal-finished and unfinished	beads of carnelian	beads of quartz agate and carnelian		beads	
Glass	bangles	bluish bangles					
Ivory	bangles, ivory spacing beads with elaborate carving						
Shell & coral		a coral bead		bead			

Resources found in the Region:

Iron: Iron ores occur in the form of bonded haematite and ferruginous laterites.[17] These deposits occur in Hirapur mills (Koraput district), Sukinda-Kamakhyanagar region and Malaygiri hills (Dhenkanal), Tamka-Daitari-Palaspal range (Keonjhar district), a series of iron ores in Keonjhar and Sundargarh, Gandhamardan range of Keonjhar and Gorumahisani of Mayurbhanj districts.[18] Besides, iron ores occur in plenty in Balidila range of Bastar state.

The archaeological findings from Singhbhum indicate that iron and and copper of Chotanagpur region were exploited from the days of the Mauryas.[19] Talcher was a famous iron smelting centre in the past.[20] Local smelters operate till today and are found in remote villages (Daiari and Nadangi in Keonjhar district, Hirapur in Koraput district and other places). Low grade iron-ore occurs in many places and local smelters use them for extraction of iron metal on

---

17. The Explorer (A Journal of the Directorate of Mines), Bhubaneswar, August 1966:15.

18. The Explorer, 12th issue, February 1971:38-43.

19. Chattopadhyay, R.K., `A Preliminary Report on the Archaeology of Singhbhum with Notes on Old Mines of the District', Man & Environment, IX, 128-150.

20. Chakrabarti, D.K., The Early Use of Iron in India, Delhi, 1992:133.

Copper, Singhbhum district in Bihar, Keshapur in Mayurbhanj,[22]

Lead ore, Sargipali (Sundargarh), Saintala (Bolangir).

Semi precious stones - mines around Banda (Phulbani), Rairakhol (Dhenkanal), Manmunda Asurgarh, Sonepur (Phulbani-Bolangir district), South of Patnagarh (Bolangir),[23] Arang Khariar (Kalahandi), South of Junagarh (Kalahandi district).[24]

Gold: Gold is known to occur on river basins of the Subarnarekha, Brahmani and Baitarani, Ib and the Mahanadi and in those portions where metamorphic rocks prevail.[25] It occurs in a somewhat larger stretch, near Telkoi (Mayurbhanj) where recorded amount of 16 PPM of gold occurs. In

---

21. Beuria, N., O.D.S.: General, Vol.1, Cuttack, 1980, p.71.

22. Ibid.

23. Ibid.

24. Produced from the Mineral Map of Orissa, Published by Directorate of Mining & Geology, Dept. of Steel & Mines, Govt. of India, Cuttack, 1993.

25. Beuria, N., O.D.S. General, Vol.1, Cuttack, 1980:75.

Koraput district near Umarkot, gold was also traced.[26]

Diamond: places of Sambalpur district was famous for diamond. Diamond was found from the river bed of the Mahanadi near Hirakud.[27]

Ivory: Ivory is a part of local fauna.

The study of physical environments of different zones, the location of archaeological settlement and the resources found from them indicate certain similarities between them but the study gives conflicting images also.

The settlement and the location found in the archaeological context suggest that in the early historical period, the coastal alluvial plain emerged as the core area. Due to its fertility, riverine network, easy accessibility to different places and other factors enumerated in the section of coastal plain one sees a rapid pace of material development in this macro ecozone. Asoka made the region

---

26. Ibid.

27. V. Ball gives an account of the way in which diamond was extracted from the Mahanadi bed. Ball, V., Manual of the Geology of India, Part III, Economic Geology, Calcutta, 1881. T. Motte purchased few diamonds which at that time were found at the junction of the Ib and the Mahanadi. Dr. Bretton gives details of the numbers and weights of the diamonds in the Mahanadi between 1804-1878. Produced from O'Malley, L., B.D.G.: Sambalpur, Calcutta, 1907:9.

the `core' of his Kalinga province, Kharavela's Kalinga encompassed the entire coastal strip. The literary texts refer to this coastal strip frequently while the early medieval epigraphic records document tussle among local powers to extend their power base to this fertile agricultural tract. The Somavamsis finally conquered the coastal strip thus amalgamating the entire region which is known as Orissa.

The upland plains on the river basins also witnessed advancement of material culture. The sites on the uplands--Manmunda, Asurgarh, Khiching and Sitabhinji (in Anandapur plain of Keonjhar district) etc. had an agricultural base. They are situated by the bank of rivers surrounded by hills, forests which are rich in mineral and forest resources. The people of the upland took advantage of metals available in the surrounding areas. But unlike the coast, the physical environment came in the way of movement of goods and services. The rivers are not navigable even in rainy season due to their rocky bed (the Mahanadi being a notable exception). They are separated from the surrounding areas by abrupt rise of the Eastern Ghats which are inaccessible due to their undulating topography. The upland plains, however, had proved to be ideal regions for the growth of local political pockets in the highland as

they had the agricultural base to support `tiny' kingdoms.

However apart from this broad corelation between physical environment and the location of different settlements emerged in the early historical times, there are significant diversities when, an analysis is made of the location of the settlements found in archaeological context and the regions which are likely to be developed as favourable places for settlements owing to their physical environments. As discussed in the earlier sections with regard to coastal alluvial plain, it is Cuttack district which were likely to have developed as the `core' area owing to its topographical pictures. The district developed as a zone of attraction in the early medieval period, when successive dynasties for the 9th century A.D. upto the Gajpatis, made different places of district developed as important centres. However, in the early historical period, one finds settlement in Bhubaneswar, Puri and Ganjam district. Lalitgiri and Namitgiri in Cuttack district are the two early historical settlements in the early historical period. Unlike the early medieval period, when one finds numerous settlements in Cuttack and Balasore districts, the major concentration of settlement in the early historical period was in Bhubaneswar and further south.

The literary and epigraphic records are not helpful in explaining this discrepancy between centres which are likely to develop due to their physical environments and archaeological records. The Raghuvamsa of Kalidasa (4th century A.D.), while describing Raghu's campaign, alluded to King's march to Kalinga, the king of which was referred to as the lord of Mahendra mountain. Raghu took a coastal route through Utkala to reach Kalinga from river Kapisa (river Kaisa in Mednipur district), thus suggesting that Utkala denoted territories beyond river Kasia which means it includes at least Balasore and Mayurbhanj districts. The Vanaparvani of the Mahabharata described the march of Pandavus from the mouth of the Ganges to Kalinga. The tribes of Kalinga was identified with region where the sacred river Vaitarani flows, thus indicating that Kalinga extended at least upto Cuttack district.[28] The epigraphic records of early historical period, Rock Edicts of Asoka and Kharavela did not refer to any other territorial units in Orissa during their times.

The number of casualties in the Kalinga war (even the figure is an exaggerated one) suggests that that settlements must have been more extensive than what is known from the

---

28. Roy, P.C., The Vanaparvan of the Mahabharata, op. cit.

archaeological records. However it is difficult to explain why did Bhubaneswar and further south in Puri and Ganjam districts prosper in the early historical period vis-a-vis Cuttack and Balasore district? This requires more study; but the discussion shows that the settlements in historical times did not develop in a way which the course of physical determinism offers.

CHAPTER III

MATERIAL CULTURE IN EARLY HISTORICAL ORISSA

Seafaring and maritime trade of early Orissa can be better understood by studying the material and cultural factors which led to its emergence and sustained it. The visible profile that the material culture of early Orissa assumed was an evolutionary development in which several processes from the proto-historic period interacted and interplayed with each other. The various elements which gave a distinct `form' to early historical Orissa and their emergence and growth are discussed in this chapter.

Writings on the pre and proto history of Orissa mainly focus on identifying stone tools associated with various prehistoric cultures. However, given the unevenness of material development in Orissa, both in the context of time and space, the study of tools in isolation of their archaeological context does not help much in reconstructing the evolution of material culture prior to the Mauryan intervention in Orissa in 3rd century B.C. Further, no comparative analysis of tool - in terms of similarity in structure and raw material - has been made. In the light of these inadequacies, our understanding of the contours of developments in the protohistoric period remains inadequate.

The precise beginning of a neolithic age in Orissa is not known. At Baidyapur, an important prehistoric site in Mayurbhanj district, neolithic tools overlapped with that of the palaeoliths.[1] However, the existence of a mesolithic culture in Orissa is proved by the findings of mesolithic sites on the left bank of river Tel and the Mahanadi in Bolangir and Phulbani districts.[2] These sites consist of more than one locality and sometimes the number of localities goes up to five or seven. The mesolithic sites of Phulbani and Bolangir districts belong to one and the same cultural complex fixed on the basis of typological similarities in respect of the nature of sites and stone tools assemblage.[3]

The assemblage mainly consists of both heavy duty tools and microliths. The mesolithic tools exhibit a distinct

---

1. Mittal, A.C., An Early History of Orissa, Banaras, 1962, 67-68.

2. The sites on the left bank of the Tel are located in the reserve forest near Dhobabahati, Kustapali, Lakarma, Ramai, and Tithipali; one site has been found at Paikapal on the left bank of the Mahanadi. On the left bank of Bagh, mesolithic sites were discovered at Jamatangi Saupara, north of Sobhapalli, Digi and south of Mandipadar and on the right bank of Jamghati, west of Chelibahal, south-west of Talupali. See IAR - 1983-84:60-61.

3. Ibid.

deviation from bigger tools of the handaxe-cleaver tradition. The microlithic flake-blade industry which is associated with the late Stone Age is also reported from Udaygiri, Bhubaneswar[4] and north Orissa.[5] Unlike the microlithic sites of central and western India, no ceramic is found in association with the microlithic age. The raw material was ordinary and precious stones like chert, jasper, opal and quartzite. The microlithic tools of these materials are found in sites with Udaygiri which do not have deposit of these stones. This suggests that the people of microlithic industry exploit the resources of other areas or they were importing from areas where these materials were found.

The Neolithic Culture is dominated by polished stone celt industry. The neolithic sites are found mainly in upland Orissa.[6]

---

4. IAR - 1961-62:36.

5. Mohapatra, G.C., Stone Age Culture of Orissa, Poona, 1960, p.7.

6. Baidyapur, Khiching Kuliana in Mayurbhanj district, Thakurani, Sitabhinji in Keonjhar district, a number of sites in the Bonai subdivision of Sundergarh, many sites in Dhenkanal, Koraput and Ranpur districts of Orissa. For the neolithic sites of Bonai subdivision of Sundergarh district, see Behera, P.K., `The Pebble tool Component of the Bonaigarh Neolithic Complex, Orissa', Man and Environment, XVII, 2, 1992:57-65. See, Tripathy, K.C., `Prehistoric Studies in Orissa' in M.N. Das (ed.), Sidelight on the History and Culture of Orissa, Cuttack, 1977, p.63.

However in some sites, stone pebbles outnumber that of celts as in Bonai subdivision of Sundergarh district, thus suggesting that pebble tool was an inseparable part of the neolithic industry.

The manufactured tools were mostly subsistence oriented. However, it seems that stone tools produced at a particular place were consumed by others. This is known from a neolithic site - Sulabhadihi - in Bonai subdivision of Sundergarh district, which is an extension of the Chotanagpur plateau. The celt manufacturing sites of Bonai subdivisions are three types (a) large-scale production site where semi-finished celts were manufactured, (b) more than one hundred small and medium sized clusters of stone chips mostly located in the foothills and representing the sites of micro-chipping and finished neolithic celts and third, (c) a few habitation sites mostly located close to the Brahmani. Two major types of chisel-medial rectangular cross-section and triangular cross-section are found in the region, the former being the dominant one. The two types of tools have been found from site (a), the one represented by Sulabhadihi. However, the micro-chipping and habitation sites on the bank of river Brahmani yield only rectangular cross-section and not triangular cross-section. It seems that all three category of sites are part of one system and

denote three sets of activities of same people in the ecological setting of a river, a plain and hill. If the same people were also knappers at Sulabhadihi then obviously, both types of chisel should have been found from the habitation and microchipping sites.

If three types of site do not belong to one culture, then it is possible that tool-fabricators of Sulabhadihi formed a separate group themselves. They were either select group of people from Bonaigarh who specialised in triangular cross-section chisel manufacturing or they formed altogether a separate group who supplied one of their major products to the neolithic people of Bonaigarh. In either case, it seems that while rectangular cross-section chisel was produced and used by local people of Bonaigarh, the triangular section was meant for consumers of other regions, it is difficult to identify them though in the absence of comparative study of lithic industry of Orissa.[7]

The neolithic sites were developed in a particular ecological setting. The sites are situated in a landscape near plain, hill and water. They established small habita-

---

7. Behera, P.K., `Sulabhadihi: A Neolithic Celt Manufacturing Centre in Orissa', Puratattva, 22, 1991-92:124-131.

tions in a setting where water for survival, alluvial plain for agricultural activities, ample supply of fauna, flora and other products for subsistence and required rock types to implement fabrication are freely available.

The Neolithic Age in Orissa at a later stage was marked by the use of shouldered adze - stone and copper. This type of tool is reported from Kuchai,[8] Baidyapur, Amsikida, Rairangpur and Raihari in Mayurbhanj, Sankerjang in Dhenkanal district, Sitabhinji in Keonjhar district, Sisupalgarh (Bhubaneswar), Dhanmandal of the Darpan Khas area of Cuttack and Golbai in Khurda division of Puri district.[9]

There has been debate among historians on the origin and the date of shouldered adze. It was argued by Heine-Geldern[10] that shouldered adzes in Orissa were brought from southeast Asia through land route via northeast India during 2500-1500 B.C. The Mongoloid racial element and traces of Mon-khmer influence in the Mundari languages were considered

---

8. Thaper, B.K., Recent Archaeological Discoveries in India, Paris, 1985:45.

9. Basa, K.K., `Cultural relations between Orissa and Southeast Asia: An Archaeological Perspective' in P.K. Mishra (ed.), Comprehensive History and Culture of Orissa (forthcoming),

10. Heine-Geldern, R. von, `Pre-historic research in the Netherlands Indies' in P. Honing and F. Verdoorn (eds.), Science and Scientists in the Netherlands Indies, 1940:129-67.

as other evidence of the same.[11] In fact, Mundari speaking people are found in many parts of India. Yule and others who have excavated the proto-historic site of Sankerjang (Dhenkanal) refer to the Mongoloid racial affinities of the buried.[12] The presence of lithophone (basalt bar) at Sankerjang is cited by them to argue for cultural contact between Orissa and Vietnam (pre-historic parallel of lithophone is known from Vietnam). On the basis of the recovery of shouldered adzes and cord impressed pottery from the excavated neolithic sites of Daojali Hading[13] and Sarutaru,[14] it is argued that shouldered tools were brought through northeast India.[15] Sharma divided the neolithic culture of Assam into two phases - early and late, the latter was dominated by shouldered adzes and cord-impressed pottery.[16] Sankalia has also suggested a similar dating of the neolithic culture of Assam. He suggested a time bracket

---

11. Ibid.

12. Yule et. al., `Sankerjang: A metal period burial site in the Dhenkanal upland of Orissa', SAAS - 1987, 1990, 581-584.

13. Sharma, T.C., `A Note on the Neolithic Pottery of Assam', Man (New Series), 2(1)1967:126-8.

14. Rao, S.N., `Excavation at Sarutaru: A Neolithic Site in Assam', Man and Environment, 1(1) 1977:39-43.

15. Medhi, D.K., `Prehistory of Assam', Asian Perspectives, 29(1) 1990:37-44.

16. Sharma, T.C., op. cit.

of 2000-1000 B.C. to the late Neolithic Culture.[17]

However, the beginning of contact between Orissa and southeast Asia cannot be postulated on the basis of tools. The typological similarity may be due to the utilitarian character of the tool rather than any evidence of cultural contact. However, the neolithic culture of southeast Asia and eastern India has been dated to 2nd-1st millenium B.C.[18]

The excavation of Sankerjang (Dhenkanal district) and Golbai sheds important light on the date and nature of proto-historic culture of Orissa. Sankerjang, a chalcolithic burial site in the uplands of Dhenkanal, Orissa has yielded copper bangles, basalt bar (lithophone), shouldered tools, small tools or toiletry implements and stone beads. The site has been dated to first millenium B.C. on the basis of carbon-dating.[19]

Dash has suggested that the barcelts of Sankerjang bear thrashing marks of grain at the flat-face of the working

---

17. Sankalia, H.D., `From History to Pre-history in Assam' in V.S. Srivastava (ed.), Cultural Contours of India, Part II, Delhi, 1981, p.5.

18. Ardika, I.W. and Bellowwood, P.S., `Sembiran: The beginning of Indian Contact with Bali', Antiquity, 1991, 65(247):221-32.

19. Yule, P. et. al., op. cit.

edge indicating its use in pounding or corn-crunching.[20] The proto-historic site of Golbai (Lat. 20°21'N and Long. 83°33'E) situated in the laterite zone of Khurda and on the bank of Mandakini, a tributary of river Daya, is the first proto-historic site found in coastal districts of Orissa. The excavation has revealed a sequence of culture dated between 1600-800 B.C. Period II A (dated between 1400-900 B.C. has yielded a number of tools of bone, stone and copper. The Polished Stone includes shouldered adzes, celt, chisels etc. The copper objects obtained from this level include bangle, ring, chisel and a fishing hook. The cord impressed pottery is found from this level. The other objects include charred grains (rice and other cereals), sling ball and spindle whorl.[21]

The two proto-historic sites - Sankerjang and Golbai - represent the contour of development in the 2nd millenium B.C. The two sites represent Neolithic Age-II, if one postulated a similar development in Orissa. The findings of Sankerjang and Golbai show an advancement in material culture. The copper objects found in Dhenkanal and Puri dis-

---

20. Dash, R.N., `Sankerjang - A Chalcolithic Site in Orissa', O.H.R.J., 32, 1987:99-125.

21. Sinha, B.K., `Excavation at Golbai Sasan, District Puri, Orissa', Puratattva, 21, 1990-91:74-76.

tricts show that the people used the copper resources of Singhbhum and Mayurbhanj districts. This must have led to the development of communication route. Similarly, the findings of cereal sign of crunching corn on barcelt marks a tentative beginning in agriculture. The finding of an iron tool in Golbai marks the beginning of the use of iron in Orissa.[22] Moreover, metal bangles, rings and lithophone in burial site of Sankerjang suggest that some social groups tried to maintain their social exclusiveness by embellishing the buried with ornaments and precious stones.

However, the protohistoric culture represented by Sankerjang and Golbai seems to have continued for a long period in different parts of Orissa. The shouldered tools have been found from the excavation of Sisupalgarh.[23] Dani drew attention to the occurrence of shouldered tools from the excavation of Kausambi and Rajgir.[24] The material culture of Sisupalgarh as revealed from the excavation represents a complex society and therefore, the possibility of existence of a culture of which shouldered adze is a representative is ruled out. The presence of shouldered

---

22. Ibid.

23. Dash, R.N., Neoliths in Orissa, unpublished Ph.D. thesis, Utkal University, 1987, p.

24. Dani, A.H., Prehistory and Protohistory of Eastern India, Calcutta, 1960:100-2.

tools indicates the continuation of neolithic culture in some parts of Orissa in the age of Sisupalgarh. A neolithic celt is also found from the fortified site of Asurgarh (Kalahandi) from the level of 1st-4th century A.D. The artefacts of the period includes among other things punch-marked coin, beads of precious stones and floors of houses paved with brickbats.[25] Even tribes of today use a broad spectrum of pebble tools in activities such as cutting, chopping, and spliting.

Given the uneven development of material culture in different geo-physical regions over centuries, the presence of shouldered tools at Sisupalgarh suggests the existence of another culture in different landscape, the people of which had come in contact with the `complex' culture of Sisupal-garh. However, the content which led to such an interaction is not yet explored. The ethnographic study might throw light on the content and nature of such interaction between simple society of the upland where mineral, forest and other resources are located and people of the coastal plain having a complex material culture - the two are represented by the shouldered-tool culture and the culture of Sisupalgarh in the early historical Orissa.

---

25. IAR, 1971-72, 27.

The contours of development from the upper limit of Golbai (i.e. 800 B.C.) to the Mauryan intervention in 261 B.C. is not yet known. Black and Red ware has been found from various sites of Orissa. The conventional dating of the ware in Orissan context is based on Lal's dating of the ware found from the excavation of Sisupalgarh. Lal reported the finding of the Black and Red Ware of megalithic fabric at the lowest layer of period II A, which he dates to the beginning of 2nd century B.C.[26] However, our knowledge about the distribution and chronological position of Black-and-Red Ware is greater today than at the time of Sisupalgarh excavation in 1948 and therefore, warrants more discussion. The pottery has been found from the following archaeological sites in Orissa.

- Sisupalgarh beginning of period II A (dated to the early 2nd B.C.[27]
- Dhauli - surface finds.[28]
- Manmunda: along with Red and Black slipped ware, five beads of precious stones-carnelian, quartz, coral, four

---

26. Lal, B.B., `Sisupalgarh 1948: An Early Historical Fort in Eastern India', Ancient India, no.5, 1949, 79-80.

27. Ibid.

28. Brandtner, M., `Archaeological Remains at Dhauli', UHRJ, II 1991:39-41.

microlithic-blades and a broken copper ring from layer-IV assigned to 4th century B.C.[29]

- Jaugarh - along with neolithic culture - with red polished, dull red ware, iron objects, beads of semi precious stones - shell, carnelian agate, crystal and jasper from period I.[30]
- Kharligarh and Gudavella (Bolangir): along with microlithic flakes.[31]
- Nehna, 4 km. west of Khariar (Kalahandi): surface finds.[32]

The aforesaid contents show that the Black-and-Red Ware is found in association with different cultures, neolithic and iron using culture of Jaugarh, microlithic blades and copper of Manmunda and microlithic flakes and cores in Kharligarh. All of them together suggest a fusion of chalcolithic culture in the neolithic-megalithic context as in the context of Andhra and Karnataka region. It is to be noted that Black and Red Ware with cord impression is found

---

29. IAR, 1989-90, 86.
30. IAR, 1957-8:30.
31. IAR, 1968-69:62.
32. IAR, 1984-85:58.

evidence indicate that the ware had a beginning in the first half of the first millenium B.C. rather than around 2nd century B.C. as suggested by Lal. The pre-North Black Polished ware occurrence of Black-and-Red Ware at Sonepur in Gaya district confirms the earlier beginning of the ware in eastern India.

Again the occurrence of iron below three metres of Rouletted ware level at Saunagamedu (North Arcot) is strikingly comparable to Sisupalgarh and as suggested by Banerjee is of pre-Mauryan level co-eval with the megalithic culture.[34] Brandtner has also suggested a pre-Mauryan origin of the ware found from Dhauli area of Bhubaneswar, where the Special Rock Edict is located. Brandtner has surveyed some parts of western Orissa which from 5th century onwards, was known as part of dakshina Kosala and is close to megalithic culture of central India. Around Khariar where Black and Red wares are reported, he found a megalithic burial site even though the excavation of the site is yet

---

33. Thimma, Reddy K., `Coastal Ecology and Archaeology: Evidence from the East Coast of India', Man and Environment, XIX(1-2), 1994:43-57.

34. IAR, 1971.

to be undertaken.[35] The presence of a megalithic culture in Orissa in first millenium B.C. cannot be discounted in view of the practice of megalithic rituals among the Godaba and Bond tribes of Orissa.[36]

The above discussion tried to argue for a megalithic culture in the first millenium B.C. and advancement in a material culture in the same period. Further study is required to prove a megalithic culture and its evolution in the context of Orissa. However, the excavations of Sankerjang and Golbai and artefacts found in association with the Black and Red ware indicate the level of advancement in material culture. The copper artefacts found in the burial site of Sankerjang and Golbai indicates the possible utilisation of the copper resources of Mayurbhanj and Singhbhum districts. This would have led to a route through Cuttack, Dhenkanal and Keonjhar districts or otherwise, it must have passed through coastal districts of Cuttack and Balasore to reach Mayurbhanj and Singhbhum districts. Copper artefacts, iron tools and beads of ordinary and precious stones mark the beginning of craft activities. Copper ornaments, other

---

35. Brandtner, M., `Archaeology of Western Orissa', SAAS, 1993, Vol.1, 1995:101-114.

36. Furer-Haimendorf C. von, `Megalithic Rituals among the Gadabas and Bonds of Orissa', JRASB, Letters 9, 1943:49-78 and p1.14-16.

important objects with the buried indicate tentative beginning in social differentiation. These observations are corroborated by the Mauryan experience. Numerous causes are cited to explain Asoka's campaign against Kalinga. Some scholars emphasize upon the resource imperative of the Mauryas i.e. to have access to the iron-copper deposit of Chotanagpur-Keonjhar-Mayurbhanj plateau. Other reasons for the campaign are the importance of a coastal route both land and sea between the north and south, which inevitably passed through Orissa as well as the fertility of coastal plain which sustained a dense population, if reference to population in the 13th Rock Edict is of any indication. All of them point out to some degree of material advancement in Orissa prior to Mauryan conquest. This is further proved if one considers the material and political condition of the existence of Mauryan Empire. Despite Asoka's effort to project an image of `Chakravartin' the existence of Mauryan Empire, as recent discussion shows,[37] depended on the large degree of provincial autonomy it granted. The administrative apparatus that came up in the wake of Mauryan conquest of Kalinga could not have been a total superimposition from

---

37. Fussman, G., `Central and Provincial Administration in Ancient India: The Problem of the Mauryan Empire', I.H.R., 14, 1987-88, 43-72.

the metropolitan centre (Magadha). It is highly unlikely that the Mauryas could have carried out their administration without the participation of `locals' in the process. The fact that Kalinga developed into an independent state soon after the decline of the Mauryas indicates that it possessed capacity both at material and social level, which were required for the emergence of an `early' state system.

Rock Edict XIII documents the conquest of Kalinga by Asoka in his 9th regnal year. The Special Rock Edicts at Dhauli and Jaugarh point out that Kalinga became a separate province under the Mauryas with its headquarter at Tosali (identified with Dhauli) and administrative centre at Samaja (Jaugarh).[38] The two special edicts refer to high functionaries like Kumara, Mahamata, Nagalaviyohalaka and Rajavachanika. The Jaugarh Edict refers to avijitaanta (unconquered territories on border) while Dhauli edict refers to prince of Ujjain who would send officers on tour in every three years.

The external stimulus in the form of Mauryan rule increased the pace of social processes and institutional formations. The Mauryan conquest of Kalinga and the emer-

---

38. Hultzsch, E., Corpus Inscription Indicarum, I, 1969 (reprint):66-70, 92, 100, 115-18.

gence of `state system' under the Mahameghavahanas subsequently have been discussed by Senaviratne in the context of `secondary state formation'.[39] The social formation characteristic of a `simple society' still continued as the Vana Parvan of the Mahabharata[40] and 13th Rock Edict refer to people and tribe and not to any institutionalised kingship. However, the social differentiation of a `rank' society further increased in the Mauryan period. Senaviratne opines that the authority of Mauryan state over its sphere of influence could be characterised as power to homage and tribute and not power to organise all the political affairs of a large and in principle precisely delimitable manner.[41] Except at the highest echelon of administrative stratum of the province, the chieftains controlled local units. The local elites of `rank' society, by virtue of being a part of administrative structure, constituted a class, and were further differentiation from their respective `clans'. A. Nath found traces of earthern fortification at Dhauli.[42]

---

39. Senaviratne, S., `Kalinga and Andhra: the Process of Secondary State Formation in Early India', IHR, 7(1-2), 1980-81:54-69.

40. P.C. Roy, The Mahabharata (New edition), Vana Parvan, 255.

41. Senaviratna, S., `Kalinga and Andhra...', op. cit., p.62.

42. IAR, 1984-85:60.

While around 2nd century B.C. fortification appeared at Sisupalgarh.[43] Considering the location of Sisupalgarh in the plains of Bhubaneswar, the fortification was an attempt to maintain the social exclusiveness of privileged and superior social groups.

The administrative experience under the Mauryas helped them to understand the nature of institutionalised kingship in state-system and as a consequence, in the long run the establishment of provincial headquarters and the association of the local chieftains in subordinate position saw the emergence of a better defined ruling elite soon after the decline of the metropolitan state authority from the provinces.[44] The political elites benefitted from their association with the Mauryan structure and it was expected that they would follow many of the examples of the Mauryas which would validate and consolidate institutionalised kingship among a predominantly tribal populace. The symbolic aspect of art as providing authority must have been recognised from the Mauryan column. The Mauryan column was a symbolic manifestation of Mauryan hegemony in a newly conquered province. In Orissa there is no definite evidence of the

---

43. Lal, B.B., Sisupalgarh, op. cit., 75.

44. Senaviratne, S., `Kalinga and Andhra...', op. cit., p.63.

presence of an Asokan column. However, some scholars suggest that lion and bull capital preserved in Orissa State Museum and Bhaskaresvara temple belong to an Asokan column.[45] Further, religious patronage as a mechanism for consolidating political authority was a Mauryan legacy which as the evidence of the post-Mauryan period would show, was used by political elites in their quest to consolidate the `early' state. No remnant of Asokan stupa in Orissa is known. However, British officials documented the remnants of a stupa on the top of Dhauli hill. Brandtner opines that some of the rock-cut caves of Dhauli belonged to Asokan period.[46]

The post-Mauryan age witnessed the emergence of `early' state under the Mahameghavahanas. The Hatigumpha inscription of Kharavela refers to himself as the third member in the line of the Mahameghavahanas to ascend to the throne. He claimed himself as Kalingadhipati (Lord of Kalinga-line 1), and Chakradhora (the holder of the wheel of sovereignty-line 17). Reference to institutionalised kingship, army (line 4, 7, 17), officials like mahamad, nagara akhadamas in

---

45. Panigrahi, K.C., History of Orissa, Cuttack, 1986:356-64.

46. Brandtner, M., Archaeological Remains at Dhauli, op. cit.:36-48.

the Hatigumpha Inscription indicate the emergence of a state system.[47] The small inscriptions found in the complex of Khandagiri-Udaygiri refer to other officials like Kamma, Chulakamma and Padamulika.[48] Further the Manchapuri cave inscription refers to the queen of Kharavela and her lineage. The matrimonial alliance as a mechanism for consolidation of political authority was a well-established norm in the early historical period. The Satavahanas in the Deccan made matrimonial alliance with chiefs of other clans - Rathikas and Maharathas to consolidate their authority. The construction of a palatial building in his 9th regnal year was an attempt to prove his superiority in the eyes of people and chiefs in the age of transition to state system for, the monumental building was not only a physical space that separated political elite from the others, it is also suggestive of king's authority and superiority.

The Hatigumpha and other terse inscriptions of the Udaygiri-Khandagiri complex record the construction and donation of caves to Jaina monks. The rock-cut art of Khandagiri-Udaygiri complex provide insight to `socio-

---

47. Jayaswal, K.P. and Banerjee, R.D., `Kharavela's Hatigumpha Inscriptions', EI, XX, 89.

48. Sahu, N.K., Kharavela, Bhubaneswar, 1984:91.

political dimension of art in early historical Orissa.[49] Many of the rock-cut arts of the complex depict achievements of king Kharavela in his eventful thirteen years. The visual imagery of sculpture runs in parallel with the carefully constructed image of royalty which is found in the Hatigumpha Inscription. Moreover, reference to remission of taxes, organisation of music, dance and other festivities in the Hatigumpha Inscription are special acts which tried to establish a bond between king and the ruled. The donatory arts of the complex gives a repetitive image of royalty. For instance, the sculptures celebrate the political success of a Chakravartin king symbolised in the installation of Kalinga Jina.

However, the corroborative evidence to suggest the emergence of `secondary state' as argued by Senaviratne after the Mauryan rule is lacking. There is no evidence to reveal the participation of the chiefs of rank society in the Mauryan political structure at the provincial level. Moreover, the emergence of state system under the Mahameghavanas took place 75 years after the decline of the Mauryan in 185 B.C.; if Kharavela ascended the throne in 56 B.C. The other evidence like Patronage Monument - are too general

---

49. Sahu, B.P., `Authority and Patronage in Early Orissa', Economic and Political Weekly (forthcoming).

to point out any logical connection with the Mauryas.

At the material level, the period under the Mauryas and the state system witnessed growth of a number of settlements. Apart from Dhauli, Sisupalgarh and Jaugarh the other settlements of the period are Asurgarh (Kalahandi), Manmunda (Phulbani) (see Map on different sites of early historical Orissa). At Sisupalgarh fortification was further reinforced by bricks around 1st century B.C. The period saw a sophistication of pottery. Red Polished Ware has been found from Sisupalgarh (II A) and Jaugarh (Period I). Iron tools like sickle, hoe and other agricultural implements have been found from period II.A, Sisupalgarh. Apart from other iron tools, beads which continued in this period also, teracotta ear ornaments from Sisupalgarh is the only notable addition. A punchmarked coin has been found from layer-III of Manmunda[50] while the lowest layer of Asurgarh assignable to 3rd century B.C. has yielded a Chunar sandstone.[51] A hoard of punchmarked coin has been found from Sonepur, which is situated opposite of Manmunda on the other side of the Mahanadi.[52] The pilasters facing the door-ways of the

---

50. IAR - 1989-90:80-86.

51. IAR - 1972-73:27.

52. JNSI, 13(1), 1951:92-94.

Anantagumpha in the complex of Khandagiri-Udayagiri have ghatta-bases ornamented in hellenistic fashion. A Yavana guard is shown on the left pilaster of the care in the upper storey of Hatigumpha. The kilted foreigner in boofs wears a fillet on the forehead while a sheathed sword hangs from the left side suggesting Kushana influence.[53] The Naga and Yaksha figure of Bharhut type are the other notable evidence suggesting contact with the outside world.[54]

The period also saw a increasing interaction between various sites of Orissa. Knobbed ware which occurs throughout Sisupalgarh culture has been found from Lalitgiri, Jaugarh and Manmunda also. The black slipped and Black ware of Manmunda had concentric knob.[55] In Sisupalgarh lids and bowls of greyish black colour had central knob and occurred throughout while red ware having knob occurred from period II A (2nd century B.C. onwards).[56] At Lalitgiri knob is found on slipped and plain black ware and blackish grey

---

53. Behera, K.S., `Maritime Contacts of Orissa: The Archaeological Perspective', Paper presented at the Seminar on the Techno-Archaeological Perspective of Seafaring in the Indian Ocean, NISTADS, 1994.

54. Panigrahi, K.C., History of Orissa, op. cit., 367.

55. IAR - 1989-90, op. cit.

56. Lal, B.B., Sisupalgarh..., op. cit., 80.

ware.[57]

The period (3rd-1st century B.C.) also saw greater exploitation of resources and craft specialisation. The archaeological explorations of old mines of Singhbhum district indicate their use in the Mauryan time.[58] Iron objects, beads have been found from different early historical sites. The Arthasastra praises elephants of Kalinga.[59] It rated Karpasikas (silk) of Kalinga as one of the best silks produced in India.

The 1st-3rd century A.D. witnessed the emergence of new sites and also, a continuation of old sites like Dhauli, Sisupalgarh, Manmunda, Asurgarh and Jaugarh. The followings categorise evidence of the (1st-3rd century A.D.).

Sites around Bhubaneswar

Udaygiri: The filling forming the terrace of cave 14 of Udaygiri yielded a silver punchmarked and a heavy ear stud

---

57. IAR - 1988-89:65-6.

58. Chakrabarti, D.K. and Chattopadhya, R.K., `A Preliminary Report on the Archaeology of Singhbhum', op. cit.:128-150.

59. Kangle, R.P., The Kautilya Arthasastra, Pt.II, Delhi, 1988 (reprint):2.II.

of crystal.[60] An apsidal structure is found near cave-14.[61]

Near Bhaskaresvara Temple: A deposit of more than 3 metres in height has been found from the neighbourhood of Bhaskaresvara, Brahmesvara and Meghesvara temples. The surface finds include shapes like bowls, dish and lid, teracotta gamesman, ear ornaments, animal figurines beads and iron nails.[62]

Santarapur Burning Ghat: The Santarapur Burning Ghat on the right bank of the river. Gangua (Gandhavati) reveals a deposit of 7 metres. The exposed lateritic block wall on the periphery of the mound revealed a structure from which early historical pottery has been found.[63]

The other sites of early historical Orissa (1st-3rd century A.D.) are the following: Namitgiri in Jajpur division of Cuttack district,[64] Buddhist site of Lalitgiri in

---

60. IAR, 1961-62:36.

61. IAR, 1958-9:38-40.

62. IAR, 1984-85:59.

63. Ibid.

64. IAR, 1985-86:62; IAR, 1988-89:65-66.

Cuttack district[65] and Ganiapalli in Sambalpur district.[66] Dadheri, 8 kilometres north of Birsa township in Sudergarh district, Sitabhinji in Keonjhar district[67] and coastal sites of Manikpatna and Palur near lake Chillika in Puri and Ganjam districts.

Evidence of Contact with outside Region:

* Sherds of Rouletted ware: from deposit dated to 2nd century A.D. from Sisupalgarh, Manikpatna.
* Sherds of North Black Polished ware from the level of 200-350 A.D. from Sisupalgarh.
* Indian amphorae: Manikpatna, Jayrampur,[68] Balasore district.
* Roman medallion, clay bullae and caltrop - Sisupalgarh, 3rd-4th century A.D. level.
* A sherd with Brahmi-Kharosti inscription: Manikpatna.
* Two sherds with stamped pattern: Dhauli. This type of ware is found at some North Indian sites of Kushana

---

65. IAR, 1985-86:62.

66. Sahu, N.K., `Ganiapalli' in S.C. Behera, Interim Excavation Reports, Sambalpur University, 1982, 9-15.

67. Mohanty, P., `A Note on Sitabhinji', Indica, 25(1), 1988:11-14.

68. Sahu, B.P., `Situating Early Historical Trade in Orissa' in K.M. Shrimali (ed.), Indian Archaeology since Independence, New Delhi, 1996:96.

period.

* Red glazed Kushana pottery - 1st-4th century A.D. level, Asurgarh (Kalahandi).
* Sprinkler - Lalitgiri.

Numismatic Evidence

* Roman gold coins of Gordian and other types - Bamanghatty, Mayurbhanj district.
* Punchmarked coin: 1st and 2nd century A.D. level - Sisupalgarh; 4th-5th century A.D. - Asurgarh; Period II - Jaugarh.
* Puri Kushana coins - Period II - Jaugarh; 3rd century A.D. - Sisupalgarh; 1st-4th century A.D. - Manikpatna.
* Kushana coins - Copper coins of Kanishka - 1st-4th century A.D. - Asurgarh gold coins of Huviska - 3rd century A.D. - Sisupalgarh.

Table in Ch.2 gives details about material evidence from important early historical sites of Orissa.

The evidence of the 1st century A.D.-4th century A.D. clearly indicates strides in material culture. The period saw a vertical as well as horizontal expansion of settlements. The nature of settlements also changed. Buddhist, port sites as well a cluster of sites around Bhubaneswar

appeared in this period. From 1st century A.D. onwards, there was an expansion of settlement to the north in coastal Orissa, whereas upto 1st century A.D. the main concentration of settlements was in Puri-Ganjam and further south in Srikakulam district with Bhubaneswar as nucleus area from 1st century A.D. onward, one finds an expansion of settlement to Cuttack and Balasore district. Namitgiri and Lalitgiri, both in Jajpur division of Cuttack district appeared.

The Bhadrakali stone inscription (2nd half of 3rd century B.C.) refers to a local ruler, Gana who was ruling in the Bhadrak area of Balasore and had made donation to a Buddhist Sangha.[69] At other levels of material culture, the period saw an advancement. While number of objects found from different sites increased the period saw monetisation of the economy. The imitation Kushana copper coin which were in circulation from 1st to 4th-5th century A.D. are found in hoards from many parts of coastal and central Orissa. The contact with the outside world increased and port sites further facilitated this interaction. The period saw the emergence of a network of inland routes facilitating mobilisation and movement of goods.

---

69. Sircar, D.C., `Bhadrak Inscription of the time of Gana of Regnal year 8', EI, 29:169-72.

At the political level, the evidence suggests the emergence of local kingdoms from 3rd century A.D. onwards. As mentioned earlier, Gana, who had made a donation to a Buddhist Sangha was ruling in the Bhadrak region of Balasore. The gold coin copied from Roman Imperial coin inscribes a Brahmi legend referring to a ruler Maharaja-ra(ja)dhasa Dhamadamadhara (SG). The coin is found from period III (200-350 A.D.) of Sisupalgarh.[70] From this period onwards, one finds a proliferation of a number of local kingdoms in Orissa.

Internal Routes:

A network of internal routes emerged in the period. The distribution of Punchmarked and Puri-Kushana coins, resources found from various archaeological sites, and their probable provenance as well as literary and epigraphic records of the period provide evidence of the growth of a network of routes along which movement of goods, services and people took place. In the protohistoric period, a route seems to have connected the copper and iron belt of Mayurbhanj and Chotanagpur plateaus with central and coastal Orissa. This is proved by the findings of the copper and iron tools from Sankerjang (Dhenkanal district) and Golbai

---

70. Lal, B.B., op. cit., 100.

in Puri district. These two districts do not have any deposit of copper and iron and therefore, the protohistoric people of the two sites might have used the copper resources of the Mayurbhanj and Chotanagpur plateau. The mobilisation of the troops of Asoka must have taken place along this route. The existence of such a route from Bhubaneswar in coastal Orissa to Chotanagpur plateau in the early historical period is proved by various evidences. The Hatigumpha Inscription of Kharavela referred to his campaign against Gorathagiri (Barbara hills in Gaya district) and Magadha. He could have taken a route which had passed through Cuttack, Keonjhar, Mayurbhanj and Chotanagpur region. The Punchmarked coins have been found from Rameswar in Cuttack district and Bahalda in Mayurbhanj district. This route seems to have existed throughout the early historical period. In the third century A.D., the distributions of imitation Kushana coins document the existence of this route. Puri-Kushana coins have been found from many places along this route. This route seems to have gone through Cuttack district along the bank of river Birupa, a distributary of the Mahanadi upto the Kaima hills in Dharmasala from where, a route stretched in a north-westerly direction upto `Khiching (Mayurbhanj)' through Sitabhinji (Keonjhar district). From Khiching the road went in a north-easterly direction to

Bamanghatti, Bahalda in Mayurbhanj district and to Saraikala in Chotanagpur region. A hoard of Puri-Kushana coins has been found from Kaima hills and recently a rock-cut. Buddhist cave on the hill has been brought to light. The Puri-Kushana coins have been found from Sitabhinji of Keonjhar district, Khiching and other places along these routes (see Map on the distribution of the Puri-Kushana coins). Bamanghatti in Mayurbhanj district has yielded Gordian and other types of ioman gold coins. This route was a principal one since it not only connected Madhyadesa through Gaya but also passed along the rich mineral belts of Keonjhar, Mayurbhanj, and Chotanagpur region. The findings of hoards of copper coins and iron tools from various early historical sites of coastal Orissa indicate the possible use of these resources of these regions.

A coastal inland route from Bhubaneswar to the further south had developed in the early historical period. In the time of Asoka, Dhauli became the provincial headquarter while Jaugarh in Ganjam district developed into an administrative centre. The local kingdoms which developed in the early medieval period such as the Matharas, the Sailodbhavas and the Gangas were ruling in the region beyond Chillika lake and tried to extend their power base to the fertile

plains of Puri and Cuttack districts. The Gangas in the 11th century finally succeeded in transforming themselves from the position of a local power to a regional kingdom by conquering entire Orissa and made Cuttack as their capital. Yuang Chwang, who had visited Orissa in the 7th century took a coastal route through Cuttack and Puri district to reach Kalinga which denoted regions beyond the Mahendragiri (Ganjam district) in the 7th century A.D.

Two routes seem to have developed which connected coastal Orissa with the dakshina Kosala region in western Orissa. The typological similarity in iron assemblages of Kharligarh-Gudavella and Manmuda with that of Sisupalgarh and Jaugarh indicate the existence of contact with the two regions. The special Rock Edict I of Asoka referred to `Kumara' of Ujjain who sent officials on tours to Kalinga every five years, thus, indicating the existence of a route from western Orissa to Kalinga. To reach Kalinga from Ujjain one had to come through Raipur district of Madhya Pradesh and western Orissa. The Hatigumpha Inscription states that Kharavela went to Vidharbha (Berar) and it seems that he followed the route along the valley of the Mahanadi upto Raipur district of Madhya Pradesh. The discovery of Punchmarked coins from Asurgarh (Kalahandi), Sonepur (Bolangir) and Manmunda (Phulbani) suggests the existence of a

route that might have connected western Orissa with Madhyadesa on the one hand and on the other, with coastal Orissa. The Somavamsis who conquered coastal strip of Orissa in 9th century A.D. had followed this route from western Orissa. This route seems to have passed along the bank of the Mahanadi. Another possible route which might have connected coastal Orissa with the highland was through Ganjam and Phulbani district. At Baudh, there was a place called Kalingaghata from which a route probably linked the region with coastal Orissa through the mountainous regions of Phulbani, western Ganjam and Nayagarh region of Puri district. A hoard of Puri-Kushana coins have been found from Nayagarh. Yuang Chwang seems to have followed this route to reach Mahakosala from Kalinga in Ganjam in 7th century A.D.

The evidence of the Mauryan period does not indicate the presence of a land route along the coast which connected the port of Tamralipti in Medinipur district with coastal Orissa. However, the evidence of the early centuries of the Christian era suggest the growth of such a route. This route emerged due to the expansion of settlement from Bhubaneswar and further south to the Cuttack and Balasore district from the 1st century A.D. onwards. Hoards of Puri-Kushana coins have been found along this route. This coast-

al route along the land route seems to have gone through Jajpur, Bhadrak, Sore, Balasore and Baripada plain to reach Medinipur. Puri-Kushana coins have been found in hoards from different places of Balasore district. The Raghuvamsam referred to this route while narrating Raghu's march to Kalinga through Medinipur and coastal strip in Balasore and Cuttack district.[71] This route continued to exist throughout the historical period. Sri Chaitanya came to Jagannath Puri from Navadvipa, first by the river route upto Deobhag on the Ganges and from there by land route upto Dantan in the southern extremity of the Medinipur district. He then took an inland coastal route through Balasore and Cuttack district to reach Puri.[72] The records of the Mughal period refer to several places like Balasore, Sore, Bhadrak along this route.

Along with these principal routes, there were other feeder routes which connected these principal routes with minor regions of Orissa. They are difficult to reconstruct but nevertheless, must have played an important role in the mobilisation of resources. Along with the inland routes,

---

71. Mohapatra, K., `The Route of Pilgrimage of Sri Caitanya as described in the Caitanya Candrodaya Natakam of Karnapura (1540)' (Oriya), Dagara, 33, 8.

72. The Raghuvamsam, canto.IV, 56.

the rivers also acted as arteries of communication. The records of the 19th century show that the Mahanadi was the main link between western and coastal Orissa. In coastal Orissa, river Birupa, a distributary of the Mahanadi, connected Cuttack with Jajpur. Along its course, one finds a number of Buddhist sites including the famous sites of Lalitgiri, Ratnagiri and Udayagiri which emerged in the early medieval period.

River Daya and Bhargavi, the other distributaries of the Mahanadi connects Bhubaneswar with the Chillika lake. However, there is no evidence of the early historical Orissa which referred to riverine traffic, although the epigraphic records of the early medieval period referred to ferry places (naditarasthanas).[73]

These developments in early Orissa synchronised with the societal transformations in other regions on the east coast of India. In Bengal, the nucleus of settlements in proto-historic period in Burdwan and Birbhum districts, the mountain belt of which provided ideal setting for the emergence of isolated settlements of the protohistoric period. In this period, out of sixty-odd settlements only six are

---

73. Produced from Subudhi, U., The Bhaumakaras of Orissa, Calcutta, 1978:103.

situated in the lower coastal Bengal.[74] However, one sees a shift of settlement in the early historical period. As many as fifty sites appeared in the coastal districts of West Bengal.[75] New ceramic types such as the grey, black-clipped and red-wares appear around 3rd century B.C. Northern Black Polished ware are found in port sites of Tamluk, Chandraketurgarh and other sites like Harinaryanpur in Medinipur and 24 Pargana districts of lower Bengal. The terracotta plaques, pottery with ship symbols sherds with Kharosti script etc. evidenced the beginning of a maritime network. In eastern Deccan important Buddhist sites (Dharanikota-Amaravati-Nagarjunakonda) grew in lower Krishna valley as also a number of sites on the coastal Andhra appeared. The numismatic evidence documents the beginning of indigenous coins under the Satavahanas. It was under the later Satavahanas that the ship symbol was adopted on their coins.[76] Similarly in the far south the tribal society transformed into chiefdom and this is documented from the variety of precious artefacts found from the megalithic burial of the

---

74. Datta, A., `Chalcolithic Culture in West Bengal - A Study on Settlement and Transition' in A. Ray and S. Mukherjee (eds.), Historical Archaeology in India, Delhi, 1990:78-89.

75. Sengupta, S., `Archaeology in Coastal Bengal' in H.P. Ray and J.F. Salles (eds.), Tradition and Archaeology, op. cit.:115-128.

76. Ray, H.P., Monastery and Guild, Delhi, 1986:8-87.

south. These include beads of precious stone, copper vessels, gold and silver rings.[77]

The two other processes which facilitated the emergence of maritime contact were the internal developments that had participated in the Indian Ocean network and the presence of a fisherfolk who had adapted themselves to control environment long ago. The first process includes changes in south-east Asia as also emergence of trading groups and networks in western Indian Ocean which connected the Mediterranean world with the south Asian trading system.

However the historical evidence about fishermen who played a vital part in sea-voyage is lacking in Orissan context. The mesolithic tools from the coastal sites of Vishakhapattanam (Andhra Pradesh), Tangi near Chillka and Cuttack district indicate that people took to sea very early. The presence of ringstones, stone tablets and small ring stones in the Mesolithic artefact assemblage on the Vishakhapattanam coast (Chandrampalam and Paradenipallam) strengthens this assumption since similar tools with or without perforation are still used as sinkers by local

---

77. Rajan, K., `New Lights on the Megalithic Culture of Kongu Region, Tamilnadu', Man & Environment, XV(1) 1990:93-102.

fishermen.[78]

The growth of seafaring, maritime trade and an east coast network in the early historical period should be understood in terms of the transformation within respective regions, and changes in other societies who had participated in an Indian Ocean network. However, seafaring as an economic activity was a result as well as part of the `structure' of early Orissa. To elaborate it, while maritime trade was an outcome of changes at political (Mauryan conquest, emergence of state system), economic (coins, etc.), social (craft activities and social differentiation) and other levels the inputs from the sea was an important component of the economy and the products coming through and from sea provided status and played an important role in the growth of a complex society in the age of `early' state.

However, historical evidence about products which could have come from the sea. There was exchange and trade of subsistence items like agricultural products, cloth and other perishable goods, the remains of which are not to be found in archaeological context. Salt and fish belong to this category. They remained items of consumption through

---

78. Thimma Reddy, K., `Coastal Ecology and Archaeology: Evidence from the East Coast of India', Man and Environment, XIX(1-2), 1994:43-57.

out the historical period. A record of Chodagangadeva refers to Lavanakaradhikari.[79] Record of 19th century shows trade in sea-fish.[80] There were other products from sea which have been found from various early historical sites of Orissa. Beads of coral have been found from Asurgarh and Manmunda while beads of shell has been found for Jaugarh. There are other goods live Rouletted ware, bead of glass, Indian amphorae and other exotic objects which are found in different early historical sites and could have come through the sea and port. Rouletted has been found from Manikpatna and Sisupalgarh. This ware is found all along the east coast from Tamluk in lower Bengal to Anuradhapur in Srilanka. The ware had been found from different sites of south-east Asia including Bali, Indonesia. The x-ray diffraction and neutron activation analyses of the ware found from Arikamedu, Karaikadu in Tamilnadu, Anuradhapur and Sembiran (Bali) indicate that these sherds are similar in mineral and chemical analysis and possibly they come from the same source of origin.[81] Further sherds with Kharosti script has

---

79. Shah, A.P., Life and Culture in Medieval Orissa, Varanasi, 1976:104.

80. Hunter, W., S.AB: Cuttack and Balasore (reprint), XVIII, Delhi, 1976:53-56.

81. Ardika, I.W. et. al., `A Single Source for South Asian Export-Quality Rouletted Ware?', Man and Environment, 18(1), 1993:101-09.

been reported for Manikpatna.[82] The ware which has been found from Chandraketurgarh and other sites of 24 Pargana districts as well from Sembiran. But B.N. Mukherjee takes it as an evidence to postulate and Kushana involvement in maritime trade with south-east Asia through the ports of east coast.[83]

Further monochrome glass beads have been found from Sisupalgarh and Manikpatna. These monochrome glass beads best known collectively as Indoa-Pacific beads are reported from Ban Don Ta Phet and Banchiang in Thailand and Sembiran, Bali, Indonesia and other places.[84] With regard to composition and chemical analyses of these beads from south-east Asia, these beads can be divided into two types - mixed alkali with soda, main alkali has high almunina and low lime content and potash glass. Brill, who has analysed an orange opaque bead of Sisupalgarh has found high alumina and low

---

82. Behera, K.S., `Maritime Contacts of Orissa: Archaeological Perspective'..., op. cit.

83. Mukherjee, B.N., `Kharoshti and Kharoshti-Brahmi Inscriptions in West Bengal (India)', Indian Museum Bulletin, XXV.

84. Basa, K.K., `Manufacturing Methods of Monochrome Glass-beads of Southeast Asia', Man and Enviroment, XVIII, 1, 1993:93-100.

lime in the bead.[85]

The discussion shows that the seafaring in early historical Orissa was the result of several complex variables operating from the protohistoric period onwards. The protohistoric period saw the emergence of an elite groups as well exploitation of metals as documented from the findings of the burial sites of Sankerjang in Dhenkanal upland and Golbai in Puri district. The other variables which contributed to the growth of seafaring was several changes at various levels of the material cultures of early Orissa. The archaeological and other evidence of the period document the expansions of settlements in coastal Orissa, emergence of fortified settlements, use of coin in exchanges and greater exploitation of resources as well as the emergence of religious establishments at different sites - Lalitgiri, Ganiapalli, Khandagiri-Udayagiri. The other factor which influenced in the growth of the seafaring in early Orissa were changes in other regions of the east coast who played a considerable part in the emergence of an east coast network in the early centuries of the Christian era. Orissa as a littoral region participated in this east coast network.

---

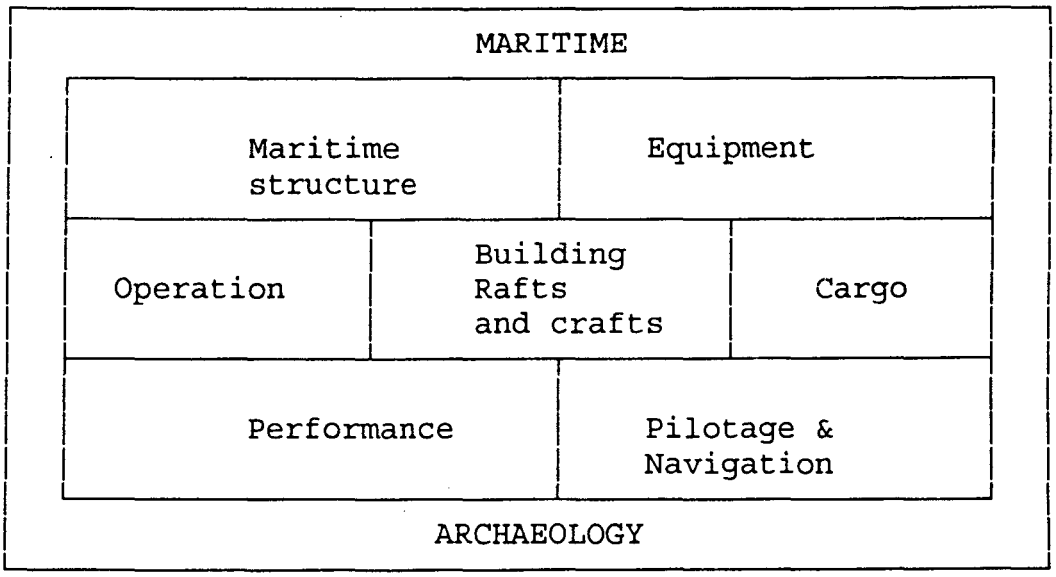
85. Brill, R.H., `Chemical Analyses of Some Early Indian Glass' in H.C. Bharadwaj (ed.), Archaeology of Glass, Calcutta, 1987:4.

CHAPTER IV

ETHNOGRAPHY OF BOATS

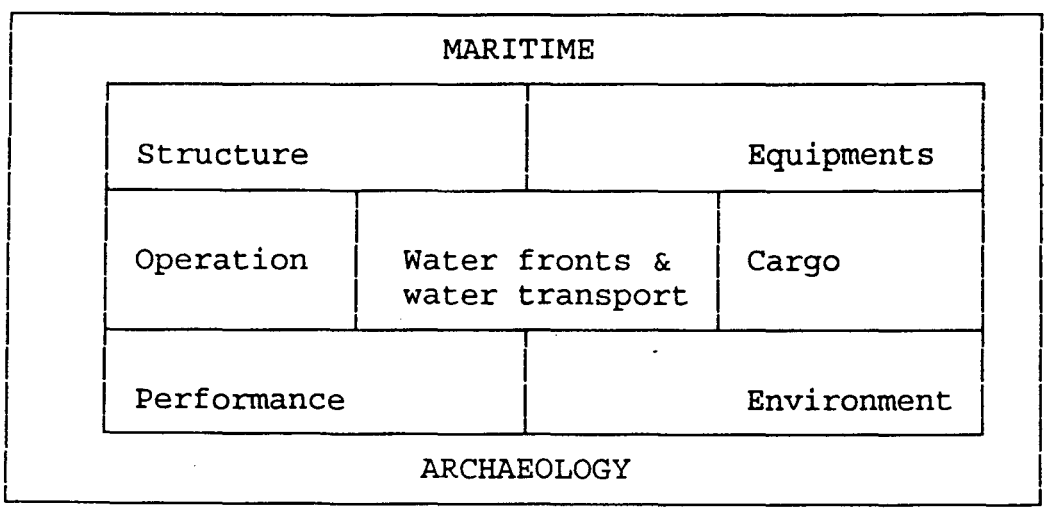
Maritime Archaeology is a broad subject, covering ports, cargo, maritime communities, trade-routes and the development of boats and ships. These subjects which Maritime Archaeology as a discipline covers, can be divided into two categories: (a) study of building and operation of water-front, i.e. Nautical Archaeology and, (b) study of the context in which water crafts were used. The second category includes apart from the study of physical environment, the material context which led to the use of the watercraft. Further as a watercraft is used for transportation of goods, one needs to study among other things, the trade routes along which they reached the boat (trade routes) and places which provided shelter to ships and are congenial for transportation of resources from and to it (study of ports). The first category includes study of boats, social groups associated with navigation etc.

A diagram of the National Maritime Museum, Greenwich defines the scope of Maritime Archaeology in the following manner.



(Source: Sean Mc Grail, Ancient Boats in N.W. Europe: the archaeology of water transport, Longman, London, 1987:1.)

Sean Mc Grail has developed further upon it; he includes seamanship and navigation as part of operation and has added `environment' to make the scope of maritime archaeology more broad and well-defined.



(Source: Sean Mc Grail, Archaeology of Boats-Principle (mimeographed).

Some of these issues included in Maritime Archaeology-like resources of the region, `the material' context and the internal trade routes, which led to the rise of seafaring in the early historical period have been discussed in the earlier chapters. However other subjects like boats, social groups and ports have not been discussed.

The reconstruction of these issues on the basis of archaeological evidence alone is not possible. For example, no excavated boat is found in its complete form; the sequence and structure of boat building is not known; the techniques used in the construction and other aspects like pilotage and seamanship are not to be found in the archaeological records. Similarly, material artefacts cannot alone reconstruct the gamut of social relationship involved in seafaring; the social groups related to seafaring and boat building and the relationship between coastal establishments and the agricultural inland.

Maritime archaeologists use ethnographic evidence to interpret the material artefacts found from archaeological context. Ethnography, a sub-discipline of social anthropology is defined as the description and analyses of individual contemporary cultures. Ethnographic data can be divided into the material and social aspects of culture.

The use of ethnographic data in interpreting how material artefacts enter the archaeological records led to the emergence of a new discipline of ethno-archaeology. Ethno-archaeology has been defined as the study of human behaviour and of the material culture of living societies in order to see how materials enter the archaeological records.[1] Material remains thus, in ethno-archaeology are recorded from an archaeological as well as an ethnographic viewpoint and also because disposal and survival of artefacts and structures are documented, as well as production and use. The archaeologist then, seeks to interpret excavated remains in the light of the ethno-archaeological data by formulating hypothesis to explain the production, distribution, use and disposal pattern of ancient artefacts and structures.[2]

The importance of ethno-archaeological data in the study of `Archaeology of Boats' and other aspects of seafaring has been emphasised by the maritime archaeologists. For instance, O.C. Pederson opines that "The ethnographic study of recent vessels can sometimes contribute valuable under-

---

1. Bahn, P., Collins Dictionary of Archaeology, Percollina, 1992:162.

2. Champion, S., Dictionary of Terms and Techniques in Archaeology, Phaidon, 1980:43-3.

standing of archaeological find, in a way already known to archaeologists studying house construction."[3] Both ethnographic and archaeological studies complement each other; both attempt to understand different aspects of ancient boat-structure and should not be studied in isolation of other.

However, Archaeology of Boats has not yet emerged as a separate discipline in India. There is only one boat with a confirmed early date in the entire subcontinent; the log boat recovered from the Kelani Ganga, Srilanka, dated by radio-carbon to the 6th to 4th century B.C. There are iconographic representation of boats in ancient structures - in temples, stupas, herostones and other places which throw lights on ancient boats.[4] Since they are artistic representation on stone, vital elements of boat structures are often not represented in iconographic representation of boats. In the context of Orissa, there are few iconographic representation of boats. However, the representation of boats in Jagannath temple (12th century A.D.) is the only one which

---

3. Crumlin-Pederson, O., Aspects of Maritime Scandinavia, Roskilde, 1991:70.

4. Deloche, J., `Iconographic Evidence on the Development of Boat and Ship structures in India (2nd century B.C.-10th century A.D.): a new approach' in H.P. Ray and J.F. Salles (eds.), Tradition and Archaeology, op. cit.,

gives structural details and helps in understanding ancient boats. There are five palm-leaves manuscript, which were collected from Chilika region and in possession of Maritime Institute, Bhubaneswar. The manuscripts give details about building-techniques of different types of vessels but they belong to the 19th-20th centuries.

The historical evidence about coast-inland relation through rivers, goods mobilised from the hinterland etc. is lacking. The findings of the excavation of the coastal site of Manikpatna is not yet documented. Behera referred to the findings of the artefacts of this early historical site which includes among other things, Rouletted ware, Indian amphorae, sherds with Kharosti script and imitation Kushana coins. As outlined elsewhere (Ch.3) the distribution of Puri-Kushana coins can be taken as evidence of connection of this coastal site with the inland. At present, the maritime archaeological potential of Orissa is largely obscured by sedimentary deposits brought by monsoon flood situation, and long shore currents that deposit sand on the coast everyday. The systematic exploration of ancient coastal sites, study of palaeo-channels and divagation of rivers can possibly lead to findings of ancient boats and throw lights on the maritime antiquity of Orissa.

In the absence of a historical context, the ethnographic study of boats in Orissa becomes an anthropological and not an ethno-archaeological exercise. A study of the contemporary cultures of fishermen and their boats are still desirable for two reasons: (a) still in the coastal section of Orissa, there are small scale, essentially non-industrial societies who use boats of a form and structure that are `living fossils' surviving from very long period, and (b) the rapid motorisation and mechanisation of boats in the age of transition to market oriented fishing are leading to changes of not only the structure and forms of watercraft but also the organisation and composition of fishermen and fishing technologies. These two imperatives necessitate an ethnographic study of fishermen the of coast and watercraft used by them, the resting place for boats and other aspects associated with Maritime Archaeology.

The issues that are to be dealt in the chapter have been outlined in Chapter. The records of the 19th-20th centuries throw lights on trade goods, aspects of riverine traffic and ports developed on their mouth. They have been alluded to in the discussion.

In the past, as Ptolemy's reference to coastal establishments of Orissa[5] or the 18th century records show, ports developed on the mouths of rivers as the river acted as highway of communication mobilising the commercial potential of the hinterland.[6] However at present, most of the river mouths are silted and their beds remain occluded except in the rainy season. Moreover, the development of modern communication network led to the abandonment of riverine traffic. In the 18th century, the rivers acted as main line of communication and also the mouths which at present, are silted, thereby disconnecting the sea from the inland, developed into `ports' sheltering boats of different size.

Numerous ports had developed in the mouths of river of south Orissa in Srikakulam district of Andhra Pradesh and Ganjam districts of Orissa. Kalingapattanam, situated on the mouth of the river Vamshadhara developed into a port in the 18th-19th centuries. The mouth constituted a kind of

---

5. Ptolemy (2nd century A.D.) referred to many coastal establishments of Orissa: Nanigaina (Puri), Katikardama (Cuttack), mouths of river Manada (Mahanadi), Tyndis (Brahmani), Dosarm (Vaitaranai), Kosamba (Pipli), see Mc Crindle, J.W., Ancient India as described by Ptolemy (book VII, Ch.I, 16), Calcutta, 1927:194-7.

6. Deloche, J., `Geographical Factors in the Localisation of Ancient Seaports of India', I.E.S.H.R., 20(4), 1983:439-48.

dock with a depth of 4 metres. During the monsoon, the river was navigable over some 100 kilometres mobilising the resources of Ganjam and Koraput districts. The roadstead was protected by a rocky point projecting 8 metres into the sea permitting transhipment of cargoes at all seasons.[7] Further north, Sonnapuram, situated on the mouth of Bahuda was the main port of Ichhapura province of Ganjam in Orissa. The depth of the river at its opening was 5 metres, which provided easy access to country craft. The on-shore exploration of the region revealed terracotta ring wells and glazed and Chinese ceramics of medieval period.[8]

Similarly the mouth of the river Rushikulya which prospered into an important port in the 18th century A.D. is now impaired by sand deposits. The river accessible to smaller craft during the hot season over 50 kiometres formed at its opening a port which having a water-depth of 2 metres over the bar, could receive boats of 200-300 tonnes. Father Tachard wrote it is one of the most mercantile towns to be found between Madras and Bengal; there is abundance of everything and the port is very convenient. At the lowest tide, it's exit has always 5 or 6 feet of water and 9 or 10

---

7. Maltby, T.G., M.D.M.: Ganjam, 1982:43-4.

8. Tripathi, S., `Traditional Boatbuilding and Navigational Techniques of Southern Orissa', JIOS, 3(1)1995:65.

feet at spring tide. Ships are built here in great number and at low cost, we counted 98 vessels with three beached on the shore and saw about 18 in the shipyard being constructed at the same time.[9]

There were other ports which had developed all along the Orissa coast in the 17th-18th centuries. The question arises why did so many ports develop at the mouths? What were the resources which were mobilised to ports and the role of riverine traffic in it.

The emergence of numerous ports at river mouths in the 17th-18th centuries were out of the rice trade that developed on the east coast of India in the Company period. Orissa was an exporter of rice to regions of Bay of Bengal and the rivers, therefore, carried the rice of the hinterland into ports. However, the records of the 18th-19th centuries show that the rivers were used in internal trade in subsistence items also. Lake Chillika was used by pilgrims who used to come from the south to cross over the lake to reach Puri. The distributaries of the Mahanadi,the Bhargari-Daya-Nuna, find their opening in the lake. In hot weather, boats may be seen along their banks at least 10

---

9. Letters edifiantes.t., XIII:27.

miles above the point where they enter the lake. The boats belong to Ganjam traders who bring loads of bamboos and other goods across the lake Chillka and in return, carry off surplus rice of southern Parganas.[10] Salt and sea-fish were other subsistence goods in internal trade. In Orissa fish was common dish among all castes. Dr. Francis Day, Inspector General of Indian Fishers in the last quarter of the 19th century has recorded that except at seasons when sea-fish is obtainable, the supply proved to be unequal to the demand.[11] The river Mahanadi was in the 17th-18th centuries the main outlet for trade of Sambalpur and Bolangir districts of westernOrissa with coastal Orissa. In rainy season, Indian boats having a carrying capacity of 100 tonnes took five days to reach Cuttack from Sambalpur. The duration of the return journey in July on the other hand took indigenous boats twenty-five days while in November the return journey took twentyone days. At other times, the length of the journey depended on how often they have stranded on the sand or between rocks - a frequent occurrence soon after the rains moving to the depth of water.[12]

---

10. Senapati, N., ODG: Puri, Cuttack, 1977:298.

11. Hunter, W.W., S.A.B.: Cuttack and Balasore, XVIII, Delhi, 1971 (reprinted):53-56.

12. O'Malley, L.S.S., B.D.G.: Sambalpur, Cuttack, 1907:161.

The main commodities which are exported to coastal Orissa were rice, pulses and forest products while the western Orissa in return, imported salt, cloth, coconut and other products of coastal Orissa.[13]

However, details of inland trade and role of riverine network is missing in historical records. It seems that in the past, riverine network was carried out with greater efficiency or otherwise, how can the emergence of so many ports in the 18th century Orissa or in Ptolemy's time be explained? A palm-leaf manuscript of the 13th century (Baya Cakada) gives extraordinary details about the construction of the Konark Sun Temple and refers to how large blocks of stones were brought from far-off places by means of small river crafts on the winding channels of meagre streams through a maze of small water courses whose beds are today completely occluded and reduced to a succession of pools.[14]

---

13. The information has been collected in an interview with Arjuna Bag, age - 70, Saraswati Dorani, age - 80. Panda, N., `Reference to Maritime Trade in Oriya-Bratas' (Oriya) in K.S. Behera (ed.), Sapara `o' Sahitya (Oriya) (sea & literature), Cuttack, 1993:150.

14. Boner, A., Sharma, A. and Das, G., New Light on the Construction of Sun Temple of Orissa, XLI-XLI:45-78, and f.p.97 `Map of Orissa showing the rivers and artificial waterways by which stones were transported to Konark.

The ethnographic evidence has been analysed in the context of the following issues: (a) the coastal settlements and their relation with the inland settlements; (b) the relations between the structures of the boats and the physical, economic and cultural environments; (c) fishing settlements, their location and bearing on ownership pattern and economic differentiation and finally (d) why do different boats ply on coastal water and can the factors responsible for diversity in boat types be isolated?

Orissa has a coastline of about 480 km. A comparison between the number of fishermen and the percentage of the coastline of each district reveals that the district Balasore which constitutes 27 per cent of the coastline is inhabited by 57 per cent of marine fishermen and is followed by Ganjam, Puri and Cuttack districts respectively.

Table 1: Percentage of Coastline & Marine Fishermen in each district of Coastal Orissa

District	% of Orissa's coastline	% of Orissa's marine fishermen
Balasore	27% (130 km.)	57
Cuttack	28% (135 km.)	11
Puri	32% (155 km.)	13
Ganjam	13% (60 km.)	20
	100% (480 km.)	101

The demographic data[15] shows that in Balasore district, 184 fishing villages exist followed by Ganjam, Puri and Cuttack districts respectively.

Table 2: Number of Marine Fishing Villages & active fishermen

District	Balasore	Cuttack	Puri	Ganjam
No. of Marimetime fishing villages	184	7	16	29
No. of active fishermen	17,168	3,202	3,800	5,880

A correlation seems to exist between the number of fishermen in each district and the arable tract available there. People took to sea when the land is insufficient to support the entire population. The deltas of the Mahanadi-Brahmani-Vaitarani and their distributaries have made Cuttack and Puri districts highly fertile and agriculture, therefore, forms the mainstay of the economy. The Rushikulya coastal plain of Ganjam district follows the two districts in agricultural fertility. In contrast, Balasore is characterised by low per hectare agricultural output, lack of double

15. Demographic data has been reproduced from a census conducted in 1984. See Kalvathy, M. and Tietze, U., Artisanal Marine Fisheries in India: Techno-Demographic Study, B.O.B.P./W.P./Madras, 1984.

cropping and frequent crop failure due to various reasons.[16]

The location of fishing settlements has also influenced the number of fishermen of each district. A coast is the line which limits the sea where it invades land but it is inversely the frontier line where it sinks below the sea.[17]

This brings us to the question of nature of the coast. The coast of south Orissa[18] is characterised by sandy beaches with little vegetation. The coast of north Orissa, even though characterised by stretch of sand-beach, provides vegetation and agricultural opportunity little inland from the coast. The tidal influence of the river provides easy access to inland and the river mouths are also deep enough to provide shelter to countrycraft. The fishermen of north Orissa therefore, inhabit further inland in agricultural villages where people of other occupational groups live and although marine fishing is the main occupation of fishermen, they work as agricultural labourers in village and, at times, own little land. On the other hand, fishing settlements in south Orissa are situated on the broad sandy beach-

---

16. Sinha, B.N., Geography of Orissa, N.B.T., New Delhi, 1971.

17. Febvre, L., A Geographical Introduction to History, London, 1950:213-215.

18. River Mahanadi is the dividing line between north and south Orissa.

es separated from the agricultural villages which are situated inland and thus, the fishermen of south Orissa live exclusively by fishing.

The location of settlements has its effect on the ownership pattern. In Orissa where fishing settlements are situated in agricultural villages, one finds well to do men who owns more than one boat. In south Orissa, the fishermen often own boats and nets and thus, there the fisherman has complete control over the `catch' and its marketing, while in the north, boat-owners determine the share of different crew members and sometimes, employ fishermen on remunerated wages.

The distribution pattern of boat and nets in south Orissa reveals that the percentage of those who do not own any boat roughly equals the percentage of those who do not own any net. The demographic data reveals that while the non-owning class constitutes the highest group followed by those who own a boat. The group of households who own two or more boats is still around one-fifth of the total fishermen population.

Table 3: Distribution of Assets (boat & net) in Ganjam & Puri Districts

	Ganjam	Puri
a) Ownership Pattern with regard to boat		
i) Percentage of households with no boats	37%	57%
ii) Percentage of households with one boat/boat share	26%	25%
iii) Percentage of households with two and more boats/boat shares	24%	17%
	97%	99%
b) Ownership Pattern with regard to nets		
i) Percentage of househols with no gear	37%	50%
ii) Percentage of households with one gear	16%	11%
iii) Percentage of households with two gears	10%	13%
iv) Percentage of households with three or more gears	35%	25%
	98%	99%

This distribution of boats and nets as outlined in Table-3 shows a concentration of ownership in a few hands, the exact reason for which is not known. This may be related to operational and managerial skills. One finds economic differentiation on the basis of ownership pattern. The economic differentiation find equivalents in the domain of social status, role in political leadership of the community, role in cultural function, marriage and settlement pattern. For instance, labourers not owning any boat live in different streets and in smaller houses than the owners of craft and gear. Even though the egalitarian group work structure (fishing in sea) leads to free association of

different economic classes, their preference group is limited to their own economic status for marriage and other cultural functions.[19] In contrast, the distribution of assets in Cuttack and Balasore districts (north Orissa) is characterised by disproportionate ratio between the owners of boats and nets. Whereas 32 per cent own nets only, 81 per cent do not own any boat. This is because in Balasore, as in Bengal, well-to-do men of the villages offen own displacement crafts, which is beyond the means of poor fishermen. On the other hand, the tradition in Balasore is that the crew members must own net to get a share in the `catch'.

Table 4: Distribution of Assets in Cuttack & Balasore

	Cuttack	Balasore
a) Ownership Pattern with regard to boat		
i) Percentage of households with no boat	49%	81%
ii) Percentage of households with one boat	36%	17%
iii) Percentage of households with two and more boats	15%	1%
	100%	99%

contd...

19. Kalavathy, M.H. and Tietze, U., `Family Structure, Socialisation and Cognitive Patterns in Different Economic Strata of Artisanal Marine Fisherfolk' in U. Tietze (ed.), Artisanal Marine Fisherfolk of Orissa, Cuttack, 1985:85-88.

Table contd...

b) Ownership Pattern with regard to nets		
i) Percentage of housekols with no net	35%	18%
ii) Percentage of households with one net	43%	60%
iii) Percentage of households with two nets	4.1%	17%
iv) Percentage of households with more than two nets	18%	3%
	100%	98%

Boat Strucure and Different Environment:

A boat is a utilitarian object, the structure of which is influenced by three environments in which it operates, namely, **physical, mercantile and cultural**.

Orissa's southern coastline has wide sandy beaches and surf-beaten coast which is typical of the coast of south India. The continental shelf off the southern coast is narrow extended upto 40 km. Further, the mouths of rivers are silted and inaccessible to boats from the sea. On the other hand, the coast of north Orissa is characterised by creeks and rivers as well as extended tidal areas. The continental shelf in north Orissa is wide forming part of the shallow continental shelf of Bengal. Thus, whereas the southern coast is narrow, open sandy beaches and open surf beaten coast, the northern coastline is much shallower with

a broad shelf, gradual slope and greater tidal range.[20] Therefore, boats which can withstand the surfs of the sea are found along the coast of south Orissa (masulas and cattamaran) while the extended tidal shelf allows the use of displacement craft in estuarine and coastal water.

The differences in ethnic and cultural background of fishermen also influence the structure of boats. The masulas and cattamaran are the predominant water crafts used by the fishermen of south India who constitute a majority in south Orissa. Therefore, the masulas and rafts are found in southern coastline whereas the Oriyas and Bengalis of north Orissa use displacement craft.

The changes in the economic environment got reflected in the structure of boats. For instance, the mechanisation and motorisation of traditional watercraft resulted in the age of transition from subsistence oriented to market oriented fishing. The commercial gain that fishing as an economic activity offers resulted in changes and innovation in watercraft. Therefore one sees installation of motors in traditional boat and the addition of false-keel to make the traditional boat more sea-worthy.

---

20. Mohapatra, P., Traditional Marine Fishing Craft and Gear of Orissa, Bayof Bengal Programme, Madras, 1986:1.

However, innovation in watercraft is possible when these three factors coalesce. Apart from being an answer to the nature of coast and the continental shelf in which a boat operates, any innovation in the structure of a boat is the result of an interplay between cultural tradition and economic imperatives. For instance, innovation in the traditional craft by installation of motor engine, false-keel or a rudder may be induced by the new economic environment of marine-fishing, but the changes are not a sharp break from the traditional boat structure and its form. To give examples of an extreme point, the fibre made motorised watercraft which operates off Puri coast is a `replica' of `teppa', the cattamaran. So innovation in the structure or `form' of the boats, to gain wide acceptance among the fishermen of a society at a particular point of time, must have the sanction of relevant cultural practices and beliefs. To put it inversely, the new boat-form or structure must be in consonance with long-established cultural traditions of that time.

Explanation to a particular boat-`form' or `structure' may be sought in the combination of these three environments. However, it is difficult to explain why do different `forms' of `boats' operate in the same estuarine water? For

example `patia', a remarkably rare boat is found plying with flushlaid boats in the coastal water of Balasore. Patia boat has an extraordinary planking both ordinary and reverse clinker, and also shows a structural continuity over last eight hundred years. This boat is found along with flush-laid boats in the estuary of Pancapara in Balasore district and further north. The patia boat is built by the same group of carpenters who construct other flush-laid boats. The question arises why do such an extraordinary `form' exist and more importantly, what are the factors which led to such a remarkable continuity over last eight hundred years? An explanation to them may be sought in a `regional boat building tradition' which requires indepth study of the evolution of boat building traditions of Orissa.

Finally, how does one differentiate between boat and ship? Both boats and ships derive their buoyancy from the flotation characteristics of a hollowed vessel due to the displacement of water by continuous watertight outer surface of the boat. Thus boats and ships, in contrast to raft derive their buoyancy from the whole vessel. On the other hand, raft derive their buoyancy from the individual elements.

Mc Grail opines that the distinction between boat and ship may be found in length, structure and operation of the vessel. He classifies vessel less than 12 metres as boat, from 12 to 20 metre as large boat or small ships, and more than 20 metre as ship. Vessels of intermediate length i.e. 12 to 20 m which are classified as large boats or small ships must be determined on the grounds of structure i.e. open boat or decked and operations, which includes the duration in sea, seasonal or all-weather and facility to cook and sleep.[21] However, it can be said that the classification on the basis of length alone cannot be sustained as the problem of defining the intermediate vessels shows. Moreover, many of the boats have deck and cooking facility in them. The long-term and long-range endurance of the ship in comparison to boats may be found in boats as well, as the quality of timber and the technique of building determine the life of a boat.

The distinction may be sought in the culture which uses the particular watercraft. A vessel is a boat or ship is determined by the role it plays as a constituent element in the economy of that society and importance attached to it by the social groups. Ships are structures which constituted

---

21. Mc Grail, S., Archaeology of Boats - Principles (mimeographed).

significant elements in the economies of the societies which built and operated them. For instance, prior to the introduction of trawlers or bigger mechnised steel vessel, the traditional vessels made of timber might be a ship for fishermen who used it while today, traditional crafts are small boats in comparison to trawlers and other big vessels.

Boat-types on the Orissa Coast

Ethnographic studies reveal diversity of boat types in the coast of Orissa. The structure and form of `boats' indicate differences in geographical, economic and cultural patterns existing in the northern and southern coast of Orissa.

As outlined earlier, the tidal rivers and extended shelf allows the use of displacement craft in **north Orissa**. Both flush-laid and clinker design of boats are found in north Orissa. Both the designs are built in shell-sequence i.e. the planks give the shape of the boat while the bigger vessels are skeleton first, i.e. the frame gives the shape of the boat (Fig.1: Skeleton Sequence Boat). Further, the displacement craft of north Orissa can be classified into two categories on the basis of their functions, whereas the traditional craft of comparatively large size go 25 km

offshore, the smaller vessels engage in estuarine fishing and are used for loading and unloading purpose.

The **chhoat** is a comparatively large vessel of more than 10 m and is found in the estuarine and coastal water of Balasore. Made of sal timber, the boat is a flush-laid one of 12 planks on each side of the keel. The keel, stem and stern-post of this craft is quite pronounced, the stem is not vertical, rather it meets the keel at an obtuse angle. The tranverse stability of the boat is obtained by a number of thwarts and ribs (frames). The frames are composite; one set runs from sheer to bilge and the floor timber runs from bilge to bilge. Further stringers in boat help in reinforcing the tranverse stability. The forces of the mast at cross-beam levels are distributed at the stringers and thus, helps in lessening the axial torsional and compressive pressure. The fenders on both the port and starboard sides of the boat prevent chaffing between two vessels. The boat is propelled by oars and sails. The mast is slender and in comparison to most of the other boats is longer. This indicates the sea-worthiness of the vessel as a slender mast is more resilient and transmits less loading to the hull (Fig.2). The **dhingy** is a smaller version of the chhoat, though there are structural differences as well. The stem

and stern posts are extended and vertical and also a gunwale which is not found in chhoat .

Patia is a unique boat which plies along the Orissa coast from the mouth of Pancapara to the mouth of the Subarnarekha. It is used for fishing 20 km offshore. Built of sal wood, the planking is done in a way which is rare worldwide. The patia is built in shell sequence with planking done in clinker design. The boat is important for, it has iconographic parallel in the representation of boat in the Jagannath Temple, Puri (12th century A.D.). The Jagamohana of the Jagannath Temple preserves a ceremonial barge of black granite which is built in reverse-clinker design. This insitu ceremonial barge is the only iconographic representation of a reverse-clinker to have been found (Fig.3) in India. The Indian Museum, Calcutta and Victoria-Albert Museum, London have in their collection the same type of boat in the form of a miniature sculpture found from Orissa but their exact provenance is not known. Solvyns had sketched a `pettoua' which was a sea-going vessel of Balasore in reverse clinker design.

However, patia is not purely a reverse clinker boat; it is a combination of both clinker designs - ordinary and reverse. The combination of both clinker designs gives the

boat its shape and distinctive look. From keel to the 8th strake, the planks overlap in a reverse manner i.e. the inside upper-edge of the power plank overlaps the outside of the lower-edge of the upper strake. The ninth to the sheer strake (11th strake) are broad straight timbers laid in ordinary clinker style. The 9th strake is laid on the strake below it at almost right angle, thus forming a chine. This change in planking gives the boat its particular shape and combined attributes of both clinker technique (Fig.4). The lower eight strakes overlapping in reverse manner are cut sharply at both ends. The general run of these strakes decrease gradually, which means that while the end curves of the garboard strakes terminate near the top of the stem and stern post, the length of other seven strakes decrease gradually. Similarly, the top four strakes from the sheer strake terminate at the end of the garboad strakes near the top of the stempost, the other two strakes decrease gradually in length. The width and depth of strakes from the keel increase progressively.

The keel of this boat is quite different from that of other boats which operate in the region. It has a T-shaped keel, also called hogged keel. A hogged keel has a broader timber (hog) added to the top of the keel to form a T-cross section. The garboard strakes overlap (strakelap) and are

fastened on the hog. Though a single member is generally preferred for keel, there are keel-scarfs at both ends and at the middle. The stem and stern posts are fastened to scarfs made at both ends of the keel. They are semi-circular with the innerside being flat. The stem-post is raised considerably than the stern post. The boats are propelled both by oars and sail

Navas and **salti** are other boats which operate in marine fishing in fair weather (from November to February) and in other seasons are engaged in estuarine fishing. Apart from estuarine fishing they are used in loading and unloeading fish and nets from the larger vessels. They are without sail or mast and are propelled by oars.

The boats of **Southern Orissa** are entirely of different types. The high surf of the sea and lack of landing facility led to developments of boats and watercrafts which can withstand the surf of the sea. The boats of the Chillika region are different for, the lagoon provided enough water for the use of displacement craft.

The characteristic plank boats of the southern coast is the **masulas**, known locally as padhua (name of a light timber tree). The masulas being a boat of the larger Indian Ocean

tradition is well-documented.[22] Engaged in beach seining, the masula is a flat bottomed boat without having any mast or sail (Fig.5). Unlike the boats of north Orissa, the planks of which were fastened by iron nails, the masula is a stitched boat. However, there are slight variations in the stitching pattern of padhua of Orissa from that of the masula of south India. Holes are bored right through the planks and then stitched edge to edge. The loop runs through each separate pair of holes both outboard and inboard. Inboard the pair of holes is connected to the adjacent pair of holes in a criss-cross way thus forming a web. The seam is caulked by wadding material (grass in the Orissa masulas and in other places, coirfibre) which is held by the web formed due to criss-cross stitching. This is the general stitching pattern in the masulas of south India. But in the masulas of southern Orissa, the criss-cross pattern like `N' runs both outboard and inboard, thus holding the wadding material on both sides of the hull (Fig.6).

The **log rafts**, known as cattamaran ply on the shores of southern Orissa from Konark to the further south. On the

---

22. Kentley, E., `The Sewn-boats of the Indian Ocean: A Common Tradition?' in J. Coles, V. Fenwick and G. Hutchinson (eds.), Spirit of Enquiry, WARP, Occasional Paper 7, 1993:68-71. See also Kentley, E., `The Masulas of India's East Coast' in H.P. Ray and J.F. Salles (eds.), Tradition and Archaeology, op. cit.:247-60.

coast of Ganjam, it consists essentially of five log brought to a narrow point at the forward end, where two accessory stem pieces give a sharp beak point as in the rafts of Tamilnadu. At aft the craft is abruptly truncated, the log being cut off at the same level. Instead of being lashed together with rope, the logs are pegged together permanently. On the Puri coast one also finds three log and four log rafts. In the three log cattamaran (the south Indian name), there is a central median log along with two outer logs pegged with wash strakes (Fig.7). The three logs are lashed tightly while going to the sea. Other than these types, another type of log raft is found in southern Orissa, known as `teppa'. The hull of the `teppa' consists of two sections. Each half consists of a long log bearing washboard, sewn or pegged upon the outer-edge with a pointed beak piece pegged upon fore-end.

The quiet water of the Chillika lake on the other hand, allows the use of displacement crafts in the lagoon, and which had been referred to by Hornell.[23] The boats are very shallow. Though one or two additional bottom strakes are found, the boats of the Chillka region structurally belong

---

23. Hornell, J., `The Origins & Ethnological Significance of Indian Boat Designs', Memoirs of Asiatic Society of Bengal, 7(3), Calcutta, 1920.

to one class. Made in shell-sequence, the boats are flat-bottomed and without a keel. The central longitudinal members are bent upwards at sharp angle at both ends so as to run from stem to stern. There are two strakes on each side of the boat. The sheer strakes meet each other at bow and stern. No frame is to be found in the boats; the sides are held by a number of cross-beams. The strakes are laid in ordinary clinker style. The rigging of the boat--biped mast--is unique in Orissa. No where else in the Indian Ocean except in Maldives, biped masts are found in a boat. Two slender bamboos are set up parallel in between the first and second cross-beam and lashed tightly to the holes made on sheer strakes. Two short-stays run from each mast to the bow while the back-stay is lashed to a cross beam (second from the stern). The head of the rectangular (oblong) sail, which resembles a rush mat is lashed to masts while two shoot stays run from the edge of the boot to a hole on sheer strakes. To give strength to the sail, numerous tranverse bamboo plates are fastened at short intervals in the sail. This rigging does not allow for changes in the sail position while sailing (Fig.8).

These are major boat types along the Orissa coast. However the present study has left out many aspects of boat,

mainly rigging, navigational techniques and different sections of a boat. One question which needs to be looked at is various terminologies used to describe a boat. Why are different terms used to denote structurally the same type of boat in different regions? Or why does same term denote different types of boat in different regions? For instance, the reverse-clinker built patia is known as danga in North Cuttack, while danga is a generic term to describe a boat in Orissa. One also needs to look at the structural differentiation between same type of boat in different regions of Orissa.

CHAPTER V

CONCLUSION

The dissertation makes an attempt to depart from traditional historiography on two accounts. Firstly, while traditional emphasis were on exotic good and maritime trade, we have tried to show that seafaring was an ongoing economic activity of various social groups where products of the sea formed an important part. The sea also acted as a highway of communication and exchange of goods between different regions which had participated in an Indian Ocean Network. And secondly, the traditional historiography has emphasized upon the external stimulus in the form of Roman trade for the growth of maritime trade only while the dissertation has tried to show that seafaring as an economic activity in early historical period resulted out of many complex variables. It was a result of internal developments and was also influenced by changes in the east coast network. Seafaring as an economic activity emerged when early Orissa saw the growth of a complex society. One sees a vertical as well as horizontal expansion of settlements, greater exploitation of resources, monetisation of economy and increasing contact with other regions.

The other factors which accounted for the developments of seafaring in early Orissa were the internal transformation of other societies on the east coast of India. Lower Bengal, Andhra and the far South witnessed transformations at several levels which are evidenced from the archaeological and other records of the period. The growth of maritime trade on the east coast of India emerged as a result of these developments on the eastern littoral of India and Orissa as a littoral region participated in the emergent east coast network.

One of the most important element in the growth of seafaring was the presence of seafaring communities who adapted themselves well to the coastal environment, constructed boats and innovated navigational techniques to sail in open sea. However, the historical evidence about the seafaring communities, the boats these used and other aspects related to maritime history are lacking. The ethnographic studies in chapter-IV looked at the boat structures, the location of their settlement and fishing relation with the inland. The study tried to show the importance of ethnographic studies in understanding seafaring communities, boat-structure and the sequence of their building, tools used and navigational techniques. As the study has shown,

there are boats which are `living fossils' plying in the coastal water of Orissa for over last eight hundred years. Moreover, the ethnographic study showed how the structure of the boat is influenced by physical, economic and cultural environments in which they ply. Hence, it is imperative to study not only the nature of the coast and the physical changes which occurred over centuries due to different physical phenomenon but also, the economic and cultural environments in which a boat operates. Further, the ethnographic evidence showed that goods were mobilised to the river-mouths through riverine traffic and, the mouths developed as ports sheltering ships from the serfs of the sea. The records of the first half of the present century show that the river Mahanadi was the main communication link between coastal western Orissa through which trade in subsistence goods like cloth, salt, rice, timber, bamboo, forest products etc. were carried out. Trade in subsistence goods sustained an Indian ocean network in the early historical period and the ethnographic study might throw important light on the subsistence goods involved in the early historical trade, remains of which are not to be found in archaeological records. Further, the study on the location of fishing settlements has shown the nature of their relation with the inland areas and it would be worthwhile to study

how marketing of the seafish was done before the emergence of modern transport.

It must be said that in the absence of actual boat-finds, ethnographic sudy cannot establish a correlation with early historical Orissa. It merely indicates the importance of certain facets related to maritime history, hence its importance as a `source material' in understanding different aspects of seafaring in its historical context.

The present study left many aspects of early historical Orissa unexplained. This is partly due to the paucity of time and partly, to the inadequacies of the sources. Given the constraints of space and time, the dissertation merely touched upon the utilisation of resources (Ch.2) routes along which they passed (Ch.3), the emergence of various settlements, their location (Ch.3) and the growth of coinage (Chs.2 and 3) which indicated the growtth of a complex society in certain pockets of Orissa. However, two vital institutions that have not been touched upon are polity and religion. The protohistoric burial sites indicate the emergence of elite groups, but the developments from the Mauryan period onward received less attention which demands an indepth study. Senaviratne has suggested the formation of a `secondary state' in Kalinga as a result of Mauryan

intervention. However, several issues remain unanswered, such as the nature of Mauryan authority in Kalinga, the degree of participation of local elite in the administration. The emergence of a state system under the Mahameghavahanas took place not immediately after the decline of the Mauryas, thus posing questions about the intervening period. Questions like the nature of the state system and its scope are other issues which require more study. Some elements of the North Indian political framework are evident in the Hatigumpha Inscription of Kharavela, but to argue for a secondary state on the Mauryan model and a continuation of the Mauryan political structure in the post-Mauryan period requires more evidence. The officials mentioned in the Hatigumpha and other terse donative inscriptions of the Khandagiri-Udaygiri complex do not have parallels in the inscriptions of Asoka. An important question which requires greater emphasis is the role of the state in the mobilisation of resources. Did the state intervene directly in the mechanism of resource exploitation, mobilisation and consumption? In case an active role is accepted, what were the mechanisms through which the resources of the highland were mobilised? In this regard, it is important to explain the emergence and role of various fortified settlements which came up in the upland plains in early Orissa. A question

that needs to be answered is whether the fortification was an internal development of these societies or had their origin out of the resource imperatives of the state system that emerged in the coastal strip in the early historical period. In case of the former possibility, it is worthwhile to look not merely at the power structures of these localities but also their relations with the coastal plain which saw a rapid stride in material culture in the period of our study since these fortified settlements are surrounded by natural resources which were being utilised by the people of the coastal plain.

An integral element of the early historical society was religion. In the context of the early historical trade, the symbiotic relations between the Buddhist Sangh and trade has been highlighted by scholars.[1]

In contrast to the Deccan, in Orissa Buddhism and Jainism had a major presence in the period of our study. The remnant of a railing pillar found from Bhubaneswar, the emergence of Buddhist sites like Lalitgiri and Ganiapalli as well the presence of an old stupa on the top of the Dhauli hill as documented by British officials of the 19th century

---

1. See Ray, H.P., Monastery and Guild..., op. cit.

testify the presence of Buddhism in early historical Orissa. Equally important is to notice the substantial presence of Jainism around Bhubaneswar as testified by the inscriptions and elaborate structures at the complex of Khandagiri and Udaygiri in Bhubaneswar. These architectural remains provide interesting vignettes about the possible interface of religion and polity. More important is to look for elements of competition between these heterodox religions to extend their support base among a predominantly tribal population.

Finally one needs to study the social organisation, cultural beliefs and different boats used by the marine fishing communities. Along with a systematic ethnographic study, a scientific exploration of the coast and palaeo-channels with a view to bring to light possible historical sites and remains of boats, will enable a better understanding of the antiquity of the maritime traditions of Orissa.

BIBLIOGRAPHY

Acharya, P.,, 1956: `Ancient Routes in Orissa', Orissa Historical Research Journal, IV, 3-4:43-50.

Acharya, P., 1952: `Trilinga, Trikalinga, Kalinga, Odra and Utkala', Orissa Historical Research Journal, 1, 1:73-92.

Acharya, P., 1969: Studies in Orissan History, Archaeology and Archives, Cuttack.

Ahmed, E., 1972: Coastal Geomorphology of India, New Delhi.

Ardika, I.W. et. al., 1993: `A Single Source for South Asian Export Quality Rouletted Ware', Man and Environment, 18, 1:101-09.

Ardika, I.W. & Bellowwood, P.S., 1991: `Sembiran: The Beginning of Indian Contact with Bali', Antiquity, 65, 247:221-32.

Arunachalam, B., 1993: The Routes of Baliyatra - A Scientific Appraisal (mimeographed).

Bahn, P., 1992: Collins Dictionary of Archaeology, Harper-Collins.

Bajpai, K.D., 1992: `Contribution of Kalinga to Indian Culture' in Nayak, B.V. and Ghosh (eds.), New Trends in Indian Art and Archaeology, Delhi:271-74.

Ball, V., : `The Diamond, Gold and Lead Ores of Sambalpur Distirct', Records of Geological Survey of India, X:186-92.

Ball, V., 1881: Manual of the Geology of India, Economic Geology (Part III), Calcutta.

Basa, K.K., 1991: The Westerly Trade of Southeast Asia from 400 B.C.-500 A.D. with special reference to Glassbeads, Ph.D. dissertation, University of London, London.

Basa, K.K., 1993: `Manufacturing Methods of Monochrome, Glass beads in Southeast Asia', Man and Environment, XVIII, 1:93-100.

Basa, K.K., 1994: `Problems and Perspectives in Archaeology of Orissa, India', Occasional Paper 4, Department of Anthropology, Utkal University, Bhubaneswar.

Basa, K.K., `Cultural Relations between Orissa and Southeast Asia: An Archaeological Perspective' in Mishra, P.K. (ed.), Comprehensive History and Culture Orissa (forthcoming).

Begley, V. and De Puma, R.D., 1991: Rome and India - The Ancient Sea Trade, Wisconsin and Delhi.

Behera, K.S., 1977: `Maritime Trade in Ancient Orissa' in Das, M.N. (ed.), Sidelights on the History and Culture of Orissa, Cuttack :115-21.

Behera, K.S., 1991: `Trade and Pattern of Commerce in Orissa C. A.D. 700-1200', Utkal Historical Research Journal II:1-15.

Behera, K.S., 1993: `Ancient Orissa/Kalinga and Indonesia: the Maritime Contact', Utkal Historical Research Journal, IV:122-132.

Behera, K.S., 1994: `Maritime Contacts of Orissa: The Archaeological Perspective', paper presented at the Seminar on the Techno-Archaeological Perspective of Seafaring in the Indian Ocean, NISTADS, New Delhi.

Behera, K.S. (ed.), 1993: Sagara `O' Sahitya (Sea and Literature) (Oriya), Cuttack.

Behera, P.K., 1991-92: `Sulabhadihi: A Neolithic Celt Manufacturing Centre in Orisasa', Puratattva, 22:124-131.

Behera, P.K., 1992: `The Pebble Tool Component of the Bonaigarh Neolithic Complex', Man and Environment, XVII, 2:57-65.

Behera, S.C., 1982: Interim Excavation Reports, Sambalpur University, Sambalpur.

Beuria, N., 1980: Orissa District Gazetteers: General, vol.1, Cuttack.

Boner, A., Sarma, S.R. and Das, R.P., 1972: New Light on the Sun Temple of Konarka, Four unpublished manuscripts relating to construction, History and Ritual of the Temple, Varanasi.

Boner, A. `Economic and Organisational Aspects of the Buildin gof the Sun Temple of Konarka' in Shrimali, K.M. (ed.), Indian Art, Religion and Society, Delhi:99-108.

Brandtner, M., 1988-89: `Archaeological Exploration around Bhubaneswar', Manav (the journal of Anthropological Society of Orissa), 3:231-50.

Brandtner, M., 1991: `Archaeological Remains at Dhauli', Utkal Historical Research Journal, 2:36-48.

Brandtner, M., 1995: `Archaeology of Western Orissa', South Asian Archaeology Series, 1993, 1, London:101-114.

Brill, R.H., 1987: `Chemical Analyses of Some Early Indian Glass' in Bharadwaj, S.C. (ed.), Archaeology of Glass, Calcutta: 1-25.

Casson, L., 1989: Periplus Maris Erythraei, Princeton University Press.

Chakrabarti, D., Goswami, N. and Chattopadhyay, R.K., 1994: `Archaeology of Coastal West Bengal: Twentyfour Parganas and Midnapore Districts', South Asian Studies, 10:135-60.

Chakrabarti, D.K., 1992: The Early Use of Iron in India, Delhi.

Chakrabarti, D.K. & Chattopadhyaya, R.K., 1985: `A Preliminary Report on the Archaeology of Singhbhum with notes on the Old Mines of the District', Man and Environment, IX, 1:137-47.

Champakalakshmi, R., 1996: Trade, Ideology and Urbanisn - South India, 300 B.C.-1300 A.D., Oxford, New Delhil.

Champion, S., 1980: Dictionary of Terms and Techniques in Archaeology, Phaidon.

Chandra, M., 1977: Trade and Trade Routes in Ancient India, New Delhi.

Chandra, S. (ed.), 1987: The Indian Ocean: Exploration in History, Commerce and Politics, New Delhi.

Chattopadhyay, B.D., 1994: The Making of Early Medieval India, OUP, New Delhi.

Chattopadhyay, B.D., 1986: Historical Geography in Ancient India, ICHR, Delhi.

Chattopadhyay, S., 1968-69: `Orissa in Non Indian Asiatic Sources', Journal of Ancient Indian History, 2:118-25.

Chattopadhyaya, B., 1994: An Introduction to the Maritime History of India with Special Reference to the Bay of Bengal, Calcutta, 1994.

Chowdhury, K.A. and Ghosh, S.S., 1952: `Wood Remains from Sisupalgarh', Ancient India, 8:28-32, Pl.8-9.

Cohen, R., 1981: `Evolution, Fission and Early Stat
Classen, J.M.H. and Skalnik, P.
Early State, The Hague.

Crumley, C., 1976: `Towards a Locational Definition of
Systems of Settlement', American A
pologist, 78:59-73.

Crumlin, O.P., 1991: Aspects of Maritime Scandinavia
kilde.

Dani, A.H., 1960: Prehistory and Protohistory of Ea
India, Calcutta.

Das, D.N., 1977: The Early History of Kalinga, Calcutt

Das, M.N. (ed.), 1977: Sidelights on the History and C
of Orissa, Cuttack.

Dash, R.N., 1982: `The Iron & Other Objects from Gudav
Kharligarh', Journal of Orissa Re
Society, 1, 2:53-61.

Dash, R.N., 1987: Neoliths in Orissa, unpublished
thesis, Utkal University.

Dash, R.N., 1987: `Sankerjang - A Chalcolithic Si
Orissa', Orissa Historical Res
Journal, 32:99-125.

Datta, A., 1990: `Chalcolithic Culture in West Benga
Study on Settlement and Transitic
Ray, A. and Mukherjee, S. (eds.),
torical Archaeology in India, Delh
89.

De, S.C., 1952: `Cowry Currency in Orissa', Orissa Hi
cal Research Journal, 1, 2:10-21.

Deloche, J., 1983: `Geographical Considerations i
Localisation of Ancient Seapor
India', Indian Economic and S
History Review, 20, 4:439-448.

Deloche, J., 1994: Transport and Communication in India, Water Transport (vol.2), Oxford University Press, New Delhi.

Deloche, J., 1996: `Iconographic Evidence on the Development of Boat and Ship Structures in India (2nd C. B.C.-10th C. A.D.); a new approach' in Ray, H.P. and Salles, J.F. (eds.), Tradition and Archaeology: Early Maritime Contacts in the Indian Ocean, New Delhi.

Earle, T.K.,, 1987: `Chiefdoms in Archaeological and Ethnohistorical Perspective', Annual Review of Anthropology 16:279-308.

Erdosy, G.O., 1988: `Urbanisation in Early Historical India', BAR International Series, London.

Eschemann, A., Kulke, H. and Tripathy, G.C. (eds.), 1978: The Cult of Jagannath and the Regional Tradition of Orissa, Delhi.

Febvre, L., 1950: A Geographical Introduction to History, London.

Fried, M.H., 1967: Evolution of Political Society: An Essay in Political Anthropology, New York.

Furer-Haimendorf, C. von, 1913: `Megalithic Rituals among the Gadabas and Bonds of Orissa', Journal of Royal Asiatic Society of Bengal, Letters 9, 49-78, 1:14-16.

Fussman, G., 1987-88: `Central and Provincial Administration in Ancient India: The Problem of the Mauryan Empire', Indian Historical Review, 11:43-72.

Ganguly, D.K., 1975: Historical Geography and Dynastic History of Orissa, Calcutta, 1975.

Gani, S.M., 1964: `Kalinga Sadhavas on the High Sea', Orissa Review, 21, 4:17-23.

Ghosh, A., 1973: City in Early Historical India, Simla.

Glover, I.C., 1996: `Recent Archaeological Evidence for Early Maritime Contacts between India and Southeastn Asia' in Ray, H.P. and Salles, J.F. (ed.), Tradition and Archaeology: Early Maritime Contacts in the Indian Ocean, Delhi:129-158.

Greenhill, B., 1971: Boats and Boatmen of Pakistan, David and Charles.

Greenhill, B., 1995: Archaeology of Boats, Conway Maritime Press, London.

Gupta, S., 1994: `Archaeology of Indian Maritime Traditions: The Early Historical Phase', Man and Environment, XIV, 2:217-225.

Heine-Goldern, R. von, 1910: `Prehistoric Research in the Netherlands Indics' in Honing, P. and Verdoorn, F. (eds.), Science and Scientists in the Netherlands Indics:129-67.

Hullzsch, E., 1969: Corpus Inscription Indicarum, 1 (reprint).

Hunter, W.W., 1872: Orissa or the Viccissitudes of an Indian Province under Native and British Rule (2 vols.), London.

Hunter, W.W., 1976 (reprint): A Statistical Accounts of Bengal, Puri, XIX, Delhi.

Hunter, W.W., 1976 (reprint): A Statistical Accounts of Bengal: Cuttack and Balasore, XVIII, Delhi.

Hunter, W.W., 1976 (reprint): Fisheries and Botanies of Bengal with General Index, XX, Delhi.

Jayaswal, K.P. and Banerjee, R.D., 1929-30: `Kharavela's Hatigumpha Inscriptions', Epigraphia Indica, XX:71-89.

Jena, M., 1995: `Orissa and Indonesia - A trading of cultures', Orissa Review, LI:9-11.

Junker, L.L., 1996: `Hunter-Gatherer Landscapes and Lowland trade in the Prehispanic Philippines', World Archaeology, 27, 3:389-410.

Kalavathy, M.H. and Tietze, V., 1984: Artisanal Marine Fisheries in Orissa: A Techno-Demographic Study, Bay of Bengal Programmes, Madras.

Kangle, R.P., 1988: The Kautilya's Arthasastra, Pt.11, Delhi (reprint).

Kar, B., 1925: Pracina Odisara Jalayatra (Seavoyages in Ancient Orissa), Cuttack.

Kentley, E., 1993: `The Sewn-boats of the Indian Ocean: A Common Tradition?' in Coles, J., Fenwick, V. and Hutchinson (eds.), Spirit of Enquiry WARP, Occasional Paper 7:68-71.

Kentley, E., 1996: `The Masulas of India's East Coast' in Ray, H.P. and Salles, J.F. (eds.), Tradition and Archaeology: Early Maritime Contacts in Indian Ocean, Delhi:247-60.

Kirch, P."V., 1991: `Prehistoric Exchange' in Western Melanesia', Annual Review of Anthropology, 20:141-65.

Kulke, H., `Early State Formation and Royal Legitimation in Late Ancient Orissa' in Das, M.N. (ed.), Sidelights on the History and Culture of Orissa, Cuttack:104-114.

Lahiri, N., 1992: The Archaeology of Indian Trade Routes, Delhi.

Lal, B.B., 1919, `Sisupalgarh 1918: An Early Historical Fort in Eastern India', Ancient India, 5:62-105.

Lal, B.B., 1949: `Sisupalgarh: An Early Historical Fort in Eastern India', Ancient India, 5:62-105.

Leuders, H., 1912: `A List of Inscriptions from the Earliest Times to about A.D. 400', Epigraphia Indica, 10.

Levi, S., 1933: `Location of Dantapura', Journal of Bihar and Orissa Research Society, XXI:137.

Liu, X., 1988: Ancient India and Ancient China.

Mahalik, N.K., 1992: `Evolution of Mahanadi and its Relation Human History', Utkal Historical Research Journal, 3.:125-129.

Maltby, T.G., 1882: Madras District Gazetteers and Manuals: Madras Manual, Madras.

Mammo, T., 1987: Study of Income, Indebtedness and Savings among Fisherfolk of Orissa, India, Bay of Bengal Programme, Madras.

McCrindle, J.W., 1927: Ancient India as described by Ptolemy, Calcutta.

McDowell, B., 1970: `Orissa: Past and Promise in an Indian State', National Geographic, 1384, 1970:546-577.

McGrail, S., 1984: `Boat Ethnography and Maritime Archaeology', International Journal of Nautical Archaeology, 13:149-50.

McGrail, S., 1987: Ancient Boats in NW Europe, Longman.

McGrail, S., 1995: `Maritime Research in India', South Asian Studies, 11:175-6.

Medhi, D.K., 1990: `Prehistory of Assam', Asian Perspectives, 29, 1:37-44.

Miller, D., Rowlands, M. and Tilley, C. (eds.), 1989: Domination and Resistance, London.

Mishra, B., 1927: `The Area of Orissa in Hiuen-Tsang's Time', Journal of Bihar and Orissa Research Society, 12, 1:86-89.

Mishra, P.P., 1980: `The Contact between Orissa and South Asia in Ancient Times', Journal of Orissan History, 1, 2:10-17.

Mitra, D., 1960: Udaygiri and Khandagiri, New Delhi.

Mittal, A.C., 1962: An Early History of Orissa, Banaras.

Mohanty, P., 1988: `A Note on Sitabhinji', Indica, 25, 1:11-14.

Mohapatra, G.C., 1960: Stone Age Cultures of Orissa, Poona.

Mohapatra, K., 1970: `The Route of Pilgrimage of Sri Caitanya as described in the Caitanya Candrodaya Natakam by Kavi Karnapura (1540)' (Oriya), Dagara, 33, 8.

Mohapatra, K., 1973: `Description of Sea and Sea-voyage in the Ancient Literature of Utkal' (Oriya), Jhankara, 25, 3:273-277.

Mohapatra, P., 1983: TRaditional Marine Fishing Craft and Gear of Orissa, Bay of Bengal Programme, Development of Small Scale Fisheries, Madras.

Mohapatra, P.K., 1984: Some Aspects of Economic Life of Orissa (1550-1751), Bhubaneswar.

Mohapatra, R.P., 1980: `Position of Women as depicted in the Early Sculptures of Khandagiri and Udayagiri Caves', Orissa Historical Research Journal, 24-26:61-69.

Mohapatra, R.P., 1986: Archaeology in Orissa - Sites and Monuments (2 vols), New Delhi.

Mookerjee, R., 1912: Indian Shipping, Bombay.

Motte, T., 1953: `A Narrative of a Journey to the Diamond Mines at Sambalpur (reprinted)', Orissa Historical Review Journal, 1, 3, App.II.

Mukherjee, B.N., 1980: `Dosarance-Dosarana Coastal Orissa', Journal of Orissan History, 1, 3.

Mukherjee, B.N., 1990: `Kharoshti and Kharoshti - Brahmi Inscriptions in West Bengal (India)', Indian Museum Bulletin, XXV.

Oldham, C.E.A.W., 1936: `Dantapura and Paluru in Northern Gajam', Journal of Bihar and Orissa Research Society, 22, 1-12.

O'Malley, L.S.S., 1929: Bihar and Orissa District Gazetteers: Puri, Patna.

O'Malley, L.S.S., 1906: Bengal District Gazetteers - Cuttack II, Calcutta.

O'Malley, L.S.S., 1907: Bengal District Gazetteer - Balasore VII, Calcutta.

O'Malley, L.S.S., 1909: Bengal District Gazetteer - Sambalpur XVI, Calcutta.

O'Malley, L.S.S., 1911: Bengal District Gazetteer - Midnapore XXVI, Calcutta.

Panda, G.K., 1988: The Drainage and Floods in Orissa Coastal Plain, unpublished Ph.D. dissertation, Department of Geography, Utkal University, Bhubaneswar.

Panda, S.K., 19 : Early Trade Routes in Orissa - A Reassessment of Numismatic and Archaeological Evidence (mimeographed).

Panigrahi, K.C., 1986: History of Orissa, Cuttack.

Panigrahi, M., 1990: Archaeology of Orissa from the Neolithic to the Early Historic Period, M.Phil. dissertation, Department of History, University of Delhi.

Patra, B., 1994: `Ports of Ancient Orissa', Journal of Orissan History, XIII:54-60.

Pattnaik, J.K. and Tripathy, B.K., 1993: `Ships and Shipping in Orissan Art', Puratattva, 23:61-63.

Pattnaik, S.K., 1993: `Trade Routes and Communication Pattern of Ancient Orissa', Indica, 56, 1:47-58.

Phalgunadi, I.G.P., 1984: `Hinduism in Bali', Southeast Asian Perspectives, 1, 1:37-55.

Phalgunadi, I.G.P., 1994: `A Fundamental Dictionary of Balinese Language and Culture', The Southeast Asian Review, 19, 1-2, Jan.-Dec.

Polyani, K. et. al., 1957: Trade and Markets in the Early Empires, Glencoe.

Rajan, K., 1990: `New Lights on the Megalithic Culture of Kongu Region, Tamilnadu', Man and Environment, XV, 1:93-102.

Rajguru, S. (ed.), 1958: Inscriptions of Orissa (A.D. 300-700 C.), 1 and 2, Government of Orissa, Bhubaneswar.

Rao, S., Nageswara Rao, M. and Vadyanadhan, R., 1983: `Morphology and Evolution of Mahanadi and Brahmani-Baitarani deltas' in Dikshit, K.R. (ed.), Geomorphology Contribution to Indian Geography, Vol.2, Delhi:261-267.

Rao, S.N., 1977: `Excavations at Sarutaru: A Neolithic Site in Assam', Man and Environment, 1, 1:39-43.

Rao, T.C.S., 1992: `Geophysical Survey of Maritime Archaeological Sites off the East Coast of India' in Nigam, R. and Khare, N. (eds.), New Trends in Indian Art and Archaeology, Delhi:443-455.

Rath, P.C., 1947: `Maritime Activities of Kalinga', Journal of Kalinga Historical Research Society, 1,4:347-360.

Raut, L.N. and Tripati, S., 1993: `Traditional Boat-Building Centres around Chillika Lake of Orissa', Journal of Marine Archaeology, 4:51-55.

Ray, H., 1994: `The Identity of Huang-Chi - An Ancient Indian Kingdom in Intimate Contact with Han-China', Indian Historical Review, 19, 1-2:1-34.

Ray, H.P., 1986: Monastery and Guild, OUP, New Delhi.

Ray, H.P., 1989: `Early Maritime Conflicts between South and Southeast Asia', Journal of Southeast Asian Studies, 20, 1:42-54.

Ray, H.P., 1989: `Early Trade in the Bay of Bengal', Indian Historical Review, 14, 1-2:79-89.

Ray, H.P., 1994: The Winds of Change - Buddhism and the Maritime Links of Early South Asia, OUP, New Delhi.

Ray, H.P., 1996: `Maritime Archaeology: The Ethnographic Evidence', Man and Environment, XX, 1:74-85.

Ray, S.N., 1932: `Sea in Folklores of Orissa', Prachi, II, 13-77.

Roy, P.C. (ed.), The Mahabharata (New Edition), Calcutta.

Sah, A.P., 1976: Life in Medieval Orissa, Varanasi.

Sahai, B., 1992: `Remote Sensing of Coastal Environment - An Overview', Workshop on Utilisation of Coral Reefs, Space Application Centre, Ahmedabad.

Sahu, B.P., 1979: Prehistoric and Early Historic Archaeology of Orissa, unpublished M.Phil. dissertation, Department of History, Delhi University.

Sahu, B.P., 1984: `Ancient Orissan Cultural Relations (Reflection on Archaeological Data', Indica, 21, 1:5-10.

Sahu, B.P., 1987: `The Dynamics of Internal Transformation of the Tribal Society' in Shrimali, K.M. (ed.), Essays in Indian Art, Religion and Society, New Delhi.

Sahu, B.P., 1996: `Situating Early Historical Trade in Orissa' in Shrimali, K.M. (ed.), Indian Archaeology since Independence, Delhi:96-109.

Sahu, N.K., 1984: Kharavela, Bhubaneswar.

Sankalia, H.D., 1981: `From History to Prehistory in Assam' in Srivasta, V.S. (ed.), Cultural Contours of India, Part II, Delhi.

Sarkar, J., 1950: `Medieval Orissa's Seaport: Balasore', Bihar and Orissa Research Society, 36, 3-4:148-174.

Sarkar, K.K., 1967: `Kalinga (Sanskrit), Klin (Old Khem) and Holing (Chinese)', Proceedings of Indian Historical Congress, 27:70-73.

Sarma, I.K., 1991: `Ceramics and Maritime Routes of India - New Evidence', Puratattva, 21, 1:37-42.

Senaviratne, S., 1993: `From Kudi to Nadu: A Suggested Framework for the Study of the Pre-State Political formations in Early Iron Age South India', Sri Lanka Journal of Humanities (University of Peradeniya), XIX, 1-2:58-77.

Seneviratne, S., 1980-81: `Kalinga and Andhra: The Process of Secondary State Formation in Early India', The Indian Historical Review, Vol.7, 1-2:54-69.

Senapati, N., 1977: Orissa District Gazetteers: Puri, Cuttack.

Sengupta, G., 1996: `Archaeology in Coastal Bengal' in Ray, H.P. and Salles, J.F. (eds.), Tradition and Archaeology: Early Maritime Contacts in the Indian Ocean, Manohar, Delhi:115-23.

Service, E.R., 1975: Origins of the State and Civilisation: The Process of Cultural Evolution, New York.

Service, E.R., 1978: `Classical and Modern Theories of the Origins of Government' in Cohen, R. and Service, E.R. (ed.), Origins of the State: The Anthropology of Political Evolution, Philadelphia:21-34.

Sharma, T.C., 1967: `A Note on the Neolithic Pottery of Assam', Man (New Series), 2, 1:126-28.

Shrivastava, P.C., 1975: `A Note on the Study of Movement of Beach Sand by Flurescent Tracer at Paradip and Gopalpur, Orissa Coast', Journal of Geological Society of India, 16, 1:78-83.

Singh, J., 1969: Prachina Utkala (Oriya), Orissa Sahitya Academy, Bhubaneswar (Reprint).

Singh, M.M., 1961: `India's Overseas Trade as known from the Buddhist Cannons', Indian Historical Quarterly, 37, 2&3:177-182.

Singh, U., 1994: Kings Brahmanas and Temples in Orissa - an epigraphic study, OUP, New Delhi.

Sinha, B.K., 1990-91: `Excavation at Golbai Sasan, District Puri, Orissa', Puratattva, 21:74-76.

Sinha, B.N., 1961: `Morphological Regions of Orissa', The Indian Geographical Review, 6, 1:1-20.

Sinha, B.N., 1971: Geography of Orissa, NBT, Delhi.

Sircar, D.C., `Bhadrak Inscription of the Time of Gana of Regnal Year 8', Epigraphia Indica, 29:169-72.

Sivasubramanian, K., 1991: Kattumaram, Fisheries and Fisher-folk - A Study in Kolhapatnam, Pallipa-lem, Andhra Pradesh, India (A Survey of the Fisheries and Fisherfolk), Bay of Bengal Programme, Madras.

Sjoberg, G., 1960: The Pre-Historical City of Past and Present, New York.

Solvyns, F.B., 1811: Les Hindous ou Description de'leurs Moeurs, Coutumes, Ceremonies, Vol.III, Paris.

Subba Rao, B., 1958: Personality of India, Baroda.

Thapar, B.K., 1985: Recent Archaeological Disccveries in India, Paris.

Thapar, R., 1988: The Mauryas Revisited, Calcutta.

Thimma Reddy, K., 1991: `Coastal Ecology and Archaeology: Evidence from the East Coast of India', Man and Environment, XIX, 1-2:3-57.

Tietze, U. (ed.), 1985: Artisanal Marine Fisherfolk of Orissa, Cuttack.

Tripathy, B. and Patnaik, S.K., 1990: `Pottery in Ancient Orissa - A Study of Redware', Orissa Historical Research Journal, XXXVIII, 1-4:224-234.

Tripathy, K.C., 1977: `Prehistoric Studies in Orissa' in Das, M.N. (ed.), Sidelights on the History and Culture of Orissa, Cuttack.

Tripathy, R., 1986: Crafts and Commerce in Orissa, Delhi.

Tripathy, S., 1982: `Imitation Kushana Coins and the Kusana Rule in Orissa', Journal of the Orissa Research Society, 1,2:39-52.

Tripathy, S., 1986: Early and Medieval Coins and Currency System in Orissa, Calcutta.

Tripati, S., 1995: `Traditional Boat-Building and Navigational Techniques of Southern Orissa', Journal of Indian Ocean Studies, 3, 1:66-79.

Ucko, P.G., Tringham, R. and Dimberley, G.W. (eds.), 1972: Man, Settlement and Urbanism, Duckworth.

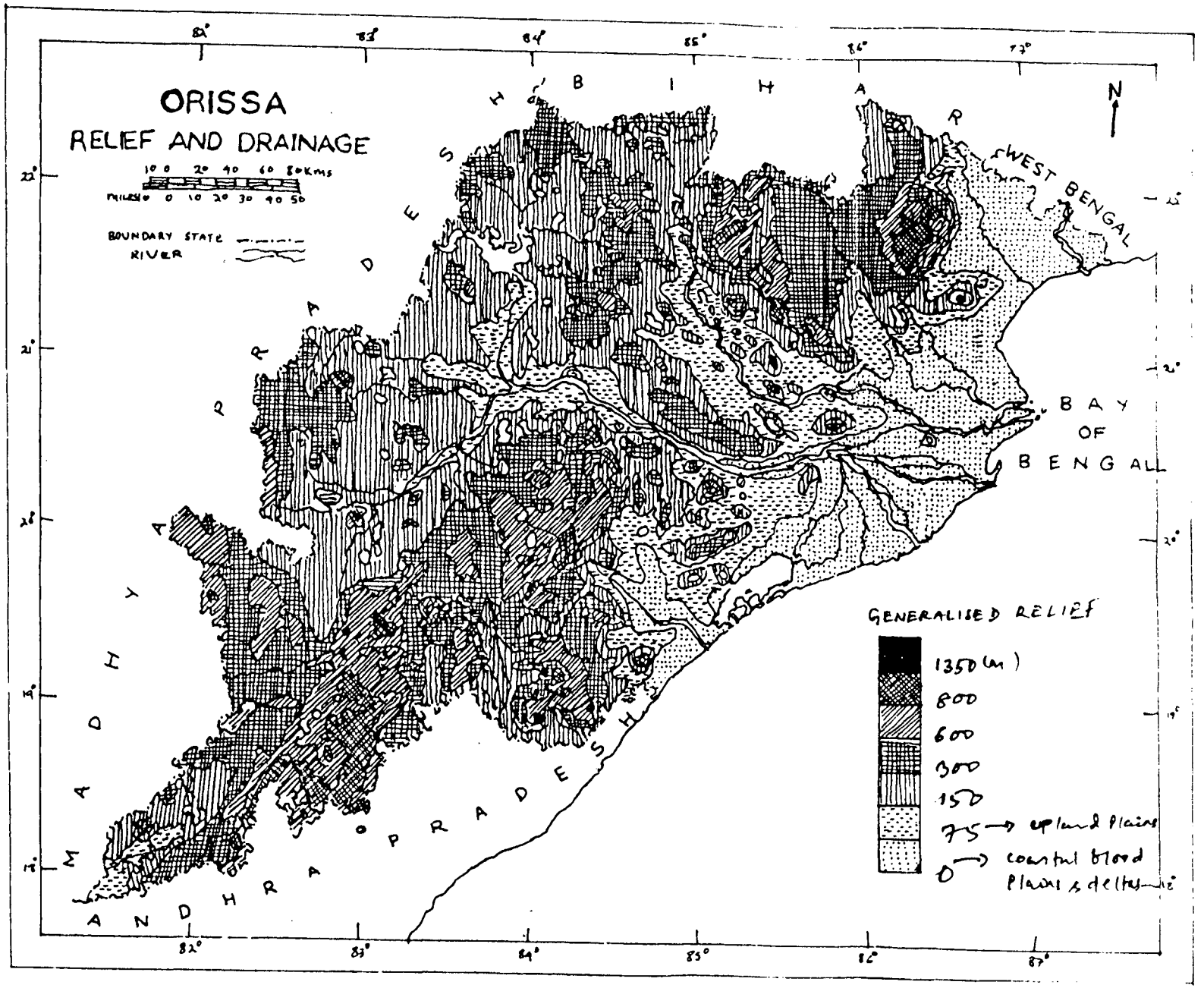
Walters, T., 1967: Yuan Chwang's Travels in India (A.D. 625-645), Vol.2, Delhi.

Webb, M.C., 1974: `Exchange Networks: Prehistory', Annual Review of Anthropology, 3:357-383.

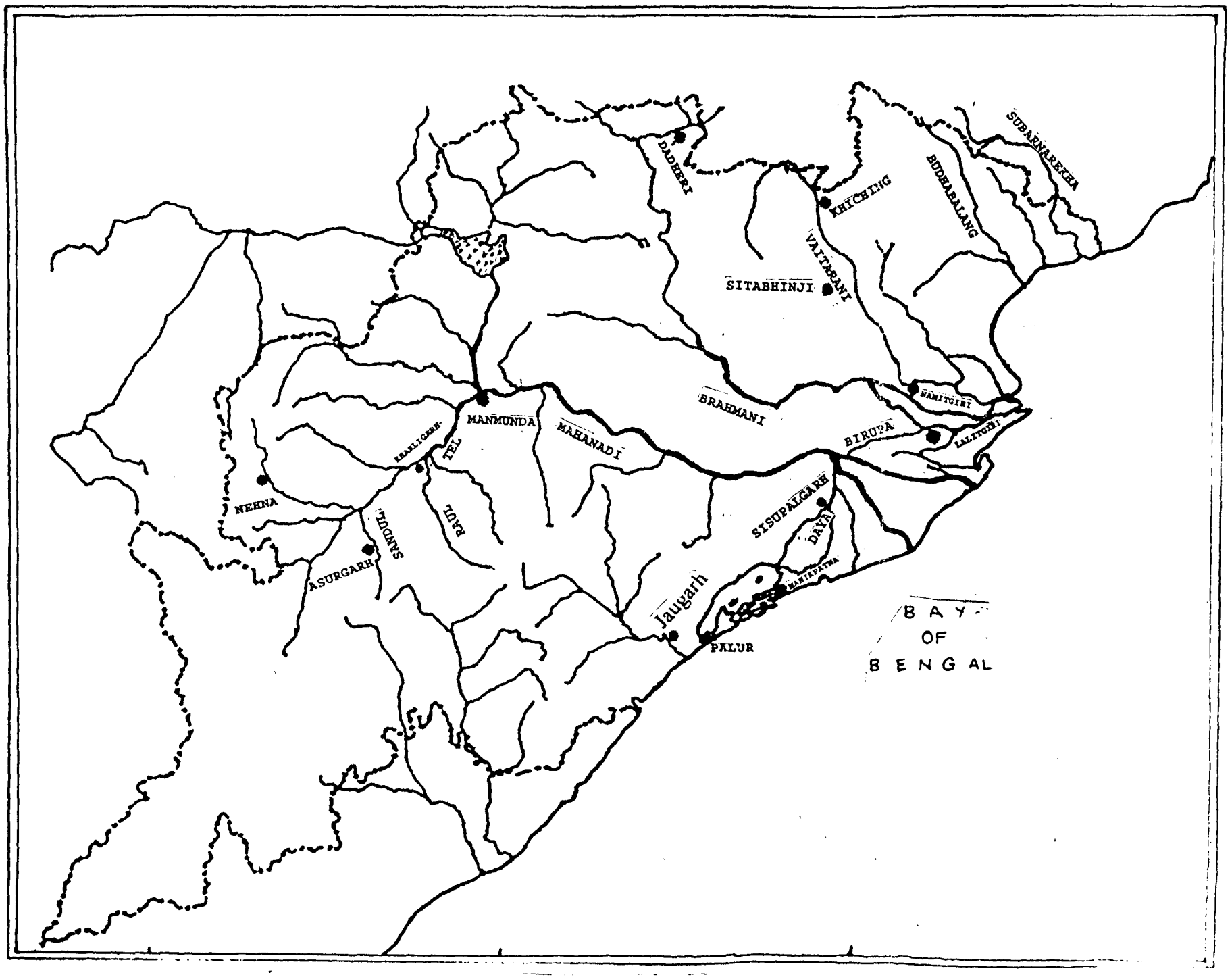
Wolters, O.W., 1967: Early Indonesian Commerce: A Study of the Origins of Srivijaya, Cornell University Press.

Yule, P., Rath, B.K. & Hojgaard, K., 1990: `Sankerjang: A Metal Age burial Site in the Dhenkanal Upland of Orissa', South Asian Archaeology Series, 1987:581-584.

Wright, H.T., 1977: `Recent Research on the Origin of the State', Annual Review of Anthropology, 6:379-97.



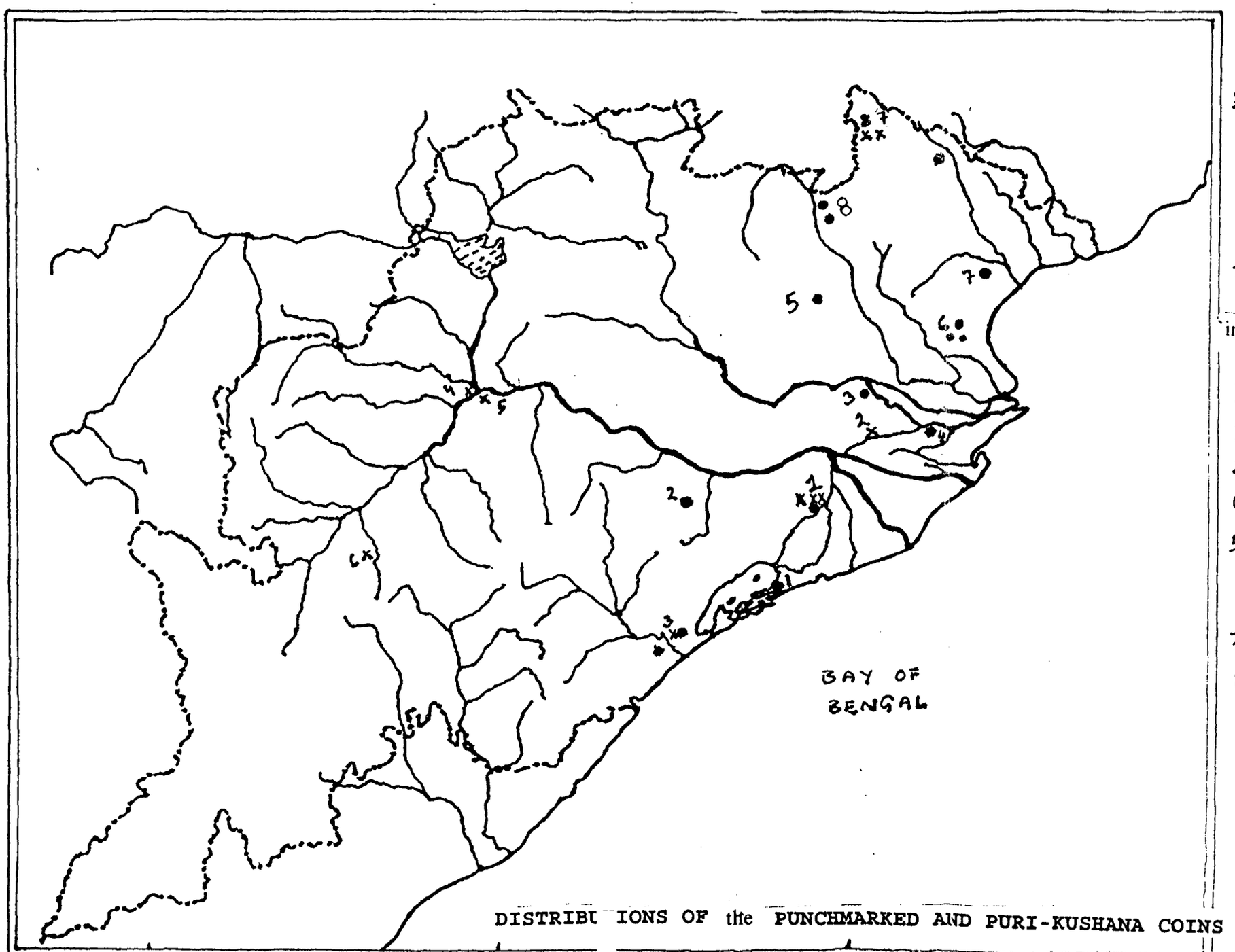
RELIEF OF ORISSA



SITES of EARLY HISTORICAL

λ — PUNCHMARKED

● — PURI-KUSHANA COINS



DISTRIBUTIONS OF the PUNCHMARKED AND PURI-KUSHANA COINS

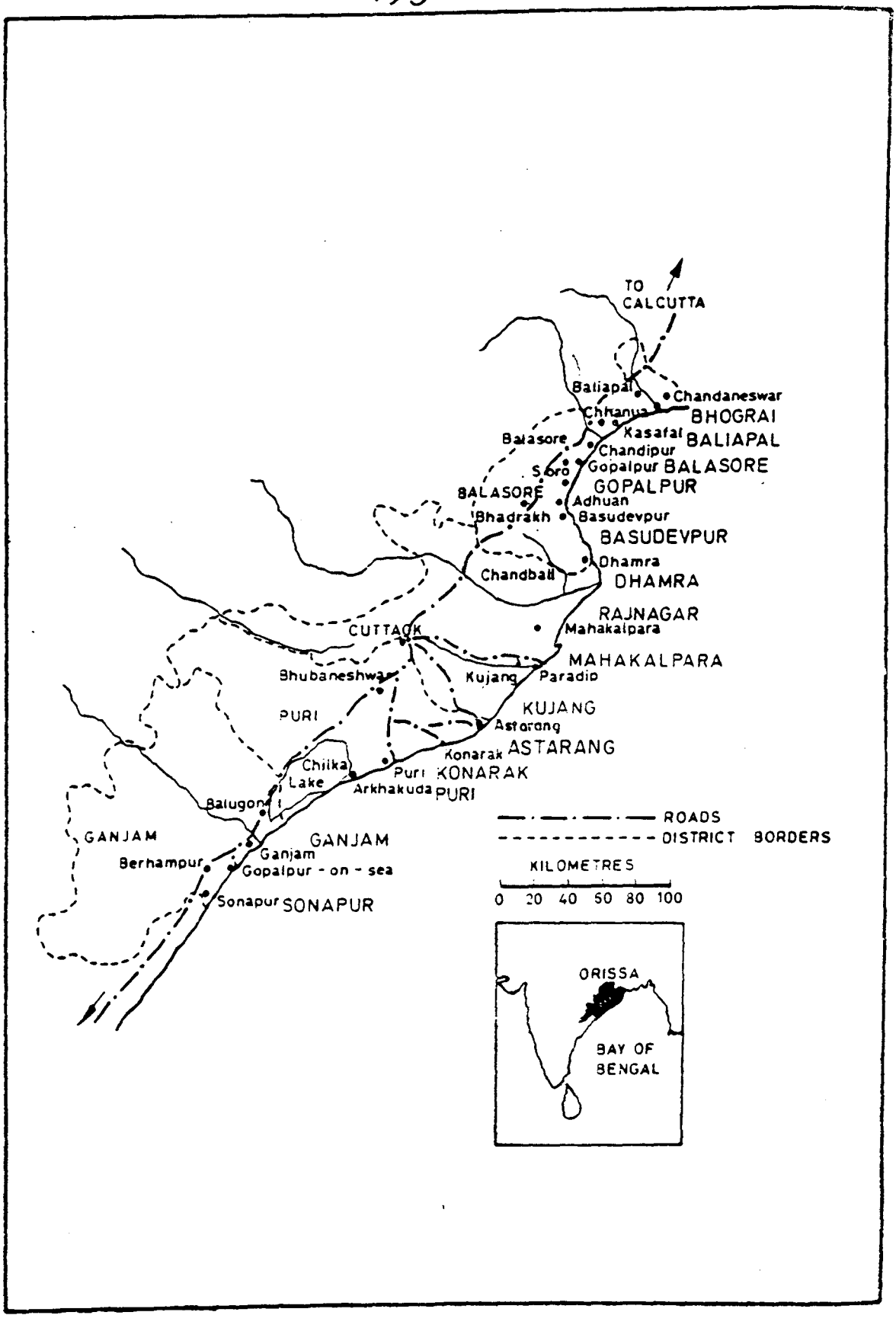
N
W E
S

punch marked

1. Bhubaneswar.
2. RAMESVARA
3. Jaugarh
4. Sonepur
5 Manmunda
6 ASURGARH
7. BAHALDA

imitation Kushana coi

1. MANIKPATNA
2. NAYAGARH
3. KAINA
4. LALITGIRI
5. SITABHINJI
6. BHADRAK
7. BALASORE
8. KHICHING



FISHING SETTLEMENTS ALONG THE ORISSA COAST

Fig.1: A bigger vessel being built in skeleton sequence in which the frames give the shape of a hull. In contrast, the traditional and small boats are built in shell sequence in which the planks give the shape of a boat.

Fig.2: A chhoat found in the coast of North Balasore.

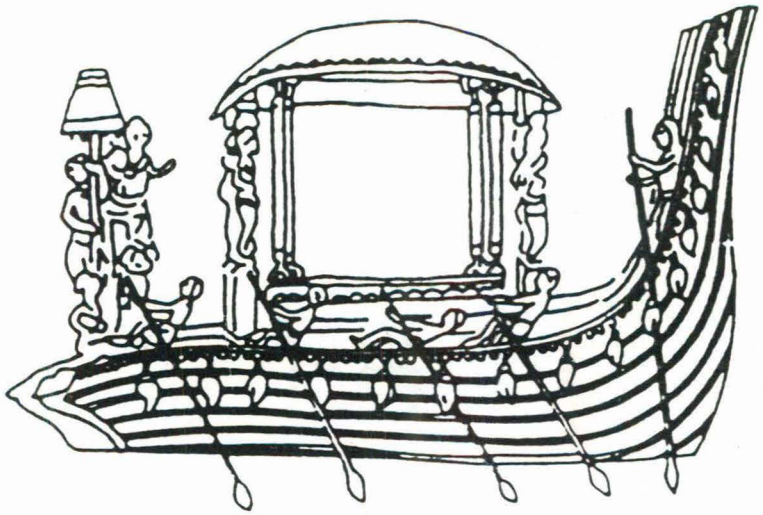


Fig.3: The ceremonial barge of the Jagannath Temple (12th century). This is the only in situ iconographic representation of a reverse clinker-built boat in India.

Fig.4: A patia found in North Balasore from the river Pancapara to the Subarnarekha. This reverse clinker-built boat is rare worldwide.

Fig.5: A stitched masula boat of the Puri and Ganjam Coast.

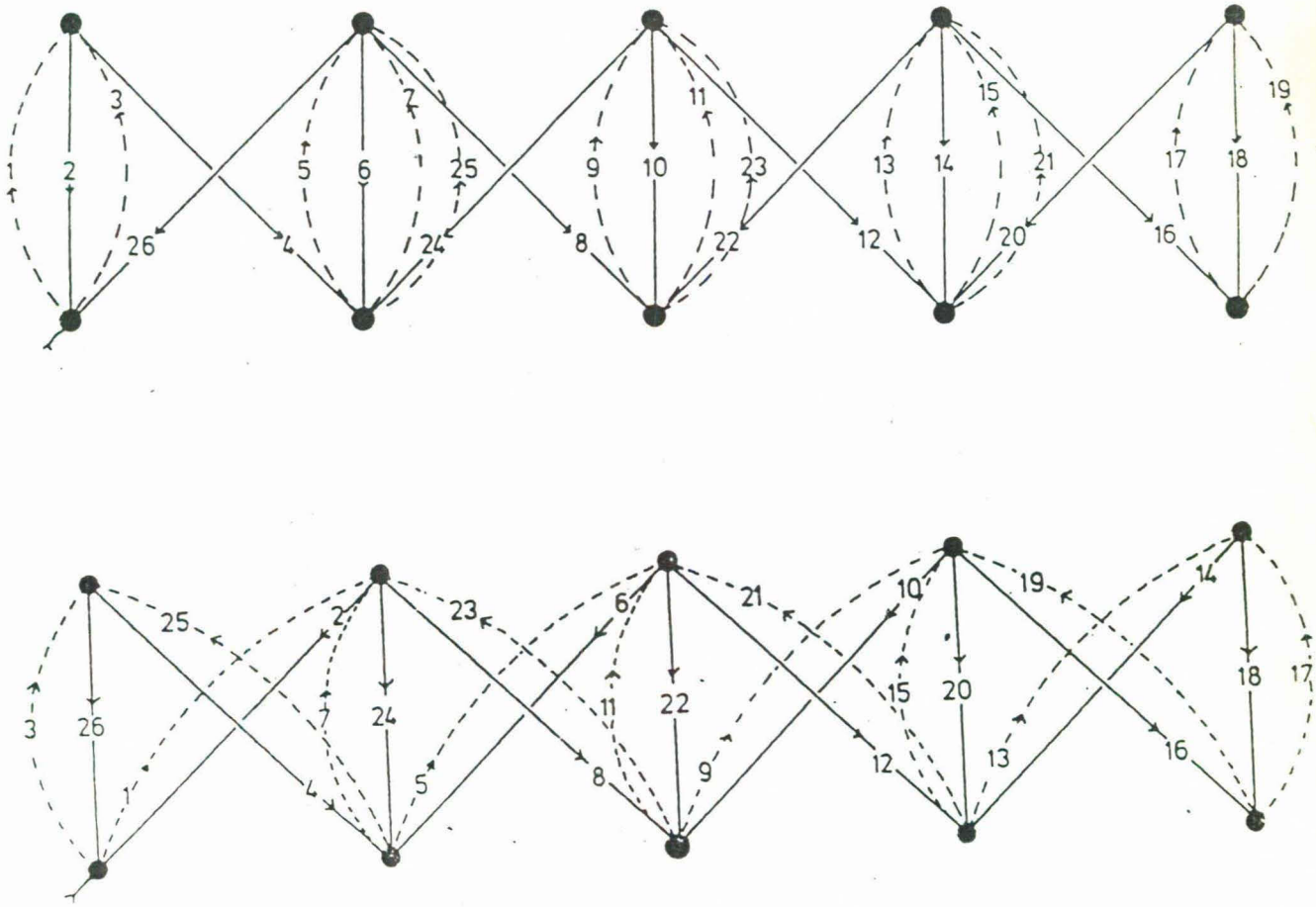


Fig.6: a. Stitching pattern of the masula of south India.

b. Stitching pattern of the masula of Puri and Ganjam; Both loop and criss - cross 'N', both on the outboard and inboard of a masula boat.

Fig.7: A three log cattamaran of the South Orissa Coast.

Fig.8: An ordinary clinker boat of the Chillika Lake with biped masts. This type of rigging is unique in India.