



## **A Critical Review of the Economy of the Chalcolithic People of Inamgaon**

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### **Abstract**

The large-scale excavation of Inamgaon was a landmark in the history of Indian archaeology, it was not only the most extensive and systematic excavation, but several scientific methods were employed for the recovery and analysis of archaeological data. The multidisciplinary approach enabled the reconstruction of various aspects of the economic and the socio-political organization of the early farming community of the Deccan. While considering economy, as one of the main aspects of social life, the present emphasis on the reanalysis of the economic aspects of Chalcolithic Inamgaon has been explored with a consideration of the three basic activities of the economic system (production, distribution and consumption) and all its variables (subsistence, technology and environment).

### **Introduction**

Inamgaon is one of the most intensively and extensively excavated and well reconstructed Chalcolithic sites of the Deccan region as well as of India so far. The site of Inamgaon (Pune District, Maharashtra) is considered as the "regional centre" of Bhima Valley i.e. the main settlement of that region (Shinde, 1987). The archaeological research in the Deccan, prior to the beginning of Inamgaon excavation, involved mainly vertical trenches and thus the primary aim of this excavation was to build the regional chronocultural sequence. The large-scale excavation at Inamgaon was a landmark in the history of Indian Archaeology, this was not only the most extensive and systematic excavation, but several scientific methods were employed on the recovery and analysis of archaeological data. The multidisciplinary approach enabled the reconstruction of various aspects of the economic and the socio-political organization of the early farming community of the Deccan. The contextual approach, propounded by Walter Taylor (1948) and Ian Hodder (1986), adopted as the methodology to carry out the research at Inamgaon. Large-scale excavations were conducted at Inamgaon for twelve seasons (from 1968-71, 1972-74, 1975 and 1977-83) by Prof. H. D. Sankalia, Prof. M. K. Dhavalikar and Prof. Z. D. Ansari. Along with the reconstruction of the material culture, these intensive and large-scale

excavations enabled the scholars to throw some light on the settlement and subsistence patterns, the socio-political and economic conditions and the religious beliefs of the people.

### The Site and its Environment

The ancient site (18° 36" North; 74° 32" East) is located about 3 km from the village of Inamgaon (about 89 km east of Pune in Maharashtra), on the right bank of the river Ghod, a tributary of the river Bhima, which in its turn, forms part of the Krishna system. It is represented by a series of five mounds of which the first four (INM-I, INM-II, INM-III, INM-IV) are situated in a way as if forming a horse shoe pattern whereas the fifth mound (INM-V) is located about 150 m west of the principal mound i.e. INM-I (Dhavalikar *et al.*, 1998). It is one of the most extensive Chalcolithic sites of Maharashtra, spread over an area of roughly 550m x 430m (Fig. 1).

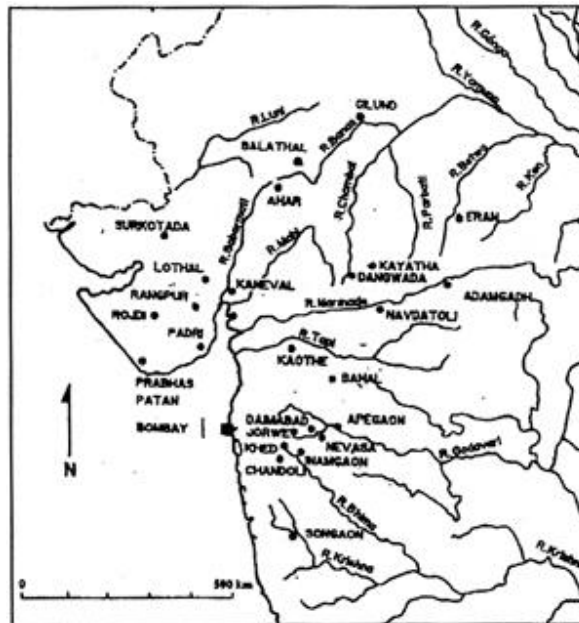


Fig. 1: Map showing the Site

Twelve seasons of intensive large-scale excavations at Inamgaon revealed three cultural phases (Dhavalikar *et al.*, 1988). These phases and their corresponding chronology is given below:

Period III	→ Late Jorwe Culture (layers 5-1)	→ c. 1000 to 700 BC
Period II	→ Early Jorwe Culture (layers 11-6)	→ c. 1400 to 1000 BC
Period I	→ Malwa Culture (layers 16-12)	→ c. 1600 to 1400 BC

The mound INM-I is the largest mound and represents the principal area of habitation. It was the

most important residential area of the ancient settlement and was occupied during all the three cultural periods. The mound INM-II is the adjoining mound of INM-I and was occupied only during Period I. The mound INM-III was occupied during all the three cultural periods. This mound is located to the south of INM-I, near its western end. The mound INM-IV is located to the south of INM-II. This mound has not been subjected to excavation, but the pottery from this area shows that it was occupied during all the three cultural periods. The mound INM-V is situated to the west of INM-I and was probably occupied only during Period II (Dhavalikar *et al.*, 1988).

Inamgaon is a village in the Shirur taluka of Pune District, Maharashtra State, which is located 89 km East of Pune city. The region around Inamgaon forms a part of the lower reaches of the Ghod river, the major tributary of Bhima. The river Ghod originates at an elevation of 1090 m above the mean sea level on the eastern slopes of the Western Ghats and flows in the east-southeast direction for about 200 km before meeting the Bhima (Pappu, 1988). Geologically, the region around Inamgaon, is covered by Cretaceous-Eocene Deccan Trap basalt and there are no later formations except the older alluvium of the late Pleistocene age and the sub-recent alluvium of the Holocene age. The Chalcolithic settlement at Inamgaon is situated on an alluvial fill terrace, about 14 m above the bed level of the river Ghod (Rajaguru, 1988).

The total thickness of alluvium varies from 10 m to 15 m. These alluvial deposits around Inamgaon have been divided into Older Alluvium of the late Pleistocene age (12 m to 15 m in thickness) and Younger (sub-recent) Alluvium of Holocene age (8 m to 10 m in thickness). The older fill is made up of yellowish brown *Kankary* silt, inter-layering with the bouldery, pebbly and sandy gravels. The younger fill is made up of dark brown non-*Kankary* and well laminated silts (Pappu, 1988).

The landscape at the time of the arrival of the Chalcolithic settlers was not very much different from the present one. The river Ghod flowed more or less at the same bed level as today, but the alluvial terrace was undissected and covered by fairly mature black soil. The forest cover was fairly denser than today. The palaeontological evidence shows that the semi-arid environment was congenial for varied animal life since 20,000 yrs BP (Rajaguru, 1988).

### **Reanalysis and Reconstruction of Economic Organization of Inamgaon**

While considering economy, as one of the main aspects of social life, the term itself needs to be properly understood. 'Economy', in its literary sense, means "management of resources" (*The Little Oxford Dictionary*, 1976) or more simplistically how people made a living out of their social- and material life. From the present ethnographic study it has been found that economic system anywhere consists of at least three basic activities (1) the production and/or acquisition of goods, services and foodstuffs; (2) the distribution of these products within the society and possibly also between societies; (3) the actual consumption or use of the goods, services, or food. Archaeologists should study all these three aspects to reconstruct the ancient economic organization (Knudson, 1978).

After the introduction of 'New Archaeology' (Binford, 1962), the reconstruction of various subsystems of culture (which includes non-material aspects like social, political, religious, economic organizations, etc.) including an emphasis on the understanding of the interrelationship of the different subsystems and also to understand the change in the different subsystems through time, became an important approach to reconstruct the past. For Knudson (1978), a society's economic subsystem is based on variables like subsistence, technology and environment. 'Subsistence' is the way a society makes its living. In ancient societies there were basically two different sorts of subsistence: the exploitation of wild animals and plants, and the exploitation of domesticated plants and animals. The reconstruction of changing economic patterns is directly related to the understanding of subsistence practices. 'Technology'; as a means and agency for the coping behaviour of people, is another most important aspect of economics in the archaeological record. The tools, the technology involved in making them and the procedure of their use by the past people can determine the basic economic life-style of the society. Together with the other two factors, the 'Environment' plays an important role (including limitations) on a society for economic acquisition and production practices in terms of available resources. It therefore, places an immediate effect on the life style of the people. And moreover, the change in environment may change the subsistence pattern of a particular region.

The present emphasis on the reanalysis of the economic aspects of Inamgaon from the three different cultural periods of the Chalcolithic time has been explored with a consideration of the three basic activities of the economic system (production, distribution and consumption) and all its variables (subsistence, technology and environment) for the reinterpretation of the economic organization of the Chalcolithic culture of Inamgaon.

### **1. House Types and Settlement Patterns**

The house structures, which were found from the Malwa period (Period I) at Inamgaon, all were rectangular in shape except one rounded hut and three pit dwellings. According to Flannery (1972), round huts generally indicate a seasonally settled life. The occupants of pit dwellings and circular huts were probably very poor and they could not afford to make rectangular houses (Dhavalikar and Ansari, 1988).

The Early Jorwe houses were all rectangular in plan. In this phase storage facilities (for grain) were found almost in every house of this period, which indicates that agricultural activities were at the peak at that time.

In Late Jorwe period (starting from 1000 BC) there was a drastic change in their economy. The dwelling structures found in Late Jorwe period, all are circular huts except the house of the ruling chief. These circular huts imply a decline in their economy. As circular huts indicate a semi nomadic life, the Late Jorwe people observed a decline in agriculture and hence became more dependent on hunting and became semi-nomadic.

In Malwa period, the rectangular houses were built close to each other, and even pit dwellings were situated by their side. In Early Jorwe period the settlement was well planned, The houses were constructed almost in rows with an open space in between which may have served as a

lane. In Late Jorwe period, the circular huts were made in clusters of 3/4 or more (Dhavalikar, 1988). The planned pattern of settlement in Early Jorwe period indicates their prosperous economic condition but in Late Jorwe period, the clusters of round huts indicate their poor economic condition. The other structural remains, found from Inamgaon (like jetty, ditch, defence wall, embankment etc.), all are assigned to Period II, which also suggest well economic condition in the Early Jorwe period.

A remarkable feature of the Jorwe (both Early and Late) settlement is that the houses of the artisans such as the potter, the goldsmith, the lime-maker, the lapidary, the ivory carver, etc. were located on the western periphery of the principal habitation area (INM-I) whereas those of well-to-do farmers and men of means were in the central part. The house of the ruling chief of Early Jorwe was in the central part whereas in the Late Jorwe it was located in the eastern part, on the river front. Of the five different localities at Inamgaon, the largest (INM-I) was occupied by artisans and well-to-do people and the ruling chief, whereas, the others (INM-III & INM-IV) were probably occupied by poor farmers and labourers.

## **2. Economy - Pottery and Other Artefacts**

The main pottery from Period I (1600 BC to 1400 BC) was Malwa ware, which was typical black-on-red painted pottery. Painted designs include linear and geometrical patterns and a few motifs, such as the stylised bull and dog. In Period II (1400 BC to 1000 BC), Malwa ware was replaced by Jorwe ware, which was also black-on-red painted pottery but as far as the fabric is concerned, it was far more superior than Malwa ware. The superior fabric can indicate the better and stable economic condition of the Early Jorwe people. In the Late Jorwe period, a decline in the potters' art was observed. Though in form and fabric, it was related to Jorwe ware but in sharp contrast to the fine fabric of the Early Jorwe period, the Late Jorwe fabric was coarse. And in the closing phase of Period III (Late Jorwe period) some vessels were baked without treating them with a wash or executing painting on them. Totally undecorated Late Jorwe ware vessels were found from the late levels of Period III (Dhavalikar and Ansari, 1988). All these indicate a decline in potter's art as well as in the whole economic condition of the Late Jorwe people, which was severe in the ending phase of Period III. The Late Jorwe people could not recover from this declining economic condition and that brought the end of the Chalcolithic culture at Inamgaon.

As far as other artefacts are concerned, in case of stone tools (blade industry) found from Inamgaon, the blades and all the other tool types made on blades were found in large numbers from the Late Jorwe period. The total number of blades (unused, used and finished tool types) from Period III is 6658, whereas from Period II, it is 3570 and from Period I, the number is 1128. All the different finished tool types found from Period III are much more in number than the preceding two periods. In case of bone and antler objects i.e. the tools made on bones or antlers, the total number is also much higher in Period III (255) than the preceding period i.e. Period II (77). Points, scrapers, punches, picks, etc. made on bone, are found in large numbers from Period III. This higher number of stone (blade tools) and bone tools from Period III may indicate that at that period the people were much more dependent on animal food, because the finished tool types, which were dominated by different types of points could serve as hunting implements. The tools (both stone and bone) were also used for killing or butchering animals. Large numbers of

bone and antler objects from Period III also indicate their greater dependence on animals. Regarding the shell objects, the case is also similar. Among the total 406 shell objects from Inamgaon, 324 came from Period III. Late Jorwe period (Period III) has yielded the highest number of riverine shell objects. Most probably they could not continue long distance trade with the contemporary communities and relied heavily on the local source and hence the evidence of the exploitation of the local riverine shell. This became a necessity in Period III, because the people were compelled to change their subsistence pattern due to the decrease in agriculture production probably because of the increased aridity (Dhavalikar and Ansari, 1988).

### **3. Burial Practices**

As far as burial practice is concerned, no adult burial was found from Malwa period. Only child burials of single-urn and twin-urn type were found from the Malwa period. This indicates that Malwa people did not bury adult dead bodies within the habitation.

In Early Jorwe period, people started to bury the adults and continued the child burial practice also. Among 72 burials of this period, 25 were adult burials. A number of burial goods including pots, ornaments and tools were also buried with the dead person. So, these types of burials in the Early Jorwe period indicate the social and economic superiority of a certain section of the society, who could afford to bury their deads such elaborately.

The maximum number of burials occurred in the Late Jorwe period (Period III). Mainly the topmost levels of Period III had a very high concentration of burials, which suggest probably epidemic or some other massacre might have taken place at the end of the occupation at Inamgaon (Dhavalikar and Ansari, 1988). Among 171 burials from this period, 64 were adult burials. The multiple burials of adult skeletons (which is reported from Late Jorwe period only) in this period indicates high frequency of death as well as the poor economic condition of the people as probably, they could not afford singular burials and ritual and rites. Overall the high frequency of burial in this period suggests a decline of the culture.

### **4. Plant and Animal Economy and Chalcolithic Diet**

The economy of the Chalcolithic inhabitants at Inamgaon was mainly based on farming and stock-raising. The food economy was further supplemented by hunting wild animals and exploiting aquatic and avian fauna. In the beginning of the Malwa period, the inhabitants domesticated sheep/goat and cattle. When the agricultural activities developed at the site, they felt the need for more cattle. The agricultural activities reached its peak during the Early Jorwe period (Thomas, 1988). The crops, except perhaps rice, were actually cultivated in the vicinity of the site. The occurrence of monsoon (*Kharif*) crops like black-gram, green gram, hyacinth bean, horse gram and winter crops (*rabi*) like wheat, barley, lentil, grass pea, common pea etc. suggest that the Chalcolithic farmers had the knowledge of double cropping. Mixed cropping might have also prevailed (Kajale, 1988).

The Malwa people who were the first inhabitants of Inamgaon came to the site with the knowledge of agriculture. They domesticated sheep/goat and cattle almost in equal number. In

the subsequent Early Jorwe period the intensity of the agricultural activities increased in a great way. Early Jorwe people kept more cattle probably for this reason. They had an average of 52.72% cattle, while 22.93% of sheep/goat. The irrigation canal, which was assigned to Early Jorwe period, supports the prosperous agriculture and the cultivation of wheat, barley etc. in this period. The distribution of grains in various trenches and layers also suggests the plant economy was richest in Early Jorwe period (Period II). In Late Jorwe period there was a sharp decline in the intensity of cultivation of various domesticated species. Though the earlier domesticated species continued but they reduced highly in intensity in Period III (Late Jorwe period). So, the people of the Late Jorwe period, who suffered from poor cultivation, became dependent on the collection of wild plant food like Indian jujube (that was found in great quantity in this period) (Kajale, 1988), and hunting of wild animals and butchering of the pastoral animals at the site. Probably the drop in rainfall and consequent increase in aridity led to the decline in agriculture, which was probably the result of poverty in this period (Dhavalikar, 1988). The people of Period III (Late Jorwe period) had to adapt to the ecological conditions prevalent at that time. They started to keep more sheep/goat. In this period, the cattle are represented by 20.22% and sheep/goat by 58.94%, which was farther increased in the later levels of the Late Jorwe period. This indicates the change in food economy and supports the agricultural decline. The maximum exploitation of avian and aquatic fauna also indicates that the conditions were adverse in this period. There was also evidence of consumption of dog meat in Late Jorwe period. The dog bones were found with cut marks and with evidence of charring from this period. This suggests very poor economic condition and poverty of the people of Period III. This is also supported by the ethnographic parallel (of Kathodi tribe). From the flimsy circular huts of this period, it can be said that people became semi-nomadic in this period which was due to the decline in agriculture and more dependence on pastoralism and hunting of wild animals, avian & aquatic fauna. The other cultural evidences from this period also support that they were economically very poor in this period. The evidence of horse bone from this period suggests their contact with the Megalithic people of Vidarbha region. This also indicates the mobility of Late Jorwe people. The availability of horse and ass in this period accelerated the mobility of the people and it became rather easy for them to find new pasture for their live-stocks (Thomas, 1988).

The trace element analysis of the human skeletal remains from Chalcolithic Inamgaon was carried out to obtain some information about the diet and subsistence as well as the economic conditions of the inhabitants (Gogte and Kshirsagar, 1988). It is scientifically proved that zinc (Zn) and copper (Cu) are rich in animal food, whereas strontium (Sr) and manganese (Mn) are rich in plant/vegetable food.

From the calculations of the mean elemental concentrations of bones (in parts per million or ppm) at different ages in Early Jorwe and Late Jorwe period (Gogte and Kshirsagar, 1988), it is evident that, in general, Zn and Cu concentrations are higher in the bones from the Late Jorwe period than in the bones from Early Jorwe period. This indicates that the Late Jorwe people were more dependent on animal food in their diet as compared to the Early Jorwe people. That means the food economy of the Late Jorwe people was based more on animals in sharp contrast to the Early Jorwe period in which people were more dependent on plant food. This suggests that there was flourishing agriculture in Early Jorwe period and because of the agricultural decline in the

Late Jorwe period people had to subsist more and more on animal diet (Gogte and Kshirsagar, 1988).

The strontium level is lower in the Early Jorwe bone samples than that in the Late Jorwe bones. Low Sr values can be due to more dairy foodstuffs in the diet of the Early Jorwe people. High Sr value in the Late Jorwe bones also might be due to more fish in their diet. Mn value in grains is rather low as compared to its amount in other plant foods (particularly wild plant foods). Manganese is also present in molluscs. Therefore, it may be said that high Mn concentration in bones from the Late Jorwe period probably because of their dependence on the locally gathered wild plant food and fish (Gogte and Kshirsagar, 1988).

*Dietary difference according to status:* At Inamgaon, in Late Jorwe period, people mainly lived in circular huts with a few exceptions of rectangular houses (Dhavalikar *et al.*, 1988), which were occupied by the people who were probably economically and also socially superior to the rest. Skeletal remains; found from different houses of this period, were tested (chemically) by the scholars to understand the status differences of the people through dietary patterns. The high status of the residents from the rectangular houses of this period is reflected in the protein-rich diet showing higher Cu and Zn content, while these bones show lower Sr concentration as compared to the bones of individuals from the circular huts of this period (Gogte and Kshirsagar, 1988). This suggests that the occupants of the circular huts were economically poor and the occupants of the rectangular houses were economically rich in this period. This is also supported by the material evidences and burials found from these rectangular houses of Late Jorwe period.

*Weaning practices:* As human milk is low in Sr and cereal foods are rich in Sr, the weaning practice can also be understood by strontium estimation of the skeletal remains. Increase in Sr & Ca ratio in bones of the children can be related to the introduction to foods other than mother's milk. At Inamgaon, the higher Sr values in bones of the age between 2 to 5 years from the Early Jorwe period as compared to those from the Late Jorwe period suggest that the children of Early Jorwe period were dependent more on plant food due to more agricultural activities during that period. The rise in the weaning age in the Late Jorwe period at Inamgaon was probably because of the shift from the sedentary agricultural phase (Early Jorwe) to the semi-nomadic pastoral phase (Late Jorwe) due to the decline in agriculture (Gogte and Kshirsagar, 1988). This also supports the decline in economy in the Late Jorwe period.

## **5. Site Catchment Analysis at Inamgaon and its Inferences**

Site catchment analysis, as defined by Higgs and Vita-Finzi (1970), is the study of relationship between technology and natural resources lying within the economic range of individual archaeological sites. It is concerned with the exploitation of plant, animal, mineral and other resources by human groups in a particular territory. The concept of site catchment analysis rests on the assumption that, further the area is from the inhabited locus, the less likely it is to be exploited. The threshold limit of the catchment area for hunting-gathering community is 2 hours walking distance, which is the area of 10 km radius from the site and for the agriculturist community it is 1 hour walking distance, that is the area of 5 km radius from the site (Higgs, 1975).



At the site of Inamgaon, the site catchment analysis was carried by Dr. R. S. Pappu (this is the first site in India, where site catchment analysis was carried out to understand the exploitation of resources). The data from the excavations and the data collected on present resource potential (modern land use pattern) around the ancient site had been integrated to assess the prehistoric resource potential. The catchment area around the ancient site of Inamgaon for a radius of 5 km was studied by a series of transects in different directions from the inhabited locus (as proposed by Higgs, 1975). The one-hour exploitation territory (5 km) was further divided into 12 minutes (1 km), 30 minutes (2.5 km) and 1 hour (5 km) walking distances. The details of modern land use, topography, climate, mineral resources, soil, natural vegetation, fauna, cultivated plants, environmental changes have been thoroughly recorded and studied. A reconnaissance survey was also undertaken for two-hours exploitation territory (10 km) to have an overall idea of the landscape and the resource potentiality within the larger area around the ancient site of Inamgaon (Pappu, 1988).

The Chalcolithic site at Inamgaon was continuously inhabited for about 900 years from 1600 BC to 700 BC. The environmental studies indicate that the landform within the catchment area was fairly stable over the last 4000 years (Pappu, 1988). The subsistence, pattern of the early farming community at Inamgaon was based on agriculture. But hunting, fishing, collection of forest products and pastoral activities also played an important role in their subsistence activities.

Chalcolithic people of Inamgaon exploited a circle of 2.5 km radius (on the basis of data) for their agricultural activities. The total arable land around 2.5 km. radius is 12.40 sq km (1240 hectares). The total population of Chalcolithic Inamgaon as calculated by Dhavalikar and Possehl (1974) was 800-1200 and the arable land required for this population is between 250 hectares (minimum) to 800 hectares (maximum). So, the land within 2.5 km radius from the ancient site was probably more than adequate for the Chalcolithic farmers (Pappu, 1988).

There is deep and medium (good for agriculture) black soil within the 1 km catchment area. Both *Kharif* (summer) and *Rabi* (winter) crops were planted. This indicates that the Chalcolithic farmers of Inamgaon practised rotation of crops. The intensive agriculture was possible due to the artificial irrigation canal during the Early Jorwe period (Dhavalikar 1984), which also indicates prosperity during that period (Early Jorwe). Barley was the staple food and was planted more frequently than wheat. The area enclosed by the inner bend of the meander loop of the Ghod river was used for intensive agriculture. The area on the left (other) bank of Ghod river within 1 km radius is mostly covered by thin soil cover and bare outcrops of basalt. Agriculture was rarely practised there (Pappu, 1988). Lithic blade industry is one of the main features of the Chalcolithic culture of Inamgaon. The main raw material was chalcedony and occasionally silica family minerals such as chert, jasper, milky quartz, carnelian, agate etc. These minerals were found in plenty in the gravel bar developed in the river around the site and also in the gravel deposits of Older Alluvium (Pappu, 1988).

In case of pottery, the predominant ware, in all the cultural periods (Malwa, Early Jorwe, Late Jorwe), was black-on-red ware with a few variations in shape, fabric, design etc. Potter's kiln was also recovered from the site. So, the pottery was made locally and the clay, required for pottery preparation, is available in abundance in the finer alluvial deposits exposed on the river banks,

which was the source of clay for making pottery in the Chalcolithic time (Pappu, 1988). Chalcolithic people probably also used to prepare lime on a large scale (as lime balls and lime kiln were recovered from the excavation). They probably used *Kankas*, occurring around the ancient site in various sizes and shapes. Riverine shells might also have been exploited to some extent for this purpose (Pappu, 1988).

The area within the catchment of 1 to 2.5 km was rich in small and big game. This indicates an ideal hunting ground for the Chalcolithic people of Inamgaon. The major portion of this land was probably covered by natural thorn and scrub vegetation during Chalcolithic times. So, this area was also used as grazing ground for the domesticated animals. A few agricultural fields were probably also located within a distance of 2 km from the ancient site wherever there was good arable land. The seasonal wild plant foods might have been gathered from this area also (Pappu, 1988).

The area between 2.5 and 5 km radius had relatively thick vegetation cover and was covered by thorn scrub type forest during Chalcolithic time. At that period there might have been varieties of deer and other fauna present in this area. This zone is quite far from the ancient site and hence, no agricultural activities were carried out here. But there is evidence of a farmstead situated 5 km south of the ancient site. This place is known as Gotkhila (hamlet of the main site). This was a seasonal camp of the main regional centre. The extensive exposure of chalcedony associated with vesicular basalt was noticed at a place situated 7 km southwest of the ancient site. This place is known as Garmal. Artefacts of different stages of manufacture were found here in significant number (Pappu, 1988).

## **6. Trade Aspect**

On the basis of the material evidence from the site and the inference from site catchment analysis, it can be said that the Chalcolithic community at Inamgaon exchanged materials with their contemporaries (Dhavalikar, 1988). According to Service (1972), this cannot rightly be called trade, which is associated with state societies; but it can rather be called reciprocal exchange, which is a characteristic of a chiefdom society. The Chalcolithic people at Inamgaon had trade or reciprocal exchange with many of their contemporaries including the hunter-gatherers (Dhavalikar, 1988).

Evidences of copper, gold and ivory objects were found from the excavation at Inamgaon. The remains of a furnace for heating and melting copper was also found. This indicates that copper was used at the site for locally manufacturing the copper objects from imported copper. But copper, gold, ivory etc. were not locally available. The copper ores were probably brought from a distance of 60 to 15 km radius from the ancient site. The nearest source of copper for the Inamgaon Chalcolithic people was in the present Gulbarga and Raichur districts in Karnataka. The good quality of copper ores such as chalcopyrite, cuprite and malachite have been reported from there (Pappu, 1988).

For gold objects also the nearest source was Hatti in Raichur district and Gadag in Dharwad district. Ivory also might have come from Karnataka. A few marine shells, which were recovered

from the excavations, might have come from the west coast region lying about 200 km west of the ancient site. Copper, gold and ivory objects were used on a restricted scale by the Chalcolithic people. This suggests that these objects were luxury items (Pappu, 1988).

On the basis of the data obtained from the excavation, it is evident that the Chalcolithic people of Inamgaon needed the circle of 2.5 km radius from the ancient site to satisfy their basic agricultural requirements. Grains of domestic species were cultivated in the vicinity of the site within the walking distance of 15 to 20 minutes. The area enclosed between 2.5 km and 5 km radius could satisfy almost all other resource requirements such as small and big game, wild plants and to some extent mineral resources. Other resources, which were not available within this catchment area but found from the site, probably came through trade contact or exchange network. This conclusion based on site catchment analysis is not very convincing for the simple reason that they also had to establish a farmstead at Walki, roughly 20 km away from the site (Dhavalikar *et al.* 1990). There was a need for these people to establish such a farmstead is clear indicative of the fact that the agricultural area around the site of Inamgaon was not enough. It is therefore suggested that the data from the catchment area may not always give correct picture of exploitation pattern and strategies. It is important therefore to have data from other sites and try to establish relationship between various sites in and around the main site.

The excavation at Inamgaon yielded shell objects (like bangles, perforated shell etc.). They used both riverine and marine shell. It is evident from the occurrence of a few fragments of columella and unfinished bangles, that the bangles were manufactured locally. But the marine shells for manufacturing these shell objects came from the coastal area. The conch shells (marine shell) came from Saurashtra coast where the Late Harappans and their successors, such as those of Rangpur and Prabhas cultures, were living in the later half of the second millennium B.C. (Kenoyer, 1983). The marine shells might also come from Kalyan coast and Mahad near Mumbai, which are not very far from Inamgaon. So, large number of marine shell at Inamgaon suggests that the Chalcolithic people had trade contact (or reciprocal exchange network) with the coastal region (Dhavalikar, 1988).

## **Conclusion**

The objective of the present paper was to reanalyse the economic aspect of the Chalcolithic people of Inamgaon. For this purpose, all the aspects of economy (production, distribution and consumption) and all its variables (subsistence, technology and environment) have been considered here.

As mentioned previously, the overall food economy of the Chalcolithic people at Inamgaon was mainly based on agriculture and stock-raising. The food economy was further supplemented by at least 25% by hunting wild animals, gathering wild plant foods and exploiting aquatic and avian resources (Thomas, 1988). It is evident from the site catchment analysis (Pappu, 1988), that the basic resources for their subsistence were available within the radius of 2.5 km from the site. An area enclosed between 2.5 km and 5 km radius satisfied almost all the other resource requirements such as small and big game, wild plants, etc. The other resources, which were not locally available (like copper, gold, ivory etc.), were brought from outside probably through

exchange network. However, the agricultural land was not enough for the population during the Early Jorwe period and therefore they had to establish a couple of temporary or seasonal camps (farmsteads) near the main 'regional centre'. One seasonal camp of the main settlement of Inamgaon was located at a place known as Gotkhila, situated 5 km south of the ancient site. It appears that a group of farmers from the main regional centre set up temporary camps in such favourable localities where they could carry out a number of activities such as planting, harvesting, collection of wild plants and also hunting. Another such camp was located at Walki, 27 km west from the ancient site of Inamgaon (Pappu, 1988).

Another important aspect regarding the economy of the Chalcolithic culture at Inamgaon was the craft specialization of the people (like potter, goldsmith, lime-maker, lapidary, ivory carver etc.). In the Late Jorwe period, House Nos. 5, 116, & 120 were identified as the houses of lime makers and House Nos. 11, 104 were identified as that of a copper or goldsmiths. Potters' house and other craft specialists' houses were also identified from Inamgaon (Dhavalkar *et al.*, 1988). This is an indicator that though there was a decline in the Late Jorwe period, the craft manufacturing activity remained important throughout.

As mentioned earlier, economically Early Jorwe was the most prosperous phase during Chalcolithic time at Inamgaon. In Late Jorwe period there was a decline in the agricultural activities as well as in the whole economy of the people. A drop in rainfall and consequent increase in aridity most probably led to the decline in agriculture and which was the result of poverty in Late Jorwe period. For Shinde (1989, 1994), the deterioration was probably due to fluctuating climatic conditions. But considering the fact that at Inamgaon, people continued to cultivate crops such as barley, peas, and oil seeds till around 700 BC (till the end of the occupation), it seems that this area was receiving at least the minimum rainfall required for growing these crops. A section of the population, which constructed clusters of round huts, could have led a semi-nomadic existence. However, large multi-room structures on the eastern part of the main habitation mound (INM-I) at Inamgaon suggest some people were leading a normal, sedentary life. Even the chiefdom system continued till the last phase. Shinde (1989, 1994) opined that the Megalithic people, equipped with effective iron implements and fast moving horses, began to arrive in the Deccan around 800 B.C. and were responsible for the end of the Chalcolithic culture in this region. The evidence from Inamgaon suggests that most of the exposed permanent rectangular structures of the last phase (Late Jorwe period) were burnt down and possibly a large section of the population was massacred, which is clear from the multiple burials. The presence of more than one skeleton in one pit, the absence of burial goods in many cases, and missing limbs such as a hands and legs or even the head of a skeletons, may suggest that perhaps because of large scale killing, it was difficult for the survivors to give a ceremonial burial to each individual (Shinde, 1989 & 1994).

For Walimbe (1997), the skeletal remains with traumatic injuries, found from the Late Jorwe period at Inamgaon, were due to some pathological reasons. These injuries cannot be interpreted as a direct cause of death. Some of the burials with injuries were also found from the Early Jorwe period. Moreover, the multiple burials were found not only from the Late Jorwe period, but also from the Malwa (Br. Nos. 129, 130) and Early Jorwe (Br. Nos. 103, 124) periods. More evidence of multiple burials in the Late Jorwe period (Br. Nos. 63, 146, 168, 175, 179, 194, 199, 205, 206,

208) can be attributed to proportionately more extensive excavations at these levels. The occurrence of more than one individual in a burial, indicating their simultaneous death, could be better explained pathologically rather than culturally. Bio-cultural studies undertaken on the Inamgaon skeletal series (Walimbe and Tavares, 1995) suggest higher morbidity rate in the later levels of the occupation due to poor climatic conditions, specially water scarcity, which probably caused an epidemic at the end of the Late Jorwe period (Walimbe, 1988).

So, whatever may be the reason (there could be a single reason or multiple reasons) of the decline and the end of the occupation at Inamgaon around 700 BC, it is evident that there was a great decrease in agricultural production and overall economic condition in the Late Jorwe period. Malwa people began the settlement at Inamgaon around 1600 BC and started agricultural activities and animal herding. These activities (agriculture) flourished and reached its zenith in the Early Jorwe period (1400 BC to 1000 BC) at the site. All the material remains: artefacts, ecofacts, structures and features, indicate that Early Jorwe people at Inamgaon had a stable and highly prosperous economic set-up. Then there was decline in the third phase in the economy leading to the end of Chalcolithic culture of inamgaon: But the cause (or causes) of the end of this culture has remained controversial till now.

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### **References**

Agarwal. D. P., 1982. *Archaeology of India*, Scandinavian Institute of Asian Studies Monograph Series, No. 46, London & Malo: Curzon Press.

Ansari, Z. D., 1988. Blade Industry, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part ii, pp. 509-526, Deccan College Post-Graduate and Research Institute, Pune.

Binford L., 1962. Archaeology as anthropology, *American Antiquity* 28: 217- 225.

Dhavalikar, M. K., 1975-76. Settlement Archaeology of Inamgaon, *Puratattva*, vol. 8, pp. 44-54.

Dhavalikar, M. K., 1977. Inamgaon: the pattern of settlement, *Man and Environment*, Vol. I, pp. 46-51.

Dhavalikar, M. K., 1979. Early Fanning Cultures of the Deccan, *Essays in Indian Protohistory* (D. P. Agrawal and D. K. Chakrabarty Eds.), pp. 247-265, New Delhi: B. R. Publishing Corporation.

Dhavalikar, M. K., 1981-83. Chalcolithic cultures: a socio-economic perspective, *Puratattva*, Vol. 13 & 14, pp. 63-80.

Dhavalikar, M. K., H. D. Sankalia and Z. D. Ansari, 1988. *Excavations at Inamgaon*, Vol. I (Part i & ii), Deccan College Post-Graduate and Research Institute, Pune, India.

Dhavalikar, M. K., Vasant Shinde and S. Atre, 1990. Small site archaeology Excavations at Walki, *Bulletin of the Deccan College Post-Graduate and Research Institute*, Vol. 50 (Golden Jubilee volume), pp. 197-228.

Dhavalikar, M. K. and Z. D. Ansari, 1988. The Site, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 5-7, Deccan College Post-Graduate and Research Institute, Pune.

Dhavalikar, M. K., 1988. Inamgaon A Chalcolithic Chiefdom, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part ii, pp. 1001-1009, Deccan College Post-Graduate and Research Institute, Pune.

Dhavalikar, M. K. and Z. D. Ansari, 1988. Chronology, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 133-135, Deccan College Post-Graduate and Research Institute, Pune.

Dhavalikar, M. K. and Z. D. Ansari, 1988. Structures, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 137-261, Deccan College Post-Graduate and Research Institute, Pune.

Dhavalikar, M. K. and Z. D. Ansari, 1988. Burials, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 263-340, Deccan College Post-Graduate and Research Institute, Pune.

Dhavalikar, M. K. and Z. D. Ansari, 1988. Pottery, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 341-503, Deccan College Post-Graduate and Research Institute, Pune.

Dhavalikar, M. K. and Z. D. Ansari, 1988. Other Artifacts, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part ii, pp. 553-724, Deccan College Post-Graduate and Research Institute, Pune.

Gamble, C., 2001. *Archaeology: The Basics*, Routledge an imprint of Taylor and Francis group, London.

Ghosh, A., 1989. *An Encyclopedia of Indian Archaeology*, Vol 1 & 2, Indian Council of Historical Research, New Delhi.

Gogte, V. D. and Anupama Kshirsagar, 1988. Chalcolithic Diet, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part ii, pp. 991-1000, Deccan College Post-graduate and Research Institute, Pune.

Higgs, E. S., 1975. *Palaeoeconomy*, Cambridge University Press.

Hodder, I. (ed.), 1987. *The Archaeology of Contextual Meanings*, Cambridge, Cambridge University Press.

Hodder, I. R. and C. Orton, 1976. *Spatial Analysis in Archaeology*, Cambridge: Cambridge University Press.

Kajale, M. D., 1977a. Plant Economy at Inamgaon, *Man and Environment*, Vol. I, pp. 54-56.

Kajale, M. D., 1979a. *Bioarchaeology of the Ghod Valley, Maharashtra*, Unpublished Ph.D. Thesis, University of Poona.

Kajale, M. D., G. L. Badam and S. N. Rjaguru, 1976. Late Quaternary History of Ghod Valley, Maharashtra, *Geophytology*, Vol. 6 (1), pp. 122-132.

Kajale, M. D., 1988. Plant Remains, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part ii, pp. 727-821, Deccan College Post-Graduate and Research Institute, Pune.

Kale, V. S. and S. N. Rajaguru, 1987. Late Quaternary alluvial history of the north-western Deccan upland, India, *Nature*, 325, pp. 612-614, [doi:10.1038/325612a0](https://doi.org/10.1038/325612a0).

Knudson, S. J., 1978. *Culture in Retrospect: An Introduction to Archaeology*, Rand McNally College Publishing Company, Chicago.

Lukacs, J. and S. R. Walimbe, 1986. Excavations at Inamgaon, Vol. II, *The Physical Anthropology of Human Skeletal Remains*, Part i, An Osteobiographic Analysis, Deccan College Post-Graduate and Research Institute, Pune, India.

Lukacs, J. R., R. K. Bogorad, S. R. Walimbe and D. C. Dunbar, 1986. Palaeopathology at Inamgaon: A Post Harappan Agrarian Village in Western India, *American Philosophical Society Proceedings*, 130 (3), pp. 289-311, <http://www.jstor.org/stable/986828>.

Naik Sonali and Sheila Mishra, 1997. The Chalcolithic Phase in Bhima Basin, Maharashtra: a Review, *Man and Environment*, Vol. XXII, No. 1, pp. 45-58.

Pappu, R. S., 1988. Quaternary Stratigraphy and Stone Age Industries, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 15-31, Deccan College Post-Graduate and Research Institute, Pune.

Pappu, R. S., 1988. Site Catchment Analysis, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 107-120, Deccan College Post-Graduate and Research Institute, Pune.

Rajaguru, S. N., 1988. Environment, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part i, pp. 9-14, Deccan College Post-Graduate and Research Institute, Pune.

Sankalia, H. D., Z. D. Ansari and M. K. Dhavalikar, 1973. Inamgaon: A Chalcolithic Settlement in Western India, *Asian Perspective*, Vol. 14, pp. 139-146.

Sankalia, H. D., 1988. Ground and Polished Stone Tools, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part ii, pp. 527-541, Deccan College Post-Graduate and Research Institute, Pune.

Shinde Vasant, 1987. Fanning in Chalcolithic Deccan, India, *Tools and Tillage*, Vol. V: 4, pp. 214-227.

Shinde Vasant, 1987-88. Land-use Pattern During Chalcolithic Period in the Tapi Basin, *Puratattva*, Vol. 18, pp. 54-60.

Shinde Vasant, 1989. New light on the Origin, Settlement System and Decline of the Jorwe Culture of the Deccan, India, *South Asian Studies*, Vol. 5, pp. 60-72.

Shinde Vasant, 1990. The Malwa Culture in Maharashtra: A Study of Settlement and Subsistence Patterns, *Man and Environment*, Vol. XV, No. 2, pp. 53-60, ISPQS.

Shinde Vasant, 1991a. Craft Specialization and Social Organization in the Chalcolithic Deccan, India, *Antiquity*, Vol. 65 (249): 796-807.

Shinde Vasant, 1994. The Deccan Chalcolithic: a Recent Perspective, *Man and Environment*, Vol. XIX, No. 1, pp. 169-178, ISPQS.

Shinde Vasant, 1998. *Early Farming Settlements in the Central Tapi Basin*, New Delhi, Munshiram Manoharlal Publishers.



Shinde V. and Shweta S. Deshpande, 2002. South Indian Chalcolithic, *Encyclopedia of Prehistory*, Peregrine and Ember (eds.), Vol. 8, pp. 344-360, South & Southwest Asia, Human Relations Area Files, Inc.

Shinde V. and Shweta S. Deshpande, 2002. Central Indian Chalcolithic, *Encyclopedia of Prehistory*, Peregrine and Ember (eds.), Vol. 8, pp. 34-39, South and Southwest Asia, Human Relations Area Files, Inc.

Thomas, P. K., 1984a. The faunal background of the Chalcolithic culture of Western India, *Animals and Archaeology: Early Herders and Their Flocks*, pp. 355-361, Clutton-Brock Juliet and Caroline Grigson (eds.), London: BAR International Series.

Thomas, P. K., 1988. Faunal Assemblage, *Excavations at Inamgaon*, (M. K. Dhavalikar, H. D. Sankalia, Z. D. Ansari), Vol. I, Part ii, pp. 823-961, Deccan College Post-Graduate and Research Institute, Pune.

Taylor, W., 1948. *A study of Archaeology*, Memoirs of the American Anthropological Association 69.

Vita-Finzi, C. and E. S. Higgs, 1970. Prehistoric economy in the Mount Cannel area of Palestine: site catchment analysis, *Proceedings of Prehistoric Society*, Vol. 36, pp. 1-37.

Walimbe, S. R. 1997. Trauma and Deccan Chalcolithic Decline: Fallacies and Facts, *Man and Environment*, Vol. XXII, No. 2, pp. 101-104, ISPQS.

Walimbe, S. R. and A. Tavares, 1995. Evolving Trends in the Skeletal Biology in the Indian Subcontinent: A Case Study on the Incipient Agricultural Populations of the Deccan Plateau, *Quaternary Environments and Geoarchaeology of India: Essays in honour of Prof S. N. Rajaguru*, (S. Wadia, R. Korisettar and V. S. Kale Eds.), pp. 515-529, Bangalore: Geological Society of India.

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