Conclusion and discussion

As the Harappan seals and sealings have not yet been deciphered so we have no documentary proof of the social and economic life of people. Hence we reconstruct these aspects on the basis of interpretations of material remains. In this research work the researcher had based the study on the basis of domestic animals. With the help of this agriculture, trade, social structure and other aspects of the Harappan have been reconstructed. Domestication of animals give us enough data for such studies which can be supplanting with other evidences also.

The people of the Harappan civilization were farmers and herders, with hunting, gathering and fishing as their subsidiary activities. Our knowledge of the faunal records of the Harappan civilization has grown immensely over the past two to three decades. It is now clear that the remains of cattle, principally the zebu or Bos indicus, consistently make up 50-60 percent of the faunal assemblage. This observation, when combined with the prominent role of cattle imagery in the art of Harappan people, indicates that they were cattle keeper on a large scale. The zebu was without doubt the most important animal in their lives and may have been their most important source of wealth.

The Harappans also kept substantial number of water buffalo, sheep, goat and pigs. They had domesticated dogs and the figurines tell us that
some of them wore collars, some had curved tails over the back, one looked something like a bulldog and a thinner one is a more gracile breed that resembles the modern Afghan. The chicken was domesticated from the wild Red Indian Jungle fowl, the earliest remains of which are found at Mohenjodaro.

These people were also fish eaters. Most sites along the river have the remains of the freshwater fish, especially a variety of carp. Recent excavations at Harappa have revealed the presence of marine fish, indicating some form of commerce in dried and / or salted fish\(^1\). The Mature Harappan occupation at Balakot, a site near the Arabian Sea, east of Karachi, had sufficient remains of marine animals, especially a grub, to estimate roughly that maritime food resources contributed about half of the dietary intake from all fauna, with most of it coming from fish\(^2\).

The mastery of agriculture and management of domesticated animals was one of the great revolutions in human history. It involved the combined arts of food production and domestication, which led to significant changes in human society ranging from increase in population to immense human biological changes, not all of which was positive. The beginning of village life and the symbiosis between agriculturalists and pastoralists is important to understand ancient India or Harappan period. It all started with domestication of animals and ushered in the first urbanization in Harappan period.

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The various domesticated animals played important role in the subsistence pattern of the pre or early Harappan cultures of north-west India and the Indo-Gangetic divide. The Quetta-Kachi region in Baluchistan was inhabited by the earliest farming communities. Mehrgarh I has yielded sufficient evidence with regard to domestication of animals\(^3\). Here, although wild animals predominated in the lower levels, the upper levels have yielded bones of several domesticated varieties.

Bones of wild animals from lower levels of period I (Aceramic Neolithic) belonged to gazelle (\textit{Gazella dorcas}), wild sheep (\textit{Ovis orientalis}), wild goat (\textit{Capra aegagrus}), swamp deer (\textit{Cervus duvauceli}), antelopes (\textit{Boselaphus tragocamelus}), and wild cattle (\textit{Bos, perhaps namadicus}). However, in the upper levels of period I, except for a few remains of the gazelle, wild pig (\textit{Sus scrofa}) and onagers (\textit{Equus hemionus}), all other remains belong to domesticated cattle, goat and sheep, (\textit{Ovis aries}). It appears that the Baluchi Neolithic folk had domesticated all those animal species (wild cattle, wild sheep/goat) which were present in this area during seventh millennium B.C. Thus, like western Asia, here also, at place like Mehrgarh, the cattle husbandry began as far back as 7000-6000 B.C. The Neolithic deposits have also yielded a number of bones of water buffalo (\textit{Bubalus bubalis}).

In period II also, thousands of animals’ bone remains have been found in MR-4 area and almost all of them represent the domesticated cattle, sheep and goat which might have been used for food, for ploughing, for threshing, or as pack animals and as source of milk. The cattle, sheep and goat were dominant during all the periods of habitation at Mehrgarh.

In the Quetta valley it self, there is another site, contemporary of Mehrgarh I. It is Kile Gul Mohammad. It has also yielded animal bones in large numbers\(^4\). Among the 15000 animal bones, about 200 belong to wild animals. The bones of sheep, goat and cattle have been reported from all the phases.

In Loralai valley, Rana Ghundai has provided some good evidences as 29 bone species could be identified as belonging to domesticated animals\(^5\). They were the humped cattle (*Bos indicus*), sheep, ass (*Equus asinus*) and also horse (*Equus caballus*). At Sur Jangal, the majority of bones belong to the cattle although the fragments of sheep and goat bones also exist. The bones of dog and fox are also reported\(^6\) whereas at Nal cemetery six graves have yielded animals bones of the sheep and goat, probably kept as a part of funerary offering\(^7\).

The bias for cattle at an early date is visible at sites like Mehrgarh and Sur Jangal. Its importance in the overall economy of the early cultures either as a meat producer or possibly as a source of milk or as a non-human labour is evident. From the presence of their wild ancestors in the region and from the nature of the faunal assemblages, local domestication of cattle, sheep and goat is inferred at Mehragarh. The remains of buffaloes from successive period at Mehrgarh suggest that they were more than hunted. The Rana Ghundai’s horse-remains have been shown to be actually those of the semi-

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ass. Terracotta representations of the animals have been obtained from Quetta Valley, Periano Ghundai and Gumla. The dog remains have been unearthed at Sur Jangal and Mehrgarh. At Gumla the species is represented in terracotta art. It is evident from the available data that the earliest known settled communities of northwestern India kept and reared domestic animals. The inhabitants maintained herds of cattle, sheep and goat as domestic animals.

Hunting as an exercise and as an additional source of food was evidently resorted to. Evidences of wild animals come from many sites like Mehrgarh, Kile Gul Mohammad, Damb Sadaat, Jalilpur, Amri and Balakot. The bone tools from every site may be taken as additional evidence for the practice of hunting. Throughout the region, from Quetta and Zhob Loralai in the north to Kulli and Shahi Tumb in the south, cattle representations are prolific. The animal is richly rendered in terracotta art and depicted on pottery at Sur Jangal, Periano Ghundai, Gumla, Quetta sites, Nal, Kulli, Amri and Shahi Tumb. The bull cult appears to have a hoary antiquity in the sub-continent. Representations of a horned deity upon pottery of painted designs which Allchin calls ‘the buffalo deity’ are found at Gumla, Rehman Dehri and Kot Diji. Allchin\(^8\) observes that the horned deity of Mature Indus period is beyond doubt. In the matter of religion both wild and domestic animal seem to have been important.

Bone awls, points etc. have been reported from Kile Gul Mohammad, Damb Sadaat, Gumla, Jalilpur and Amri. Mehrgarh and Rehman Dehri present the evidence of the use of bone seals. It is seen that bone was used as a raw material for some artifacts.

The toy terracotta cart, solid wheels and bull figurines, in addition to the find of the plough field at Kalibangan, may possibly be interpreted as indirect evidence of the use of cattle for draught and traction. Evidence of cereal crops is registered at site like Mehrgarh, Rahman Dheri, Balakot and Kalibangan.

The foundation of the Harappan civilization was laid in the antecedent farming settlements in north western India. The antecedent cultural base was transformed into an elaborate ceremonial complex with agriculture, full-fledged animal husbandry, fertility figures and possibly the animal sacrifice as part of rituals and monumental buildings.

The domestic animals were indispensable for farming economy, which in turn sustained the mature urban civilization. The keeping of domestic animals, thus, must have been of great importance in the Harappan civilization. Among the domestic animals; cattle, sheep and goat have been reported from almost all the sites. The pig is also frequently encountered. The remains of the buffalo are reported from more than one and half a dozen sites. From the large number of bones of cattle, sheep, goat and pig with many instances of chopping marks and charring signs and from the presence of their young ones at more than one site, it seems that they formed an important component of the Harappan food economy and the people possibly used them to supplement their diet with meat and milk derived from these animals.

The range of wild animals was also wide, varying from the species like the rhinoceros, chittal, sambar, barasinga, gazelle, nilgai, and hog deer to black-duck, among others. These animals were hunted by a section of the
people who engaged in procuring their livelihood that way. Varieties of tortoise and fish along with fish hooks from more than one site suggest the practice of fishing.

In addition to their economic importance, animals were associated with cult and/or religion in the Harappan civilization. In this matter both wild and domesticated animal were equally important.

The dung was used as fuel is evident at Mehragarh VIII. The site at Zekhada in Banas Kantha district of Gujarat was excavated by K.N. Momin. The materials from the site reveal Harappan and post-Harappan cultural affiliation. The floors and walls of the huts at the site show the use of cow dung for the purpose of plastering.

In the Harappan civilization we visualise three distinct socio-economic entities: farming, pastoralism and hunting-gathering fishing.

The fauna associated with the Mature Harappan and the Late Harappan cultures was largely dependent on grassland and forest. The sambar deer, gazelle, tiger and boar prefer the open hills of the steppe or scrub of the countryside forest. The gazelle and boar, especially, prefer marshy conditions. The rhinoceros, elephant and buffalo, on the other hand, prefer high grass. The presence of these animals indicates that the climatic conditions of the region concerned were such as to favour a suitable habitat for them. Except the tiger, which is sometimes found in the Sind and the pig none of the remaining wild species (rhinoceros, water buffalo, dear and the elephant) survive in the region today.

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Chitalwala, in the context of Saurashtra, observes that the landscape has not remained quite the same since the Harappan and post Harappan times. It is suggested that the biotic interference has made the landscape comparatively more barren than what it was during the Harappan times\textsuperscript{11}.

Even if no major shift in climate is postulated, it may be reasonable to expect a slightly higher rainfall throughout the area before the natural vegetation cover was depleted by man’s interference-intensification of agriculture and grazing of domesticated animals. Fairsevis points out that the grasslands which where the habitat of the big game were coincidentally the areas best suited for agriculture and the grazing of domesticated animals. This obviously spelled doom for the larger wild life and not surprisingly many are missing in region today. The ecological conditions are not entirely the same as they were during the Harappan times\textsuperscript{12}.

A.T. Clason points out that during the Harappan civilization fresh water plants grew in the valley of the Indus that are not found there today. Biotic interference by man and his domestic animals seem to have led to the depletion of flora and subsequently fauna\textsuperscript{13}.

It is evident from the material related to the cultural antecedent to the Harappan civilization that the earliest known settled communities of north-western India kept and reared domestic animals. The inhabitants maintained herds of cattle, sheep and goat. The bones of buffalo and pig are less

common. They seem to have known the dog. There is no incontrovertible evidence for the presence of the horse. The ass, however, appears to have made its appearance in these early cultures sometimes in the 4th-3rd millennium B.C.

The exploitation of riverine and marine resources is attested to some sites, indicating the extensive use of the varied ecological niches. Tortoise, fish and mollusk, as dependent suppliers of calories, appear to have supplemented the diet. Evidence for wild animals, suggesting hunting, comes from many sites. The bone tools recovered from certain sites may be taken as additional evidence for the practice of hunting. Nevertheless, on the whole, hunting appears to have played a secondary or marginal role in the inhabitants’ quest for food.

The pronounced bias for cattle at an early date is perceptible at sites like Mehrgarh and Sur Jangal, suggesting the possibility of some communities specializing in cattle husbandry. Dani posits that at Gumla the initial occupation might represent a pastoral nomadic encampment. At Kili Gul Mohammad the earliest stage is represented by pastoralism and limited cultivation. Mehrgarh happens to be one site which has shown preference for cattle breeding in its entire history. The size of the domesticated cattle reared at Mehrgarh was similar to those of the sites in the Greater Indus Valley like Jalilpur and Balakot. Cattle gained ascendancy over caprinae almost everywhere expect Kile Gul Neolithic.

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dated to around 6000 B.C.; domestic cattle; sheep and goat were herded in and around Mehrgarh. The story is repeated at other sites like Kili Gul Mohammad, Rana Ghundai, Jalilpur, Kalibangam, Amri etc. in the 5th-4th millennium B.C. It can be said that cattle, sheep and goat, in decreasing order of abundance, were the important domestic animals of the Pre/Early Harappan people. The whole superstructure of these early farming, peasant communities rested squarely on their herds and crops.

In the relatively arid zones of the Baluchistan’s highlands some communities would have found herding to be more dependable than agriculture. Inhabitants of Baluchistan still make a trek to Sind during winters to find pasture for their herds. The cultures of this region, with a strong pastoral base, may have been less sedentary. A higher rate of hunting is evidenced in northern Baluchistan.

Cattle representations are both widespread and abundant in these early cultures. The animal is richly rendered in terracotta art and depicted on pottery. It is evident that the bull cult has a hoary antiquity in the subcontinent. It appears that cattle and buffalo were associated with a horned deity, which seems to be the horned deity of the mature Indus. The Allchins\textsuperscript{16} observe that a process of cultural convergence is evident in the realm of religious beliefs. In the matter of religion, both wild and domestic animals seem to have been important. Bone was used as a raw material for awls, points, seals and other artifacts. The use of dung as fuel is evident at Mehrgarh VII\textsuperscript{17}. In view of the practise of agriculture the secondary uses of

animals, especially of cattle, for milk, traction etc. may be inferred. It appears that in these cultures animals’ domestication appeared independently and developed on local breeds, the most important of which were the zebu cattle. It is becoming increasingly clear that the economic dispensation of these early cultures drew heavily upon a variety of resources, both vegetative and faunal, not merely for the sake of sustenance but also to secure an enviable standard of living.

The range of domesticated animals used for food and other purposes in the Mature Harappan and Late Harappan period is quite large. Cattle, sheep and goat remains have been reported from almost all the site. The bones of the Indian pig are common at many sites. However, one has to concede to the existence of the wild boar, which must have been hunted. The buffalo has been reported from more than a dozen sites. Among the domestic animals, cattle were the most important. Cattle bone remains and representation on seal, figurines and copper tablets indicate the presence of two breeds: (1) Zebu cattle with long upright horns and (2) humpless short-horned variety. The zebu is never associated with a cult object or fodder trough, whereas the humpless beasts are shown with “manger” in front of them. Interestingly, all the representations are exclusively of the male beasts. The cow which is considered sacred in Hinduism was possibly not so with the Indus people. Cattle were kept for traction, agriculture and also for their meat and milk. On the basis of their depiction in different contexts on the seals it can be said that they played an important role in the socio-economic and religious life of the people.

The horse is reported from Harappa, Mohenjodaro, Lothal, Surkotada and Kalibangan II etc. Both at Harappa and Mohenjodaro, the horse bones appeared in the upper levels. While Nath\(^{19}\) assigns the Lothal remains to the late period of Harappan culture, Rao\(^{20}\) suggests that they came from the Mature Harappan levels. Meadow has questioned A.K. Sharma’s\(^{21}\) identification of the horse at Surkotada, terming it a half-ass or *hemione*. There are, evidently, conflicting views on the association of the horse with the mature Harappan civilization. Piecing together the available zoological and secondary(terracotta) data, it seems reasonable to argue that the animal was known to the Indus inhabitants, if not earlier, at least by the early centuries of the 2nd millennium B.C. At this point it may be noted that the Harappan were acquainted with the ass.

The bones and representations in art forms show at least three types of dogs; one akin to the modern dingo-pariah, the other a grey-hound type and the third a mastiff type\(^{22}\). Paddayya\(^{23}\) notes that in some cases the neck chains lead us to believe that they served as watch-animals. The bones of the cat are almost rare. The domestic cat has been identified only at Harappa. The foot-impressions of the animal are recorded on a brick at Chanhudaro\(^{24}\). The cat does not seem to be represented in art forms.

\(^{19}\) Nath, B., (1963), Advances in the study of prehistoric and ancient animal remains in India; A review, Rec. ZSI, Vol. 61, p.6.


The picture emerging about the domestication of birds is far from satisfactory. Bone remains of the domestic fowl are reported from almost every site. The remains of the black partridge have been identified from Rupar. The rest of the evidences relating to birds like peacock, doves and ducks mostly come from pottery paintings and terracotta representations. Rao\textsuperscript{25} aptly observes that the bone remains of birds being delicate are prone to easy decay, which possibly accounts for their scarcity.

The range of wild animals, most of which were possibly hunted for food and/or raw material, is also wide. They include the rhinoceros, chital, sambar, barasinga, hog deer nilgai, gazelle, blackbuck, hare and mongoose among others. Aquatic animals like gharias, turtles, tortoise and fish are reported from various sites. Cut marks and signs of charring on them indicate their use for food. A large variety of shells have also been collected from different sites. At Balakot marine resource like fish and mollusc played an important role in the subsistence of the inhabitants. Fishing is further evident from the find of fish-hooks from sites such as Mohenjodaro and Chanhudaro.

On the basis of the chopping marks and charred signs on a large number of bones of cattle, sheep, goat and pig and the presence of their young ones at more than one site, it seems reasonable to argue that these animals were not only reared but also butchered for food. Beef, meat and pork formed an important component of the diet. Animals provided the readily available protein. However, a variety of cereals and crops, viz.,

wheat, barley, rice, dates, verities of leguminous plants, reflecting on agriculture have been obtained from various sites. A mixed subsistence economy based on cattle, sheep, goat, pig, buffalo, wheat and barley can be endorsed for the Harappans, though their can be little doubt that cereals and vegetables formed the main ingredient of their diet. Fishing and hunting, though occasional, may not have been unimportant in the subsistence structure of the people.

The osteological remains, together with the circumstantial evidence from Lothal, Surkotada and Kalibangan indicate the practice of some form of animal sacrifice. Paddayya\(^26\) observes that besides cattle and goats which had some religious meaning, buffaloes and elephants also played a part in the old Indian cults. The manner of depiction of tigers, rhinoceroses and gharials suggest that they were, possibly, occasionally venerated. The dove appears to have had some religious meaning.

Fragments of toy bullock-cart and solid wheels from different sites together with the bull figurines from Chanhudaro\(^27\) with holes in their shoulders, possibly to take the beam of a yoke, suggest the use of cattle for transport and traction. The humped cattle served the Harappans as beast of burden for pulling carts and carrying loads. The domestic ass could have been put to analogous use but on the basis of present evidence it seems that it might have been used only occasionally. The skeletal remains of the camel, an animal that serves similar purposes, are also restricted in their distribution. Significantly, there is no evidence for riding, implying that

these animals were used only for draught and traction. The use of bone, ivory and chunk shells for the manufacture of bangles, beads, awls, combs, weights and other artifacts is attested to at more than one site.

The presence of fish and shells, which are essentially marine in their origin, at sites like Mohenjodaro, Khanpur and Zekhada, which are away from the coast, presupposes the existence of some form of long distance exchange mechanism. Further, the presence of the bone remains of wild animals like rhinoceros and deer and in certain cases only the antler remains at Mature Indus sites suggest that they were probably imported from outside, indicating possible relations between people at different levels of cultural attainment.

It will be difficult, and possibly not valid, to postulate that sufficient farming and stock-raising was carried out at each settlement in the Harappan civilization. Breeding of animals and cultivation of plants and cereals are interrelated subsistence activities. Therefore, some form of interrelationship between people pursuing different subsistence strategies can be envisaged. Hunting bands can exchange animal meat and fish with cereal cultivators. Similarly, breeders can exchange their cattle, sheep and goats in other areas for grains. The prevalence of symbiotic relationships between flora and fauna is generally interrelated, but at times alternative ways of life can be assumed for the Harappans.

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