Harappan Environment as One Variable in the Preponderance of Rhinoceros and Paucity of Horse

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Since the third decade of the last century, several scholars have been advocating a wetter climate during the larger part of the Harappan period. On the other hand, there are other scholars who stress that the environment was not much better than now during those times and that the civilization could thrive only because of judicious management of natural resources. The amount of information on several aspects of the civilization, including the inferences on environment, has been steadily increasing with each passing year. These include indirect clues inferred primarily from objects of utility and art besides direct inferences made on the basis of multiproxy environmental studies. If the global changes in the environment and concurrences in the subcontinent are looked into, one sees a clear pattern, wherein several streams of investigations converge conformably. At the same time, the apparent discrepancies of time spans and discordant data are due to the differences in dating and other techniques used besides other unaccounted variables. It is here that the animals like rhinoceros and horse are useful in the vivid portrayal of the Harappan environment across time. Both the horse and the rhinoceros are known conspicuously in rock art from the humid Mesolithic times and the horse from several Neolithic settings in the country precede the mature Harappan. In this background, the paucity of indigenous horse and the overwhelming presence of rhinoceros in the Harappan civilization appears paradoxical. The puzzle becomes more intriguing when one becomes conscious of the fact that in any habitation normally horses (or the evidence of it) would be most common and that rhinoceros being animals of remote swampy forests would be less common.

Rhinoceros and Horse: Antecedents

Although fossil evidence of extinct species of rhinoceros is known from as early as Late Pliocene (Badam 1979) from the strata of Sivaliks, the earliest known co-habitation of ecosystems by man and rhinoceros is noted in the Middle Palaeolithic context from Soan Valley. Bones of this animal have been reported from Mesolithic sites of Langhnaj and Kanewal in Gujarat and lake sediments in Pratapgarh (UP). At Chirand in Bihar it is obtained in the Neolithic context. The depiction of rhinoceros in rock art is known from the Mesolithic times. The sites include those of Mirzapur region, Roup village, Ghormanger, Harni Harna, Urden, Gelpur, Jaora, Bhimbetka, Ram Chajja in Raisen district (Neumayer 1993) Pachmarhi in Hoshangabad district, Chaturbhujnath Nala in Mandsaur district and Kanyadeh in Chambal valley (Kumar 2001) and Tarsang near Godhra. There are several other sites in

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north India (Mathpal 1984) from where rock paintings of rhinoceros have been reported. During the Harappan times depiction of rhinoceros continued very much but in the form of three-dimensional art.

The indigenous horse, on the other hand, although not known from many sites in contexts earlier than the Harappan, yet is also reported from south India, albeit with a time frame that falls within the Mature Harappan period. The evidence of the earliest domesticated horse comes from Baghor in Siddhi district of Madhya Pradesh, datable to 4500 BC (Badam 1989). Mahagra, another early Neolithic site located in Allahabad district has also produced evidence of domesticated horse. From south India also the Neolithic site Kodekal (2460 ±105 BC) has yielded evidence of true horse (Badam 1989). Significantly, from Chichali, a Chalcolithic site, on the south bank of Narmada, a sherd of the Malwa Period (1800-1100 BC) had depiction of a horse. Obviously, horse was known in (even in peninsular part of) the subcontinent from the Pre-Harappan period. The indigenous horse was very much there in the subcontinent and should not be associated with the controversies of introduction of horse with the 'advent' of Aryans during the decline of Harappan civilization.

Rhinoceros and Horse: Harappan Evidence

The excavations conducted at different Harappan sites have revealed a large number of evidence of rhinoceros both in the form of bones and art, namely: terracotta figures and seals. Frequently, the numbers of rhinoceros from a single site are much more than the accepted or contested evidence regarding horse from all the Harappan sites put together. The terracotta figures are reported from Harappa (Dales & Kenoyer 1993) and Lothal (Rao 1985) besides a rhinoceros mask from Mohenjodaro. More than a dozen seals at Mohenjodaro have this animal, besides one each from Harappa, Kalibangan and Banawali. It has also been reported from small Harappan Sites like Allahdino. Evidence regarding this animal was also obtained from rural sites like Zekda and Kanewal in Gujarat. Bones of rhinoceros have been identified at Harappa, Kalibangan, Lothal, Kuntasi, Surkotada, besides Oriyo Timbo and Khanpur (Thomas *et al.* 1996). Evidently, in the Harappan Civilization, rhinoceros was very much in vogue both in the portrayal and the food economy. In fact, at Harappa, excavations (Dales & Kenoyer 1993) have shown the number of rhinoceros figures (6.3%) to be more than double than that of sheep and goat (2.8%), which shows its popularity as an object for portrayal among the masses.

Evidence regarding horse is noticed from many Harappan sites. Among them, those known from Surkotada, Lothal, Malvan, Ropar, Kalibangan, Harappa, Mohenjodaro, Rana Ghundai (Badam1989) belonging to mature and late Harappan phases, needs no re-enumeration. A terracotta figure of horse from the Harappan levels has been reported from Nausharo. More recently, a terracotta figure of horse has been reported from Rakhigarhi (Nath 1999).

Rhinoceros and Horse: Aspects of Portrayal

In the Harappan Civilization, the rhinoceros is not only depicted in significant numbers but it has been portrayed with qualitative details. The fact that these are depicted on the seals and copper tablets show that these were popular amidst the intellectual classes using them. Perhaps, the most important of such depictions is in the seal with the ithyphallic-seated deity obtained from Mohenjodaro. The finding of the rhinoceros mask from Mohenjodaro shows that the animal had fired the imagination of the artist engaged in the trade of entertainment. Or else it could as well have been a toy for children. Either way, rhinoceros covered a large ground from association with deity, to entertainment and food. The numerous depictions of this animal could not have occurred if the Harappans were not actually seeing the animal, at least occasionally. Scholars in general have been appreciative of the detailed modelling of the animal. At Lothal, the rhinoceros is realistic and reveals a careful study of the anatomical features (Rao 1985).

Although most scholars agree on the evidence of horse in the Harappan levels, there are others who question the "contextual integrity" of the horse remains (Meadow &

Patel 2002). They are of the opinion that the horse came in vogue during the upper levels of the civilization and accept the evidence of horse and two humped camels from Pirak Pd I, dated to 1800-1500 BC. Meadow and Patel (2002) stress, "there are no convincing depictions of either horse or camel in Harappan iconography" There appears to be some lack of fineness in producing the figure of horse. Lal (2005) quotes Mackay "perhaps the most interesting of the model animal is one that I personally take to represent the horse." Lal further writes "Wheeler also confirmed the view of Mackay". Evidently, the artist may have made the horse but could not make it accurately because of an incoherent image in his mind. The same logic could be applied regarding the terracotta image from the mature Harappan levels at Lothal. Although there are several characteristics that resemble the horse, the jaw is much more like that of a dog rather than the longish jaw of a horse. Apparently, the Harappan artist was more familiar with rhinoceros than the occasional horse that was perhaps sparingly used by the merchants.

Rhinoceros and Horse: Aspects of Time and Space

Rhinoceros is conformably known from fossils in geological layers to rock art in Mesolithic, bones and art in Harappans and later times. Due to its popularity, it crossed time and space barriers. Thus Harappan or Harappans influenced seals in far off lands like Shortughai and Tell Asmar depict rhinoceros. This animal's popularity also transcended time, as known from objects found from later cultures, carrying on in fragments of the tradition of the Harappans. Of particular significance is the bronze figure of rhinoceros on a chariot from Daimabad (Dhavalikar 1982). Kuntasi has also yielded evidence of rhinoceros in late Harappan levels (Thomas *et al.* 1996). A terracotta figure of the animal is known from Dangwada from Chalcolithic levels. Chalcolithic paintings depicting rhinoceros have been depicted at Ramchhajja in Raisen district and Deurkothar in Rewa district of Madhya Pradesh. Kumar (2001) has reported a rock painting of rhinoceros at Kanyadeh in the Chambal valley in contextual association of what he calls "post-Harappan" script. Evidently, from the prehistoric to the post-Harappan times the continued popularity of the animal is obvious. Curiously, however, in spite of the strong tradition of portrayal of rhinoceros across different cultures in north India the absence of any evidence whatsoever in relation to OCP and PGW cultures is enigmatic. The rhinoceros again finds favour only during the currency of the NBPW as seen from the examples of Murtaziganj disc and seal from Bhita. The depiction of rhinoceros was now becoming progressively rare baring those associated with depictions of Jaina Tirthankar Sreyamsnatha.

Horse, on the other hand, although known from widespread areas including Harappan and partly later cultures, does not have large numbers as examples. However, from the upper levels of the Harappans, particularly in the late Harappan times, it becomes common. The late Harappan levels at Mohenjodaro, Ropar, Harappa, Surkotda (Badam 1989) and Malvan have revealed the evidence of *Equus caballus* i.e. the true domesticated horse. Meadow and Patel (2002) are of the opinion that the horse is observed from " as early as the end of the Harappan phase and became widespread only by the second millennium." From the later part of the second millennium BC, particularly in the PGW period and later, the evidence of the horse shows an upward trend. This is in stark contrast to the evidence regarding rhinoceros, which showed a downward trend. Although the frequency showing upward trend for horse and general downward trend for rhinoceros since the decline of Harappan Civilization, is a point worth observation; yet this phenomenon is not directly co-relatable and, therefore, not correlated with the changes in the environment alone. In this time span, the situation is more complex, with parameters like: introduction of iron, loss of forests, changes in environment, changes in attitudes of communities, less dependence on hunting, development of trade, development of cavalry and chariots, etc. However, the preponderance of rhinoceros and paucity of horse in the Harappan civilization is herein believed to have been primarily due to the humid Harappan environment.

Environmental Inferences

Besides the empirical inferences of a humid environment obtained by scholars now for nearly seventy years, multiproxy environmental studies have also corroborated the same. Pollen data from Didwana Salt Lake, Rajasthan showed taxa indicative of increased precipitation during the mid-Holocene that started to fall around c.5000 years BP and reached the present levels at c.4200 BP (Singh *et al.* 1990). Significantly, fluvial geo-morphological studies done in western India, namely in Godavari, Bhima and Narmada rivers have shown that the most humid phase of Holocene is between 8000 to 4000 yrs BP (Mishra, 2001). According to S. Mishra (2001), after the Last Glacial Maxima, terminating about 14000 years BP, the environment (albeit with minor alterations) is marked by high sea levels, reduced continental glaciers and warm and humid climate. There is a spectrum of researchers who have stressed on higher sea level during the Harappan times. Due to this phenomenon, the Ranns were under a 4 m sheet of water with the Great and Small Ranns forming an arm of the sea. In-situ foraminiferal species observed from the Lothal dockyard have shown the access to sea upto that point of time. This high sea level started receding and achieved the present level at about 4500 years BP. Evidently, a warm and humid climate, including higher sea levels in the coastal areas, led to the bounties of nature, which carried the Harappan civilization in the early part of the mature period. Naturally, therefore, the *terra firma* was not so firm, as it was interspersed with patches of swamps and ponds besides grasslands and forests. It is in this environmental backdrop that rhinoceros was a natural co-habitant close to the Harappan settlements. It is in this context that the horse although known did not find favour until the later part of the Mature Harappan when transition to aridity had already started.

There are many other aspects besides the mere representation of water buffalo, rhinoceros, elephant, tiger, crocodile, fish which definitely stress on the evidence of humid Harappan environment. Perhaps "large number of fish bones" observed in the recent excavations at Harappa goes well with humid climate. The presence of fish bone at Rakhigarhi has been assumed as one of the subsistence traits. Secondly, water buffalo, which contributed significantly to the food economy (Thomas 2002) of the Harappans, requires a favourable environment. These animals were both hunted and kept as domestic animals during the Harappan phase (Meadow & Patel 2002). Water buffalo is well represented in the terracotta figurines obtained from excavations at Harappa (Dales & Kenoyer 1993). Further, depiction of animals of the humid environment is shown in profusion and their remains also identified in significant numbers. On the other hand the typical animals of lesser rainfall areas like the black buck, gazelle and nilgai are not identified at many sites of this civilization (Thomas 2002). Thus, it is clear that the Harappan environment was humid. In fact, scholars have estimated that in the western Rajasthan during the period from 10,000 to 3500 years BP, the precipitation was three times that of the present (Amundson & Pendall 1991).

Discussion and Conclusion

Although there are coherent grounds for assuming a humid environment during the larger part of the mature Harappan period, there have been alternative views also. The grounds cited for the semi-arid type of environment largely rests on such factors like: finding of floral species (including pollens) having affinity to semi-arid environs, use of mud bricks instead of baked bricks that would have consumed large amount of fuel, able management of scarce water. However, to the present author it appears that, like other civilizations, the Harappan Civilization also had the bounties of nature that they could thrive upon. A semi-arid environment is hardly an impetus for the genesis of a civilization that incidentally did not have the advantage of iron technology. In such a backdrop, the development of a civilization would have required an authoritarian regime with an exploitative hierarchical setup. The lack of monumentality and deification of rulers besides variance of material remains between different regions show that the setup was more egalitarian and worked on collective understanding rather than on autocratic fancies. Although here a humid Harappan environment is suggested, there is no denying the fact that there may have been occasional

spells of drought which increased in frequency towards the later part of the mature Harappan period. This may explain the floral evidence of semi-arid conditions in the backdrop of a humid Harappan environment. Moreover, airborne pollens of far off semi-arid areas are more likely to be trapped in the soil where it has some dampness. Similarly, the use of mud bricks in some Harappan sites does not necessarily mean scarcity of fuel but may have been conscious decision of the builders to save effort, time and of course fuel for other purposes.

Scholars have said that the mere presence of rhinoceros in the Harappan Civilization does not make the environmental settings humid as this animal has been cited in western provinces of the Mughal rule. However, there is a vast difference in magnitude if compared with the numerous evidence of the animal in the Harappan period and the occasional sighting of the animal in isolated damp pockets in a generally semi-arid settings. The horse, on the other hand, although known during the Harappan times did not find much favour due to its lack of utility in the given environmental conditions. But with the scientific data on a higher sea level during the Harappan Civilization, it appears that transport by horse was not possible during any part of the year. In conditions of extreme heat and humidity, keeping of the horses required special skills (Meadow and Patel 2002), and, therefore, was not a very favoured option. Thus, the preponderance of rhinoceros and the paucity of horses in the larger part of the mature Harappan period were mainly due to the humid environment. This munificent environment was also largely responsible for the genesis and successful continuity of the Harappan civilization until the onset of increasing aridity. Lastly, in view of the cogent reasons given for a munificent humid Harappan environment for the larger part of the mature period nonetheless substantiated by the quantity and quality of the depictions of rhinoceros, the animal stood as a symbol of Harappan prosperity. To the present author, it appears that, the only way out to negate the humid Harappan environment epitomized so well by the *Rhinoceros unicornis* is to hypothesize about the existence of another species "*Rhinoceros aridensis*", which can be postulated as thriving in semi-arid conditions.

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