

DEBATE

[Under this column we take up certain issues of history and archaeology for debate. We also hereby invite comments of experts on the issue, which we will publish in subsequent numbers – The Editor]

Was the Harappan Culture Vedic?*

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Some archaeologists think that the Harappa culture was created by the Rigvedic people. In 1978 this was convincingly refuted by B.B. Lal¹ in terms of the timeframe, geography and the cultural contents of the *Rig Veda* and Harappa. But in 1997 he appears as a convert to the view he had controverted. He does not accept the chronological gap between Harappa and ‘the Vedic texts’, points to the presence of the horse in Harappa, and dismisses the theory of the “glaring disparity” between the cultures represented by the Harappan remains and the ‘Vedic texts’.²

The Vedic texts, according to the general consensus of the Vedicists, belong to c. 1500–500 BC. The *Rig Veda* may be placed in the late or the post-urban phase of Harappa; it cannot be linked to the mature Harappa. Lal produces the fundamentalist argument that the *Aitareya Brahmana* refers to the shifting of the vernal equinox from ‘*Mrgasiras*’ to ‘*Rohini*’ which occurred around 3500 BC, and thus he places the *Rig Veda* in the 4th millennium BC.³ But modern astronomers who have studied the original texts state ‘the equinoxes are not explicitly mentioned in the *Brahmanas*’.⁴ It should be noted that the *naksatras* do not move but the point of the equinox moves. But the movement of the point of the equinox or the *visuat* (equator) when day and night are of the same duration is neither mentioned in the *Vedas* and the *Brahmanas* nor in the *Vedanga Jyotisa*.⁵ Hence there is no ground for placing the *Rig Veda* in the 4th millennium BC. More importantly, in view of its geography and close similarity with the *Avesta* the *Rig Veda* cannot be dated in isolation. The mention of the exact names of the Vedic deities in the Mitanni inscription of the 14th century BC clearly shows that the *Rig Veda* cannot be much earlier than the 15th century BC. A good many archaeological traces of the horse from the Rigvedic area belong to c. 1500 BC.

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Pleading for the Vedic identity of the Harappan culture, Lal states: 'Just as there were cities, towns and villages in the Harappan ensemble (as there are even today in any society) there were both rural and urban settlements in the Vedic times'. But linguists and archaeologists who have worked on this subject reject this view. 'Linguistically, the Indo-Iranians reveal no cities, fortifications, palaces, temples, writing, irrigation, specialized crafts or trade'.⁶ This finding applies to both Proto-Indians and Proto-Iranians. However, Lal quotes the *Rig Veda* verse X.101,8 with Griffith's translation in which the gods are asked 'to make iron forts, secure from all assailants'.⁷ Though he rightly questions the meaning of *ayasipur* as iron fort, he asserts that *pur* means a fortified town.⁸ The Vedic people had their *purs*, for there is the story that to fight the Asuras effectively the Devas set up the *counter-purs* and also counter-kingship. Sometimes the term *pur* is credited with thousand gates or *sahastradwara*, and is therefore considered a great Harappan town. But the term *sahastra* or thousand is a cliché which is used not only in Vedic texts frequently but also in Asokan inscriptions and later. However those who have adequately examined references to *pur* in the Vedic texts, particularly in the *Rig Veda*, do not consider it a fortified town. Wilhelm Rau, a Vedicist, and George Erdosy, an archaeologist, who have studied the Vedic *pur* in depth, do not identify the Vedic settlements with the Harappan.⁹

According to Rau, 'Not a word is said in our texts of the characteristic features of the Indus cities, of brick walls, brick houses, brick-paved streets laid out on an orthogonal pattern, of granaries or public baths'. He holds that towns are mentioned at the very end of the Vedic period.¹⁰ Erdosy elaborates the idea of Macdonell and Keith,¹¹ and questions the very existence of *pur* in the sense of fort on contextual grounds. Thus he considers 'renewed insistence on equating the Rigvedic and Harappan civilizations' to be 'eccentric assertions'.¹²

In our opinion the myths and metaphors relating to the *pur* suggest that it was either a dwelling unit or a cluster of such units which appeared in the post-urban Harappan phase. Particularly the early Vedic stone *purs* may indicate the recently discovered rock shelters in which the pastorals lived in the hilly tracts of the Northwest Frontier.

Of course a good part of the territory covered by the earliest Veda is the same as the Harappan area. However, the *Rig Veda* also covers Afghanistan where Harappa had a colony. B.B. Lal states that in the Harappan region not a single name of the river has any kind of Dravidian affiliation either on the west or on the east.¹³ It is true that the Rigvedic region in the northwest shows almost total substitution of pre-Indo-Aryan river names by those of Indo-Aryan type. But according to Witzel, a specialist in Vedic linguistics, some pre-Aryan river names have survived. These include Kubha (modern Kabul) river, Krumu (modern Kurram) and possibly the Sindhu. In this view these names have only doubtful Indo-Aryan/Indo-European etymologies.¹⁴ What Lal says implies that Ganga has an Indo-Aryan name.¹⁵ But that is not correct because the term *gang* means river in Mongoloid language and may be of Tibeto-Burman origin.

The plants and animals are different in Rigvedic and Harappan cultures. *Pipal* and *nim* are the sacred trees of the Harappans. Both these terms are non-Indo-Aryan. The term *nimba* is not known to the *Rig Veda*, but the term *pippala* occurs in its first *mandala*. The only agricultural product mentioned in the *Rig Veda* is barley, but, besides barley, wheat, sesamum and peas were produced in Harappa. It may be noted that the word *tila* which means sesamum is considered either Munda or Dravidian. Though camel bones appear in Mohenjodaro, camels appear neither in seals nor in terracottas. They first show up in 1700 BC in Pirak in the Kachi plains of Baluchistan. Rhinoceros is an important animal. Unicorns or single-horned animals form the overwhelming majority of animal symbols in seals and sealings. But this most favourite Harappan animal is not known to the *Rig Veda*. The term *ganda* or *khadga* is used for the rhinoceros in Sanskrit and the term *ekasringa* for both the unicorn and rhinoceros, but none of these terms occurs in the *Rig Veda*. It is significant that both *ganda* and *khadga* are of Dravidian origin according to Turner. Probably the Harappans carried on their agriculture with the help of bulls which are common in the Harappan art. Because of its predominant pastoralism the *Rig Veda* also makes numerous references to the bull. However, the Harappans had a full-fledged food producing economy which created conditions for the sustenance of cities.

In addition to the bull the elephant is also represented in the Harappan terracottas, but unlike the horse it is not important in the earliest Veda. The Vedic culture was horse centred. Though B.B. Lal and S.P. Gupta adduce some cases of the presence of the horse,¹⁶ these do not generally belong to the mature Harappan phase. That is why this view is countered by S.R. Rao, an older champion of the Aryan Harappa.¹⁷ Richard Meadow who has examined the relevant data on the horse problem finds no osteological remains of the horse before 2000 BC. The recent excavation of Harappa by American archaeologists do not indicate the presence of the horse there, and so does the Harappan site of Dholavira. Its excavator R.S. Bisht informed the author in January 2001 that though he found 'thousands of bones in Dholavira he did not find any horse bone'. Contacts between the Indo-Aryans from Central Asia and the Harappans in the mature Harappan phase cannot be ruled out. A few Harappans may have known the horse but it is certain that this animal was not in common use. It is because of this that B.B. Lal, now a great protagonist of the Vedic nature of the Harappan culture, 'would like to have more and more examples'.¹⁸ According to him 'one would like to have more such evidence from future excavations in order to make sure that the horse did play a significant role in the life of the Harappans'.¹⁹ In his earlier writing, Lal states: 'The evidence on the camel and horse is very meager and not wholly beyond doubt'.²⁰

The horse is not represented on any seal despite recent attempts at masquerading a bull as a horse²¹ Similarly the spoked wheel typical of the Indo-Aryan culture is absent in the mature Harappan culture.

Lal finds 'ample evidence of [...] sea-trade', and speaks of 'tremendous wealth' obtained from it. In support he quotes a verse from the ninth Book of the *Rig Veda*

together with its translation by Griffith.²² The verse reads: “*rayah samudranscaturo' smabhyam soma visvatah, a pavasva sahasrinah*”.²³ The translation reads: “From every side, O Soma, for our profit, pour thou forth four seas filled full of riches thousand fold”. We may add that the ninth Book in which this verse occurs was solely devoted to Soma, and added to the main text later. Further, Griffith’s translation of *asmabhyam* as, “for our profit”, creates an impression of profit arising out of trade; such a confusion is not created by Geldner.²⁴ We should also note that the four seas are called imaginary by Griffith.²⁵

In this context the commentary of Sayana makes more sense. According to it the sacrificer prays to Soma for the possession of the whole bounded by the four seas.²⁶ In any case there is no reference whatsoever to ‘tremendous wealth’ derived from ‘sea-trade’. This does not mean that the early Vedic people were unfamiliar with the sea. V.I. Sarianidi²⁷ and R.N. Nandi²⁸ suggest that people migrated to the Indus Valley along the Persian Gulf and the Makran coast. Nandi has looked into most references to the sea in the *Rig Veda*. On the basis of those from Books I and X he speaks of ‘peddling of goods’ and ‘petty trading’ in the context of land trade,²⁹ but we cannot infer sea trade from these references.

The mature Harappan culture was basically urban, marked by crafts and commerce, in contrast to the early Vedic culture which was rural and pastoral. Lal points out that from urban, the Harappan culture became rural because of a substantial fall in the economy.³⁰ This clearly means the existence of only villages and not of towns. But B.B. Lal asserts that villages and towns always existed in India and that both appeared in Rigvedic times. However we may recall that *pur* does not mean a town.

The most striking feature of the Harappan constructions is the use of fired bricks on a large scale. In Egypt mainly dried bricks were used. Baked bricks were used in Mesopotamia, but the extent of their use in the Harappan cities was much larger. Those who would like to attribute the Harappan buildings to the Rigvedic people should study the term *istaka*. *Ista* occurs in *Rig Veda* in the sense of worship or sacrifice which was not connected with brick at the early stage. Had it been so, *istaka* could have been used in the *Rig Veda*, as it was done in later texts. This clearly shows the absence of bricks and supports the view that *pur* did not denote fort, rampart or Harappan towns. The destruction of *pur* by Indra, who is called *puramdara*, may refer to large buildings of about 2000 BC found in the Bactria-Margiana Archaeological Complex. The Rigvedic Indo-Aryans seem to have been active in this area of Turkmenistan and north Afghanistan. They may have seen the bricks in this area, but they do not seem to be brick users.

Lal speaks of the functioning of the officials called *adhyaksa*, *nidhapati* and *rathaspati*³¹ in the *Rig Veda*. The first term does not occur in the *Rig Veda*. The last term *rathaspati* or ‘lord of chariots’ is used in it in the sense of a deity. Even if it is taken as warrior chief, it does not indicate any specific administrative function. Really

those who possessed cattle, horses and chariots dominated the Vedic *sabha*. The second term *nidhapati* or owner of snare recalls fowling and hunting adopted by the early people as a source of subsistence. The snare or tab was used for catching birds and small animals.³²

The number of non-Indo-Aryan words in the *Rig Veda* shows linguistic pluralism in this text. Foreign words in this text suggest the contribution of the speakers of the Harappan languages to the earliest Vedic language. The Rigvedic people spoke Indo-Aryan language. But since the Harappan script has not been deciphered, we cannot say with confidence about the languages which the Harappans spoke.

Recently, Michael Witzel has produced a revealing study on this problem.³³ He quotes Kuiper to state that the *Rig Veda* contains some 300 words, that is roughly 4 per cent of its hieratic (fixed or stylized) vocabulary, that are not Indo-Aryan.³⁴ Several scholars have tried to establish the identity of these words. There are twenty-five Dravidian words in the *Rig Veda*, and Burrow has noticed 85 such words in later Vedic Texts.³⁵ Turner discusses quite a few Dravidian words from the Indo-Aryan languages, and shows that they are connected with cereals, pot making, body organs and kin relations.³⁶ He also points out some Munda words in these languages. These include *ganda* (rhinoceros), *langala* (plough) and *langula* (tail or monkey)³⁷ in the chronologically earliest portion of the *Rig Veda*. Witzel states that these words occur in the Rigvedic language of Punjab.³⁸ According to him the semi-Munda words appear first in the early portions of the *Rig Veda* and Dravidian words occur in its middle and late portions.³⁹

Most probably Dravidian words percolated to the Vedic language through the remnants of the Indus culture. At present Brahui, a form of Dravidian, is spoken in parts of Iran, Turkmenistan, Afghanistan, Baluchistan and Sindh. Its speakers number 600,000 in 1980. It is estimated that the Proto-Dravidians migrated from Elamite Iran to the subcontinent around 4000 BC.

The latest view based on DNA data is different. The DNA data show certain characteristics in the human body which pass from generation to generation. A DNA data marker defined the first major wave of Dravidian migration into India. The marker is called M 20 and is found in 50% in some south Indian population. They are Dravidians and they came to India from the Middle East around 30,000 years ago.⁴⁰

No attention has been paid to the problem of the Munda migration to the Indus valley though the number of semi-Munda words in *Rig Veda* seems to be much larger than the Dravidian words. It is estimated that the speakers of the Austro-Asiatic languages to which Munda belongs appeared in India some 50,000 years ago. But when did they appear in the Harappan area? S.S. Sarkar holds that an autochthonous element represented by the Vedic or Australoid ethnic strain appears to be at the base of the Indus people.⁴¹

Archaeologically, the arrival of the Munda-speaking people in this region may be linked with the spread of the people who used Copper Hoards and possibly with those

who used ochre-coloured pottery (OCP). The Copper Hoards are roughly placed between 2600 and 1100 BC. More than forty Copper Hoard sites have been found. They cover a wide area ranging from West Bengal and Orissa in the east to Gujarat and Haryana in the west, and from Andhra Pradesh in the south to Uttar Pradesh in the north.⁴² They appear in Jharkhand where the largest copper mine (130 km long) lies in Singhbhum district, but the largest hoard comes from Gungeria in Madhya Pradesh. It contains 424 copper tools and weapons, and 102 thin sheets of silver objects. Nearly half of the copper hoard sites lie in the Ganga-Yamuna *doab*, particularly in its upper portion. Thus there is no doubt that the copper hoards also appear in the Harappan zone.

It has been shown by Parapola that the swords and the dirks with antennae hilts from the Copper Hoards of the Ganga plains have exact parallels in north Afghanistan.⁴³ Bar celts from north Afghanistan are similar to the bar celts characteristic of the Copper Hoards.⁴⁴ Recently bar celts have been reported from a copper hoard found in Rajasthan. All these similarities between the copper objects of the subcontinent and those of north Afghanistan suggest Munda influence in that area. Because of this Munda words may have penetrated the *Rig Veda* in second millennium BC in Afghanistan also.

From where did these Copper Hoard people move to different parts of the subcontinent including the Harappan area? According to D.P. Agrawal on the basis of the available limited trace impurity data on ores and artifacts one can probably correlate the Copper Hoards with the Rakha mines in Singhbhum,⁴⁵ which lies on the borders of Jharkhand, Orissa and West Bengal. The Mundari people and their languages dominate this area till today. A recent study of the origins of the people and culture of Bengal shows that its main ethnic groups such as the Vangas, Pundras, etc., were originally Austroloids and spoke Austro-Asiatic languages in the beginning.⁴⁶ The Copper Hoard people seem to have moved from this area. Since the thickly forested east and mid-Ganga plains were difficult to cross they seem to have followed hilly and plateau routes near the rivers through Bihar, Uttar Pradesh and Madhya Pradesh and managed to reach the upper *doab*; this may explain the presence of the Munda speakers in the Harappan area around 2500 BC and account for a substratum of semi-Munda words in *Rig Veda*.

Recently it has been pointed out that the Santhal symbols used in rituals are similar to the Indus script. It is suggested that the Harappans came to the Santhal area.⁴⁷ But in reality the Santhals or the Mundari people went to the Harappan area. At present the Santhals form not only the largest Munda tribe but also the largest single 'aboriginal' tribe in the subcontinent. Since the Harappans were multilingual, the Munda words and symbols could also be used in attempts to read their script. In a recent issue of *Electronic Journal of Vedic Studies*,⁴⁸ the Harappan inscriptions have been called symbolic and are not considered a form of writing by three American scholars. In any case, the existing evidence shows that Dravidian was prevalent mainly in the southern part of the Harappan culture found in Sindh and the adjoining

areas. On the other hand, the occurrence of the Munda words in the older portions of the *Rig Veda* suggests that semi-Munda language was current in the Punjab portion of the Harappan culture.

More light on the problem of the Munda presence in Punjab can be thrown by a detailed study of the Punjabi words. Even a elementary study shows that *kuri* the term for girl in Punjabi is the same as *Kuri* for girl in Santhali. Similarly, the term *Munda* for boy in Punjab is a Mundari word.

The present discussion shows that generally the markers of the Harappan culture do not appear in the *Rig Veda* and vice versa. Urbanism, crafts, commerce and large buildings characterize the Harappan culture, but the Rigvedic culture is rural and pastoral. The horse plays a crucial role in the *Rig Veda*, but it has no place in the mature Harappan culture. Some Rigvedic rivers of the northwestern subcontinent bear non-Indo-Aryan names. The Munda, Dravidian and other non-Indo-Aryan words in the *Rig Veda* suggest that the Vedic people learnt elements of pottery and agriculture from the late Harappans.

A.M. Shastri, who was placed in charge of the publication of inscriptions by the ICHR in my time, doubts the later Vedic character of the Painted Grey Ware and considers it to be Harappan. We can always think of interaction between the remnants of the Harappan culture and the later Vedic people. I had pointed out earlier that the PGW culture is more or less the same as the later Vedic culture. Both A. Ghosh⁴⁹ and B.B. Lal⁵⁰ support the view that the PGW culture is identical with the later Vedic culture. Though later Vedic culture may be pre-iron, the use of iron, horse and glass appears in both cultures. It is well known that the iron and horse are wanting in the mature Harappan culture. Both PGW and later Vedic cultures lack fired bricks, scripts and large structures which are found in the mature Harappan culture. Some writers are baffled at the use of rice, pig and buffalo in the PGW culture. They should appreciate that the later Vedic texts contain many Munda and Dravidian words and because of interaction PGW culture contains non-Vedic elements. In the study of ancient cultures the ongoing interaction between different ethnic and linguistic groups cannot be ignored, but there is nothing to show that the striking elements of Harappan culture appeared in later Vedic times. The PGW people kept pigs like the Harappans, but the Sanskrit term *sukaru* used for this animal is a Munda word according to Turner. Like the Harappans, the PGW people too kept buffalo, but the Sanskrit term *gowal* for buffalo in later Vedic texts shows that the speakers of the Indo-Aryan language were more familiar with cow than with buffalo.

Several Indo-Aryan features appear in the PGW contexts which cover Punjab, Haryana, Western Uttar Pradesh and Northern Rajasthan. Designs of svastika marker associated with the Aryans occur in the PGW. At least at five sites in Rajasthan and Western Uttar Pradesh burnt bones and ashes were deposited to mark the burials. This suggests post-cremation burial. In any case it is clear that the striking markers of

mature Harappan culture which had disappeared around 2000 BC are absent in later Vedic times.

It is argued that the Indo-Aryans migrated from Harappa to Western Asia and Europe. But why did they not take the Harappan script with them. In the 2nd millennium BC we find Hittite, Kassite and Mitanni inscriptions containing Indo-Aryans words in Western Asia. But all of them are written in cuneiform script; none of them appears in the Harappan script. Much later when the Buddhist missionaries went from India to Central Asia they carried the Brahmi script and Pali texts.

The greatest difficulty in Indo-Aryan diffusion from India is caused by the language of the *Rig Veda*. This text is a mixture of Munda and Dravidian words with the Indo-Aryan language. It also contains some other indigenous non-Aryan words which have not been identified linguistically. If the Indo-European language spread from India to Europe why do not we find traces of non-Indo-Aryan words in Greek and other languages. Evidently the Munda, Dravidian and other terms were adopted by the Indo-Aryans when the *Rig Veda* and later Vedic texts were compiled as a result of contact with late or post-Harappan peoples.

It is, again, argued that the original home of the Aryans lay in the Ganga basin where they ruled in 7000 BC and from there they migrated to other countries (quoted in Michael Witzel, in *Electronic Journal of Vedic Studies*, VII, 2001, no. 3). But there is no archaeological evidence of settlement of that time in the Ganga plains. Then how could the royal state arise without the payment of taxes and tribute? 7000 BC was the phase of hunters and food gatherers in the Ganga plains. Food producing settlements appear in that area only around 1200 BC.

Maharashtra is also called the original home of the Aryans. But the settlements on any scale are not found in this area earlier than 1500 BC.

Now we have solid scientific evidence on the basis of Spencer Wells (*op cit.* p. 167) that the Indo-Aryans migrated from Central Asia to India. Search made for genetic characteristics in the blood cells of humans and other beings is revealing. These traits pass from generation to generation. Biologists have noticed the type of genetic traits in the steppe people of Central Asia from its one end to the other. These genetic indications are called M 17, and they appear around 8000 BC. These are found in more than 40% people of Central Asia. When the scientists looked for them in Delhi they discovered these traits in more than 35% of the Hindi-speaking and only in 10% of the speakers of Dravidian. Thus biologists conclude that the Indo-Aryans migrated from Central Asia to India. They place this process after 8000 BC. But linguists and archaeologists place it around 2000 BC.

We also notice striking similarity in the use of the past tense in Russian and many Indo-Aryan languages. In Russian one uses *Ya Chital* 'I read', *Ya pishal* 'I wrote'. The 'L' ending past tense is used in Bengali, Assamese, Oriya, Nagpuri, Maithali, Bhojpuri and Magahi. It is also used in Marathi and sometimes in Rajasthani. It is rare in Punjabi. Linguists can better examine Russian links with Indo-Aryan language, but

the genetic evidence about the Indo-Aryan migration from Central Asia to India is decisive.

Notes

1. B.B. Lal, ‘The Indo-Aryan hypothesis vis-a-vis Indian archaeology’, *Journal of Central Asia*, vol. 1, no. 1, 1978, pp. 21–41.
2. Id., *The Earliest Civilization of South Asia*, New Delhi, 1997, pp. 281–87.
3. Ibid., p. 286.
4. S.N. Sen, in D.M. Bose, S.N. Sen & B.V. Subbrayappa, *A Concise History of Science in India*, National Science Academy, New Delhi, 1971, p. 77.
5. M.N. Saba & N.C. Lahiri, *History of the Calendar*, Council of Scientific and Industrial Research, New Delhi, 1955, repr., 1992, Appendix 5-D; cf. S.B. Dikshit, *Bharatiya Jyotisa*, Hindi Samiti, Suchana Vibhag, Uttar Pradesh, 2nd ed., Lucknow, 1963.
6. Y.Y. Kuzrnina & K.F. Smimov, ‘The origin of the Indo-Iranians in the light of recent archaeological data’, *Journal of Central Asia*, vol. 1, no. 1, 1978, p. 68.
7. Lal, op. cit. (1997), pp. 284–5.
8. Ibid.
9. W. Rau, *The Meaning of Pur in Vedic Literature*, München, 1976; G. Erdosy, ‘The meaning of Rigvedic pur: Notes on the vedic landscape’, in J.M. Kenoyer (ed.), *From Sumer to Meluha. Contributions to the Archaeology of South and East Asia in Memory of George F. Dales Jr.*, Wisconsin Archaeological Report, vol. 3, 1994, pp. 223–34.
10. Rau, op. cit., p. 52.
11. *Vedic Index of Names and Subjects*, 1912, repr., Delhi, vol. I, 1967, pp. 538–9.
12. Erdosy, op. cit., pp. 224–32.
13. Lal, 1998, p. 446.
14. ‘Substrate languages in Old Indo-Aryan’, *Electronic Journal of Vedic Studies (EJVS)*, Vol. 5, 1999, Issue 1 (September).
15. Lal, 1998, p. 442.
16. Abstract of The Mythical Twins of ‘Aryan Invasion of India’ and ‘Extinction of Harappan Civilisation’, Shyamnandan Sahay Memorial Lecture, delivered by B. B. Lal at Patna on 20 February 2001.
17. R.S. Sharma, *Advent of the Aryans in India*, New Delhi, Manohar, 1999, pp. 42–3.
18. Ibid., p. 43.
19. ‘Rigvedic aryan: The debate must go on’, *East and West*, Vol. 48, Nos. 3-4, December 1998, pp. 445–6.
20. *An Encyclopedia of Indian Archaeology (EIA)* (ed.) A. Ghosh, New Delhi, Munshiram Manoharlal, 1989, Vol. 1, p. 85.
21. *Frontline*, 13 October 2000.
22. Lal, op. cit. (1997), p. 285.
23. IX.33.6.
24. *Harvard Oriental Series*, vol. 35, 1951, p. 30.
25. *The Hymns of the Rigveda*, repr., Delhi 1986, p. 483.
26. *catuhsamudramudritabhumandalasvavitvam eva asaste yajamanah*. Comm. on RV IX. 33.6 in *Rig-Veda-Samhita*, vol. III, ed. Max Muller, London 1892.
27. *Journal of Central Asia*, vol. I, no. 1, 1978, p. 77.

28. *Indian Historical Review*, XXI, nos. 1 and 2, 1994–95, pp. 9–36.
29. *Ibid.*, pp. 34–5.
30. Abstract of The Mythical Twins of ‘Aryan Invasion of India’ and ‘Extinction of Harappan Civilisation’, Shyamnandan Sahay Memorial Lecture, delivered by B. B. Lal at Patna on 20 February 2001.
31. Lal, 1998, p. 444.
32. Sharma, *Advent of the Aryans in India*, pp. 38–41.
33. ‘Substrate Languages in Old Indo-Aryan’, *Electronic Journal of Vedic Studies*, Vol. 5, 1999, issue I (September).
34. *Ibid.*, Section O. At another place in the same paper he speaks of about 380 foreign words in the *Rig Veda*.
35. Asko Parpola, *Deciphering the Indus Script*, Cambridge University Press, 1994, pp. 167–8.
36. Sharma, *Advent of the Aryans*, p. 56.
37. *Ibid.*
38. *EJVS*, ‘Substrate Languages’, Section 1, 2–3.
39. *Ibid.*, p. 33. See also ‘Autochthonous arians? The evidence from old Indian and Iranian texts’ in *EJVS*, Vol. 7, 2001, issue 3 (May).
40. Spencer Wells, *The Journey of Man, A Genetic Odyssey*, Princeton University Press, 2002, p. 166.
41. *EIA*, Vol. 1, p. 318.
42. R.S. Sharma, *Ancient India*, New Delhi, NCERT, 1999, pp. 51–2.
43. Asko Parpola, ‘The coming of the arians to Iran and India and the cultural and ethnic identity of the dasas’ in *International Journal of Dravidian Linguistics*, Vol. XVII, No.2, 1988, p. 102 with fns, pp. 108–9.
44. *Ibid.*, pp. 102–3 with fns, pp. 110–11.
45. *EIA*, Vol. 1, p. 324.
46. Annapurna Chattopadhyaya, *The People and Culture of Bengal*, Calcutta, Firma KLM Pvt Ltd, 2001.
47. Arun Pathak and N.K. Verma, *Echoes of the Indus Valley*, Patna, Janaki Prakashan, 1992.
48. Vol. 11, no. 2 (2004), pp. 19–57.
49. *Encyclopaedia of Indian Archaeology*, Vol. I, p. 75.
50. In: A.H. Dani and V.M. Mason (eds), *History of Civilizations of Central Asia*, Vol. I, UNESCO Publishing, Paris, 1992, p. 6.