



Research Paper

Ancient Indian history: What do we know and how?

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Abstract

When and where was the Rigveda (Rv) composed? How are the Vedic people related to the vast Harappan archaeological tradition? These quintessential questions have no direct answers. At our current level of understanding, archaeology and sacred texts constitute two distinct streams which do not intersect. We must therefore collate evidence from different sources and try to produce a synthesis. It is particularly important to take note of archaeological evidence from Central Asia, because it has not received the attention it deserves. What is well known in science must be kept in mind in the case of history also. A theory to be valid must explain each and every fact (known at present or to be known in future) in a self-consistent manner. Conversely, even if there is one piece of evidence that a theory is unable to explain, it should be put on hold, modified or even rejected.

Keywords. Vedic People; Rigveda; ancient India; Harappan civilization; genomics; Indo-European speakers

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I. Indian archaeology 7000–1900 BCE

A development of singular importance in world history was the transition from hunting and food gathering to the domestication of winter cereal grasses wheat and barley, animal breeding and settled life in the neolithic age. The cold wet conditions after germination that these crops require are met in a vast area that extends from the Mediterranean coast in the west through the Zagros mountains to the river Indus and beyond in the east; and from the Red Sea in the south to east Turkey in the north. It is believed that the domestication of the first species of wheat took place in east Turkey. Very soon well-developed agriculture appeared at various places more or less simultaneously, around 7000 BCE. Well-known early farming sites include Catal Huyuk in east Turkey, Jericho in Palestine, Ali Kosh in the Iranian lowlands of Khuzistan, and Mehrgarh to the west of Indus, in central Balochistan (Pakistan). How exactly agricultural techniques spread is a question on which there is no broad consensus. Farming could have been introduced into Mehrgarh by a migrating population, or a handful of people might have brought in the new seeds and technology.

Mehrgarh is situated in the Kachhi plain at the foot of the Bolan pass on river Bolan, a tributary of the Indus. Mehrgarh lies on the historical route that connects the Indus Valley via Quetta and Kandahar to the Iranian Plateau, which in turn leads to central and west Asia. Even at that early period Mehrgarh's trade with Iran, north Afghanistan and Arabian coast (which lies 500 km to the south) was an important part of life, as can be seen from the grave goods. It is however not clear how these imports were paid for. Economics gives viability to multi-step trade routes which in turn become pathways for transfer of technologies, ideas, influences and people. One can safely presume that once Mehrgarh became an agricultural centre, it would have attracted hunter-gatherers from the neighbouring areas.

Agriculture diffused slowly out of Mehrgarh. The neo-lithic agricultural site of Kili Gul Muhammad, located barely 3 km north of the Quetta city in the plain near the Zarghun valley, is dated 4800 BCE. Various technologies were introduced soon thereafter. In about 4700 BC there appears at Mehrgarh handmade and coated-basket pottery as well as first ever signs of cotton. Wheel-made pottery and copper make their appearance in about 4000 BCE. It is not clear whether these technologies arrived through diffusion or were brought by new people. It is notable that the material culture does not give any indication of new people. Even if they brought in new technology, they merged with the existing population. (Their hypothetical presence may be discernible genetically, though.) Various mounds in the Mehrgarh area show continuous occupancy till about

2000 BCE. Balochistan shows closer ties with sites across the Hindu Kush than across the Indus. The Balochistan phase was followed by the vast Harappan tradition, so named after the first site was discovered. The oldest site east of Balochistan is Balakot located on an ancient course of Windar river, approximately 12 km inland from Sonmiani Bay. It has been assigned a time bracket 4000–3500 BCE. There is a chronological gap of some 2000 years between Mehrgarh and Balakot. It is believed that in future intermediary sites will be discovered that may fill this gap. The oldest site on Indus itself is Amri, where the earliest occupation is dated 3600–3300 BCE, that is somewhat later than Balakot. These early sites mark the beginning of pre- and early Harappan phases, which lead to the mature phase which lasted from 2600 to 1900 BCE and is characterized by major settlements such as Harappa, Mohenjodaro, Rakhigarhi and probably Ganweriwala. Sometimes the Harappan phase is used as an umbrella term to include the Balochistan phase also (Kochhar 2000: 60–76).

It is noteworthy that during the entire period, 7000–1900 BCE, there is no manifest sign of entry of new people. Even if they did arrive, they merged, losing their own identity. The new people who made an impact arrived only with the decline of the mature Harappans and are surmised to be the Indic speakers, who came from the northwest (Kochhar 2000: 193). Both the phenomena may be related to the prolonged and widespread failure of rains.

II. Indo-European homeland

Indo-Iranian and Indo-European (IE) linguistic commonalities suggest the existence of hypothetical PIE speakers, who are believed to have been stationed in the resource-poor European steppes, bordering the Caspian Sea and Black Sea, and to the south of the forest lands inhabited by the Finno-Ugric people. The latter languages contain loanwords from the former indicating neighbourly interaction. Thus, the Finnish *porras* for pig is cognate with Latin *porcus*; the Mordvinian *azoro* corresponds to Sanskrit *asura*, lord, etc. Before the dispersals began, PIE had domesticated horse (Skt. *ashva* = Gothic *athwa*), harnessed it in fast-moving spoked-wheeled vehicles (Skt *chakra* = Greek *kyklos* = Engl. cycle), and learnt the use of copper (*ayas* = eos).

Significantly, there is a loanword in the reverse direction, that is from the Finno-Ugric into some of the IE languages. The Finnish *mehiläinen*, Hungarian *meh* and Mordvinian *meks* correspond to the Sanskrit *makṣh*, Avestan *makshi* and Slovenian *muha*. The absence of cognates in other IE languages suggests that the Slavic and the Indo-Iranians were still stationed together when the others had already left (Kochhar 2000: 145). The extreme closeness within the Indo-Iranian group implies that they were the last ones to split from one another. The Indo-Aryans and Iranio-Aryans are the only ones in the PIE family who would go on to compose literature: *Rv* and the related *Avesta*. *Rv* is in fact closer to *Avesta* than the later Vedic texts. 'It is quite possible to find verses in the oldest portions of *Avesta* which simply by phonetic substitutions according to established laws can be turned into intelligible Sanskrit' (Kochhar 2000: 32). The Indo-Iranian family includes speakers of Dardi, Kafiri, Pashto, Balochi, and Kurdish languages. It is now certain that starting about 2000 BC, very large parts of the world (including Central and South Asia) were affected by prolonged drought which caused collapse of existing civilizations and led to widespread migrations.

III. Central Asia

Presumably it was the quest for water which compelled Indo-Iranians to move southwards to areas where, thanks to rivers fed by the snow-clad Pamirs and Hindukush, water shortage would not be so acute. A positive fall-out of Russian occupation of Central Asia has been the thorough archaeological excavations in the area including north Afghanistan. Unfortunately, south Afghanistan and Iran, which are more relevant from an Indian point of view, remain largely unexplored archaeologically. The archaeology of south Turkmenistan runs parallel to India's, with *Namazga V* corresponding to urban centres of Harappa and Mohenjodaro. In 2100 BC, *Namazga V* was ruined. Atop its ruins came up a small impoverished village *Namazga VI*, which shows clear signs of decline in material culture as well as new burial practices and new symbols. Remarkably, one pedestal from *Namazga VI* is decorated with a *svastika*, an absolutely new motif in local symbolism. It was never found again in the entire rich collection of south Turkmenistan pottery. From this and the following, we conclude that Indo-Iranians were in south Turkmenistan about 2100 BCE on the way to Afghanistan, Iran and India.

About the same time as *Namazga VI*, a new cultural complex came up spread over the Murgab river delta (Margiana) and the plain around the middle reaches of Amu Darya (Bactria). The calibrated radiocarbon dates from Murgab-Amu cultures cover a period 2100 BC–1700 BC. Two sites from this area are noteworthy in that they seem to provide evidence that can be related to the *Rv*.

Togolok 21 in the Murghab Delta in south Turkmenistan shows evidence of use of *Ephedra*, which has been identified with the *Soma/Haoma* plant of the Rigvedic/Avestan people. *Ephedra*, however, appears in association with poppy and cannabis, while *Soma/Haoma* was a pure plant extract. We may consider *Togolok 21* to belong to the *Rv*-related people, but we also have a structure in the neighbourhood probably belonging to their enemies. *Dashli 3* in the Amu plain in north Afghanistan shows a circular building (inside a square enclosure) which fits the Rigvedic description of a *Dasa* fort. Unlike *Togolok 21*, there is no sign of *Ephedra* in

Dashli 3. This is consistent with the fact that the Dasa people are described as anti-Soma (Kochhar 2000: 157–177).

In the early days, it was assumed that Dasa were native Indians, and the forts that Indra broke were the latter's. Since Iranian is also familiar with Dasa, they cannot be the Harappan people. Indra's enemies, mentioned in the Rv, seem to be the non-Soma-drinking people whom the Rig-vedic people encountered in north Afghanistan and its neighbourhood. An intriguing question arises. If the Rv people were the Harappans, who were the people whose forts Indra demolished? At Bishkent, in this region, graves have been found which fit the description in the Rv (10.18) devoted to Mrtyu, the god of death (Kochhar 2000: 176). Archaeological cultures, believed to be associated with Indo-Iranians, share a number of features:

- Cult of fire
- Either burial of burnt bones and ashes, or of the body in a flexed position
- Poor-quality pottery, whether handmade or wheel-made. Extensive use of handmade pottery. It is noteworthy that the two earthen vessels, ukha and mahavira, used in the Vedic ritual were explicitly required to be handmade. To sum up in advance, the Indo-Iranians next climbed up the Hindukush. Most of the Rv is believed to have been authored in south Afghanistan beginning with about 1700 BCE, even though it probably contains references or allusions to an earlier era. There were other Indic-speaking groups also who spoke related dialects but were not connected with the Rv. Conclusive evidence for the migration of the Aryans comes not from India or Iran, but from further west. A treaty (1400 BCE) concluded on cuneiform tablets between the victorious Hittites and the defeated Mittanis (Aryans) mentions the divinities of Mitra, Varuna, Indra and the (two) Nasatyas (Ashvini Kumars).

Soma/Haoma cult was common to the Rigvedic/Avestan people. The Vedic agnishtoma and the Zoroastrian Haoma ceremony are strikingly similar. The Soma/Haoma plant was leafless with its twigs resembling a finger. The twigs were crushed, and the extracted juice also called Soma was filtered and drunk. Note that there was no time for fermentation. The natural history of the Soma plant helps us localize the Indo-Iranian habitat. The Rv makes it clear that Soma grew in mountains, a popular location being Mount Mujavat. In the Rv (8.80) a maiden, Apala, plucks Soma twigs by the wayside and chews them. In Baudhayana Shrautasutra (6.14), the Adhvaryu asks the seller if the Soma came from Mujavat, which obviously was still a source of supply, but not known first hand. Katyayana's Shrautasutra (10.9.30) enjoins the priests not to give the genuine Soma to a Kshatriya or a Vaishya, even when it was available, but to give them substitutes. Shatapatha Brahmana (4.5.10.2–6) lists the substitutes for use in the ritual, when Soma is not available. Subsequently, even in medical literature, Soma becomes mythical. Such respected medical texts as Sushruta-samhita (29.21–22) and Charaka-samhita (1.4–6) claim that Soma had 15 leaves, which appeared one per day during the waxing moon (shukla-paksha), and dropped off one by one during the waning moon (krshna-paksha). We thus see the Indo-Aryans progressively moving away from the Soma habitat. Each and every statement on Soma/ Haoma in the Vedic corpus and Avestan literature can be explained in a self-consistent manner by identifying the Soma plant with those species of Ephedra which have high alkaloidal content and which grow at high altitudes (Kochhar 2000: 106).

IV. Rivers Sarasvati

Sarasvati is the only river that is described in some detail in the old books of the Rv. It is aptly called naditama, the foremost of rivers. It rises in the mountains, cuts its ridges, raises foam and goes to the samudra. (The word samudra literally means water gatherer; its identification with the ocean is a later development.) It has many tributaries and is called its mother. In addition, there are other sisterly rivers in the region. Later Vedic texts (Panchavimsha Brahmana and Jaiminiya Upanishad) as also the Mahabharata mention a river Sarasvati which vanishes in the desert at a place called Vinashana.

The Vinashana Sarasvati has been identified with the present semi-defunct Ghaggar, which lies between the Indus system in the west and Yamuna-Ganga in the east. The admittedly late 10th mandala contains a river hymn where all the superlatives earlier applied to Sarasvati are transferred to Indus. Sarasvati is mentioned here in passing. It must be the Vinashana Sarasvati. The present-day maps show a small tributary as Sarsuti. It is not known when the name was transferred to it and the main river given the rather un-poetic name Ghaggar.

Sarasvati, it would seem, was where the rishis were. Unmindful of the Vedic references, the Puranas talk of Sarasvati as an invisible river that joins Ganga and Yamuna at Prayag. Also, Mahabharata, not discomfited by the apparent contradiction, mentions Vinashana as well as Invisible Sarasvati. The question of geographical identification of naditama Sarasvati was taken up for the first time by the Europeans. Puranic mythology was beneath their notice; they would consider only the Vedic corpus.

From the field work carried out 150 years ago, it is known that at one time, both Yamuna and Satluj flowed into Ghaggar, and the combined waters reached the sea. (Recent satellite imagery confirms this, but does

not or cannot provide any chronology.) As early as 1847 Lassen (1847: 91) proposed that the mighty Sarasvati be identified with Ghaggar. Max Muller accepted the hypothesis without, it seems, acknowledging the source. He, however, was careful to admit that 'it may not be possible to determine by geo-logical evidence the time of the changes which modified the southern area of the Punjab and caused the Sarasvati to disappear in the desert' (Max Muller 1869: 46).

A 100 years after him, there is no need to indulge in idle conjecturing because we now have the scientific and technological ability to answer the question unambiguously. Max Muller also suggested another hypothesis that the Aryans came into India through invasion. For this, he has been severely condemned. But his Sarasvati hypothesis has been accepted as gospel truth for reasons of convenience. Even if old Ghaggar were a flowing river in Rigvedic times, it will not follow that it was the naditama Sarasvati. Even if it be established that old Ghaggar indeed was the Sarasvati, it would only mean that the Rv was composed in India; the question whether the Aryans came from outside or not will still remain open. However, if it turns out that the Rv Sarasvati was located outside India, it would conclusively prove that the Vedic people came into India from the outside. Whether there was invasion or migration is an emotional question. From an academic point of view, in principle, it is a matter of minor detail.

Geology or no geology, Max Muller should have known that the attributes of the old Ghaggar do not match those of the naditama Sarasvati. The waters of snow-fed Satluj and Yamuna would make the lower Ghaggar (known today as Hakra) a wide river, but in its upper reaches it would still be as pitiable as it is now. By no stretch of imagination can the rain-fed Ghaggar rising in low hills be called a mighty river that cuts ridges of mountains, raises foam, etc.

Latayana Shrauta-sutra was not translated in Max Muller's time. It provides a very valuable piece of information (10.19.8.9): 'He should proceed on the southern bank of Drishadvati [Sarasvati's tributary]. When he has reached the arna whence from she springs, he should offer his offering and descend into Yamuna in the vicinity of the place [called] Triplaksha-vaharana'. Yamuna arises in the higher reaches of the Himalayas, and is not connected with the Ghaggar system in any way. In contrast, Latayana suggests that all these rivers are within walking distance, in the same mountain range.

Taking a lead from Alfred Hillebrandt, I have suggested that the Rv Sarasvati be equated with the south Afghanistan river Helmand, which has a tributary called Arghandab whose old name is Haraivati. Admittedly, Helmand falls into an inland lake, but there is no reason to suppose that the Rv term samudra could not have been applied to it. Similarly, the Rv Sarayu must be identified with Hari-rud, whose older name is Horayu (cognate with Sarayu). Rigvedic Sapta Sindhavah (Avestan Hapta Hindu), the district of seven rivers, can be identified with other rivers in the Helmand region including Farah-rud.

The Rv also mentions Gomati. From the context it is clear that Gomal in Balochistan is meant and not the Lucknow Gomati. This illustrates the later re-use of old names. By placing naditama Sarasvati in south Afghanistan, we can develop a thesis that is capable of explaining each and every Vedic and Puranic reference to Sarasvati. The rishis on the banks of naditama Sarasvati move eastwards, and cross the Indus system (already known to Rv). They come to the present-day Ghaggar, which they would have found in the same state as it is now. They settle on its banks, and give it the name Sarasvati, which they brought with them. Eventually, they moved further east and reached the present-day Yamuna and Ganga. These two names had no special significance in the old Vedic literature, but now they came to denote the newly discovered mighty rivers. By this time, the composition of Rigvedic hymns had come to an end; and the Ganga-Yamuna area was the new centre of economy, culture and theology. Sarasvati was made an invisible partner of the new holy rivers to keep its memory alive in popular perception.

There were a number of Indic groups speaking related dialects. While a group was composing the Rv, others moved into the subcontinent, from or through Afghanistan. In all, there were a number of waves of migrations, which included the Rv people also. Swat III culture in the Swat (Rv Suvastu) valley supplants an early Harappan phase and is assigned to (non-Rv) Indic speakers. (A calibrated radiocarbon date from here is 1744 BC.) Recall that this area hosts Dardi/Kafiri speakers. In Balochistan, at the foot of the Bolan Pass, lies Pirak, which shows unbroken occupancy from 1900 to 1000 BCE. Unlike Swat, it was a new settlement. Pirak I (1900–1300 BCE) and Pirak II (1300–1100 BCE) show distinctive figurines of horses and horse riders, as also horse bones.

V. Horse

The Rigvedic people were not merely familiar with the horse; they were obsessed with it. Had the Harappan civilization been the handiwork of Indic speakers, the horse would have been the most common motif on the seals. It has been pointed out rather defensively that some Harappan sites (like Surkotada) show horse bones. Possibility exists that in some cases the animal in question may not be the true horse. Instead of nitpicking, it would be instructive to raise a more fundamental point. The key issue is not the domesticated horse but the domestication of the horse. A prerequisite for domestication of the horse is the availability of the wild horse. It is a well-established fact that India is not the habitat of the wild horse. The presence of domestic horse

in India in the Harappan context shows some contact with those who in turn were in contact with the horse land. By the time the horse appeared in India, the southward movement of the Indo-Iranian speakers had already begun. For all we know, Aryan traders situated in Afghanistan might have supplied horses to the Harappans!

Given the importance Soma enjoys in the Rv, one would have expected that Harappan sites (if the people here were related to the Rv) would all show signs of some chemical to be identified with the legendary Soma. This commonality would in turn have led us to the botanical identity of the plant. However, there is no sign of any common practice associated with a plant or its extract.

In two successive projects, Braj Basi Lal carried out excavations at the sites associated with the two epics. He found that Mahabharata-named sites are clustered towards the west, while the Ramayana-named sites are situated in the east. More intriguingly, the Mahabharata-named sites are older (PGW, painted greyware) than the Ramayana-named sites (NBPW, northern black polished ware). Even though Puranas declare Hastinapur to be an ancient capital, and Indraprastha a new settlement, archaeologically both are PGW sites (Kochhar 2000: 84–87).

These important findings have not been widely noticed. On the face of it, their chronology runs counter to the Puranic accounts, which consistently maintain that Rama came 30 generations before Krishna. The hypothesis of migration of names offers a simple resolution of the apparent paradox: The Mahabharata-related people were the first ones to move eastwards beyond Ghaggar. They settled there, giving old names to their new settlements. The Ramayana-related people came in later. They had to move further east, where they also re-used old names from their earlier settlements. The much-maligned Puranas provide insightful information. The Mahabharata people are the Kuru-Bharata people, related to the kings under whose auspices the Rig-vedic hymns were composed. On the contrary, Ramayana involves the Ikshvakus, who were not connected with the Rv. Post-Rv, the Ikshvaku territories such as Mithila emerged as centres of sacred learning. Literary and linguistic evidence clearly points towards differential migration of the Aryans into India. The older parts of the Rv as well as the Avesta show a distinct preference for the r-sound over the l. Where the other IE languages have r, the Rv also has r (rajan, Latin rex; ratha, Latin rota). But even when associated languages have l, the Rv uses r (surya, Latin sol; pur, Greek polis). However, the later portions increasingly use l as well as r. In these portions l is eight times as frequent as in the earlier portions. In the later text, the Atharvaveda, l is seven times as frequent as in the Rv taken as a whole. Classical Sanskrit, like the later Rv, uses both l and r. Significantly, the r-l divide within the Rv is reflected in the Prakrit also. The western and northwestern dialects use only r. In addition, in certain eastern dialects, notably in the inscriptions of Ashoka and in Magadhi, only l is found (Kochhar 2000: 93).

The mythification of a real Sarasvati river marks the end of the Rigvedic era and the beginning of a new one, characterized by the use of iron, and shifting of Vedic scholarship into new easterly Ganga-centric lands.

If rigorous study of ancient Indian history is to advance, it must be provided with direct evidence rather than circumstantial. It may not be advisable to embark on archaeological exploration of south Afghanistan at the present state of affairs, but a rigorous, open-ended, multi-nation investigation into the hydrological history of the Ghaggar river system would be very valuable indeed. If it turns out that Ghaggar was a flowing river in 2000 BC, it would still not prove that it was the old Sarasvati. But if it turns out that the Ghaggar has been in its present stage, say, for the 10,000–20,000 years, then there would be no option but to look for Sarasvati to the west of the Indus system.

VI. Genetics

Studies of ancient and present DNA are new powerful tools in the hands of historians and archaeologists. Genetics has uncovered an interesting phenomenon which could not have been known otherwise. When a group of newcomers arrived, their numbers were small. They married locally till their population, predominantly comprising local spouses and their children over some generations, reached a size when its members could practise endogamy. Communities which are now fiercely endogamous could not have been so from the very beginning. Thus, Cochin Jews show mixture of Indian and Jewish ancestry (Chaubey et al. 2016). Similarly, Indian Zoroastrians (Parsis) intermixed with local groups sometime after their arrival in India, that is, during 690–1390 C, while Iranian Zoroastrian ancestry was maintained primarily through the male line (Lo'pez et al. 2017). In the same manner, 'the Hindu Kush, like the gene pool of Central Asian populations in general, is a confluence of gene flows rather than a source of distinctly autochthonous populations that have arisen in situ' (Di Cristofaro et al. 2013).

Through a detailed analysis, Basu et al. (2016:1598) have estimated that all upper caste populations, except Manipuri Brahmins from Northeast India, started to practice endogamy about 70 generations ago.

Genetics has been called upon to provide more direct service also. Of particular interest are the findings pertaining to Indo-Aryan migration. Silva et al. (2017) conclude that 'the recently refined Y-chromosome tree strongly suggests that R1a is indeed a highly plausible marker for the long-contested Bronze Age spread of Indo-Aryan speakers into South Asia, although dated aDNA [ancient DNA] evidence will be needed for a

precise estimate of its arrival in various parts of the Subcontinent. aDNA will also be needed to test the hypothesis that there were several streams of Indo-Aryan immigration (each with a different pantheon), for example, with the earliest arriving ≈ 3.4 ka and those following the Rigveda several centuries later. Although they are closely related, suggesting they likely spread from a single Central Asian source pool, there do seem to be at least three and probably more R1a founder clades within the Subcontinent, consistent with multiple waves of arrival'. On the basis of archaeological and literary evidence, we can talk of four waves of migration of Indic speakers. The first two are dated 2000–1800 BC while the third is placed at 1400 BC and the fourth at 1000 BC. (i) One wave is recorded at sites in Balochistan such as Pirak, Mehrgarh south cemetery, Sibri, Shahi-tump, Rana Ghundai III-IV. They merged with the post-urban Harappans to found the late-Harappan Jhukar phase in Sindh and Rangpur phase in Kutch and Saurashtra. They even made their appearance in the Aravalli Hills as evidenced at the non-Harappan site of Ahar on the outskirts of Udaipur. (ii) The Swat IV people, culturally similar to but not related to the Rigvedic people, co-founded the late-Harappan Cemetery-H culture. (iii) The actual Rigvedic people were the authors of the Swat V culture (ca. 1400 BC), who subsequently absorbed the Cemetery-H culture and gave rise to PGW culture (Kochhar 2000: 185–186). (iiib) As already noted, there were two distinct groups among the Vedic people divided by their use of r-l.

Moorjani et al. (2013) examined the theory 'that West Eurasian genetic affinities in India owe their origins to migrations from Western or Central Asia from 3,000 to 4,000 years BP, a time during which it is likely that Indo-European languages began to be spoken in the subcontinent'. According to them 'A difficulty with this theory, however, is that by this time India was a densely populated region with widespread agriculture, so the number of migrants of West Eurasian ancestry must have been extraordinarily large to explain the fact that today about half the ancestry in India derives from the ANI', that is, Ancestral North Indian DNA.

The objection may not be tenable. It is true that the Indic speakers would have encountered numerous people already settled with whom they would have exchanged genes. The Harappan and the Rigvedic cultures were technologically at par. Both belonged to the Bronze Age and were compelled to avoid thickly forested areas and confine themselves to semi-arid northwestern India. It is only when the Aryans came across iron technology, 1200–1000 BC, that they could move eastwards from Yamuna-Ganga. Thick forests were burnt down and prevented from re-growing by removing the tree stumps with the help of a hard iron axe. Also, it is likely that the 'dialect Indic-speakers did not spend much time in the erstwhile Harappan territories and headed straight east-wards beyond Yamuna. In other words, what is now Uttar Pradesh and Bihar was an open space where Aryan genes as they stood ca. 1000 BC could dominate.

If the theory presented here is correct in essence, no genes associated with Indic speakers should be found in the Indian subcontinent, Afghanistan or Central Asia before 2000 BC. Also, since IEs have always been associated with the horse, a study of the ancient horse genes from India may yield interesting results.

At our current level of knowledge there is no direct proof that bulk of the Rv was composed in south Afghanistan. The absence of direct proof in fact tends to support the hypothesis presented here; no evidence has been found because we have been looking at the wrong places. While we wait for direct evidence and studiously collect indirect evidence, we must keep in mind that in all cases, and at all times, uncertainty in the evidence must manifest itself as tentativeness in the conclusions.

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