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We Are All Harappans

The Rakhigarhi project shines light on an old enigma: the Harappans were genetically ‘Ancestral South Indian’ stock. Which is to say, all of us in South Asia are their children.

SUNIL MENON, SIDDHARTHA MISHRA



PHOTOGRAPH BY JITENDER GUPTA



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Just three-and-a-half hours due northwest of Delhi, the GPS takes you unerringly to ancient India. Not a mythic world, but one made of bricks dried in an age-old sun. It's a part of Haryana that can pass, at one glance, for Assam: the wet green of paddy stretches to the flat, misty horizons. Some spans of time are as endless—it boggles the mind, for instance, to think that the duration between the early onset of civilisation and its decline in these parts is *longer* than what separates us now from Harappa.

Or shall we say, Rakhigarhi.

“The Rakhigarhi samples have a significant amount of ‘Iranian farmer’ ancestry. You won’t find this DNA in the north Indian population today, but only in south Indians,” says Niraj Rai.

Yes, the shift in centre of gravity is as fundamental as that. The Harappan site at Rakhigarhi, in Hisar district, is the biggest one known yet—at up to 550 hectares, it's more than twice the size of Mohenjodaro. It's also the one with the deepest time-scale, taking shape at 5500 BC and running for four continuous millennia. The nearby satellite site of Bhirrana, part of this Bronze Age metropolitan network, is even older: it offers the classic arc of evolution, beginning from early Neolithic farming around 7500 BC. Almost 10 millennia ago. Even with India's endless capacity for imagining deep time, that's serious depth. On the edge of modern Rakhigarhi village, buffaloes amble out of a pond placidly, unmindful of passing archaeologists or of the runic mysteries glimmering under the undulating mounds.

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Decades ago, Wazir Chand would come to these mounds as a dreamy little boy tending to his buffaloes. He started picking up pieces of terracotta bangles, shards of pottery, little bric-a-brac...



UNEARTHING A FARAWAY TIME

Ongoing excavation at a mound in Rakhigarhi

COURTESY: RAKHIGARHI PROJECT

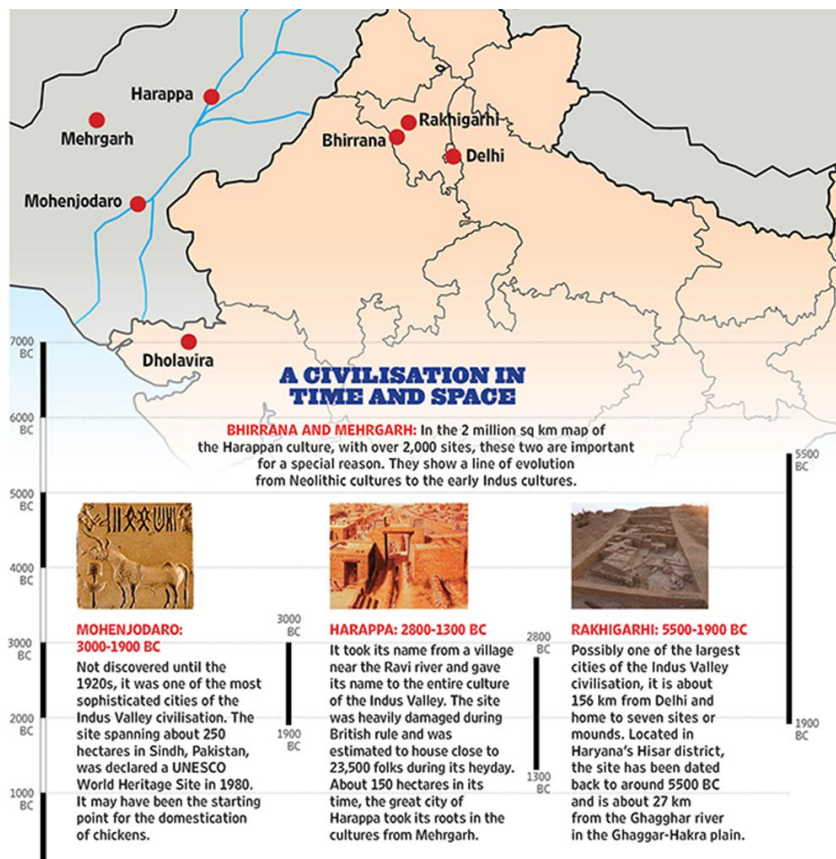
The Rakhigarhi kaleidoscope has been throwing up very interesting patterns of late. Prof Vasant Shivram Shinde, senior archaeologist and vice-chancellor of Deccan College, Pune, is at the centre of action. In February, his years of studying the Rakhigarhi people's burial practices became the basis of a definitive **article published in a Public Library of Science journal**. For that, altogether 37 burials from the necropolis area of Rakhigarhi—one of the few Harappan sites where a well-defined cemetery area has been discovered—were subjected to an examination along standard anthropological lines.

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And now, he is the vital node for two forthcoming papers that may become dramatic, if contentious, landmarks in Harappan studies. The first steps ever by genetic science into the Harappan space, both studies are based on DNA samples taken from those same burials at Rakhigarhi.

- In one, South Korean genetic scientists are trying to reconstruct, for the first time ever, what the Harappans looked like. Expect a Harappan face, or a DNA artist's impression of it, to be hitting the internet soon.
- The other paper, authored by Niraj Rai, head of the Ancient DNA lab at Lucknow's Birbal Sahni Institute for Palaeosciences, and co-authored by Harvard geneticist Vagheesh Narasimhan et al, maps the genetic ancestry of the Harappans for the first time ever.

The latter report is due out within a month. Its findings, core elements of which were revealed to Outlook, have all the potential to start a feeding frenzy. The Indus Valley Civilisation, even as an inscrutable self-image, taps deep into the modern Indian imagination. In recent years, it's become a hypersensitive field, riven with claims and counter-claims flying at each other like arrows in a mythological serial. Expect garden variety ideologues and enthusiasts to be going at each other and at bonafide historians, archaeologists and geneticists on Twitter till the much-in-vogue cows come home. (Home? Whose home?)



So Who Were the Harappans?

The answers are now clear. “The sample we are getting is very local,” says Rai, who did the basic work. “We aren’t getting any Central Asian gene flow in Rakhigarhi. Comparing Rakhigarhi with data from modern Indian populations, we have concluded that they have more of an affinity with the Ancestral South Indian tribal population compared to the north Indian population.”

‘Ancestral South Indian’. The phrase brims with potent cultural overtones, while claiming the startling force of a ‘scientific truth’. Even if, used in this context, it only confirms commonsense notions about the Harappan and Rigvedic cultures being two distinct lines, one replacing or overlaying the other, with elements of both rupture and continuity—and gradual mixing.

The Harappan people didn’t vanish into thin air. Over centuries of being unable to sustain their cities due to growing aridity, as Shinde explains, they “went rural” (*see interview*). Went back to living a more primary economy. And migrated. And mixed. Their knowledge systems too went into hibernation, Shinde believes, only to resurface in the Indian cultural gene whenever the circumstances became more conducive.

“We still build the same way. Even our bricks are in the ratio they invented—1:2:4 in depth, width and length—even if the size is smaller,” says Dinesh Sheoran, Shinde’s pointsman in Rakhigarhi. He picks up a stray Harappan brick lying atop a kuchha village wall: it’s bigger and in good health. No wonder even the British used them, in the 19th century, for railway lines!

This March, one of the biggest studies on the Central and South Asian population’s genetic ancestry confirmed what is known in - politicised terms as the “Aryan migration”.



SKELETAL HISTORY

Researchers at a burial site in Rakhigarhi

COURTESY: RAKHIGARHI PROJECT

But before asking whether the Harappans indeed live on among us—or which interpretive filter to use while trying to read (and write) history—there are two more stark facts in the genetic data. One comes from the forthcoming paper. “The Rakhigarhi samples have a significant amount of ‘Iranian farmer’ ancestry,” says Rai. “In India’s present-day population, only the south Indians have Iranian farmer ancestry. You won’t find Iranian farmer DNA in the north Indian population.”

Iranian farmer? Yes, this nomenclature owes to studies of early Neolithic farming in the Zagros mountains of Iran—one of the sites in the Fertile Crescent where humanity is said to have first farmed and domesticated animals. At least that’s what the scholarly consensus seems to be. An eastward expansion is then cited as having brought farming and animal domestication to the Indian subcontinent. Along with the people who brought them—a ‘demic’ flow, as they call it—and then proceeded to interbreed with local hunter-gatherer populations to produce the ‘Ancestral South Indian’ type. Of which the Harappans are an instance.

But couldn’t farming have evolved in India—or elsewhere outside the Fertile Crescent—independently? Perhaps. And goats domesticated? Again, yes...even the last big study on Indian goats suggests a story more complex than it happening at Zagros and then spiralling out. But the present study accepts that model: essentially, that the story of ‘civilisation’ began in the Fertile Crescent and spread east. “The first mixing happened around 6000-5000 BC. As the Neolithic (period) started, the Northwest Indian mixed significantly with Iranian farmers,” says Rai.



Harappan terracotta bangles

PHOTOGRAPH BY JITENDER GUPTA

And then: “Central Asian mixing happened only when the Indus Valley collapsed.”

Central Asian mixing? That’s the ‘Aryan’ stuff, and genetic data clearly shows it happened—around or after the cusp offered by the decline of Harappan cultures. In a sense, for all the flux offered in between by highly politicised readings, and all the apprehensions about what modern DNA analysis would show, genetic studies are confirming the basic elements of an ‘Aryan’ migration theory. The key takeaway is that earlier mixing seems to have given us the ‘Ancestral South Indian’ (ASI)—with an ‘Iranian farmer’ component as part of it. And ‘ASI’ later mixed with incoming pastoral people from the Central Asian Steppe, giving us the ‘Ancestral North Indian’ (ANI). ANI is simply ASI + Steppe DNA.



PAST FORWARD

Children at a covered mound in Rakhigarhi

PHOTOGRAPH BY JITENDER GUPTA

The ‘Indo-Aryan’ Debate

By now, the racist overtones sloshing around everywhere simply have to be acknowledged and managed. ‘Aryan’ is a word and concept that played a central role in modern political history. It’s not just Nazi Germany. In 1935, responding to the new cachet the word had acquired, Persia offered itself as ‘Iran’ to the world, as a nod to their ‘Aryan’ ancestry. In India, the word already had prestige: the 19th century revivalist/reform stream already saw us an ‘Arya Samaj’ (Aryan Society). And politics in the last three decades has gone along a path that insists Vedic culture came out of a local, native, autochthonous strand—that is, born out of India’s womb—when everything in historical linguistics and archaeology has always strongly suggested the opposite. And now, genetics adds its ballast to what linguistics always knew and archaeology had corroborated.

One of the major advances here came in the spring of 2018. This March, 92 top scientists and researchers from around the world (Shinde and Rai among them) had put their names on one of the biggest studies on the **genetic ancestry of the Central and South Asian population**. That paper had sampled 612 individuals from diverse groups—carefully chosen ancient samples correlated with modern ones. It confirmed what is known, in loaded and now-politicised terms, as the ‘Aryan migration’ (the older ‘Aryan Invasion Theory’ having been refined in scholarship by the 1970s). In technical words, this study called it “large-scale genetic pressure from Steppe groups in the second millennium BC”, showing the “chain of transmission to South Asia”. They found this to be “consistent with archaeological evidence of connections between material culture in the Kazakh middle-to-late Bronze Age Steppe and early Vedic culture in India”. The genetic marker that clinched this connection was the Y chromosome haplogroup R1a (subtype Z93)—“common” in South Asia and “of high frequency” in Bronze Age Steppe DNA.

“It’s inherently racist,” says historian Irfan Habib. Adds archaeologist Shereen Ratnagar: “You cannot use genetic data to settle questions of historical linguistics.” Nayanjot Lahiri, another Harappa domain specialist, shares the disdain.



A Harappan toy bull figurine

PHOTOGRAPH BY JITENDER GUPTA

The authors of the March paper say “much of the formation of both the Ancestral South Indians and Ancestral North Indians occurred in the 2nd millennium BC. Thus, the events that formed both the ASI and ANI overlapped (with) the decline of the Indus Valley Civilisation.” The researchers suggest the first admixture between the Iranian agriculturalists and South Asian hunter-gatherers created the ASI, Harappan people among them. Further, around the second millennium BC, the Steppe pastoralists (the ‘Aryans’) intermingled with the Harappan people and others in the northern Indian plains to create the ANI. This is a visualisation that confirms what have by now become popular ‘cultural’ notions, so one needs to move carefully—especially if ‘science’ uses apparently technical terms to denote genepools. It needs to be stated that ASI, or the ‘Ancestral South Indian’, is better read as everyone’s ancestor in South Asia—whether Punjabi, Bengali or ‘Madrasi’.

Pointing out that Indo-European is a linguistic, not genetic concept, Habib says, “What they’ve found is not related to the language problem. Language doesn’t necessarily spread through genes.” He mentions the Greek and Turkish populations: genetically inclined to each other, linguistically separated. Ratnagar, who has worked extensively on Harappan sites, too says: “Indo-Iranian languages have no relation to genetics. This kind of claim is an old-fashioned, racial one.”



A Kushan era seal found in Rakhigarhi

PHOTOGRAPH BY JITENDER GUPTA

“The Rakhigarhi people are six feet tall and sharp-featured, just like the modern Haryanvis,” says Shinde, of the ancient Rakhigarhi people. You scan Wazir Chand’s face for...what...traces of R1a/Z93? He’s a Sirohi, a Jat. “Do you know when Jats settled in these parts? They are medieval immigrants... the first mention of the ethnonym pops up no earlier than 7th century AD,” says Prof Ratnagar.

The March paper only confirmed on another axis what had always been held to be indisputably true in linguistics and other sciences. It’s a curious time: the bald tools of genetic science, often feared by historians because of the racist uses they can be put to, are actually confirming the ideas about human movements in history that all of us grew up internalising—till politics caught up. But even the March paper, with all its scale across India, Central and West Asia, did not have access to Harappan data. That’s what the present Rakhigarhi samples give us: a clear binocular view of our genetic past from a very specific time, a cusp period just before the Rigvedic influx.

The present Rakhigarhi samples give us a clear binocular view of our genetic past - from a very specific time, a cusp period just before the Rigvedic influx.

So you get a zero-Steppe DNA population in the biggest Harappan site, against which to contrast the picture afterwards. “On the basis of modern-day populations, we analysed about 1,800 samples and we concluded that groups in north India still have significant amounts of Central Asian affinity,” says Rai, of the March paper. That’s just the basic facts. To elaborate lightly, “We did some analysis to figure out the exact date of the admixture. We have prepared a model in which all these stats fit together very tightly and that model suggests the Central Asian admixture happened about 1500-1000 BC.... Significant mixing happened around 1000 BC, also at 800 BC and 600 BC.”

Dravidian Harappa?

So now, Rakhigarhi comes in as a corroborative element to help settle the ‘Aryan’ debate. Not a conclusive one. But a strongly indicative one. Why not conclusive? Because language remains an open question. We don’t know what the Harappan people spoke—whether it was at all even one language! Vast distances are involved, and even today that

supports multiple languages—there's no reason to suppose that wasn't the case 6,000 years ago. Moreover, Harappan cities were often even internally heterogeneous, just like any modern city. Not to speak of heterogeneity being a reasonable assumption for a network of well-connected cities situated as far apart as modern Afghanistan, northern Punjab, Gujarat and Haryana, with a vast suburban and rural hinterland.

But could they have been speaking 'Dravidian'...one or many, or one among many? That would, *prima facie*, seem consistent with the genetic data: the data would, in fact, seem to boost even the old claim of Elamo-Dravidian—the idea that Dravidian languages are linked to the ancient Iranian language Elamite. But the fact is, we simply have no idea. Scholars like Asko Parpola and Iravatham Mahadevan have spent their lives trying to decode the Indus script and linking it to the Dravidian thought world. But it has always remained speculative, requiring a leap of faith in the end. This is exactly the issue with mapping genes on to language: it's a slippery connection.



TREASURE TROVE

Maths teacher Ramesh Chandra with artefacts he found in his field in Rakhigarhi

PHOTOGRAPH BY JITENDER GUPTA

Racism and Other Isms

Our contemporary minds, coloured by modern political events, are almost primed to misread data such as what Rakhigarhi represents. Beyond the Aryan/Dravidian debates, there's the competitive nationalism we have between India and Pakistan. It's not a factor in history beyond one century, when we are dealing with a century of centuries, but we are inevitably and constantly in danger of mapping and projecting our current concerns backwards in time. A sighting of Harappa or Mohenjodaro are anyway out of the common Indian's reach. It's the easiest situation in which to breed resentment/envy/defiance. ("Our Harappan city is bigger than yours.")

Even the genetic studies freely use the “Iranian farmer” and “South Asian hunter-gatherer” tropes, almost unmindful of the fact that they are dealing with rich, primitive, pre-scientific categories that will almost inevitably be filled out with cultural/racial notions. Imagining that Neolithic farming at Mehrgarh or Bhirrana emerged from an influx of “Iranian farmers” bringing in ‘superior knowledge’ seems consistent with current data, but it relies on and shores up ideas that carry a strong cultural freight from times that have nothing to do with the period being studied. We inevitably think of modern nations—and of contemporary Iranians or those from a strongly salient part of Iranian history. But an “Iranian” 10 millennia ago would simply not be the same thing as an Achaemenid: s/he would be part of a different kind of human flux, still to put down roots, still in the process of forging the first links to a specific land. The famous Zagros woman known as GD13a would not be culturally distinguishable from someone in ancient Mehrgarh, in Balochistan, a few days away even in the ancient world. Indeed, they would be a cultural continuum: late Neolithic minds.

Shinde, cognisant of the patterns of evolution of agriculture in pre-Indus sites, agrees with the fallacy of crediting this great civilisation directly to the flow of genes and knowledge from what can be thought of as ‘non-Indian types’ in West Asia. Nations of the Near East and Europe (or China) all have aggressive claims on antiquity, which complicates historical research—being aware of that should ideally free Indian minds from that trap.

Narasimhan, though, seeks to defend genetics against all the racist antecedents: “Ethically, there is nothing inherently different about the work we do when compared with historians or archaeologists,” he says. “I believe human history is the common heritage of all humans, and it’s amazing to be able to study this directly, in a way, for the first time. This technology has not just been employed to understand the peopling of South Asia, but also of the Americas, Europe and Africa. We are also able to understand interaction not just between groups of modern humans, but also the interaction between modern humans and other archaic hominids, such as the Neanderthals.” He obviously has a point there, and the future lies perhaps in greater coordination—and ensuring genetic research is passed through the filters of commonly accepted protocols—not avoidance. That would enable the strong caveats already known from other sciences to be employed—such that genes, race and language cannot be mapped on to each other unless corroborated by other sciences. Just like the slippery link between script and language, populations too have always been known to shift language.

Modern Rakhigarhi is in a hesitant - dialogue with its remote past. The twin villages Rakhi Khas and Rakhi Shahpur have - literally been - sitting on history.

Rakhigarhi: A Cultural Gene

Once the caveats are accounted for, we are left with the complex and fascinating map of a Harappan civilisation—an empire seemingly without kings and armies, a political federation forged across a vast territory of 2 million sq km that achieved a rare unity in terms of planning and coordinated activity for the general weal. A thought world where social stratification did not entail poverty, whose urban systems negated the very ground of caste—and whose gender relations would be a fascinating area of study, judging by the way female bones were buried differently.

Modern Rakhigarhi is in a hesitant dialogue with its remote past. The twin modern villages have literally been sitting on history—Rakhi Khas and Rakhi Shahpur. They are home to between 12,000 and 13,000 people, 65 per cent of them Jats, a few Brahmins, and there’s a Dalit mohalla along the access to two of the mounds, marked by a high frequency of Ambedkar portraits hung up on walls. Babasaheb would have probably loved to intervene in some of these debates.

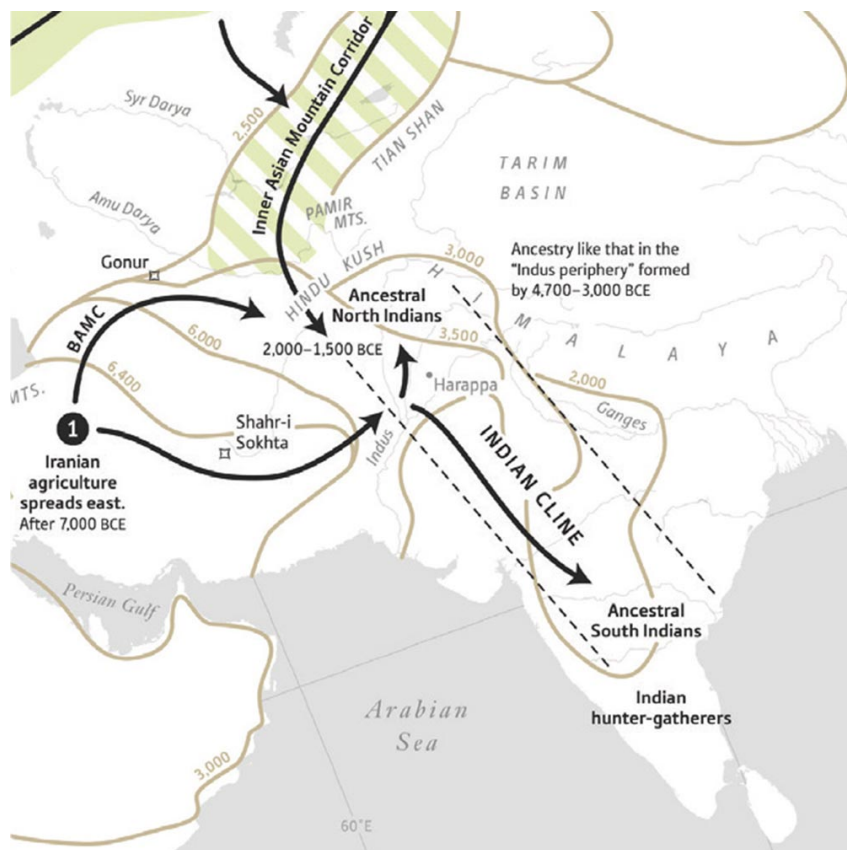
To those of its residents who have grasped the span and scale of history, it’s not only a matter of pride. They also live off the Harappan site on which they live. It offers them infinite resources to wonder at and harness. Wazir Chand has over the years, of collecting, adoring, possessing, himself become a Rakhigarhi artefact. He was sitting on one of the mounds back in the 1970s when R.S. Bisht, the then Archaeological Survey of India chief, tapped him on the shoulder and changed his life.

Talking to *Outlook*, the archaeologist reminisces: “I visited Rakhigarhi several times in the 1970s. It had only two known parts until then, but I saw five conspicuous mounds of varying sizes. I said it was one of the five largest cities in the subcontinent.” Bisht later called for a survey of the mounds. “I also found two other mounds just four metres away, clearly pre-Harappan,” he says. “Never before had we found so many mounds except in Harappa. I got it surveyed and protected as a national monument under the Ancient Monuments and Archaeological Sites and Remains Act.”

Four decades later, there are not only the thematic disputes in history—over its readings, approaches and conclusions—but also the hum of petty disputes, ownership claims and scams. One day, a non-politicised understanding may become possible. Such a day may have already existed. The Jats of Rakhigarhi have been interacting with Muslims who left these parts for Pakistan over the internet: they are overjoyed to learn they still speak Haryanvi and marry among themselves. They’ve been watching videos of old compatriots lamenting having to leave their home. On the edge of RGR2, the second mound outside the village, Sheoran does a quick ‘mathha teko’ at a mazaar. There are scarcely four or five Muslim families in the village, but everyone reveres the pir. An outer layer of history that, elsewhere, has complicated readings of the deeper layers...it lies untroubled, freshly painted by Hindu devouts, out here in Rakhigarhi.

Mapping Ancestry

Migrations affecting ancient Central and South Asian populations (courtesy the March 2018 genome study)



- **AASI:** South Asian hunter-gatherers, the earliest known inhabitants, are referred to as 'Ancient Ancestral South Indians'
- **ASI:** 'Ancestral South Indians' emerged from the admixture of AASI with 'Iranian farmers'
- **ANI:** 'Ancestral North Indians' are the result of admixture of ASI and the Steppe population
- **Why Rakhigarhi** Upcoming studies from DNA samples of burials from Rakhigarhi will be the first genetic research on the Harappan population. The researches are expected to reveal who the Harappan people were and even how they looked.

Text: Sunil Menon and Siddhartha Mishra in Rakhigarhi; Photographs: Jitender Gupta

A shorter, edited version of this appears in print

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