

# A DRAVIDO-HARAPPAN CONNECTION? THE ISSUE OF METHODOLOGY

Michel Danino\*

*(Paper presented at the International Symposium on Indus Civilization and Tamil Language 2007 organized by the Department of Archaeology, Government of Tamil Nadu, and the Department of Ancient History and Archaeology, University of Madras, Chennai, 15-16 February 2007.)*

**Abstract:** The recent find of a stone axe in Sembayan-Kandiyur bearing signs that look like Indus signs has brought fresh attention to the question of a relationship between Harappan and Tamil cultures and languages, and in particular to the theory that the Harappan language might have been proto-Dravidian. However, the issue often tends to be oversimplified owing to faulty methodology.

For instance, in view of Harappan contacts with Dilmun, Mesopotamia or Margiana, exchanges with South India are quite likely and have long been suspected; this could explain a few instances of Harappan script in the South – the presence of the script tells us nothing about its authorship. Also, if some communities did adopt a Harappan-like script, they may have used it to write their own language, not the Harappan language – script and language are distinct issues. Further, the absence of any Harappan artefacts and features south of the Vindhyas as well as recent findings on the Central Indian origin of Brahui, on the beginnings of Indian agriculture, on anthropology and genetics, together make it very unlikely that Harappans could have migrated to South India after the end of the urban phase, reverting from an advanced Bronze Age culture to a Neolithic one, forgetting all their typical crafts and sophisticated techniques, pottery designs, ornaments, and urbanism. Cultural continuity from Harappan times is visible in North India in diverse fields, but not in the South.

This paper concentrates on these and other methodological issues and stresses the need for a more sophisticated approach to this debate.

\*

---

\* French-born Michel Danino is a long-time student of Indian civilization; he has authored five books and edited two in English; some of his many papers, in particular on India's protohistory, have been published in academic journals. His latest book, on the Aryan issue, *L'Inde et l'invasion de nulle part: le dernier refuge du mythe aryen*, appeared in France in October 2006 (Les Belles Lettres, Paris, 420 pp.)

Address: 80 Swarnambika Layout, Ramnagar, Coimbatore - 641 009 (Tamil Nadu) / micheld@sify.com.

The recent find of a stone axe in Sembayan-Kandiyur with incised signs bearing resemblance to the Indus script has brought fresh attention to the long-standing debate on a possible relationship between Harappan and Tamil cultures and languages, and in particular on the theory that the Harappan language might have been proto-Dravidian. On closer scrutiny, however, the debate suffers from oversimplification, hasty conflation, and faulty methodology. This paper attempts a critical examination of the underlying – and neglected – issues at stake, and offers a view at variance with the Symposium’s stated theme.

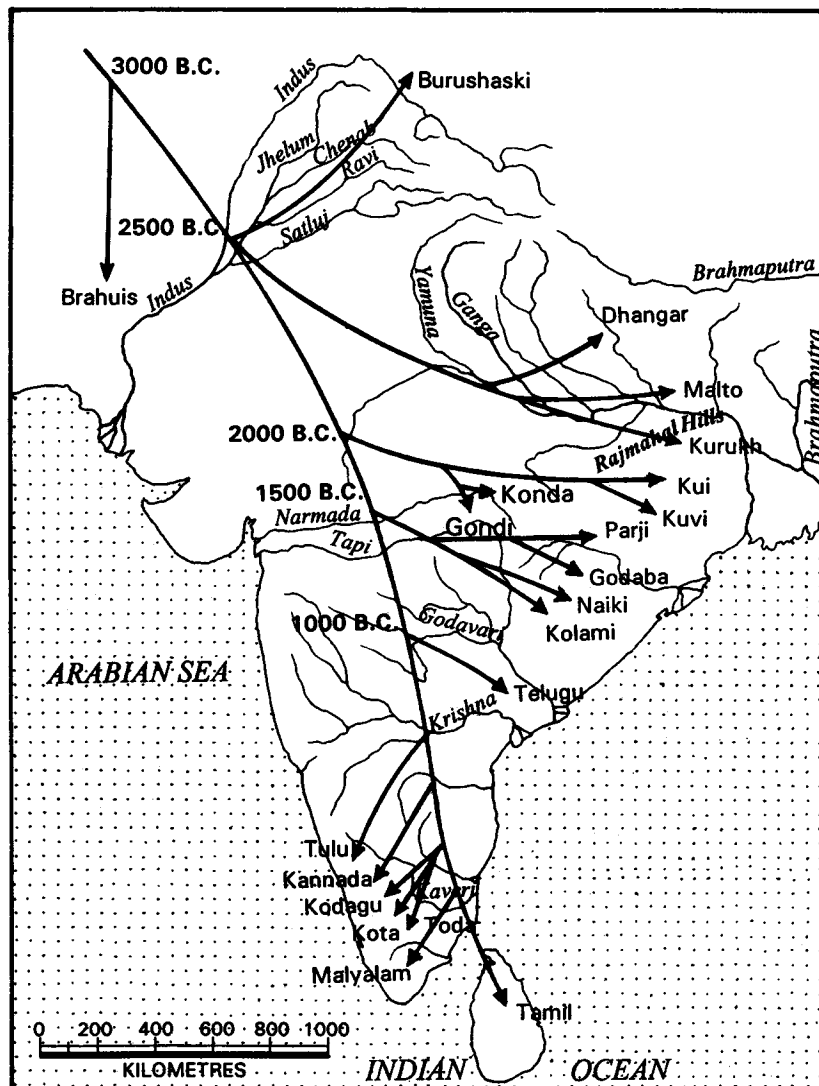
### **Background**

Let us recall that the Harappan-Dravidian equation derives largely from a colonial context that created an imagined “Dravidian,” autochthonous identity in contradistinction to an imagined “Aryan,” alien identity. Just as nineteenth-century Europe became obsessed with the Aryan-Semite pair, an equally mythical Aryan-Dravidian pair was invented in India. While the former’s genesis has been painstakingly traced by a number of historians (notably Léon Poliakov,<sup>1</sup> Maurice Olender,<sup>2</sup> Thomas Trautmann<sup>3</sup> and Stefan Arvidsson<sup>4</sup>) the latter is still awaiting its full deconstruction.<sup>5</sup>

In the meantime, we must keep in mind that until the advent of European Indology, the words “Dravidian” and “Aryan” had had, in India, purely geographical connotations, and, in the latter’s case, a cultural one. Racial and linguistic meanings for those two words had been completely alien to Indian literatures and traditions until Max Müller and Bishop Caldwell decided to substitute them for the traditional ones. This shift in meaning was to lay the foundation of Indology, a foundation uncritically accepted by most Indian scholars, with a few brilliant exceptions.<sup>6</sup> Unfortunately, those four subtexts of “Dravidian” and “Aryan” – traditional, cultural, racial and linguistic – are more often than not jumbled together, landing many scholars into confusion. Ethnological identity (not “race,” which is a completely unscientific notion rejected by biologists), language and culture are three wholly distinct concepts, which sometimes overlap and sometimes not.

As an example of this confusion, the valid linguistic concept of a Dravidian family of languages (which should have properly been named “South Indian family”) got conflated with a racial notion and gave rise to the grand vision of a “Dravidian Long March” from Northwest to South India.

Imaginary arrows were drawn connecting the dots left on the ground by pockets of Dravidian speakers, as in this map of R. S. Sharma<sup>7</sup> (Fig. 1).



**MAP 2: ROUTES OF THE HISTORICAL SETTLEMENTS OF DRAVIDIANS IN THE SUBCONTINENT.**

*Fig. 1: A map of imagined Dravidian migrations (from R. S. Sharma)*

In his caption, Sharma misleadingly uses the word “historical” to describe actually nonexistent “settlements.” I will later point to the archaeological impossibility of such a map, leave alone the arbitrariness of the neat chronology it assumes, with completely asymmetrical branchings off (all eastward at first, then all westward), major stages every 500 years with clockwork precision, and finally a very late arrival (500 BCE or later) in the Tamil region.

The discovery of the Harappan or Indus-Sarasvati civilization in the 1920s completed this mythical picture; on flimsy cultural considerations, some scholars assumed its authors to have been so-called Dravidians, which allowed them to turn the so-called Aryans into destroyers of this brilliant civilization, giving the surviving Dravidians a convenient pretext to migrate southward.

### ***The Sembian-Kandiyur celt***

The Sembian-Kandiyur celt has been interpreted as “showing a link between Indus script and Tamil culture.”<sup>8</sup> This formulation at once introduces a confusion between language and culture, ignoring the fact that a script and indeed a language can be a vehicle for different cultures; the Chinese script, for example, was the vehicle of Confucianism as well as Buddhism. The real questions are whether the celt does bear Indus signs, and if it does, how those signs are related to Tamil language and culture.

Before I examine those questions, I must raise a few methodological issues. First, there have been well-known instances of faked inscriptions in Tamil Nadu and elsewhere; it is therefore essential to have a microscopic examination by expert mineralogists so as to determine whether the inscription was made before or after the stone was polished, and if after, approximately how long after.

The second point concerns the lack of an archaeological context for the find; yet a fairly precise date “between 2000 B.C. and 1500 B.C.” was proposed by I. Mahadevan,<sup>9</sup> a well-known expert on the Indus script who was consulted on the celt. We must keep in mind that in the South, Neolithic artefacts have frequently been found in later Megalithic sites, sometimes even as surface finds. Therefore there can be no justification for the proposed date, except that it fits nicely with an imagined exodus from the North-West after the collapse of Harappan urbanism. For all we know, the celt could have been polished at any time between 2500 and 500 BCE. As regards the inscription’s date, in the absence of expert scrutiny, it is anyone’s guess.

However, the most serious methodological flaw concerns the nature of the language of the inscription. Assuming that a few signs were incised on the celt, they appear rather indistinct. (In fact, I. Mahadevan initially reported three signs, later four.) Their identity as Indus signs is by no means established. Moreover, Indus-like graffiti have long been noticed in the South on pottery

and rock art,<sup>10</sup> and have been often brandished as proof of the presence of Indus script there.<sup>11</sup> And yet, a few Indus-like signs prove strictly nothing. Let us remember that the Indus script has been compared to the scripts of several other civilizations, for instance proto-Elamite (Fig. 2), Old Semitic (Fig. 3), the script of Easter Island (Fig. 4) and the Etruscan script, to name just a few.

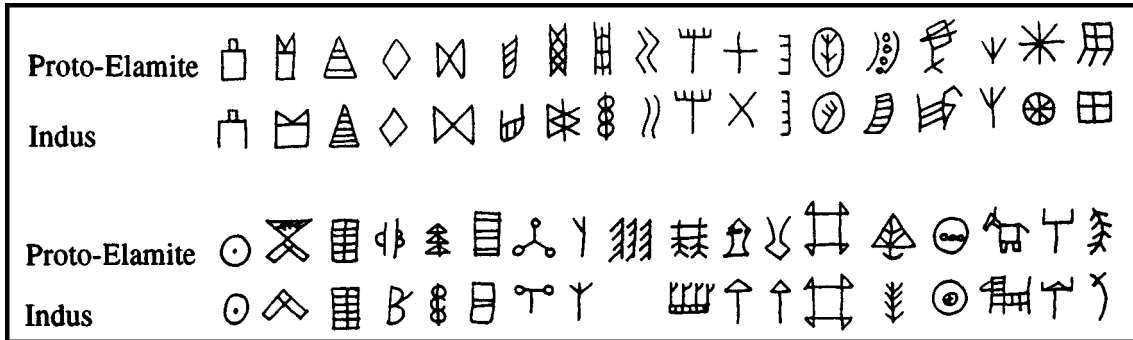


Fig. 2: A comparison between Proto-Elamite and Indus scripts, by Walter Fairserois<sup>12</sup>

S. NO.	PHONETIC VALUE	OLD NORTH SEMITIC SIGNS 16th-13th c.B.C.	HARAPPAN SIGNS	LATE HARAPPAN SIGNS
1	b	□ 9	□	□
2	g	^ 1	^ ^ 7	^
3	d	∇ △	▷ ∇	▷ ∇
4	h	λ 7	λ 7 E	λ
5	w	Y Y	Y	Y
6	b	▢ ▢	▢ H H H	▢
7	th	⊖ ⊕	⊖ ⊖	⊖
8	k	∨ ∨	∨ ∨	∨
9	n	h h	∨ ∨	∨
10	s	≡	≡	≡
11	(oy)	o o	o	o
12	p	> 0 • ◊ •	0 ◊ ))	0 ◊
13	r	q q	h	h
14	sh	W W	W	W
15	t	+ X 1	X 1 X	1
16	s	h •	h ↑	↑
17	h	4 •	4 8	4
18	m	2 •	X X	X
19	a	K K 4	U	U
20	r		↑	↑
21	s		↑	↑

Fig. 3: A comparison between Old Semitic and Indus scripts, by S. R. Rao<sup>13</sup>



Fig. 4: A comparison between Easter Island and Indus scripts, by de Hevesy<sup>14</sup>

A close look at the tables reproduced in these three figures will be enough to bring out the pitfall of similar shapes: in themselves, they prove nothing whatsoever. Only if we find in the South a clear sequence of several characters of Indus signs that exactly parallel a known Indus inscription can we legitimately claim to have an occurrence of Indus script.

We are far from this, and the Sembian-Kandiyur celt hardly helps us, as I. Mahadevan paralleled only the first two signs with a known Harappan sequence. And in any case, the reading remains subjective – “very far from certain” in the words of Asko Parpola, another expert on the Indus script and himself a proponent of a Dravidian decipherment.<sup>15</sup> There is nothing in the Sembian-Kandiyur axe that essentially differs from the numerous graffiti found in the South on pottery with some Indus-like signs, but without clear Indus sequences.

### ***The Harappan-Dravidian linguistic equation***

We must now look at some of the broader issues involved.

Let us assume, for the sake of argument, that the celt does bear four Harappan signs. The inference that the Harappan language would then be Dravidian may appear natural at first sight, but is faulty on the following two grounds:

First, we know of sustained Harappan contacts as far away as Dilmun, Mesopotamia or Margiana; exchanges with a few parts of South India are quite likely and have long been suggested, perhaps for semiprecious stones. This could explain a few instances of Harappan script in the South. But Indus seals found in Mesopotamia do not allow us to conclude that the Mesopotamians were the creators of the script or that the Harappan language was “Mesopotamian” – in other words, *a few occurrences of the script tell us nothing about its authorship or its relationship with the region where it is found.*

Secondly, if some early South Indian communities did adopt a Harappan-like script, they would have used it to write their *own* language, not the Harappan language – *script and language are distinct issues.* Brahmi, for instance, was used to write several distinct languages. So even if one day we do find unambiguous Harappan script in the South and its language turns out to be Tamil, it will still tell us nothing about the language of the Indus-Sarasvati civilization. This crucial point is generally overlooked.

Many of the proponents of the Dravido-Harappan equation resort to various kinds of “linguistic evidence” to establish that the Harappan language was Dravidian. Yet, contrary to a widespread notion, the linguistic evidence actually runs against a significant Dravidian presence in the North-West. I will present the main points briefly.

One piece of “linguistic evidence” is that numerous Dravidian words are found in the Rig-Veda, pointing to a Dravidian “substratum.” The fact is that there is no consensus among linguists on this point. The Rig-Veda has 500 Dravidian loanwords according to T. Burrow; the figure comes down to 380 according to F. Kuiper, to 100 according to M. Witzel, and to just one according to M. Emeneau. Then, the substratum language is proto-Dravidian according to Burrow or Southworth, but para-Munda according to Witzel, who tried to show that Dravidian loanwords in the Rig-Veda are found only in the more recent Mandalas and are therefore irrelevant.<sup>16</sup> Other linguists reject all proposed Dravidian loanwords: this is the case with P. Thieme and H. H. Hock.<sup>17</sup> Murray B. Emeneau, the late Dravidian linguist, hoped that linguists could agree on at least *one* loanword, *mayura*, as being Dravidian; he wrote: “[Vocabulary loans from Dravidian into Indo-Aryan] are in fact all merely ‘suggestions.’ Unfortunately, all areal etymologies are in the last analysis unprovable, are ‘acts of faith’....”<sup>18</sup> Clearly, the “Dravidian substratum” in Vedic Sanskrit is an elusive one.

There is a subtler point here: assuming there might be a few words with Dravidian roots in the Rig-Veda, how do we know that they were “borrowed” by Aryan immigrants? Loanwords, if any, need not be relics of a “substratum”; in the absence of a well-defined pattern, they could just as well be the result of long-standing exchanges.

Then there is the case of Brahui, a Dravidian language still spoken in parts of Baluchistan, which has often been brandished as the ultimate proof of a Dravidian presence in the Indus region. But in the 1920s, French linguist Jules Bloch demonstrated, through an analysis of the Brahui vocabulary, that the language reached Baluchistan recently, perhaps at the time of the Islamic invasions and probably from central India.<sup>19</sup> This thesis was more recently endorsed by Murray Emeneau,<sup>20</sup> and still more recently by H. H. Hock.<sup>21</sup> Finally, the linguist and mathematician Josef Elfenbein confirmed it using a different approach.<sup>22</sup> According to the French Indo-Europeanist Bernard Sergent, “the conclusion is radical ... Brahui reached Baluchistan late, and can



therefore no longer provide proof or even a clue of the Dravidian-speaking character of the people who lived along the Indus.”<sup>23</sup> Clearly, the Brahui trump card has failed, although a number of our Indian scholars remain unaware of the above linguistic studies.

On the other hand, one linguistic argument is nearly fatal to the Dravido-Harappan thesis. It comes from hydronymy: the names of all the 35 rivers of the North-West of the subcontinent are not Dravidian but Indo-Aryan. It is inconceivable that a Dravidian-speaking population could have lived there before the so-called Aryans – if they had, at least a few river names would betray their Dravidian origin. But there is none. Such a complete erasure of earlier names would be unprecedented: in Europe, many pre-Roman river names have subsisted, just as in America pre-colonial river names remain common. River names are among the most conservative linguistic features, and what the North-West’s hydronymy is plainly telling us is that Indo-Aryan has been spoken there for ages.

There are, indeed, traces of Dravidian names in some place names of the coastal areas of Maharashtra and Gujarat; but that is not the Harappan heartland, and until we can safely date this presence of Dravidian speakers, we risk committing the same error as in the case of Brahui.

Finally, it is worth recalling that there have been at least five major attempts to read proto-Dravidian in the Indus inscriptions: those of Father Heras, the Finnish team (under Asko Parpola), the Russian team (under Yuri Knorozov), Walter Fairervis and I. Mahadevan. If the outcome of their work must be summarized in a few words, it is that no two of these scholars agree on a decipherment, or even on the basic “Dravidian” features of the script. Clearly, this is not a very encouraging scenario for the Dravidian thesis, especially when Parpola, Knorozov and Mahadevan worked long and painstakingly with the help of computers.

### ***Seven obstacles to the Dravido-Harappan thesis***

In addition to the linguistic evidence, the thesis of a Dravidian authorship of the Indus-Sarasvati civilization meets with seven formidable obstacles. I will spell them out in the briefest possible manner.

1. Arguments based on the presence in the Indus-Sarasvati civilization of elements of so-called “Dravidian culture” (such as a “proto-Shiva”) are

misleading, since we know nothing of such a culture 5,000 years ago. It is illegitimate to fill a gap of more than two millennia without evidence.

2. The Sangam literature is completely silent on a large-scale migration from the North-West, and of course on a clash with invading Aryans.
3. There is no archaeological evidence of a southward migration through the Deccan after the end of the urban phase of the Indus-Sarasvati civilization. In other words, the “linguistic” maps of Dravidian migrations such as R. S. Sharma’s (Fig. 1) find no confirmation on the ground and belong to the realm of imagination. The only actual evidence of movements at that period is of Late Harappans migrating towards the Ganges plains and towards Gujarat.
4. Migration apart, there is a complete absence of Harappan artefacts and features south of the Vindhyas: no Harappan designs on pottery, no Harappan seals, crafts and ornaments, no trace of Harappan urbanism (including fired bricks with precise ratios), no civic organization, no extensive bronze technology, no set of chert weights, etc. Cultural continuity from Harappan to historical times has been increasingly documented in North India, but not in the South.<sup>24</sup> In fact, there is no distinct Chalcolithic phase in the South. This means, in effect, that the south-bound Late Harappans would have reverted from an advanced urban bronze-age culture to a Neolithic one! Their migration to South would thus constitute a double “archaeological miracle”: apart from being undetectable on the ground, it implies that the migrants experienced a total break with all their traditions. Such a phenomenon is unheard of.
5. Had Late Harappans migrated to the South, recent advanced studies of biological anthropology would have figured it out. The work of K.A.R. Kennedy,<sup>25</sup> John Lukacs and Brian Hemphill<sup>26</sup> has, on the contrary, established biological continuity in the North-West from 4500 to 800 BCE. In particular, there is no visible disruption in the skeletal record around 1500 BCE, the presumed date of the presumed Aryan invasion, which would coincide with a Dravidian exodus. This means that the Harappans were, on the whole, the ancestors of today’s Punjabis, Rajasthanis, Haryanvis, Sindhis and Gujaratis. None of the population movements the colonial theories imagined finds any support on the ground.

6. Added weight to this conclusion has now come from several genetic studies, which have ruled out the influx of so-called Aryans in the 2<sup>nd</sup> millennium BCE.<sup>27</sup> One recent study,<sup>28</sup> based on 728 samples covering 36 Indian populations, additionally found “overwhelming support for an Indian origin of Dravidian speakers” and concluded: “Our data are also more consistent with a peninsular origin of Dravidian speakers than a source with proximity to the Indus....”
7. Coming to the field of agriculture, British archaeologist and archaeobotanist Dorian Fuller,<sup>29</sup> correlating recent archaeobotanical evidence with Dravidian linguistics, concluded that “Proto-Dravidians [were] somewhere within the core range of modern Dravidians,” that is to say, in South India.

Without bringing in other strong circumstantial evidence such as that of the Sarasvati river, we can see that several disciplines – archaeology, anthropology, genetics and tradition – agree on the impossibility of a Late Harappan southward “Long March.” (Incidentally, they also rule out the fanciful thesis of a migration in the opposite direction, from the South northward, by “Dravidians” in centuries preceding the mature phase of the Indus-Sarasvati civilization.) Scholars who advocate such theses will do well to tackle the above points rather than indulge in unverifiable parallels based on a few signs.

### **Conclusion**

The theory of a Dravidian authorship of the Indus civilization is as much a relic of colonial scholarship as the Aryan invasion theory. It has survived because it became an integral part of the latter, which in turn was erected as a pillar by a few ideologies, especially that of the Dravidian movement of E. V. Ramaswamy Naicker (“Periyar”). Echoes of such ideological misuse of a divisive and now largely rejected theory continue to be heard in Tamil Nadu at regular intervals.

As an example relevant to the theme of this Symposium, barely a few days after the “outstanding discovery” of the Sembian-Kandiyur celt was made public, Tamil Nadu’s Chief Minister declared at an election rally that “recent archaeological findings of Indus valley scripts in Mayiladuthurai in Nagapattinam district indicated that the people who lived in Tamil Nadu

belonged to the Dravidian race similar to those who lived in the Indus valley.”<sup>30</sup> This is a throwback to nineteenth-century racial theories. There was never either an “Aryan race” or a “Dravidian one,” as anyone attempting to give such concepts a scientific definition will soon find out.

Were it not for such political ideologies, racial theories of India’s past would have died away long ago. Yet they continue to be parroted in our textbooks, as if anthropology and biology had not progressed one inch in the last hundred years. It is in this context that we suddenly find Tamil Nadu covered with Indus script – but not Kerala, Karnataka or Andhra Pradesh.

It is high time we revised our outdated and simplistic models of India’s protohistory. They do not work and lead us into a series of paradoxes. Scholars have a sacred duty to study the evidence objectively.

Tamil culture is great in its own right; it does not need to climb on Harappan shoulders to appear greater.

\* \* \*

## References

- <sup>1</sup> Léon Poliakov, *The Aryan Myth: A History of Racist and Nationalist Ideas in Europe* (New York: Basic Books, 1974).
- <sup>2</sup> Maurice Olender, *The Languages of Paradise: Race, Religion, and Philology in the Nineteenth Century* (Cambridge, Massachusetts, and London: Harvard University Press, 1992).
- <sup>3</sup> Thomas R. Trautmann, *Aryans and British India* (New Delhi: Vistaar Publications, 1997).
- <sup>4</sup> Stefan Arvidsson, *Aryan Idols: Indo-European Mythology as Ideology and Science* (Chicago: The University of Chicago Press, 2006).
- <sup>5</sup> Michel Danino, *The Invasion That Never Was* (Mysore: Mira Aditi, 2001) provides an overview of those twin myths (especially ch. 1).
- <sup>6</sup> Such as Swami Dayananda Saraswati, Swami Vivekananda, Sri Aurobindo, B. R. Ambedkar, among others (see previous note, ch. 2).
- <sup>7</sup> Ram Sharan Sharma, *Advent of the Aryans in India* (New Delhi: Manohar, 2001), p. 51.
- <sup>8</sup> From the leaflet announcing the Symposium, authored by Dr. Sitharam Gurumurthi.
- <sup>9</sup> As reported in *The Hindu*, May 01, 2006: “‘Discovery of a century’ in Tamil Nadu” by T.S. Subramanian.
- <sup>10</sup> For instance, B. B. Lal, “From the Megalithic to the Harappa: Tracing Back the Graffiti on the Pottery,” in *Ancient India* No. 16, 1960, pp. 4-24.
- <sup>11</sup> For instance, S. Gurumurthy, *Deciphering the Indus Script ... From Graffiti on Ancient Indian Pottery* (Chennai: University of Madras, 1999).
- <sup>12</sup> Walter A. Fairservis, *Excavations at the Harappan Site of Allahadino: The seals and other inscribed material* (New York: Papers of the Allahadino Expedition), No. 1. This table is reproduced in Gregory L. Possehl, *Indus Age: The Writing System* (New Delhi: Oxford & IBH, 1996), p. 59.
- <sup>13</sup> S. R. Rao, “New Light on Indus Script and Language,” in *Frontiers of the Indus Civilization*, eds. B. B. Lal & S. P. Gupta (New Delhi: Books and Books), p. 197.
- <sup>14</sup> Guillaume de Hevesy, 1935, reproduced in Gregory L. Possehl, *Indus Age: The Writing System, op. cit.*, p. 94; another table can be seen p. 95.
- <sup>15</sup> Asko Parpola, “Comments on the Incised Stone Axe Found in Tamil Nadu in 2006” in the collection of abstracts of papers presented at the Symposium, p. 26.
- <sup>16</sup> Edwin Bryant, *The Quest for the Origins of Vedic Culture: The Indo-Aryan Migration Debate* (New York: Oxford University Press, 2001), pp. 80-81.
- <sup>17</sup> Hans Henrich Hock, “Philology and the Historical Interpretation of the Vedic Texts,” in *The Indo-Aryan Controversy: Evidence and Inference in Indian History*, eds. Edwin F. Bryant & Laurie L. Patton (London & New York: Routledge, 2005), p. 286 and the references to his earlier works.
- <sup>18</sup> Murray Emeneau, *Language and Linguistic Area* (Stanford: Stanford University Press, 1980), p. 177, quoted by Edwin F. Bryant, “Linguistic Substrata and the Indigenous Aryan Debate,” in *Aryan and Non-Aryan in South Asia: Evidence, Interpretation and Ideology*, eds. Johannes Bronkhorst & Madhav M. Deshpande (Cambridge: Harvard University), p. 71.

- <sup>19</sup> Jules Bloch, "Sanskrit et dravidien," *Bulletin de la Société de linguistique de Paris*, No.76, 1924, pp. 1-21, quoted by Edwin Bryant in *The Quest for the Origins of Vedic Culture*, *op. cit.*, p. 80.
- <sup>20</sup> Murray B. Emeneau, *Brahui and Dravidian Comparative Grammar* (Berkeley: University of California Publications in Linguistics, 1962), p. 27.
- <sup>21</sup> Hans Heirich Hock, "Substratum Influence on (Rig-Vedic) Sanskrit," *Studies in the Linguistic Sciences*, vol. 5, n°2, p. 88, quoted by Edwin Bryant, *The Quest for the Origins of Vedic Culture*, *op. cit.*, p. 83.
- <sup>22</sup> Josef Elfenbein, "A periplus of the Brahui problem," *Studia Iranica*, No.16.2, 1987, pp. 215-233, quoted by Edwin Bryant, *ibid.*
- <sup>23</sup> Bernard Sergent, *Genèse de l'Inde* (Paris: Payot, 1997), p. 130.
- <sup>24</sup> See for instance: Jonathan Mark Kenoyer, *Ancient Cities of the Indus Valley Civilization* (Karachi & Islamabad: Oxford University Press & American Institute of Pakistan Studies, 1998); B. B. Lal, *The Sarasvati Flows On: The Continuity of Indian Culture* (New Delhi: Aryan Books International, 2002); Michel Danino, "The Harappan Heritage and the Aryan Problem" in *Man and Environment* (Pune), 2003, vol. XXVIII, No. 1, p. 21-32.
- <sup>25</sup> Kenneth A. R. Kennedy, "Have Aryans been identified in the prehistoric skeletal record from South Asia?" in *The Indo-Aryans of Ancient South Asia: Language, Material Culture and Ethnicity*, ed. George Erdosy (Berlin & New York: Walter de Gruyter, 1995), pp. 32-66.
- <sup>26</sup> B. E. Hemphill, J. R. Lukacs & K.A.R. Kennedy, "Biological adaptations and affinities of the Bronze Age Harappans," in *Harappa Excavations 1986-1990: A Multidisciplinary Approach to Third Millennium Urbanism*, ed. R. H. Meadow (Madison: Prehistory Press, 1991), pp. 137-182
- <sup>27</sup> For a summary of recent genetic findings, see Michel Danino, "Genetics and the Aryan Debate," *Puratattva*, Bulletin of the Indian Archaeological Society, New Delhi, No.36, 2005-06, pp. 146-154.
- <sup>28</sup> Sanghamitra Sengupta, Lev A. Zhivotovsky, Roy King, S. Q. Mehdi, Christopher A. Edmonds, Cheryl-Emiliane T. Chow, Alice A. Lin, Mitashree Mitra, Samir K. Sil, A. Ramesh, M. V. Usha Rani, Chitra M. Thakur, L. Luca Cavalli-Sforza, Partha P. Majumder, & Peter A. Underhill, "Polarity and Temporality of High-Resolution Y-Chromosome Distributions in India Identify Both Indigenous and Exogenous Expansions and Reveal Minor Genetic Influence of Central Asian Pastoralists," *American Journal of Human Genetics*, February 2006; 78(2):202-21.
- <sup>29</sup> Dorian Fuller, "An Agricultural Perspective on Dravidian Historical Linguistics: Archaeological Crop Packages, Livestock and Dravidian Crop Vocabulary," ch. 16 in *Examining the farming/language dispersal hypothesis* edited by Peter Bellwood & Colin Renfrew (The McDonald Institute for Archaeological Research: 2003).
- <sup>30</sup> M. Karunanidhi, "MK vows to develop Dravidian culture," as reported by *Sify News*, 05 May 2006 (<http://sify.com/cities/fullstory.php?id=14198547>). He not only portrayed himself as "a descendant of this Dravidian race," but said, in the presence of Prime Minister Dr. Manmohan Singh, "I did not enter public life for the sake of power. I joined the movement of rationalist leaders like Periyar E V Ramasamy to uphold the Dravidian race and work for its future." The notion of a "Dravidian race," however, is least rational.