

SARASVATI

Language

Volume 6



Dr. S. Kalyanaraman

Babasaheb (Umakanta Keshav) Apte Smarak Samiti

Bangalore 2003

SARASVATI: Language by S. Kalyanaraman

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Publisher: Baba Saheb (Umakanta Keshav) Apte Smarak Samiti, Bangalore

Price: (India) Rs. 500 ; (Other countries) US \$50 .

Copies can be obtained from:

S. Kalyanaraman, 3 Temple Avenue, Srinagar Colony, Chennai, Tamilnadu
600015, India

email: kalyan97@yahoo.com

Tel. + 91 44 2350557; Fax 4996380

Baba Saheb (Umakanta Keshav) Apte Smarak Samiti,
Yadava Smriti, 55 First Main Road, Seshadripuram, Bangalore 560020, India
Tel. + 91 80 6655238

Bharatiya Itihasa Sankalana Samiti, Annapurna, 528 C Saniwar Peth, Pune
411030

Tel. +91 020 4490939

Library of Congress cataloguing in publication data

Kalyanaraman, Srinivasan.
Sarasvati/ S. Kalyanaraman

Includes bibliographical references and index

1. River Sarasvati. 2. Indian Civilization. 3. R.gveda

Printed in India at K. Joshi and Co., 1745/2 Sadashivpeth, Near Bikardas Maruti
Temple, Pune 411030, Bharat

ISBN 81-901126-6-0

FIRST PUBLISHED: 2003

About the Author



Dr. S. Kalyanaraman has a Ph.D. in Public Administration from the University of the Philippines; his graduate degree from Annamalai University was in Statistics and Economics. His PhD dissertation was on development administration, a comparative study of 6 Asian countries, published as *Public Administration in Asia* in 2 volumes.

He was a Senior Executive in the Asian Development Bank, Manila, Philippines for 18 years from 1978 to 1995 responsible for the world-wide IT network of the Bank and disbursements on a portfolio of US\$60 million for over 600 projects in 29 developing countries of Asia-Pacific region. Prior to joining the Bank, he was Financial Advisor on the Indian Railways (responsible, as part of a professional team, for introducing computers on the Railways) and Chief Controller of Accounts, Karnataka Electricity Board. He took voluntary retirement from the Bank five years' ahead of schedule and returned to Bharat to devote himself to Sarasvati River researches and development projects.

He is well-versed in many languages of Bharat: Tamil, Telugu, Kannada, Hindi, Sanskrit. He has compiled a comparative dictionary for 25 ancient Indian languages, titled *Indian Lexicon*. He has set up a website on Sarasvati River and Civilization with over 30,000 files (<http://www.hindunet.org/saraswati>); he is the founder of the yahoogroup, IndianCivilization, which has over 800 members (April 2003). His work, *Sarasvati*, was published in 2001 a compendium on the discovery of Vedic River Sarasvati. The present 7-volume encyclopaedic work on *Sarasvati Civilization* is a result of over 20 years of study and research. He is Director, Sarasvati Nadi Shodh Prakalp, Akhil Bharatiya Itihaasa Sankalana Yojana, Chennai 600015. The Prakalp is engaged in researches related to Sarasvati Civilization and interlinking of national rivers of Bharat. He has contributed to many scholarly journals and participated in and made presentations in a number of national and international conferences including the World Sanskrit Conference held in Bangalore in 1995. He delivered the Keynote address in the International Conference of World Association of Vedic Studies, 3rd Conference held in University of Massachusetts, Dartmouth, in July 2002. kalyan97@yahoo.com

Diacritical marks used

The Kyoto-Harvard convention is NOT used since the intermingling of English words with Indian language words will distort the representation of capital letters and is not easy to read.

The standard diacritical marks are deployed but, instead of ligaturing them on top and bottom of the alphabet, the diacritical marks FOLLOW immediately after the vowel or consonant which is modified. For e.g., a_ connotes 'long a', n. connotes retroflex N. After the UNICODE is standardized, the next edition will display the modified codes for ease of representation on web pages on the internet.

a rut,at	e bet	d then
a_/ law	e_ ate	d. dot
a~_ long	e~_ bane	l. rivalry
/a~ un-	/e~ when, whey	n. and
i it	o obese	n- new
i_ bee	o_ note	r- curl
i~_ been	o~_ bone,one	r. rug
/i~ in	m. mum	r.. (zsh)
u you	n: king	s fuse
u_/ ooze	n~ nyet	s. shut
u~_ boon	h-/k- what	s' sugar
/u~ june	c change	t both
...	c. so	t. too

List of languages and abbreviations

The languages of the linguistic area and the abbreviations used are as follows:

A. Assamese
Ap. Apabhram.s'a
Ash. Ashkun (As.ku~_--Kafiri)
Aw. Awadhi_
B. Bengali (Ban:gla_)
Bal. Balu_ci_ (Iranian)
Bashg. Bashgali_ (Kafiri)
BCE Before Common Era (BC)
Bel. Belari
Bhoj. Bhojpuri_
Bi. Biha_ri_
Br. Bra_hui_
Brj. Brajbha_s.a_
Bshk. Bashkari_k (Dardic)
Bur. Burushaski
CE Common Era (AD)
Chil. Chili_s (Dardic)
D.. D.uma_ki
Dm. Dame~d.i_ (Kafiri-Dardic)
G. Gujara_ti_
Ga. Gadba
Garh. Gar.hwa_li_
Gau. Gauro (Dardic)
Gaw. Gawar-Bati (Dardic)
Gmb. Gambi_ri_ (Kafiri)
Go. Gondi
Gy. Gypsy or Romani
H. Hindi_
Ir. Irul.a
K. Ka_s'mi_ri_
Ka. Kannad.a
Kaf. Kafiri
Kal. Kalasha (Dardic)
Kand. Kandia (Dardic)
Kat.. Kat.a_rqala_ (Dardic)
Kho. Khowa_r (Dardic)
Khot. Khotanese (Iranian)
Kmd. Ka_mdeshi (Kafiri)
Ko. Kota
Kod.. Kod.agu (Coorg)
Koh. Kohista_ni_ (Dardic)
Kol. Kolami
Kon. Kon:kan.i_
Kond.a
Kor. Koraga
Kt. Kati or Katei (Kafiri)
Ku. Kumauni_
Kui
Kurub. Bet.t.a Kuruba
Kur. Kur.ux (Oraon, Kurukh)
Kuwi
L. Lahnda_
M. Mara_t.hi_
Ma. Malayalam
Mai. Maiya~_ (Dardic)
Malt. Malto
Ma_lw. Ma_lwa_i_
Mand.. Mand.a
Marw. Ma_rwa_r.i_
Md. Maldivian dialect of Sinhalese
MIA Middle Indo-Aryan
Mj. Munji_ (Iranian)
Mth. Maithili_
Mu. Mun.d.a_ri (Munda)
N. Nepa_li
Nahali
Nin:g. Nin:gala_mi (Dardic)
Nk. Naikr.i (dialect of Kolami = LSI, Bhili of Basim; Naiki of Chanda)
OIA Old Indo-Aryan
Or. Or.iya_
P. Punja_bi_ (Paja_bi_)
Pa. Parji
Pali
Pah. Paha_r.i_
Pa_Ku. Pa_lu Kur-umba
Pas'. Pas'ai (Dardic)
Pe. Pengo
Phal. Phalu_r.a (Dardic)
Pkt. Prakrit
S. Sindhi_
Sant. Santa_li_ (Mun.d.a_)
Sh. Shina (S.in.a_.Dardic)
Si. Sinhalese
Sik. Sikalga_ri_ (Mixed Gypsy Language: LSI xi 167)
Skt. Sanskrit
Sv. Savi (Dardic)
Ta. Tamil
Te. Telugu
Tir. Tira_hi_ (Dardic)
To. Toda
Tor. To_rwa_li_ (Dardic)
Tu. Tulu
U. Urdu
Werch. Werchikwa_r or Wershikwa_r (Yasin dialect of Burushaski)
Wg. Waigali_ or Wai-ala_ (Kafiri)
Wkh. Wakhi (Iranian)
Wot.. Wot.apu_ri_ (language of Wot.apu_r and Kat.a_rqala_. Dardic)
WPah. West Paha_r.i

Abbreviations used for linguistic categories and other languages Languages, Epigraphs

As'. As'okan inscriptions	OSlav. Old Slavonic
Austro-as. Austro-asiatic (cf. Munda)	Par. Para_ci_ (Iranian)
BHSkt. Buddhist Hybrid Sanskrit (Franklin Edgerton, <u>Buddhist Hybrid Sanskrit Grammar and Dictionary</u> , Newhaven, 1953)	Pahl. Pahlavi (Iranian)
Dard. Dardic	Pers. Persian (Iranian)
Dhp. Ga_ndha_ri or Northwest Prakrit (as recorded in the Dharmapada ed. J. Brough, Oxford 1962)	Port. Portuguese
Drav. Dravidian	Pr. Prasun (Kafiri)
IA. Indo-aryan	Psht. Pashto (Iranian)
IE. Indo-european	Tib. Tibetan
Ind. Indo-aryan of India proper excluding Kafiri and Dardic (as classified by R.L. Turner)	Toch. Tocharian
KharI. Kharos.t.hi_ inscriptions; Middle Indo-aryan forms occurring in <u>Corpus Inscriptionum Indicarum</u> Vol. II Pt.I, Calcutta, 1929 MIA Middle Indo-aryan	Turk. Turkish
NiDoc. Language of 'Kharos.t.hi_ Inscriptions discovered by Sir Aurel Stein in Chinese Turkestan' edited by A.M. Boyer, E.J. Rapson, and E. Senart	Yid. Yidgha (Iranian)
Ar.Arabic	
Aram.Aramaic	Abbreviations : Grammatical
Arm.Armenian	* hypothetical
Av. Avestan (Iranian)	< (is) derived from
E. English	> (has) become
Gk. Greek	? doubtful
Goth. Gothic	Xinfluenced by
Ishk. Ishka_shmi_ (Iranian)	+ extended by
Kurd. Kurdish (Iranian)	~ parallel with
Lat. Latin	acc. accusative
Lith.Lithuanian	adj. adjective
OHG. Old High German	adv. adverb
Orm. O_rmur.i_ (Iranian)	aor. aorist
	caus. causative
	cent. century
	cf. confer (compare)
	cmpd.compound(ed)
	com. commentary, t.i_ka_
	conj.conjunction
	dat. dative
	dist.fr.distinct from
	du. dual
	E East
	e.g. example etym. etymology
	expr.expression
	f./fem. feminine
	fig. figuratively

fr. from	p. page
fut. future	part. participle
gen. genitive	pass. passive
hon. honorific	perf. perfect
id. idem (having the same meaning)	perh. perhaps
imper. imperative	phonet. phonetically
incl. including	pl. plural
inf. infinitive	pp. past participle (passive)
inj. injunctive	pres. present
inscr. inscription	pron. pronoun
lex. lexicographical works or Kos'as	Pudu. Pudukkottai usage
lit. literature	redup. reduplicated
loc. locative	ref. reference(s)
m. masculine	S South
M Middle	sb./subst. substantive
metath. metathesis (of)	semant. semantically
N North	st. stem
Na_ Na_ci Na_t.u usage	subj. subjunctive
Naut. Nautical	syn. synonym
nom. nominative	Tinn. Tinnevelly usage
nom. prop. nomen proprium (proper name)	Tj. Tanjore usage
num. numeral(s)	usu. usual(ly)
NW North-west	vais.n..vais.n.ava usage
O Old	vb. verb
obl. oblique case	viz. videlicet (namely)
onom. onomatopoeic	W West

Foreword

I had written a foreword for Dr. Kalyanaraman's work titled *Sarasvati* in 2000. As promised, he has now followed up this work with an additional seven volumes to complete the encyclopaedia on Sarasvati – the river, goddess and civilization of Bha_rata.

It is a privilege indeed to receive the seven volumes titled:

1. *Sarasvati: Civilization*
 2. *Sarasvati: R.gveda*
 3. *Sarasvati: River*
 4. *Sarasvati: Bharati*
 5. *Sarasvati: Technology*
 6. *Sarasvati: Language*
- Sarasvati: Epigraphs*

This septet constitutes a fitting homage to Babasaheb (Uma_ka_nt kes'av) Apte, particularly in the wake of the centenary celebrations planned for 2003 in memory of this patriot who wanted a presentation of the history of Bha_rata from a Bha_rati_ya socio-cultural perspective.

The dream of the late Padmashri Vakankar, archaeologist is also partly fulfilled with the delineation of the peoples' lives over 5,000 years on the banks of the Rivers Sarasvati and Sindhu.

The Sarasvati Nadi Shodh Prakalp which is headed by Dr. Kalyanaraman under the guidance of Shri Haribhau Vaze, All-India Organizing Secretary, Akhila Bharateeya Itihaasa Sankalana Yojana should be complimented for bringing to successful completion this important phase of writing of the history of ancient Bha_rata.

The River Sarasvati has not only been established as ground-truth (bhu_mi satyam), but the vibrant civilization which was nurtured on the banks of this river has been exquisitely unraveled in the five volumes, covering virtually all aspects of the lives of the pitr.-s, many of whose a_s'rama-s are venerated even today in many parts of Bha_rata.

The seven volumes provide a framework for understanding the writing system evolved ca. 5,300 years ago to record the possessions and items traded by metal- and fire-workers, the bharata-s. The language spoken by the people is also becoming clearer, with the existence of a linguistic area on the banks of the two rivers – the substrata and ad-strata lexemes which seem to match the glyphs of inscribed objects are a testimony to this discovery. This calls for a paradigm shift in the study of languages of Bha_rata with particular reference to the essential semantic unity of all the language families,

thanks to intense socio-economic and cultural interactions across the length and breadth of Bha_rata.

Hopefully, this work should generate many more research studies of this kind to further study the impact of the civilization on the cultural unity of the nation.

It is also heartening to note that work has started to revive the Rivr Sarasvati and to interlink the rivers of the country. This will be a garland presented by the children of the country to Bha_rata Ma_ta_ setting up a network of about 40,000 kms. Of National Waterways which will complement the Railways system to further strengthen the infrastructure facilities and to provide a fillip to development projects in all sectors of the economy.

I understand that Kalyanaraman is now embarking on a project to write the history of Dharma. I wish him all success in his endeavours.

M.N. Pingley

Kaliyugabda 5105. a_s.a_d.ha, Gurupurnima. July 13, 2003 CE

Publisher's Note

On behalf of Baba Saheb (Umakanta Keshav) Apte Smarak Samiti, it gives me great pleasure to publish the set of seven volumes of the encyclopaedic work of Dr. S. Kalyanaraman with over 4,000 illustrations and impressive documentation.

7. *Sarasvati: Civilization*
 8. *Sarasvati: R.gveda*
 9. *Sarasvati: River*
 10. *Sarasvati: Bharati*
 11. *Sarasvati: Technology*
 12. *Sarasvati: Language*
- Sarasvati: Epigraphs*

This is a follow-up of the first work titled *Sarasvati* published in 2000 which focused on the River Sarasvati. These seven additional volumes focus on the language, writing system, technology – archaeo-metallurgy, in particular, the lives of the people who lived between 3500 to 5300 years ago and the importance of this legacy and heritage on the history of Bha_rata.

This compendium has been made possible by the contributions made by scientists and scholars of the country from a variety of disciplines, ranging from geology and glaciology to atomic research and language studies. This comprehensive work on Sarasvati thus constitutes a golden chapter in the work of the Akhila Bharateeya Itihaasa Sankalana Yojana, providing the foundation for future works on subsequent periods of the history of the nation.

A principal objective of the Baba Saheb (Umakanta Keshav) Apte Smarak Samiti is the authenticated study of the history of our nation. For this purpose the Akhila Bharatiya Itihaasa Sankalana Yojana affiliated with the Samiti, has been working with a number of scholars and institutions organizing seminars and conferences and bringing out publications. The Samiti is a non-profit, voluntary organization and is entirely supported by volunteers and philanthropists. I wish to thank all the well-wishers and contributors to the Samiti's work. In particular, I would like to acknowledge with gratitude the contribution made by Shri G. Pulla Reddy, Shri Ramadas Kamath, and Basudeo Ramsisaria Charitable Trust, ICICI, Government of Goa, in enabling this publication. Sincere thanks are due to K. Joshi and Co., and Dr. C.N. Parchure who have undertaken the supervision of the publication.

Plans have been initiated to start a national center to study the history of vanava_si people, to produce an encyclopaedia on the Hindu World and to organize research centers in all states of the country, to publish a series of research volumes on various aspects of the Bharatiya itiha_sa in all languages of Bharat, using multimedia presentations.

Haribhau Vaze

National Organizing Secretary, Akhil Bharatiya Itihaasa Sankalana Yojana and Trustee, Baba Saheb (Umakanta Keshav) Apte Smarak Samiti, Bangalore. Kaliyugabda 5105. a_s_a_d.ha, Gurupurnima. July 13, 2003 CE

Author's Preface

At the outset, I offer my sincere thanks to Moropant Pingley and Haribhau Vaze for their encouragement and support in pursuing this endeavour.

What can I say which has not already been said by eminent scientists, scholars and thinkers of this great nation? All that I can do is to compile their thoughts and present them as I see fit and as a tribute to the memories of our pitr.-s and ma_tr.-s, our ancestors who have made us what we are and who have given us the *vira_sat* (heritage).

The septet contains the following volumes:

13. *Sarasvati: Civilization*
 14. *Sarasvati: R.gveda*
 15. *Sarasvati: River*
 16. *Sarasvati: Bharati*
 17. *Sarasvati: Technology*
 18. *Sarasvati: Language*
- Sarasvati: Epigraphs*

The enduring nature of the culture of the nation has been a source of awe and inspiration for many generations of scholars.

The lives of the r.s.i-s and muni-s who contributed to the solidity of the Bha_rata Ra_s.t.ra is a source of inspiration for generations of students of philosophy, politics, sociology, spiritual studies, economics and culture.

The earlier work, *Sarasvati*, published in 2000 focused on the life-history of River Sarasvati. This set of seven volumes follow-up on this work to present a comprehensive survey of the lives of the people who nurtured a vibrant civilization on the banks of River Sarasvati. They were enterprising people who ventured to the banks of River Sindhu and beyond and had established a network of interactions which extended as far as Mesopotamia in the west and Caspian Sea in the north-west.

The River Sarasvati, flowing over 1,600 kms. from Mt. Kailas (Ma_nasarovar glacier) and tributaries emanating from Har-ki-dun (Svarga_rohin.i or Bandarpunch massifs, Western Garhwal, Uttaranchal), through Kashmir, Uttaranchal, Himachal Pradesh, Punjab, Haryana, Rajasthan, and Gujarat made the region lush with vegetation and provided a highway for interactions extending through the Gulf of Kutch, Gulf of Khambat, the Persian and Arabian Gulfs. The story of this riverine, maritime civilization is the story of an enterprising group of people who were wonderstruck by the bounties of nature and had organized themselves into a cooperating society to

harness the bounties of nature. The Samudra manthanam imagery wherein the asura-s and deva-s cooperate in churning the ocean for its riches is an allegory of this quest for material well-being while strengthening societal bonds.

This march of history is a saga of adventure, a passion for discovery of new materials and new methods of communication using a writing system and communicating orally profound thoughts on the cosmic order in relation to humanity.

The next stop is Dharma: a history of Bharatiya Ethos and Thought.

Dr. S. Kalyanaraman
Former Sr. Executive, Asian Development Bank,
Sarasvati Nadi Shodh Prakalp, 5 Temple Avenue, Chennai 600015, India
Kalyan97@yahoo.com

Kaliyugabda 5105. a_s.a_d.ha, Gurupurnima. July 13, 2003 CE

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Lingua Franca

Cracking the language code and delineating the parole of a civilization

The code of the writing system on epigraphs of Sarasvati Civilization has been cracked by simply listing lexemes used by braziers all over Bharat and identifying homonyms concordant with the glyphs on epigraphs.

Since the hieroglyphs can now be read and the underlying semantics understood, the language of the civilization, during the early stages of the Bronze Age (c. 4th millennium BCE), can be emphatically outlined. Over 2,000 lexemes of this language constitute the substratum, the *parole* or *lingua franca* (spoken language), which has enriched the lexemic repertoire of almost all dialects of Bharat – Munda, Dravidian and Indo-Aryan.

The language is **mleccha** and the writing system is **mlecchita vikalpa** (cypher writing) or writing in hieroglyphs. **Mleccha** was the language in which Vidura and Yudhis.t.hira conversed, as stated in the *Maha_bha_rata*.

A paradigm change has occurred in our understanding of the linguistic area of the civilization. Almost all languages of Bharat can be declared as a dialectical continuum, a continuity which can be traced from Vedic times to the present-day, thus establishing the essential semantic unity of all Bharatiya languages. This unity has been sustained for over 5 millennia over an extensive interaction area which the people of the civilization nurtured from the banks of River Sarasvati..

Nobody ever notices a postman, somehow

“One of GK Chesterton’s *Father Brown* detective stories is about a postman who walked into a block of flats, murdered one of the residents, and carried out the corpse in his sack without so much as rousing the suspicion of the commissionaire who stood on duty. ‘Nobody ever notices postmen, somehow,’ said Father Brown, and he echoed the paradox that Chesterton repeatedly expounded: the most familiar things can go by most easily unnoticed. Indeed, the paradox itself has now become sufficiently self evident to be regarded rather as a truism. We have become so familiar with the modern use of metals that we tend to accept it – like Father Brown’s postman – fairly thoughtlessly....

“The ornaments and weapons found during the excavations at Ur imply that the casting of metal had begun about 3500 BCE. And it seems that in this locality there was an interval of about 2000 years between the first crudely hammered metal article and the earliest cast one. Remains of primitive copper workings have been found at the sites of other early civilizations – in the Nile valley in Egypt; and at Mohenjo-daro, which appears to have been the center of an early Indian culture at Sind.” [J. Gordon Parr, 1958, *Man, metals and Modern magic*, Iowa, Cleveland, American Society of Metals, pp.1-13].



Sumerian copper statue of a man carrying a brick (copper ingot or bronze casting), c. 2600 BCE. Metropolitan Museum of Art.

It is just possible that the language of the people of Sarasvati civilization was not a lot different from the languages in vogue today in Bharat.

Like the postman in *Father Brown*, the linguistic area of Bharat, circa 5500 years Before Present, has gone unnoticed simply because it is all around us, as a dialectical continuum stretching from Kanyakumari to Kashmir, from Dholavira to Dacca. The prehistory of the civilization is also all around us emphasizing the cultural continuity for over 5500 years to

the present day.

Our pitr. postmen have delivered the messages in emphatic glyphs constituting over 3,000 epigraphs anchored on lexemes of the linguistic area of the civilization.

The substratum language was **mleccha**! We had somehow not noticed the postmen for the last 150 years, ever since the first seal was discovered close to the banks of River Sarasvati.

It is possible to identify both the **mleccha** messenger and the **mleccha** message.

Old Indic or Proto-Bharatiya *Lingua Franca* or *parole* (spoken tongue)

There are hundreds of lexical isolates attested in 'Indo-Aryan' which are not found in other branches of Indo-European. These are clearly a substratum layer of Old Indic which was spoken by the people of Bharat on the Sarasvati-Sindhu river basins and on the coastal settlements of Sindhu sa_gara (Arabian Sea). Some of these people were called Meluhhan in Mesopotamian texts. The Austroasiatic components of this substratum have to be resolved further in the context of (1) ancestors of Brahui and Elamite; and (2) other Austroasiatic groups such as those in the Brahmaputra (Lohitya)-Meghna-Barak river basins and around the Bay of Bengal.

The lingua franca (or parole, spoken tongue) of Bharat circa 5000 years ago is hypothesized as a continuum of dialects, evolving in tandem with the cultural setting and technological innovations. Since the civilization which emerged on and was nurtured on the banks of Rivers Sarasvati and Sindhu continues into the historical periods in Bharat, the language spoken circa 5000 years Before Present can be reconstructed from the languages of present-day Bharat and based on the lexical work done by philologists from the days of Yaska (circa 6th century BCE) upto the discovery of Bangani in the 20th century.

Linguistic area of Bharat, circa 5500 years Before Present

A tool exists to configure the glosses of the ancient dialects of Bharat, circa 3000 BCE. The present-day languages of Bharat are genetically related to these dialects and hence the lexemes of the present-day Bharatiya languages provide the semantic, structural framework for reconstructing the ancient mleccha language which was in vogue on the Sarasvati and Sindhu River Basins and in all the regions of the civilization, circa 5,500 to 3,500 years Before Present.

Comparative dictionary of Bharatiya languages

An *Indian Lexicon* has been compiled as a comparative study of lexemes of over 25 ancient languages of Bharat (which may also be referred to, in a geographical/historical phrase, as the linguistic area of Bharat).

This compendium of glosses (organized in over 8000 semantic clusters), is a first step in reconstructing the Bharatiya language(s) circa 5000 years Before Present. <http://www.hindunet.org/saraswati/dictionary/>

These lexemes provide a semantic structure which unify almost all the languages of Bharat into a proto-bharatiya substratum to explain the glosses of many dialects: Munda, Dravidian and Indo-Aryan. These lexemes help code the hieroglyphs contained in epigraphs of Sarasvati Civilization.

Writing originated about 3300 BCE at Harappa on the left bank of River Ravi and about 3100 BCE, at the end of the Uruk period in Mesopotamia, in order to keep track of people and goods. Unlike the writing system of Mesopotamia which evolved in cities, the writing system of SSVC was widespread and reached out into even very small settlements. In the early-to-middle third millennium BCE, the texts record organization of daily activities, especially in temple estates; royal inscriptions reveal the battles fought over the best arable land and securing access to trade routes. In early second millennium, texts relate to private sale of land and movable property and inheritance.

Over 3000 epigraphs exemplifying the writing system of the Indian (Sarasvati) civilization, ca. 5500 years Before Present, will be decoded using the lexemes, mainly of Bharatiya languages, based on the fundamental assumption that the language spoken by the people of the civilization continued in Bharat and evolved as a dialectical continuum from a linguistic area in the Sarasvati and Sindhu river basins and along the coastline of Sindhu sa_gara or Arabian sea.

Some observations on general semantics and the Indian Linguistic Area

The civilization sites in Punjab, Rajasthan, Cholistan, Kutch and Saurashtra can be explained by the Sarasvati river as a navigable channel right from Ropar to Lothal (and beyond upto Prabhas Patan or Somnath), upto ca. 2500 B.C. The existence of this highway and links through the Persian Gulf and the coastline of Sindhu sa_gara (Arabian Sea) may explain the spectrum of languages covered by the linguistic area which had existed around 5,000 years ago.

The evolution of the Prākṛits and dialectical sequences of changes in the region, governed by regional migrations of populations due to the desiccation of the Sarasvati river, ca. 1700-1300 B.C., will require further linguistic analytical work. For this purpose, extensive lexical and other language tasks based on epigraphical,

textual and cultural evidences have to continue, following on the leads provided in the *Indian Lexicon*. Thus, the *Indian Lexicon* is only a small step to further understand the formation of Indian languages.

Further work is necessary to identify lexemes of the substrate language used in cuneiform inscriptions of Mesopotamia, in the context of the re-interpretation of pictorials on cylinder seals with vivid motifs similar to those found in the Sarasvati-Sindhu civilization area.

Any language with a large number of speakers develops dialects. The major geographical barriers (apart from the Himalayas) separating groups of people in India are: the marusthali_ (Great Indian desert), the Suleiman ranges, the Brahmaputra and the Vindhya mountain ranges. The major geographical feature which overcomes these barriers is that the waters close to the long coastline of the peninsula, Arabian sea on the west and Bay of Bengal on the east, were navigable on a **bagala** or a **san:gad.a**. This explains the possibility noted by John Marshall that electrum from Kolar could have been used by the artisans of Mohenjodaro.

Two dialects predominated as the standard form of language in Northern, Western and Eastern India: they emerges as **Prakrit** and **Pali** in the historical periods.

The distinction between 'dialect' and 'language' is resolved viewing dialects as subdivisions of languages. It is a well-known fact that Mandarin, Cantonese and Pekingese differ in their spoken forms but share the same written language, thus making the former dialects of Chinese. Similarly, the so-called Indo-Aryan, Dravidian and Munda are viewed as subdivisions of a proto-Indian **parole**. (The concrete utterances produced by individual speakers of the speech community are related in the exercise of cracking the code of the writing system of the epigraphs of the civilization, treating all the examples provided by Indian lexemes in the *Indian Lexicon*, as merely dialectal variants.)

Writing systems are attributes of complex societies

The early Mesopotamian writing system was a form of book-keeping. (Coe, M.D., 1992, *Breaking the Maya code*, New York, Thames and Hudson: 41); Sumerian writing was used for administrative purposes. (Sampson, G., 1985, *Writing Systems: A linguistic introduction*, Stanford University Press: 48).

The writing system of Sarasvati Civilization, evidenced by about 4000 inscriptions on a variety of writing surfaces (seals, faience/steatite tablets, copper tablets, silver seals, bangles, bronze-age weapons and tools, potsherds) functioned with the writer and the reader sharing the same repertoire. The symbols used in the writing system are remarkable ligatures; many symbols are clearly logographic, i.e. each logograph corresponds to a word (lexeme). (Logographs are also often considered as synonyms of pictograms or pictographs or ideograms or ideographs or logograms). (See Boltz, W., 1986, Early Chinese writing, *World Archaeology*, 17/iii : 424). As logographs evolve, they are given phonetic and semantic indicators/supplements/determinatives (Boltz's phase 3). The nature of ligaturing of logographs is so specific, yet varied, that they cannot be interpreted as identity symbols or totems. (See Matthews, R.J., 1993, *Cities, seals and writing: archaic seal impressions from Jemdet Nasr and Ur*, Berlin: Gebr. Mann Verlag; Coe, 1992 (opcit.): 177-8). Just as the Mesopotamian cuneiform evolved primarily as a logographic system, in which each symbol represented a complete word or idea, the system of logographs used in epigraphs of the civilization re also hypothesised to represent lexemes.

It is hypothesized in the context of ancient India that the people of India of many regions understood each other, but the stylized variations in their grammatical structures of the so-called Dravidian and the so-called Mundarica subdivisions perceived by ancient linguists such as Pa_n.ini and Tolka_ppiyan-, resulted in their being referred to as different languages. If a dialect atlas were to be compiled for India of ca. 3000 B.C., the bronze-age artefacts stand out as major semantic fields. Almost all the categories of weapons as *distinctive items* emerge as belonging to one Indian Linguistic Area. The same situation is apparent in other categories such as parts of the body, flora and fauna, echo words and classifier words such as those used to count cattle or count flat or round objects. Social or class dialects are also discernible in the categories of rituals and alchemical techniques ranging from Na_t.a siddhas of Rajasthan to the siddhas of Tamilnadu.

Dha_tupa_t.ha is an example of the linguistic analysis directed to the definition of *semes* (or the minimal distinctive semantic features) in prakrits enabling the construction of grammatical rules (cf. Pa_n.ini and Tolka_ppiyan-) and the formation of Sanskrit, as a refinement and standardization of geographical dialects.

The study of meaning in the Indian Linguistic Area as brought out in the *Indian Lexicon* entries relates the lexemes with the phenomena generated by the use of a variety of minerals, advances in metallurgy, alchemy and use of gum-resins and fragrances and use of herbals as medicines. These are semantic fields in which lexemes inter-relate and define each other in a number of ways. In this exercise in general semantics, 'semantic meaning' is here is used in contradistinction to 'grammatical meaning'. This is but a first step in defining semantic features of lexical items of ancient India. Further advances are necessary to analyse sentences (particularly in epigraphs), yielding semantic representations (See Bhartrhari's notes on philosophical semantics: va_kya padi_ya and sphot.a).

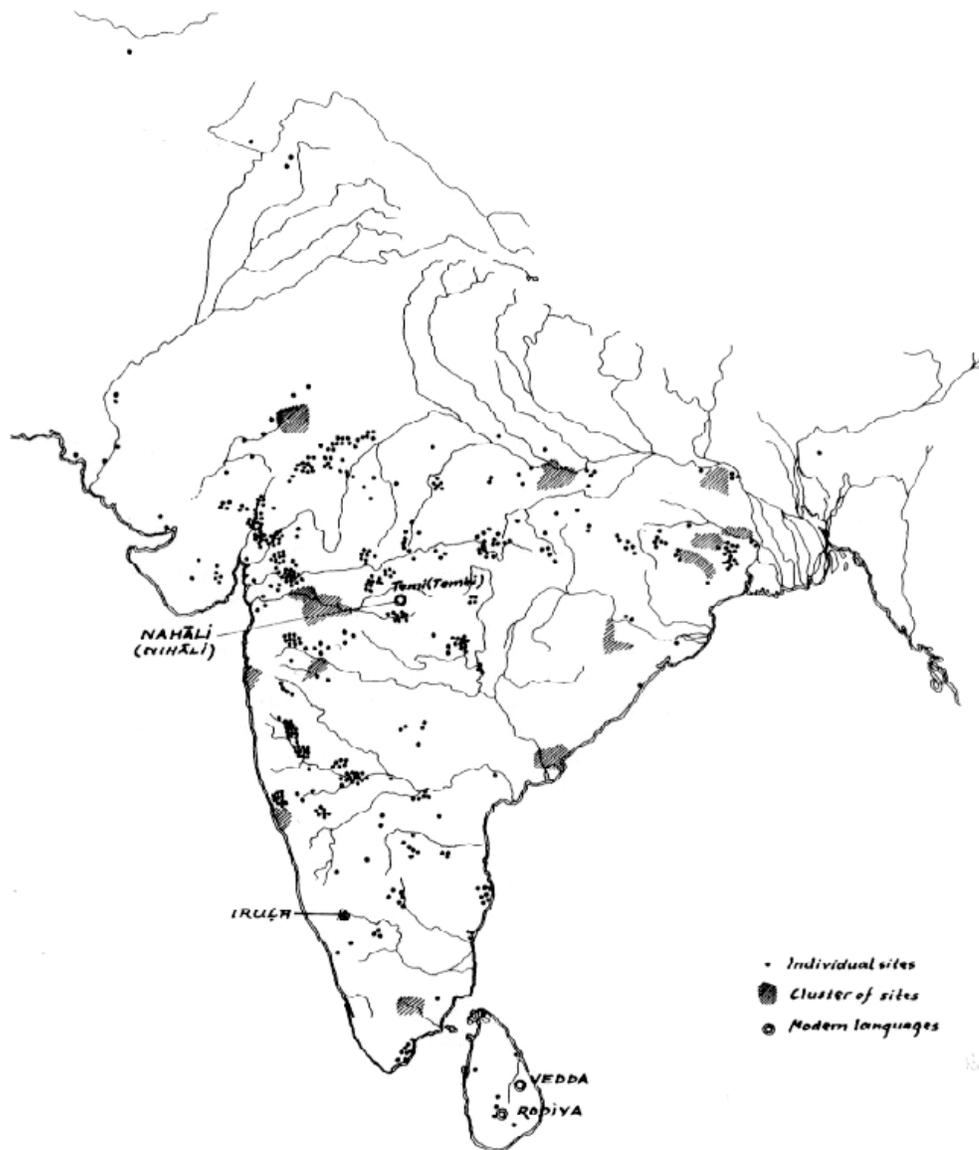
Using the resources of *Indian Lexicon*

The *Indian Lexicon*, which presents over 8000 semantic clusters, contains over half-a-million comparative lexemes from Indian languages. The *Indian Lexicon* unites about 4,000 so-called Dravidian etyma with many etyma of the so-called Indo-Aryan and Munda tongues.

The lexicon is a comprehensive exercise in general semantics. Lexemes with concordant phonemes are clustered together within a head-word sememe, without postulating any a priori assumptions about the ancestry of the phonemic version of the sememe (defined as the 'morpheme-meaning-root element').

The comprehensive exercise with lexical evidence from an ancient linguistic area of the world, tests and establishes the validity of the following core neuro-linguistic hypothesis: semantic competence is the substratum in philogeny; grammar is only a surface layer in the neural networks.

The ancient version of the spoken language of the Sarasvati-Sindhu civilization, ca. 3000 to 1300 B.C., can be traced as Proto-Prakrits/Proto-Pali or sub- or ad-stratum languages, such as Nahali, which are phonetically modified and embodied in the spoken versions of the current-day languages of India.



Microlithic sites in India and neighbouring regions and the areas of the substrate languages of Naha_li, Irula, Vedda and Rodiya (After Schwartzberg, Joseph, ed., 1978, A historical atlas of South Asia, Chicago; loc. cit., Parpola, 1994, Fig. 8.9) It is likely that many lexemes of the Pra_kr.ts were derived from the hundreds of such languages which should have constituted the substratum of the Linguistic Area in Indic protohistory.

The ancient version of the spoken language can be traced from the spoken versions of the current-day languages of India.

The lexemes are intended to be *tagged* to the images (pictorial signs and pictorial field symbols) of the Harappan (or Sarasvati-Sindhu) script.

Selection of words in this compendium is based on the following objective criteria/underlying hypotheses:

19. The words should be lexemes of the languages spoken in the geographical region bounded by the Indian ocean on the south and the mountain ranges which insulate it from other regions of the Asian continent on the north, east and west. Thus all Dardic languages, Sinhalese, Maldivian dialect of Sinhalese, and Urdu are included; Pashto is excluded. Wherever possible, Vedic, Munda, Prakrit and Pali lexemes have been included. As found necessary, cross-references to Arabic and Iranian dialects have been provided.
20. The words should have homonyms proximate to the pictorials of the inscriptions of the civilization.

The organization of the lexemes of the languages is NOT in alphabetical or areal (i.e. geographical) sequencing. The lexemes are clustered under a head-word which constitutes the core sememe.

This lexicon seeks to establish a semantic concordance, across the languages or **numraire facile** of the Indian linguistic area: from Brahui to Santali to Bengali, from Kashmiri to Mundarica to Sinhalese, from Marathi to Hindi to Nepali, from Sindhi or Punjabi or Urdu to Tamil. A semantic structure binds the languages of India, which may have diverged morphologically or phonologically as evidenced in the oral tradition of Vedic texts, or epigraphy, literary works or lexicons of the historical periods. This lexicon, therefore, goes beyond the commonly held belief of an Indo-European language and is anchored on proto-Indian sememes. The work covers over 8,000 semantic clusters which span and bind the Indian languages. The basic finding is that thousands of terms of the Vedas, the Munda languages (e.g., Santali, Mundarica, Sora), the so-called Dravidian languages and the so-called Indo-Aryan languages have common roots. This belies the received wisdom of cleavage between, for example, the Dravidian or Munda and the Aryan languages. The lexicon seeks to establish an areal 'Indian' language type, by establishing semantic concordance among the so-called Indo-Aryan, Dravidian and Munda languages. The area spanned is a geographical region bounded by the Indian ocean on the south and the mountain ranges which insulate it from other regions of the Asian continent on the north, east and west. This lexicon is a tribute to the brilliant work done by etymologists and scholars of Indian linguistics, and to a number of scholars who have contributed to unravelling the enigma of the Indus (Sarasvati-Sindhu) Script and to the study of ancient Indian science and technology.

The author believes that the work authenticates the unifying elements of Bharatiya common cultural heritage. The author also realizes that language is extraordinarily fluid, recording changes over time and reconstruction of lexemes of the past is subject to a variety of possible interpretations. Language is also a philosophical problem *par excellence*.

The cultural facets demonstrated by this comparative lexicon of languages currently spoken by over a billion people of the world can be emphasized at a number of levels:

- (1) to bring us closer to the ancient heritage of a Bharatiya language family of which the extant Indian languages (Indo-Aryan, Dravidian and Munda language streams) are but dialectical forms;
- (2) to generate further studies in the disciplines of (i) Bharatiya archaeology, (ii) general semantics and comparative linguistics; (iii) design of fifth-generation computer systems; and
- (3) to provide a basis for further studies in grammatical philosophy and neurosciences on the formation of semantic patterns or structures in the human brain -- neurosciences related to the study of linguistic competence which seems to set apart the humans from other living beings.

The warrant for this lexicon is the difficulty faced by scholars in collating different lexicons and in obtaining classical works such as CDIAL (*A Comparative Dictionary of Indo-Aryan Languages*) even in eminent libraries.

In tracing the etyma (lit. truth in Greek) of the Indian languages, it is adequate to indicate the word forms which can be traced into the mists of history.

Hypotheses on Proto-Bharatiya vocabulary

The following hypotheses govern the semantic clustering attempted in this lexicon.

21. It is possible to re-construct a proto-Indian idiom or *lingua franca* of circa the centuries traversed by the Sarasvati-Sindhu doab civilization (c. 2500 to 1700 BCE).
22. India is a linguistic area nurtured in the cradle of the Sarasvati-Sindhu doab civilization.

The hypotheses reject two earlier linguistic assertions: (i) Sir William Jones's assertion in 1786 of an Indo-European linguistic family and (ii) Francis Whyte Ellis's assertion in 1816 of a southern Indian family of languages.

These two assertions have resulted in two comparative or etymological lexicons of the so-called 'Indo-Aryan' and 'Dravidian' languages. This cleavage between the two language families is rejected. The exclusion of the so-called Austro-Asiatic or Munda (or Kherwa_ri) languages is also rejected. Instead, it is proposed that there was a proto-Indian linguistic area (c. 2500 BCE) which included these three language groups. The underlying assumption is that the so-called Dravidian, Munda and Aryan languages can be traced to an ancient Indian family by establishing the unifying elements, in semantic terms. This echoes Pope's observations made in a different context: '... that between the languages of Southern India and those of the Aryan family there are many deeply seated and radical affinities; that the differences between the Dravidian tongues and the Aryan are not so great as between the Celtic (for instance) and the Sanskrit; and that, by consequence, the doctrine that the place of the Dravidian dialects is rather with the Aryan than with the Turanian family of languages is still capable of defence... the resemblances (appeared) most frequently in the more uncultivated Dravidian dialects... the identity (was) most striking in the names of instruments, places, and acts connected with a simple life...' (G.U.Pope, *Indian Antiquary*; loc. cit. R. Swaminatha Aiyar, *Dravidian Theories*, 1922-23, repr., Delhi, Motilal Banarsidass, 1987, pp.11-12).

Methodology and limitations of the work

The methodology to test the hypotheses will be based on the design of a vocabulary super-set (in semantic terms). The governing principle of this lexicon is that phonetic and grammatical laws are subordinate to semantic laws within a language family. Cognates do not have to be concordant in phonetic and morphological forms; cognates have to be concordant in phonetic and semantic forms to suggest linguistic affinity among dialects of a language family.

To quote, **Tolka ppiyam, "ella_c collum porul. kur-ittan-ave_" (Tol. Col. Peya. 1)**, i.e. all words are semantic indicators.

The compounded forms of *sememes* of the *lingua franca* of the Sarasvati-Sindhu doab civilization have been reconstructed from the following sources:

Lexical entries of Indian languages found in the comparative, etymological lexicons: CDIAL (*A Comparative Dictionary of Indo-Aryan Languages*) and DEDR (*A Dravidian Etymological Lexicon*); etymological groups (as semantic super-sets) culled from

- (a) lists of ancient verb forms such as those found in the **dha_tupa_t.ha**, Niruktam, Whitney's lexicon and Vedic lexicon;
- (b) lists of ancient noun forms, such as materia medica found in **nighan.t.u's** and medical works, annotated with insights from botanical works, pharmacopoeia and works on pharmacognosy ;
- (c) epigraphical records of many languages of the region which mainly record economic transactions; and
- (d) language lexicons of Indian languages.

This lexicon is organized primarily on a comparative basis and secondarily on a historical basis (and not on a genealogical basis, i.e. not trying to trace the changes in phonetic forms of a sememe). Given the limitations of this organization, it has not been considered essential in this lexicon, to reformulate the old Indian phonetic form with an *.

The vocabulary is presented in groups of etyma taken from CDIAL, DEDR, Tamil and other language lexicons of Dravidian, Aryan and Munda languages. The etymological groups are put together as semantic cognates and it will be left for future research work to determine the nature of the interactions (or what linguists call, using a pecuniary term: 'borrowing') between and among the languages which constituted the proto-Indian linguistic area. The results of the research are restricted to the identification, in a comparative lexicon, of comparative *sememes* and morphemes, including many allomorphs (i.e. two or more forms of a morpheme). An attempt to conjecture or decipher the possible *proto-Indian* 'phonetic' forms will require further studies and research work. The results of these studies will help for e.g. (1) to eliminate duplicate semantic clusters included in this lexicon and (2) to re-group the clusters in a true syllabic sequence.

For 'alphabetical' indexing or 'areal' (i.e. by geographical regions) sequencing, Turner's *A Comparative Dictionary of Indo-Aryan Languages* (CDIAL), Burrow and Emeneau's *A Dravidian Etymological Lexicon* (DEDR), Pali, Sanskrit, Kannada, Tamil, Munda, Santali and other lexicons of Indian languages are unsurpassed sources. DEDR solves the problem of sequencing by using Tamil morphemes as the reference base for the entire group in Tamil syllabic order. In effect, the vocabulary of this lexicon, include many CDIAL and DEDR entries as sub-sets and constitute a semantic index to both CDIAL and DEDR which will continue to provide the basic references to areal etyma.

The primary justification for choosing a simple sequencing based on a limited number of initial vowels/consonants and consonantal combinations (with intervening vowels or nasals) is that each semantic cluster can be treated as a distinct monograph which may provide material for further study of the Indian language family in which there has apparently been an extraordinary semantic affinity between and among related languages.

One substantive problem in organizing the semantic clusters was the problem of 'alphabetical' or 'syllabic' sequencing. It has been difficult to follow a strict alphabetical ordering in this work. This is due to the author's inability to pin down the ancient 'phonetics' of a sememe or to construct a proto-Indian form. This limitation has resulted in some duplication of terms in more than one semantic cluster. The idiosyncratic sequencing is due to the limits of knowledge of the author; the result has been a number of semantic clusters included in the lexicon containing phonetic forms which may not always correspond with the etymological grouping.

Samuel Johnson refers to a lexicographer as an harmless drudge. What a pleasant and glorious drudge! An etymologist is also a drudge but may provoke, hopefully lively, linguistic disputes among the proponents of dialects of a language family, on issues such as 'true inheritance' or 'great antiquity'! The disputes (or positive creative tensions), may also draw inspiration and guidance from the past linguistic studies of great scholars who have provided valuable insights into the phonological, grammatical and lexical aspects of a proto-Indian language family.

An English semantic index has been included. The index is composed of (i) English meanings, and (ii) flora (names of botanical species in Latin terms), plants and products of plants (in English and vernacular terms which have entered the English lexicon). As in DEDR, no attempt has been made to state the equivalence of

Latin flora terms; DEDR entries in a group of etyma record the equivalence found in Hooker at the end of the numbered etymological group.

The index is primarily based on the elegantly designed index of *A Dravidian Etymological Dictionary* (DEDR). To quote from DEDR: (p.773) "This is an index of the more important meanings recorded for words in the Dravidian languages. No attempt has been made to list all the English meanings given in the entries, since such a procedure would have swollen this index beyond all reason. In fact, in any attempt to keep it within bounds, usually only one of a group of synonyms or near-synonyms has been listed: e.g. *resemble* is listed, but not *similar* and *like*... The derivational system of English words, since it does not coincide with that of Dravidian, has in general been ignored..."

Organization of the work

The dominance of economic activities in the lives of ancient Indians will be apparent from the semantic clusters compiled in this lexicon. Semantic clusters include words expressing cognate 'thoughts'.

The ancient economic court was dominated by plant products such as fragrances, incenses and exudations which were highly valued and in great demand. For example, the ancient Egyptian civilization records trans-continental expeditions to **pw'nt** (or **punt**)¹ in search of such plant products which may be designated as **Kube_ra's nava-nidhi** or nine treasures of Kube_ra, in the yaks.a tradition of great antiquity.

The inclusion of names of many plants and plant products in the lexicon, has a strong justification in terms of ancient life-styles. The etyma related to plants have been elaborated with cross-references on therapeutic effects described in works dealing with the subject of pharmacognosy and, in some instances, the references in pharmacopoeia of various countries have also been provided.

Plants and plant products (gums, gum-resins, fragrances, incenses, plant exudations, bark, in particular) had an extraordinary place in the cultural processes of ancient civilizations (particularly in the Indian linguistic area, in the ancient Egyptian civilization and in the Biblical areas), including for example, the depiction of the so-called nine treasures of **Kube_ra**, all of which may relate to plant products. (i) The existence of many **nighan.t.us** principally devoted to materia medica of the ancient medical systems and (ii) the archaeological finds of viha_ras such as the Ajanta and Ellora caves which might have been used by medicine-men and to stock plant products justify further studies on the economic importance of plant products in cultural history.

Vedic **soma** was comparable in economic importance to the plants and plant products. In an extraordinary process described eloquently in Vedic chants, **soma** was purchased, and went through a process kept secret from the seller. **Soma** was washed in water (**yad-adbhih paris.ichyase mr.jyama_no gabhastyoh- : RV. ix.65.6**), then pounded either with stone or in a mortar (RV. 1.83.6; RV. 1.28.4); it had **am.s'u** (RV. ix.67.28); it yielded **andhas, rasa, pitu, pi_yu_s.a** or **amr.ta**; it was purified through a strainer (**antah-pavitra a_hitah- : RV. ix.12.5**). It was not 'drunk' by mortals. **Soma** was the product of an activity using intense fire, and involving the participation of the entire household for days and nights. **Soma** was wealth.

The dawn of urbanization and transition from agrarian economy to an economy dominated by artisans, are vividly reconstructed from the archaeological finds of the Sarasvati-Sindhu doab civilization which may also be called the Sarasvati_ civilization. A pen picture with exquisite photographs is provided in the *Age of God-Kings*:

"About 2500 BC, a people of unknown origin started constructing a series of cities as remarkable as any the world had yet seen. Artisans set to work, trade flourished and a system of writing evolved. At its apogee, the Indus (Sarasvati-Sindhu) civilization encompassed nearly 1.3 million square kilometers; its boundaries stretched from the foothills of the Himalayas to the Arabian Sea and from the Ganges watershed to the Gulf of Bombay, just to the north of what is now Bombay. It was the largest cultural domain of its era... This people also perfected the art of casting objects in bronze, a breakthrough in technology that ranks among humankind's greatest early achievements... The pictographic script of the Indus (Sarasvati-Sindhu) people has not yet been

successfully deciphered. The Southeast Asian rice farmers seem not to have developed a system of writing... the Indus (Sarasvati-Sindhu) people... built grand cities, centers of production and trade... One of these cities... Harappa (Sarasvati-Sindhu)... around 2300 BC, Harappa (Sarasvati-Sindhu) was home to 35,000 people... Another great city took shape 550 kilometers to the south, on the lower Indus (Sarasvati-Sindhu)... Mohenjo-Daro -- 'Hill of the Dead' in Sindhi... Two gateways provided access through the wall. Within the citadel were assembly halls, administrative offices and a number of residences for various officials and functionaries. Only an enormous collective effort could have created these two great urban centers of the Indus (Sarasvati-Sindhu) culture... The huge complexes at Mohenjo-Daro and Harappa (Sarasvati-Sindhu) that are believed to be municipal granaries covered thousand upon thousand of square meters. They had raised brick floors... and strong, timbered roofs to protect against the weather. The apparent threshing areas nearby were paved in brick and included circular pits where workers pounded the kernels with wooden staves to remove the husks from the grain... The harvest was probably a state monopoly, and the granaries served, in effect, as state treasuries... They were the world's first people to grow cotton and to weave its fibre into textiles... Trading posts were established far beyond the valley's fringes. The Indus (Sarasvati-Sindhu) people founded a settlement at Sutkagen Dor, west of Baluchistan and within reach of the Persian Gulf. To the south of the valley, a large seaport took shape at Lothal on the Gulf of Cambay... From Lothal, high-prowed, double-ended sailing vessels carried the gold, gems and timber products of southern India along the coast to the Sarasvati-Sindhu doab and beyond. The richest trade route from the valley lay to the west, through the Persian Gulf to Mesopotamia. Starting about 2350 BC, traffic with the urban centers of Sumer and Akkad expanded to become a prime source of revenue... Merchants used sets of cubical stone weights that never varied in value throughout the Indus (Sarasvati-Sindhu) region. The basic unit was 16, equal to 14 grams. The larger weights were multiples of 16 -- 32,64,128, and so on up to 12,800 (11 kilograms); the smaller ones were all fractions of 16... The Indus (Sarasvati-Sindhu) merchants, like their Sumerian counterparts, developed a method of record keeping and used carved stone seals to stamp their property. Every mercantile family had its own device, and probably every important citizen did also. More than 2,000 examples have been found in the Indus (Sarasvati-Sindhu) cities, and others have turned up in Mesopotamia, left there by overseas traders... One popular motif appears to have been a unicorn sniffing at an incense burner. The unicorn is probably a bull in profile, so that one horn hides the other. But why the creature has been offered incense is a puzzlement. In a seal from Mohenjo-Daro, both the unicorn and the incense brazier are being carried aloft in some kind of procession... the Indus (Sarasvati-Sindhu) tongue is lost in antiquity and none of the signs (on seals) corresponds to any used by the Egyptians or Sumerians. The seal inscriptions are brief -- one or two lines... The Indus (Sarasvati-Sindhu) people left no surviving histories, no religious texts, no literary epics... (Harappa (Sarasvati-Sindhu)n merchants used the seals as a kind of trademark impressing them on clay tags to label their goods)... after each catastrophe (earthquake or flood), the citizens picked up their lives again. Some sections of Mohenjo-Daro were rebuilt as many as eight times. In each reconstruction, the architects re-created the previous construction virtually brick for brick... Sometime during the nineteenth century BC, however, the Indus (Sarasvati-Sindhu) cities began to slip into permanent decline... Scribes in Mesopotamia recorded rich shipments from the Sarasvati-Sindhu doab until around 1800 BC, when they suddenly ceased... The urban heritage was passed on to the east... somber notes of Harappa (Sarasvati-Sindhu)n ideology would continue to reverberate through the coming centuries." (*The Age of God-kings, 3000-1500 BCE*, Amsterdam, Time-Life Books, 1991, pp. 129-141).

Archaeology and Language

One approach suggested by Colin Renfrew is a correlation, however hypothetically, of language changes with demographic and social changes recorded by archaeology. Decipherment of the script is important to bring the civilization within the bounds of history, and to establish that the civilization should not remain categorized as 'prehistoric'. For, 'pre-historic' would mean 'prior to the use of writing.' (cf. Colin Renfrew, *Archaeology and Language: the Puzzle of Indo-European Origins*, Penguin Books, 1987, p.2). If this lexicon has established that the Indian language family had closely related members, it should be reasonable to hypothesize that the Indus (Sarasvati-Sindhu) Script was related to one or more dialects of this language, though there is no direct evidence to prove precisely which language was spoken between 2500 to 1700 BCE in the region traversed by this civilization.

"... (Archaeology) is beginning to interest itself in the ideology of early communities: their religions, the way they expressed rank, status and group identity. The question of language is important here... modern linguistics and current processual archaeology offer the opportunity for a new synthesis... (Sarasvati-Sindhu doab Civilization) was a literate civilization... some four hundred signs were found, fifty-three of them used commonly... this suggests that it must be a mixed hieroglyphic and syllabic script rather than a pure syllabic script like Minoan Linear B... not enough (signs) for a true pictographic script like that of the Egyptian hieroglyphs or the Chinese script... are the Sarasvati-Sindhu doab sealstone inscriptions in an early form of Indo-European?... there is no inherent reason why the people of the Sarasvati-Sindhu doab Civilization should not already have been speaking an Indo-European language, the ancestor of the *Rigveda*... Hypothesis A, then, would carry the history of the Indo-European languages in north India and Iran back to the early neolithic period in those areas... (Hypothesis B) outlines an alternative... which accepts the likelihood of local farming origins... (and) a process of elite dominance... by well-organized and mobile tribal groups, with a chiefdom organization... while we cannot expect to find direct evidence in the archaeological record for a specific prehistoric language or language group, we can indeed study processes or demographic and social change. It is these processes of change which we may seek, however hypothetically, to correlate with language change in those areas... it is perfectly possible that the languages used in the Sarasvati-Sindhu doab civilization as early as 3000 BCE were already Indo-European... We are talking here of simple peasant farmers, with a restricted range of domestic plants and animals and a limited range of crafts. These may generally have included weaving and pottery-making and other farming skills, but theirs were egalitarian societies... 'segmentary societies,' laying stress on the almost autonomous nature of individual village or neighborhood communities. Naturally there were links and marriage exchanges between these... three issues now remain that we should look at: language origins, language dispersals, and the relationship between archaeology and linguistic studies... " (Colin Renfrew, *op cit.*, pp. 5,7, 183-185, 190-191, 197, 205, 264. 271, 273).

One approach to study *changes* in languages is to cluster the dialects of a language together. Such a clustering is attempted in this lexicon. These clusters provide the basis for further studies to correlate the *changes* in languages with the socio-economic changes established through archaeology.

Language and Writing System

An attempt to link the Indus (Sarasvati-Sindhu) Script to the Indian etyma, is a search for Indian linguistic roots. It is, in effect, a search for words which are 'as old as time' in Bharat.

Many scripts of the current Indian languages are syllabic in structure. It is notable that Tamil, in particular, utilizes a remarkably compact alphabet (syllabary derived via grantha forms from the Bra_hmi_ script); for example, the script symbol for the syllable, **ka** connotes a phonetic spectrum of **ka**, **kha**, **ga** and **gha**. The use of a limited number of script symbols for syllables is perhaps an indication that, even if the phoneme (for a given morpheme) had a ka, kha, ga or gha, the semantic content remained unaltered. This extraordinary economy (yet, diversity) in script form is, therefore, an indication that for effective linguistic communication of a message, phonetic formants are subordinate to the semantic structure of morphemes.

Many ancient scripts were evolved on the principle of 'ideographs', i.e. depicting a word as an image (logo, on a seal, for example) using a homophone (i.e. a similar sounding word). The importance of 'images' in formulating 'meaning' (in neuronal structures) or for designing 'scripts', is paralleled by a distinct semantic structural feature of Santali language in which words are not uniquely marked for specific functions such as noun or verb but most stems of words are multifunctional. There is no grammatical gender for nouns which may be lexically marked (using for example, **herel** for male; **maejiu** for female). There are no formal marks for grammatical class, a word can perform various functions: as noun, as adjective or as verb. In Santali, every stem or root (sememe) is potentially a verb. Qualifiers can be constructed by simply adding **-n** for e.g. **kad.awa.n hor.** a man who has buffaloes. (George L. Campbell, *Compendium of the World's Languages*, Routledge, London, 1991, p. 1199).

"In Santali, any word may (in theory at least) be used as a verb simply by adding **a**, which is the verbal sign, and other signs to signify tense, mood etc. The **a** alone signifies the general or future tense in the active voice -

- used to make general statements, or statements referring to the future... The verb generally comes at the end of a sentence or phrase... (Santali language) consists of root-words and various infixes, suffixes and particles, joined together or agglutinated in such a way as to form phrases and sentences... **dalgot'kedeae...** **dal** the root word, meaning to strike or striking; **got'** an adverbial particle giving the sense of quickly or suddenly; **ked** the sign **ket'**, denoting the past tense of the active voice, modified to **ked...** **e** ... signifying an animate object -- him, or her... **a** the verbal sign, showing that the idea of striking is used verbally; **e** the short form of the 3rd personal pronoun, singular... denoting the subject -- he, or she." (R.M. Macphail, *An Introduction to Santali*, 1953, p.2).

Taking into account, this historical factor which governed the evolution of alphabets and the important part played by 'root word' in Santali (a member of the ancient Indian family of languages) the *Indian lexicon* attempts to identify 'sememes' and also provide an aid to epigraphists or scholars interested in deciphering the Indus (Sarasvati-Sindhu) script. For this purpose (and based on the assumption that the Indus (Sarasvati-Sindhu) script may be related to the Indian language family), many semantic clusters in this lexicon include, what are titled as, 'image' words, i.e. word forms which could have been represented graphically, as in the symbols and signs used in the as-yet undeciphered Indus (Sarasvati-Sindhu) script. Such 'image' clusters are sequenced close to the other substantive clusters which are related to life-activities of ancient civilizations as evidenced by archaeological finds and artifacts. The titles provided to many semantic clusters with the prefix 'image' refer to a number of images provided by the pictographs and signs of the seals and tablets containing Indus (Sarasvati-Sindhu) script. Such pictographs and signs will be clustered to aid those interested in deciphering the script. At this stage of the author's knowledge, it has not been possible to include some thoughts on 'alternative interpretations' of these 'ideographs' of the Indus (Sarasvati-Sindhu) script. A separate monograph will be presented providing an approach to breaking the deadlock of the decipherment problem. A start can be made assuming that each pictograph is a homonym (i.e. an image of a similar sounding 'substantive' word). Many 'substantives' are indeed based on the economic activities of an evolving civilization.

Semantics and Poets' search for the supreme language

To aid researchers in linguistics and neuro-scientists interested in the study of brain functions related to linguistic competence, some principal sememes of ancient speech are listed in separate annexes of this lexicon. This is consistent with the principal focus of this lexicon which is to: cluster together word forms with comparable semantic content and establish the essential semantic unity among the Indian languages. In this process of semantic clustering, attention is paid to concordant phonetic forms.

In evaluating the development of pronunciation and sense of words of the languages of the Indian linguistic area, an effort has been made to avoid duplicating the functions of lexicography. The focus is on 'meaning' of words, extensions of meaning and on phonetic transforms cognate with the basic words.

Lexicographers have attempted to define the phonetic structure of a morpheme in a language, with care and integrity, given the constraints of the phonetic symbols used for the script of the chosen language. This lexicon proceeds on the assumption that the language lexicons which are its source books, are based on painstaking social surveys and provide a commonly accepted form (i.e. through social contract) of the phonetic variants of various dialects of any one language. Since the focus is on semantics, the author has exercised a degree of freedom to coalesce the phonetic variations and as necessary, repeated some etyma in more than one semantic cluster. Speakers of every language and poets, in particular, of every language do possess enormous degrees of freedom for verbal creativity to anchor life experiences, but subject to the social contract on *sememes* or the 'meaning' of morphemes used in inter-personal verbal or written communication.

Take for instance, the rules of Sanskrit language, codified by the linguistic genius, Pa_n.ini and obeyed through literary media for over a millennium. Pa_n.ini's phonological and morphological canons are hypostatized (attributed real identities to a concept) aphorisms. Pa_n.ini was held in such awe that later linguists would not refer to what Pa_n.ini 'says' but use the verb '**pas'yati**' referring to his aphorisms [i.e. referring to what Pa_n.ini 'sees', as a r.s.i or seer]. Pa_n.ini opposes the **bha_s.a_**, defined by him in an archaic

chandah- (cf. S. Lvi, J.A., 1891, II, p. 549; Mmoires de la Socite de Linguistic de Paris, XVI, p.278-279; loc. cit. Bloch, *The Formation of the Mara_t.hi_ Language*, 1914, p.3). "... in the enumeration of Bharata (XVII, 48): **ma_gadhyavantija_pra_cya_su_ryasenyardhama_gadhi_ba_hli_ka_da_ks.in.a_tya_ca_sapta_bha_s.a_h-praki_rtita_h-**" six out of seven are geographically determinable and three out of these four (ma_gadhi, s'auraseni, maha_ra_s.t.ri) are mentioned by Vararuci. Later on Dan.d.in adds to these three La_t.i 'and similar other ones' (**Ka_vya_dars'a**, I,35)... Later on Vararuci situates the Pais'a_ci_ on the same level as the three great Pra_krts with a geographical name... the language of **braj** is used for the cycle of Kr.s.n.a, that of Bundelkhand for that of A_lha_-u_dal, that of Avadha for that of Ra_ma and generally speaking for the Epic... No region of India has imposed its language on the entire country... within each dialect there is a large quantity of words or series of words which have had a history independent of the dialects where they have been found in use. This history, which can be established with some difficulty even in the case of well-known languages as those of Europe, is altogether impossible, at least provisionally, in India... " (Bloch, *op cit.*, pp. 11-12; p.45). In making bold to attempt this 'impossible' task through semantics, one dominant structural characteristic of the Indian language family can be noted with confidence: the use of 'echo words' identified as such in this lexicon. (Pa_n.ini calls such words **a_mred.ita** or repeated : Bk. VIII. Ch. 1.2). The tendency to repeat words or with fine initial consonantal variations is a characteristic that runs across the entire family of languages, a characteristic that was also noted by Vararuci. The ancient linguists tried to delineate this 'refined' language as the 'perfect' language (whether divinely inspired **smr.ti** remembered or **s'ruti** heard); yet, the spoken word was governed by the inexorable laws of neurosciences and social contract - as evidenced by the Pra_kr.ts (original or natural forms) which did not obey these 'rules' of the grammarian though adored by the linguists. The Pra_kr.ts (including Pali) continued to diverge from the 'perfection' of Sanskrit and were socio-linguistically accepted in Sanskrit drama in the early centuries of the Christian era, though not spoken by gods or heroes in the dramas, but only by the proletariat! Women sang in Maha_ra_s.t.ri_pra_kr.t, spoke in S'auraseni pra_kr.t and people in the lower rungs of the social ladder spoke ma_gadhi_pra_kr.t. Many pra_kr.ts were written in Kharo_s.t.hi script. Buddha (c. sixth century BCE) perhaps preached in ardhama_gadhi_pra_kr.t (Pali), written in Bra_hmi_ script. Mun.d.a_ri_ and Santali (grouped as Kherwari or Austro-Asiatic) perhaps ante-date the Indo-European or the so-called Dravidian linguistic presence in India. The Indian language family also includes Gypsy (Romany; gypsy ~ Egyptian; ethonym: roma). Gypsies popularly believed to have come from Egypt, emigrated from India towards the end of the first millennium A.D. via Iran into Anatolia, South Russia, and the Balkans, to reach western Europe by the fifteenth century, Britain by the sixteenth; via Iran, Syria and the Mediterranean into north Africa and the Iberian peninsula. (George L. Campbell, *Compendium of the World's Languages*, Routledge, London, 1991, p.1164).

Ya_ska (6th-4th c. BCE), Pa_n.ini (5th c. BCE), Ka_tya_yana (3rd c. BCE), Patanjali (c. 150 BCE) have laid the foundations of Sanskrit etymology and grammar. The su_tras of Pa_n.ini analyze Sanskrit into a system of roots, stems and suffixes. Ka_tya_yana's va_rttikas explain, criticize and supplement these rules. Patanjali's bha_s.ya explains the rules of Pa_n.ini and Ka_tya_yana and is often severely critical of the latter. Kaiyat.a commends Patanjali of the three since he has observed more numbers of actual forms : (II.4.26) **munidvaya_ca_bha_s.yaka_rah-prama_n.ataram_adhikalaks.yadars'itva_t** : the author of the commentary (i.e. Patanjali) has greater authority than the other two sages because he has observed more linguistic usage. Grammatical rules were formulated, perhaps, for the benefit of 'immigrants' or as teaching aids to students of a language. In this process of delineating grammatical rules, the phonetic and morphological structures of each of the Indian languages were codified and frozen as 'rules' of the language. (cf. the example of **Tolka_ppiyam** for Tamil or **As.ta_dhya_yi** for Sanskrit). Pa_n.ini also called **Gonadri_ya/ Gonika_putra** is perhaps the oldest grammarian of the world. His **As.ta_dhya_yi** (lit. 8 chapters with 3,996 mnemonic su_tras) and later critical evaluation/defence by Patanjali (also called, **Da_ks.i_putra** in his **Maha_bha_s.ya** or Great Prose Work) countering Ka_tya_yana's criticism in the Va_rttika_s (explanatory tracts of words) are unsurpassed ancient linguistic explorations into the etyma of and rules governing the Sanskrit language. Pa_n.ini traces with stunning precision and scholarly excellence, the individual phonetic and morphological changes throughout the language which may be called a language that spanned both Vedic and Classical Sanskrit. (For a good survey of works on Pa_n.ini cf. George Cardona, **Pa_n.ini : A Survey of Research**, 1976; for an excellent reader on the Sanskrit grammarians, cf. Stall, J.F. (ed.), *A Reader on the Sanskrit Grammarians*, Cambridge, M.I.T. Press, 1972). It would be inappropriate to call Pa_n.ini's Sanskrit brahminical or Aryan; for

he notes (Ch. VI, 62,58) that there were non-Aryan brahmins as well! The contributions made by ancient Indian linguists are echoes of the oral tradition of padapa_t.has (i.e. the word texts which give every word of the sam.hita_ free from euphonic combinations and analyze compounds into their component morphemes) of the Vedic chants which are as old as civilization. There are other linguistic tracts, in particular in the so-called Dravidian family of languages and in the so-called Austro-Asiatic family of languages (exemplified in India by Mundarica and Santali languages), which preserve the echoes of the ancient speech which sustained ancient civilizations such as the Sarasvati-Sindhu doab civilization.

Ya_ska is perhaps the first etymologist of the world. His **Nirukta** treats etymology as a complement of grammar (**tad idam vidya_-stha nam vya_karan.asya ka_rtsnyam : N. i.15**) and is a principal aid to understanding Vedic texts. According to Ya_ska, grammatical rules are not universal; too much importance should not be attached to the grammatical form because, the complex formations (**vr.ttayah-**) have many exceptions; he is a bold etymologist who derives **is.t.i** (sacrifice) from □ **yaj** (to sacrifice) based on the meanings of words in the context of their use. His principal rule is direct: 'If their meanings are the same, their etymologies should be the same, if the meanings are different, the etymologies should also be different (**N. ii.7**); 'words are used to designate objects with regard to everyday affairs in the world, on account of their comprehensiveness and minuteness (**N. i.2**) [Durga, the commentator, explains 'comprehensiveness' as a psychological process (manifest and unmanifest states of consciousness) to apprehend meaning through the instrumentality of the spoken word; the process is elaborated: manifest consciousness is expressed through an effort of exhalation of breath, modification of speech-organs to produce the word; the word pervades the unmanifest consciousness of the hearer, makes it manifest and the meaning is apprehended. Durga also comments on the term 'minuteness': movements of hands and the winking of the eyes etc. are also comprehensive; they will express the meaning and in this manner there will be no need to study grammar and the Vedic texts! But these are not minute, i.e. these communication modes are not definitive (or accurate) and are not economical in the effort in production.] Ya_ska notes the four word-classes, noun, verb, preposition and particle and adds: ... S'a_kat.a_yana holds that nouns are derived from verbs. This, too, is the doctrine of the etymologists. 'Not at all,' says Gargya and some of the grammarians, 'but only those, the accent and grammatical form of which are regular and which are accompanied by an explanatory radical modification.' Those (nouns), such as cow, horse, man, elephant etc. are conventional (terms, and hence are underivable)(**Ni. 1.12**). Pa_n.ini combines particles (**avyaya**, 195 in number) and prepositions into one category, **nipa_ta** (Bk. I, Ch. IV, 56). According to Ya_ska, particles are of three types: (i) of comparison (**upama**), (ii) of adding or putting together of the senses or ideas (**karmopasam.graha** or semantic sub-clusters), (iii) of expletives which do not express any meaning (**kam, i_m, id, u** and **iva**). Ya_ska notes that the verb has 'becoming' as its fundamental notion; and that the noun has 'being' as its fundamental notion and recalls that according to Audumbara_yan.a speech is permanent in the organs only. This statement of Audumbara_yan.a is fundamental in understanding the neural bases of linguistic competence.

Tamil (a primary member of the so-called Dravidian languages) is an ancient language. This lexicon contains a number of references from Tamil works, acknowledging the antiquity of the language and its importance as a dominant member of the Indian language family. Similar references are provided from Vedic texts in many etyma groups. The rich ancient Tamil literature (which dates back to the San:gam age of c. the first millennium A.D.) includes **Tolka_ppiyam** (?c. 5th century A.D.), a grammar and socio-linguistic tract; the fifth-century work, Tiruval.l.uvar's **Tirukkural**, **s'aiva** religious works such as **Tiruva_cakam** and **Tirumantiram**; existential expositions such as **Pur-ana_n-u_ru**, **Akana_n-u_ru** (400 poems each on social and family lives); **Pattuppa_t.t.u** (ten songs) and **Et.t.uttokai** (eight anthologies) delineating love and war as facets of life. To quote Caldwell who relates a study of this language to the comparative grammatical structures of a family of the so-called Dravidian languages: "Does there not seem to be reason for regarding the Dravidian family of languages, not only as a link of connection between the Indo-European and Scythian groups, but -- in some particulars, especially in relation to the pronouns -- as the best surviving representative of a period in the history of human speech older than the Indo-European stage, older than the Scythian and older than the separation of the one from the other... The orientalist who supposed the Dravidian languages to be derived from Sanskrit were not aware of the existence of uncultivated languages of the Dravidian family, in which Sanskrit words are not at all, or but very rarely, employed... Another evidence consists in the extraordinary copiousness of the Tamil vocabulary, and the number and variety of the grammatical forms of

Shen-Tamil. The Shen-Tamil grammar is a crowded museum of obsolete forms, cast-off inflexions, and curious anomalies... It is a different question whether some of the Dravidian forms and roots may not have formed a portion of the linguistic inheritance, which appears to have descended to the earliest Dravidian from the fathers of the human race." (Caldwell's *Comparative Grammar of the Dravidian Family of Languages*, p.x, p.45, p.82). In Tolka_ppiyam, Tamil does include the so-called vat.acol (or northern words): **vat.acor- kil.avi vat.a l.er..ut tori_i er..uftot.u pun.arnta colla_kumme : Tol. Col. 395**, i.e. 'northern' words are those words which shed their scripts and are adapted; this is distinguished from 'dialectical' words (centamir.. ... ticai-c-corkil.avi) in vogue in the twelve territories of the Tamil land with regional variations and two other kinds of words: **iyar--col, tiri-col** (primitives and derivatives) used in poetry (*ceyyul*).

This lexicon establishes the possibility of tracing the etyma for both the agglutinative and inflexional types of languages. The inflexional languages such as Sanskrit and languages influenced significantly by Sanskrit show a myriad morphological variants. Unlike CDIAL which breaks out the inflexional variants under 'head words' based on assumed 'root words' with an *, this lexicon clusters the variants under semantic clusters. [Thus, for example, **vij** (move suddenly) can be clustered with **ve_ga** speed and **vi_j** or **vyaj** fan and **vizun** to sift, winnow (K.) As far as practicable, only words listed in the language lexicons are included in the semantic clusters of this lexicon, without making any attempt to derive the ancient phonetic form of the Indian sememe or a proto-Indian reconstruction of a morpheme with an *.] This lexicon, as does R.L. Turner's *A Comparative Dictionary of Indo-Aryan languages* (CDIAL), includes a number of words from the Vedic texts, attesting to the great antiquity of many semantic clusters which are also concordant with the archaeological artifacts unearthed from the Sarasvati-Sindhu doab civilization and other Indian archaeological explorations. An early attempt to trace the 'sememes' was made in works such as the **Dha_tupa_t.ha** for Sanskrit and in the brilliant work of the Vedic scholars of the nineteenth and twentieth centuries (following the tradition of Sa_yan.a in the **R.gvedabha_s.yabhu_mika_** of an earlier century) who have successfully established the semantic contents of the Vedic texts, proving Ya_ska right: "Vedic stanzas are significant, because (their) words are identical (with those of the spoken language)..." (**Nirukta 1.16**). Sa_yan.a makes a similar comment in his preface to the R.gveda: **va_kya_rtho_lo_kave_dayo_ravis'is.t.ah-** (the meaning of expressions of the Vedic Sanskrit and of the popular speech is not different) and also notes: **'abhidha_ne_rthava_dah-** there is a figurative description in such expressions... this is very frequently employed in poetical compositions. For instance, a river is described as having a pair of cakrava_ka birds for her breasts, a row of swans for her teeth, a ka_sa plant for her garment, and moss for her hair. Similarly, the Vedic texts invoking inanimate objects should be construed as implying praise...' It can be hypothesized that **soma** was a similar 'figurative description'.

Grammatical philosophy

Some leads are available to explore further the concept of 'meaning' in philosophical and linguistic terms. "*homo foneticus indicus* was no mere cross-sectioned larynx sited under an empty cranium... on the contrary, the whole man, belly, heart and head, produced voice" (J.E.B. Gray 1959, "An Analysis of Nambudiri R.gvedic Recitation and the Nature of the Vedic Accent", *Bulletin of the School of Oriental and African Studies* 22, pp. 499-530) A word points to an external object, as a semantic indicator; it also refers to the intention of the speaker. One technical term is 'artha' which may be a synonym of 'meaning'. "For the grammarian, 'artha' does not mean the external reality but whatever the word brings to the mind. Artha does not mean vastvartha but s'abda_rtha, not reality, but, the meaning of words. Individual words bring something to the mind and the sentence as a whole also brings something to the mind. But these things are included in the expression 's'abda_rtha'. Grammar studies both these things in order to evolve notions which will explain the forms of the language. Grammar is satisfied if these notions conform to what we understand from words, no matter whether they conform to reality or not. Grammar does not look at reality directly in the face. As Hela_ra_ja puts it: **s'abdaprama_n.aka_na_m. hi s'abda eva hi yatha_rtham abhidhatte tathaiva tasya_bhidha_nam upapannam; na tu vastumukhapraks.ataya_** : for to those whose authority is the word, the word designates what it corresponds to, and its designation is accordingly appropriate; but it is not for looking reality directly in the face (Hela_ra_ja on Va_kyapadi_ya III. Sam.. verse 66)... Thus while explaining the different conceptions of Time mentioned by Bhartr.hari in the Ka_lasamuddes'a such as that it is an entity which exists apart from the mind or that it is a mere construction of the human mind, Hela_ra_ja says that Bhartr.hari is not really concerned with what time is philosophically, but that he is anxious to examine and

analyze that something which is responsible for our putting the Sanskrit verb in different tenses as in **abhū_t** (was), **asti** (is) and **bhavis.yat** (will be). That something may not be able to stand close philosophical scrutiny, but if it serves the purpose of explaining the different tenses, one would have to accept it (Hela_ra_ja on Va_kyapadi_ya. III. Ka. 58). Similarly in the kriya_samuddes'a, the question is: What is action? The answer given by Bhartrhari on the basis of the Bha_s.ya passages is that it is a process, something having parts arranged in a temporal sequence. It is not directly perceptible, but it is to be inferred... These parts may be further subdivided and the smaller parts will also be actions. There will come a time when the part cannot be further sub-divided. It cannot then be called action at all. Only that can be called action which has parts arranged in a temporal sequence. After having clearly explained all this, Hela_ra_ja adds that for grammarians the real question is not whether an action has actually parts or not, but whether the verb presents it as such. The answer is that verbs do present action, however momentary, in nature, as something having parts which cannot co-exist but are arranged in a temporal sequence. And Vaiya_karan.as go by what the words present to us. (Hela_ra_ja on Va_kyapadi_ya. III. Kri. 10)." (Subramania Iyer, K.A., "The Point of View of the Vaiya_karan.as", *Journal of Oriental Research*, 18, pp.84-96, 1948).

Vya_d.i (Sarvadars'ana-sam.graha, *Bibliographica Indica*, pp. 140-4) notes that since letters by themselves cannot convey meaning, a unifying factor can be hypothesized; the factor (**sphot.a**) which is all-pervading and exists independent of letters. **sphot.a** is the idea which bursts out or flashes on the mind when a sound is uttered, the impression produced on the mind at hearing a sound: **budhairvaiya_karan.ah- pradha_na bhū_ta sphot.a ru_pavyan:gyajakasya s'abdasya dhaviniriti vyavaha_rah kr.tah** (Ka_vyapraka_s'a. 1; it is also the eternal sound recognized by the Mi_ma_m.sakas or inquirers (Skt. lex.) It connotes the relationship between sounds and meaningful words. **sphut.ati praka_s'ate'rtho'sma_d iti sphot.o va_caka iti ya_vat** (Kon.d.abhat.t.a, *Vya_karan.a-bhu_s.ana* (Bombay, 1915, p. 236); Na_ges'abhat.t.a, *Sphot.ava_da* (Adyar Library, 1946), p.5). Ma_dhava, *Sarvadars'anasam.graha* (ed. Abhyankar, p. 300), gives the double explanation that the **sphot.a** is revealed by the letters, and itself reveals the meaning: **sphut.yate vyajyate varn.air iti sphot.o varn.a bhivyan:gyah-, sphut.ati sphut.i bhavaty asma_d artha iti sphot.o' rthapratya_yakah-**. "The **sphot.a** then is simply the linguistic sign in its aspect of meaning-bearer (*bedeutungstrager*). The term **sphot.a** occurs first in the Maha_bha_s.ya, Na_ges'a ascribed the doctrine to **Sphot.a_yana**, who is quoted by Pa_n.ini (vi.1.123) on a point of morphology... the **sphot.a** (the unchanging substratum) is the word, the sound is merely an attribute of the word. How? Like a drum-beat. When a drum is struck, one drum-beat may travel twenty feet, another thirty, another forty. But the **sphot.a** is of precisely such and such a size, the increase in length is caused by the sound... Patanjali's **sphot.a** (except in so far as it is for him the meaning-bearer) is really comparable to Bhartrhari's **pra_kr.ta-dhvani**. The commentators, being acquainted with the later theory, naturally point out that the speed of utterance belongs to the **vaikr.ta-dhvani**... Bhartrhari (Va_kya-padi_ya i.44 : **dva_v upa_da_nas'abdes.u s'abdau s'abdavido viduh-eko nimittam. s'abda_na_m aparorthe prayujyate** : in meaningful language, linguists recognize two (entites which can be called) words: one is the underlying cause of words, the other is attached to the meaning... The Nya_ya philosophers for example, held that the meaning of a word was presented to the mind by the last sound, aided by the memory-impression of the preceding sounds... **Va_kyapadi_ya i. 75-8: sphot.asya bhinnaka_lasya dhvanika_la_nupa_tinah- grahan.opa_dhibhedena vr.ttibhedam. pracaks.ate; svabha_vabheda_n nityatve hrasva-di_rgha-pluta_dis.u pra_kr.tasya dhvaneh- ka_lah-s'abdasyety upacaryate; varn.asya grahan.e hetuh- pra_kr.to dhvanir is.yate vr.ttibhede nimittatvam. vaikr.tah- pratipadyate; s'abdasyordhvam abhivyakter vr.ttibhede tu vaikr.ta_h- dhvanyah-samupohante sphot.a tma_tair na bhidyate**: According to the differences in the specific cause of its comprehension (in individual instances), men attribute differences in speed of utterance (**vr.tti**) to the **sphot.a** which is not divided in time, and merely reflects the time of the sound. Similarly, in the case of the short, long, and prolate vowels-- since, on the view that these are permanent, they are intrinsically distinct-- it is the time-pattern of the primary sound which is metaphorically attributed to the word (the **sphot.a**) itself. The 'primary sound' (**pra_kr.ta-dhvani**) is defined as the cause of the perception of the letters (phonemes), the 'secondary sound' (**vaikr.ta-dhvani**, literally 'modified') is the causal factor underlying differences of diction. But it is only after the word has been revealed that the secondary sounds are presented to the mind as differences of diction; hence (*a fortiori*) the essential nature of the **sphot.a** is not disrupted by these... Ma_dhava's statement : **varn.a tirikto varn.a bhivyan:gyo' rthapratya_yako nityah- s'abdah- sphot.a iti tadvido vadanti** may be translated as 'the abiding word which is the conveyor of the meaning... is called the **sphot.a** by the grammarians'..." (Brough, John "Theories of General Linguistics in the Sanskrit Grammarians", *Transactions*

of the *Philological Society*, pp. 27-46, 1951). The *padapa_t* has break down the *sam.hita_* into its constituent words; *Ya_ska's Nirukta* studies the meaning of some of such words. Thus the phonetics of a word and its meaning are integral components of Vedic studies. *Va_rttika* defines a grammatical sentence as **eka-tin.** i.e. possessing one verb. (**Va_kyapadi_ya ii.3**). "The *Bha_t.t.a* school (of the later *Mi_ma_m.sa*) on the whole seems to preserve the more primitive attitude. According to them words have in themselves meanings, and as the words are uttered in a sentence, each word performs its task of expressing its meaning, and the sentence is the summation of these meanings. The *Pra_bha_kara* school, on the other hand, held the more sophisticated theory that the individual words did not express any meaning until they were united together into a sentence. This was upheld by an appeal to the method whereby a child learns its own mother tongue.

They pointed out that it was by hearing sentences 'fetch the cow', 'fetch the horse', and so forth, that the child came gradually to understand that the animal which he saw on each several occasion was, in fact, either a cow or a horse and that the action performed by his elders was the act of fetching. These two views were named respectively **abhihita_nvaya-va_da** and **anvita_bhidha_na-va_da**, terms which are troublesome to translate by concise English expressions. Roughly speaking, the first is the theory that the sentence is 'a series of expressed word-meanings', and the second is that the sentence is 'the expressed meaning of a series (of words)' ... At the beginning of the second book of the **Va_kyapadi_ya**, *Bhartr.hari* gives a list of definitions and quasi-definitions of a sentence. Five of these are grouped by the commentator under the traditional *Mi_ma_m.sa_* designations. Thus the view that the sentence is a unified collection (**sam.gha_ta**) and the view that it is an ordered series (**krama**) are aspects of the **abhihita_nvaya-va_da**; while the other three belong to the **anvita_bhidha_na-va_da**. These are, that the sentence is defined by a verbal expression (**a_khya_tas'abda**) or by the first word (**padam_a_dyam**) or by all the words taken separately with the feature of mutual requirement or expectancy superadded (**pr.thak sarvapadam. sa_ka_n:ks.am**). All these views, of course, imply the feature of expectancy, and the first and second are to be explained with reference to this feature, since the verb or the first word is only what it is in view of its ties with the other words in its own sentence. All these theories are adversely criticized by *Bhartr.hari*... The occurrence of homophones in a language has always provided grammarians with an interesting problem... *Bhartr.hari* gives a list of such factors, of which the most important are **va_kya**, sentence-context, and **prakaran.a**, situational context... historical and comparative studies frequently enable us to glean from texts in related languages useful hints towards this understanding (of meaning)... In the end the utmost that can be said of the meaning of a sentence according to *Bhartr.hari* is that it is grasped by an instantaneous flash of insight (**pratibha_**)(**Va_kyapadi_ya, ii.119,145**)... And when we have understood a sentence, we cannot explain to another the nature of this understanding. (**Va_kyapadi_ya, ii.146: idam. tad iti sa_nyes.am ana_khyeya_katham.cana : pratya_tmavr.ttisiddha_sa_kartra_pi na_niru_pyate** : This (**pratibha_**) cannot in any way be explained to others in terms such as 'it is this'; its existence is ratified only in the individual's experience of it, and the experiencer himself cannot describe it)." (Brough, John, "Some Indian Theories of Meaning", *Transactions of the Philological Society*, 1953, pp. 161-176).

There is no supreme language; all languages are personal and social experiences of a community.

Yet, every language is governed by an extraordinary phonetic repertoire orchestrated by 'neuronal laws' of the human brain.

The neuronal structures in which verbal creativity is embedded are the common substratum; they are language-neutral. This means, that irrespective of the language used by a speaker, or the language heard by a listener, the neurons and neuronal networks pulsate, governed by the as-yet undefined semantic laws of neurosciences. Man can create poetry; if the poem has to convey meaning to the audience, the poet has to abandon his search for the 'perfect' language and bow to the superior wisdom of the common parlance which is, in effect, the linguistic social contract for which words are but social memory-markers, or '*numeraire facile*.' The private memory-markers in the private language of a speaker's or listener's brain are the product of his life-history which can be 'emotionally' or 'neuronally' experienced.

No scientific technique is relevant, no language is adequate and no poet is competent to communicate the emotions of the 'private language' of the brain.

IE homeland

The discipline of linguistics created a myth that an early IE homeland existed.

Failed search for an IE homeland

The development of linguistics as a discipline has been significantly advanced by the study of Indo-European (IE) languages. Unfortunately, this advance has not resulted in establishing the Indo-European homeland. The identification of the homeland for Indo-European languages may prove to be an impossible search because there are no texts available for proto-IE and also because there have been enormous interchanges of vocables among ancient languages as will be established, in this work, from a study of proto-Indic languages.

Indo-European languages have a common vocabulary for semantic categories: parts of the body, family relationships and numerals. This very strong semantic evidence led to the postulation of many hypothesis, one of which was a hypothesis that the original homeland of the people speaking the Indo-European languages should have been in Central Asia with migrations westwards towards Europe and southwards towards Iran and India that is Bharat. There have been many speculations concerning the Indo-European language homeland. D'iakonov supports a Balkan homeland. Dolgopolsky proposes a Near East homeland, in central Anatolia. Gamkrelidze and Ivanov place the homeland in Armenia based on Semitic and Kartvelian (South Caucasian) loanwords. Shevoroshkin questions the significance of loan words between north and south Caucasian and shifts the homeland to east Asia Minor. Nichols situates the homeland in Bactria-Sogdiana, to explain the spread of Proto-Indo-European across the steppe. (D'iakonov, I.M., 1990, Language contacts in the Caucasus and the Near East, in: T.L. Markey and J. Greppin, ed., *When Worlds Collide*, Ann Arbor, Karoma, pp. 53-65; Dolgopolsky, Aron, 1990-93, More about the Indo-European Homeland problem, *Mediterranean Language Review*, 6-7, pp. 230-248; Gamkrelidze, Thomas V., and Vjaceslav V. Ivanov, 1995, *The Indo-European and the Indo-Europeans*, Trends in Linguistics Studies and Monographs 80, Berlin, Mouton and Gruyter; Shevoroskin, Vitaly, 1987, Indo-European Homeland and Migrations, *Folia Linguistica Historica*, 7, pp. 227-250; Nichols, Johanna, 1997, Roger Blench and Matthew Spriggs, ed., The epicenter of the Indo-European linguistic spread, in: *Archaeology and Language 1*, London, Routledge, pp. 122-48).

The problem with the determination of a homeland based on loans, assuming geographic proximity is that some loans and re-borrowings may travel far thanks to trade.

Johanna Nichols situates a homeland "well to the east of the Caspian Sea...somewhere in the vicinity of ancient Bactria-Sogdiana." In her map, Proto-Indo-European expands out of the region east of Amu Darya river; first wave covers the region surrounding the Aral Sea and the Iranian plateau. Iranian moves behind this spread. After reaching Caspian, one wave expands to the north, over the Central Asian steppe and westwards to the Black Sea; the second wave circles the southern perimeter and enters Anatolia. Satem spreads partially along the two trajectories. Protoforms of Greek, Illyrian, Anatolian, Armenian, Italic, Celtic and Germanic occur by the 3rd or 2nd millennium BCE, spread from northwest Mesopotamia to south Balkans. (Nichols, Johanna, 1997, Roger Blench and Matthew Spriggs, ed., The epicenter of the Indo-European linguistic spread, in: *Archaeology and Language 1*, London, Routledge, p.134).

Using Nichols' model, it may be suggested that the Indo-Iranian loans into Finno-Ugric occurred when the Iranian spread following the first wave out of Bactria-Sogdiana.

If, as Colin Renfrew suggests, the Indo-European speakers had brought agriculture from Anatolia to Baluchistan as early as in 6000 BCE (Renfrew, Colin, 1987, *Archaeology and Language: The puzzle of Indo-European origins*, London: 178-210 (chapter 8: The early Indo-Iranian languages and their origins), there is no reason to assume a further influx of I-E speakers into Bharat in the second millennium BCE. Such movements of I-E speakers could also have occurred *out of Bharat* and Baluchistan in the second millennium BCE.

For all these models including a model, 'Out of Bharat' (as suggested by SS Misra), archaeological evidence is lacking. "The archaeological lack of evidence for inward migration often cited by proponents of 'Out-of-India' hypothesis would have to be balanced with the lack of archaeological evidence for the presumably much more massive and prolonged outward migration required under this hypothesis." (Hock, Hans Henrich, 1999, *Out of India? The linguistic evidence*, in: J. Bronkhorst and M. Deshpande, ed., *Aryan and Non-Aryan in South Asia*, Harvard Oriental Series Opera Minora 3, Cambridge, Department of Sanskrit and Indian Studies, Harvard University, pp. 1-18.)

Hock (1996 U Mich conf.) criticized the earlier views of Prof. Misra: "...Indo-Iranian palatalization can only be explained if we reconstruct an earlier stage with contrasting e- and a- or a- vowels.

As noted earlier, it is this evidence which provides crucial support for reconstructing Proto-Indo-European with a triple contrast e:a:o and for assuming that the corresponding single a vocalism of Indo-Iranian results from the merger...' (p. 11 in: Bronkhorst and Deshpande, eds., *Aryan and Non-Aryan in South Asia*). [An excursus on this linguistic polemic is provided in the end-note².]

There is no archaeological evidence to posit an incoming of 'Aryans' from somewhere in Europe or Central Asia into Bharat. On the contrary, the word, 'aryan' is used only as connoting 'nobility' in the R.gveda, the earliest human document, and there is evidence to point to an outgoing of people from Bharat after the desiccation of River Sarasvati. This migration out of Bharat is exemplified by the claim of some Croats that they are Sarasvats! The linguistic change in name is explained: Sarasvati > Haraqvaiti > Hravat > Kravat > Croat. The migrations of gypsies out of Bharat in at least two waves has also been attested during the historical periods.

Indo-European Problem

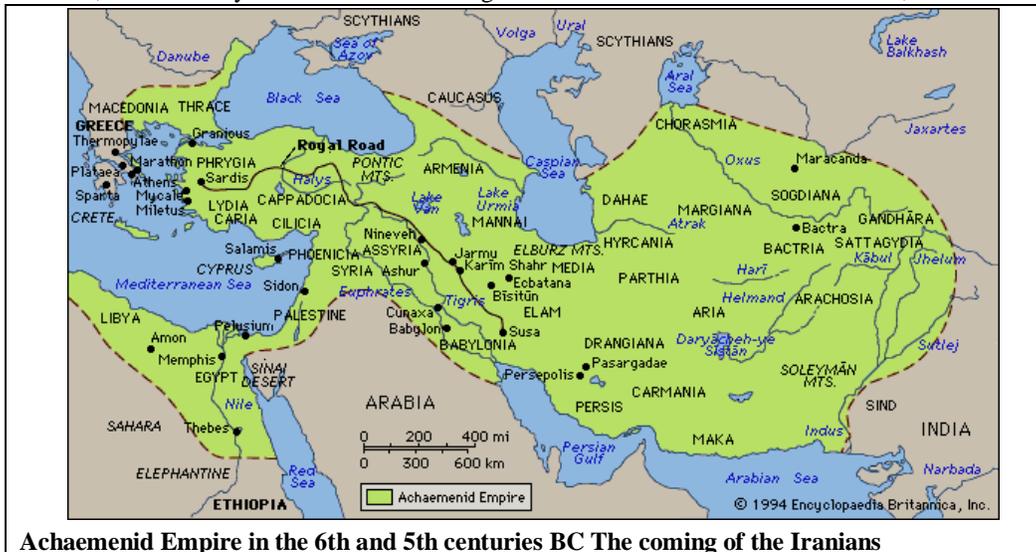
Study of the origins and dispersals of and continuity and discontinuity among peoples speaking Proto-Indo-European language(s) or dialects, has engaged a number of scholars over a hundred and fifty years, since 1850. Two major methods used in the study are drawn from the two disciplines of archaeology and language.

Archaeological method and linguistic method have been based on a number of theoretical assumptions which result in differences in interpretations of data.

The Indo-European language problem is simply one of explaining borrowings from Proto-Bharatiya languages positing a series of movements out of Bharat, as the brahmins of the civilization started their search for minerals and metals and for creating new alloys to progress the inventions of the Bronze Age. This search led them far and wide into Mesopotamia, into Central Asia and into Europe.

"Though isolated groups of speakers of Indo-European languages had appeared and disappeared in western Iran in the 2nd millennium BC, it was during the Iron Age that the Indo-European Iranians rose to be the dominant force on the plateau. By the mid-9th century BC, two major groups of Iranians appear in cuneiform sources: the Medes and the Persians. Of the two, the Medes were the more widespread and, from an Assyrian point of view, the more important group. When Assyrian armies raided as far east as modern Hamadan, they found only Medes. In the more western Zagros, they encountered Medes mixed with indigenous, non-Iranian peoples. Early in the 1st millennium, Iranian Medes already controlled almost all of the eastern Zagros and were infiltrating, if not actually pushing steadily, into the western Zagros, in some areas right up to the edge of the plateau and to the borders of lowland Mesopotamia. Persians (Parsua, Parsuash, Parsumash) also appear in roughly the same areas, though their exact location remains controversial.

At times they seem to have settled in the north near Lake Urmia, at times in the central western Zagros near Kermanshah, later certainly in the southwestern Zagros somewhere near the borders of Elam, and



eventually, of course, in the province of Fars. It has been argued that these various locations represent a nomadic tribe on the move; more likely they represent more than one group of Persians. What is reasonably clear from the cuneiform sources is that these Medes and Persians (and no doubt other Iranian peoples not identified by name) were moving into western Iran from the east. They probably followed routes along the southern face of the Elburz Mountains and, as they entered the Zagros, spread out to the northwest and southeast following the natural topography of the mountains. Where they could, as, for example, along the major pass across the mountains from Hamadan to Kermanshah, they infiltrated farther west. In doing so, they met resistance from the local settled populations, who often appealed to Urartu, Assyria, and Elam for assistance in holding back the newcomers. Such appeals were, of course, most welcome to the great powers, who were willing to take advantage of the situation both to advance their interests at each other's expense and to control the Iranian threat to themselves. It has been suggested that the introduction of gray and gray-black pottery into western Iran from the northeast, which signals the start of the Iron Age, is the archaeological manifestation of this pattern of a gradual movement of Iranians from east to west. The case is by no means proved but is a reasonable reading of the combined evidence. If it is so, then the earliest Iranians in the Zagros can be dated to Iron Age I times, about 1300 BC."

<http://www.britanica.com/bcom/eb/article/1/0,5716,109311+10+106325,00.html>

The earliest evidence for an Indic language is found not in India but in the Tigris-Euphrates doab, ca. 1600 BCE. (Of course, the decoding of the script contained in epigraphs of the civilization will push the evidence of written Indic words to ca. 3500 BCE). Neighbouring the Tigris-Euphrates doab was the empire of Mitanni, extending from the shores of the Mediterranean to the Zagros mountains, in conflict with the Hittites in the west and with the Egyptians in the southwest for the control of the Euphrates river. The language of Mitanni was Hurrian; there is, however, a clear evidence of the use of Indic cultural vocabulary in the Mitanni documents.

his'uwa festival of the Hurrians (similar to the vis-uwa in ancient India to celebrate the solstice?)

"We are told that the chief scribes of UR.MAH.LU, already mentioned as a member of one of these (scribal) families, received orders from queen Puduhepa to search for tablets of Kizzuwatna and produced copies of the ritual for the *his'uwa* festival as a result...There is a great number of Hurrian gods mentioned in Hittite texts, and many of these are descriptions of cult festivals. Since most texts are fragmentary and, therefore, cannot be dated exactly, we only pick a few significant examples. The texts for the *his'uwa* festival have just been mentioned. Most revealing is a prayer of king Muwatalli. Already in the invocation of the main gods at the

beginning of the text, Hebat occurs. The king then asks the bull S'eriš to intercede for him, and calls him 'Bull of the Weathergod of Hatti', which means that this Hurrian bull had entered the circle of the gods of the capital." (Güterbock, H.G., *The Hurrian Element in the Hittite Empire*, in: Hoffner, Jr., Harry A. (ed.), *Perspectives on Hittite Civilization: selected writings of Hans Gustav Güterbock*, Chicago, Oriental Institute of the University of Chicago, 1997)

ila_ni Mi-it-ra as'-s'i-il ila_ni U-ru wa.na-as's'i-el (in another text A.ru-na-as's'i-il) in.dar (other text: In-da.ra) ila_ni na-s'a-at-ti-ya-an-na (cf. Winckler, *Mitteilungen der Deutschen Orient-Gesellschaft* No. 35, 1907, p. 51, s. *Boghazkoi-Studien VIII*, Leipzig 1923, pp. 32 f., 54 f.)

All the four treaty gods: *Mitra*, *Varun.a*, *Indra* and *Na_saty.a*, are mentioned in one hymn of the Rigveda (RV. 10.125.1) and are individually referred to in many other r.ca-s.

P. Thieme demonstrated that the gods of the Mitanni treaties are specifically Vedic divinities, and that they cannot be Proto-Aryan. Macdonnell is more emphatic: "It is a fact, however, that this particular grouping of the gods Varun.a and Mitra, Indra and Na_satyau, with these forms of their names, can be traced *only in the Veda*. For this reason I agree with Jacobi, Konow and Hillebrandt in considering these gods to be *Indian, Vedic* deities and that there is no possible justification for any other view. We shall have to assume that, just as there were Aryan immigrations into India from the west, there must have been isolated migrations back to the west." (Macdonnell, *opcit.*, 1927, p. 805).

References to Varun.a and Mitra in a treaty can be related to interpretations of Varun.a and Mitra as personifications of True-Speech and of Contract. Using Avestic evidence, Meillet (J As., juillet-août 1907, 143 ff.) established the original nature of divinity Mitra/Mithra as the personified Contract/Treaty. Vedic *mitradruh* means 'belying the treaty (the contractual word). Mitra as the divinity of the contract is also noted in a Middle Iranian source, the Sogdian version of the Vessantara Ja_taka...RV.IX.90.5 is read thus:

matsi soma varun.am matsi mitram matsi ndram

Oh Soma, exhilarate (Divinity) True-Speech (Varun.a), exhilarate (Divinity) Contract (Mitra), exhilarate Indra...(and thereby make them fit to exercise their functions). (Paul Thieme, *Remarks on the Avestan Hymn to Mithra*, in: *BSOAS*, Vol. XXIII, Part 2, 1960, pp. 265-274).

Mitanni treaty archaeologically dated to sixteenth century BCE provides evidence for Indo-Aryan language. The terms used could be Vedic forms more ancient than the 2nd millennium BCE. Chronology of *Avesta* is based on the same Indo-Aryan migrations which are sought to explain Rigveda and other ancient Vedic texts. Gonda notes: "besides the uncertain date of the *Avesta*, the cases of cultural, stylistic and lexicographical parallelism between texts of this description do not necessarily point to simultaneity." (Gonda, Jan, 1975, *Vedic Literature*, Vol. 1 of Jan Gonda, ed., *A History of Indian Literature*, Weisbaden, Otto Harrassowitz, p. 21).

Wheel, ratha

Anthony notes that the words for 'wheel', 'axle', 'thill', 'convey in a vehicle' have been reconstructed in PIE and matching with the knowledge of wheeled technology known in Europe and Near East (ca. 3300 to 3100 BCE), PIE dispersal might have occurred no earlier than ca. 3300 BCE. (Anthony, David W., 1995, *Birth of the chariot*, *Archaeology* 48, no. 2, pp. 36-41.) This argument is questionable, as D'iakonov notes that "some processes in which rotating was required were known to mankind since Palaeolithic times, and we do not necessarily have to associate them with the wheel; and it has yet to be clarified if the terms for 'wheel, chariot' were not used in an earlier period for 'potter's wheel'". (D'iakonov, I.M., 1985, *On the original home of the speakers of Indo-European*, *Journal of Indo-European Studies*, 13, nos. 1-2, p.113).

It has not been possible to reconstruct words for items such as copper, horse and wheeled vehicles in Anatolian languages, thus positing that the words do not belong to Proto-Indo-European, but belong to a post-

Hittite Indo-European. There is also a more intractable problem of determining the rate of change in languages. “What has always filled me with wonder is the assurance with which many historical linguists assign a date to their reconstructed proto-language... We are told that proto-Indo-European was spoken about 6,000 years ago. What is known with a fair degree of certainty is the time between proto-Indo-Aryan and the modern Indo-Aryan languages – something in the order of 3,000 years. But how can anyone tell that the development from proto-Indo-European to proto-Indo-Aryan took another 3,000 years?... Languages are known to change at different rates. There is no way of knowing how long it took to go from the presumed homogeneity of proto-Indo-European to the linguistic diversity of proto-Indo-Iranian, proto-Celtic, proto-Germanic, etc. The changes could have been rapid or slow. We simply don’t know... Why couldn’t proto-Indo-European have been spoken about 10,500 years ago?... The received opinion of a date of around 6000 BP for proto-Indo-European... is an ingrained one. I have found this a difficult matter to get specialists to even discuss. Yet it does seem to be a house of cards.” (Dixon, R.M.W., 1997, *The Rise and Fall of Languages*, Cambridge, Cambridge University Press, pp. 47-49).

Iron

ayas metal, iron (RV.); **ayo_**, **aya** iron (Pali); aya (Pkt.); ya (Si.)(CDIAL 590). yakad.a iron (Si.)(CDIAL 591). yakul.a, yavul.a sledge-hammer (Si.); ayo_ku_t.a, ayak_u_t.a (Pkt.)(CDIAL 592). **ayas'cu_rn.a** powder prepared from iron as a vermifuge (Sus'r.); yahun.u iron filings (Si.)(CDIAL 489).

In Sarasvati-Sindhu valley archaeological sites, iron objects have been found from 2600 BCE (Possehl, G.L., and Gullapalli, P., 1999, The early iron age in South Asia, in: V. Pigott, ed., *The Archaeometallurgy of the Asian Old World*, Philadelphia, The University Museum Monograph 89, MASCA Research Papers on Science and Archaeology, Volume 16, University of Pennsylvania, pp. 159-161). Iron ore has been attested in eight sites together with some items of everyday use, made of iron. It is unclear if the iron items were smelted: “None has been analyzed to determine their technical properties and we do not know which of them is meteoric and which (if any) were smelted.” (Possehl, G.L., and Gullapalli, P., 1999, opcit.) Five iron items (dated ca. 2600 to 2100 BCE), including a copper/bronze bell with an iron clapper, two iron ‘buttons’ on a copper/bronze rod, an iron button on a copper/bronze mirror, and two lumps of ‘carbonates of iron’ were found in Mundigak. At Said Qala Tepe, ‘ferrous lumps’ were found (dated to ca. 2700 to 2300 BCE); at Ahar two iron arrow heads were found (dated to ca. 1275 BCE); at Chanhudaro an ‘iron artifact’ is reported; at Mohenjodaro, lollingite, an iron bearing mineral which may have been used in copper smelting has been found; at Lothal was found a fragmentary piece of metal (dated to ca. 2500 to 1800 BCE); in Swat valley at Katelai Graveyard, a piece of iron was found (dated to ca. 1500-1800). (Possehl, G.L., and Gullapalli, P., 1999, opcit., p. 159). Smelted iron occurs in a number of places, including the Deccan between the thirteenth to tenth century BCE. (Chakrabarti, D.K., 1997, *Colonial Indology: The sociopolitics of the ancient Indian past*, New Delhi, Munshiram Manoharlal). *Atharvaveda* (11,3,7) refers to blood as *lohita*, ‘red copper,’ and to a swarthy (black) metal as *s’ya_ma* comparing it to *ma_msa*, ‘flesh’. This metaphor of blood (red) and flesh (black) is an apparent distinction made between copper (*lohita*) and blackened copper (*s’ya_ma*). *S’ya_ma* or *ka_rs.n.a_yasa*, *kr.s.n.a_yasa* in ancient texts (AV 11,3,7; 9,5,4; S’Br.: *kr.s.n.a_ayas*, ‘black metal’) could be a reference to copper which is heated and cooled to obtain hardened, blackened copper. Copper is similarly blackened due to oxidation with sulfides. (Hughes, R. and Rowe, M., 1982, *The colouring, bronzing and patination of metals*, Oxford, Arts Council, p. 92, p. 187). Some scholars also argue that the word for iron exists in the Rigveda. (Thieme, P., 1958, Review of ‘Dictionnaire etymologique du proto-indo-europeen’, by Albert Carnoy, *Language*, 34, pp. 510-515; Mehendale, M.A., 1978-79, Prof. Thieme’s etymology of Skt. *asi* and its bearing on the Iron-Age in India, *Puratattva*, 10, pp. 79-80) refer to the term *asi*, ‘knife’ (Latin *ensis*, ‘iron sword’; Greek *asis*, ‘mud’ < **n.si* ‘black’). Thus **asi* in Proto-Indo-Aryan might have connoted ‘black’. Based on such linguistic analysis, the use of the word, *ayas* in the Rigveda may be interpreted as a reference to metal, in general. A remarkable concordance is found in the word for iron in different dialects of Baluchi; the word is *a_sin/a_hin/a_in*. (Elfenbein, J.H., 1966, *The Baluchi Language: A dialectology with texts*, London, Royal Asiatic Society of Great Britain and Ireland, p. 9, p. 19). It would be erroneous to assume that the term, *kr.s.n.a_ayas* refers to smelted iron. It may simply mean black metal. Dolgopolsky notes that **ayes* originally referred to metal in Proto-Indo-European times, and that the word was transferred to bronze when the Indo-

Europeans started using bronze widely. (Dolgopolsky, Aron, 1990-93, More about the Indo-European Homeland problem, *Mediterranean Language Review*, 6-7, pp. 230-248).

Meaning of *pur* in Rigveda

The word *pur* occurs about 30 times in the Rigveda, excluding compounds such as *pu_rbhid* and *puramdara*. In *Dha_tupa_t.ha*, there is a root *pr_* explained as *pa_lanapu_ran.ayoh*, ‘protecting and filling’. Greek polis, Lithuanian pilis meaning ‘town, fort’ are considered cognate with this word. In RV 8,1,28 the phrase, *caris.n.u pur* is interpreted as ‘mobile’; K. Geldner equates it with wandelnde Burg ‘mobile/mutable town/fort’ or a die zauberburg ‘the magical Burg’. (Geldner, K.F., 1951-7, *Der Rig-Veda*, vols 33-36, HOS, Cambridge, Massachusetts.) Similarly Agastya’s prayer (RV 1,166,8) for *s’atabhujibhiih pu_rbhiih* is interpreted as ‘with hundred-fold *purs*’, a metaphorical reference to a structure with hundred walls or folds or encirclements. RV 6,48,8: *s’atam pu_rbhiih*, ‘(protected with) a hundred *purs*’; RV 2,4,6: Indra crushes 100 *purs* of s’ambara; and RV 4,27,1: *a_yasi pur*, ‘pur of metal (to raks., guard, the celestial Eagle)’; here, the *pur* are in the womb, *garbhe*. The metaphor is clearly the imprisonment of the Eagle in metal *pur*. The term, *a_yasi pur* is translated by Geldner as ‘hundert ehernen Burgen (100 bronze Burgen)’, connected with demons (*da_monen*). In RV 1,189,2 Agni is implored to become *pur*; the word is interpreted as ‘wide, broad and extensive’. There is also a reference to *s’a_radi_pur* (autumnal forts of *da_sa* with *mr.dhrava_c*; 7 such forts were broken by Indra (RV 1,174,2; RV 6,20,10). Rau’s work refers to the ‘siege of forts’ in post-rigvedic texts involving the use of fire (RV 7,5,3) to rend down (*darayan*), the *pur*. (Rau, W., 1976, *The meaning of pur in Vedic literature*, Munchen, W. Finck.) Rau noted that *Da_sa* had circular forts (called *pur*) with concentric walls; these forts were not regularly inhabited cities but only functioned as temporary shelters.

“The evidence to be gleaned from the foregoing Vedic passages... does not fit the cities of the Indus civilization. It rather suggests the existence of numerous, frequently concentric, mud or stone ramparts of round or oval ground-plan, -- many times hastily erected -- and reinforced by wooden defences, enclosing thatched timber sheds to serve at best as temporary homes but more often to shelter men and their cattle in times of war, water supply and provisions being, therefore, of vital importance. We are not surprised, but would actually expect, to find no traces of such structures remaining in our days. -- Towns, -- not cities --, are mentioned first at the very end of the Vedic period. 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. No statement in Vedic literature prompts us to assume ‘an unidentified but formidable civilization... [which] presented an extensive fortified front to the invaders.’” (Rau 1976: 52).

Rau’s account simply demonstrates that Vedic accounts of *pur* (as fort) pre-date Sarasvati civilization and that the description of towns and forts described as ‘temporary shelters’ DO NOT match those of BMAC! Rau may have erred in interpreting *s’a_rada* in RV 6.20.10 as a reference to hastily erected forts; the term simply may refer to the forts constructed in the autumn. Purukutsa (father of Trasadasyu) broke seven autumnal forts of the enemy. (RV 1.63.7; 1.174.2; 6.20.10). Suda_sa (descendant of Divoda_sa) fought *Da_sa* S’ambara who possessed ninety-nine forts: **puru_n.i yas’ cyautna_ s’ambarasya vi navatim nava ca dehyo** han [RV 6.47.2: ‘(he) who (has done) many shattering deeds, who has destroyed S’ambara’s ninety-nine mud ramparts.’] Such mad ramparts are found on Sarasvati Civilization sites and not in BMAC settlements!

Asko Parpola links this textual explanation with the citadel of Dashly-3 in North Afghanistan and seeks it as a parallel to the tripura of Asura (S’Br. 6,3,3,24-25) (Parpola, Asko, 1985, *The Sky-Garment: A study of the Harappan religion and its relation to the Mesopotamian and later-Indian religions*, Helsinki, *Studia Orientalia* 57, 75f. and fig. 22; Parpola, Asko, 1988, *The coming of the Aryans to Iran and India and the cultural identity of the Da_sas*, *Studia Orientalia* 64: 195-302 and figs. 11-12.) Parpola also notes that the citadels of Bactria and Margiana have yielded large numbers of animal bones, and in Togolok-21 (belonging to the later phase, circa 1750 BCE), vessels with residues of Ephedra (i.e. *Sauma) have been found. (Sarianidi, Viktor, 1990, *Drevnosti strany Margush*, Askhabad, 102 ff. and 203 ff. Botanical identity of *sauma in Falk, Harry, 1987, Soma I and II, *Bulletin of the School of Oriental and African Studies*, 52 (1): 77-90 and Nyberg, Harri, in press, *The problem of the Aryans and the Soma: Botanical aspects*. In: George Erdosy (ed.), *Ethnicity in ancient South Asia*.)

According to *Aitareya Bra_hman.a* (1,23), Asuras made the earth a copper/bronze (*ayasmayi_*) *pur*, made the antariks.a a silver (*rajata_*) *pur* and made the sky a golden (*harin.i_*) *pur*. *Purs* are possessed by Cumuri, Dhuni, Pipru, S'ambara, S'us.n.a, Vala, Namuci and Van:gr.da (RV 6,18,5; 1,53,7-8; 6,16,39; 7,5,3; 10,46,5). *Taittiri_Ya Sam.hita_* (6,2,3) also refers to these three *purs* of copper, silver and gold possessed by asuras and which were rent by Rudra with an arrow of Agni, Soma and Vis.n.u. *Aitareya Bra_hman.a* (2,11) notes that *devas* placed three *purs agnimayi_*, 'made of Agni' around the *yu_pa* to protect the *yajñ~a*. Rigveda (RV 4,30,20) refers to *as'manmayi_ pur* (i.e. *pur* of stone), hundred of which were overthrown by Indra to benefit Divoda_sa. In the context of pouring of Soma, RV (10,101.8) prays to Vis'vedeva_ to 'make (kr.n.udhvam) inviolable metal *purs*'. Sarasvati the river is called a metal *pur* as a secure defence (*dharun.a*) (RV 8,95,1). In RV 8,100,8, *suparn.a*, the eagle, pierced the metal *pur* with the speed of mind and flew away to heaven to fetch soma for Indra who wields the *vajra*.

RV 2,35 refers to *a_ma_su pu_rs.u parah* in the context of protecting the *apa_m napa_t*, the offspring of waters. This could be a reference to the protection with divine powers (*pu_rs.u*) or protection of *apa_m napa_t*, by creating encirclements (*pur*) of raw earth.

Hock considers that there is insufficient evidence to posit a Dravidian origin of some special features in Vedic and Indo-Aryan. On the contrary, he notes that there is clear evidence for early contact with Munda.

In the course of cracking the code of the writing system of Sarasvati civilization, it will be demonstrated that there is substantial evidence to posit a substratum *mleccha* which has enriched Dravidian, Indo-Aryan and Munda dialects right from the 3rd millennium BCE.

Language and Archaeology

Panchajanya: language of the five peoples of Bharat



Krishna blowing the Panchajanya s'ankha, Kurukshetra war

The sound of panchajanya s'ankha is symbolic of the sounds of the language spoken by the five peoples of Bharat. This language can be unraveled using the epigraphs of the Bharatiya civilization.

Bhima killed 'As'vattha_ma', the elephant. Dron.a was struck with grief. Drona asked Yudhisthira if that was true. Yudhisthira said, Ashvatthama is killed; "elephant, not the man" he added in a low voice and the last phrase was not heard, was lost in the loud *om-ka_ra* (sound of *om*) generated by the blowing of the conch of Krishna, Panchajanya.

Panchajanya lit. means 'of the five people', i.e. of all the five peoples, all the Bha_ratiya-s who lived in a civilization area of 1.25 million sq. kms. covering the regions of present-day Afghanistan, Pakistan and north-west Bharat.

This shows the importance of s'ankha industry in the Sarasvati Civilization. This also shows that the s'ankha was an industry in which all the peoples of Bharat were engaged. The five people are referred to as Bha_ratam Janam by Vis'vamitra Gathina in the Rigveda. The continuity of the culture from the Sarasvati (Bharatiya) Civilization into the historical periods of Bharat has been attested by archaeological discoveries.

Students of Archaeology and Language

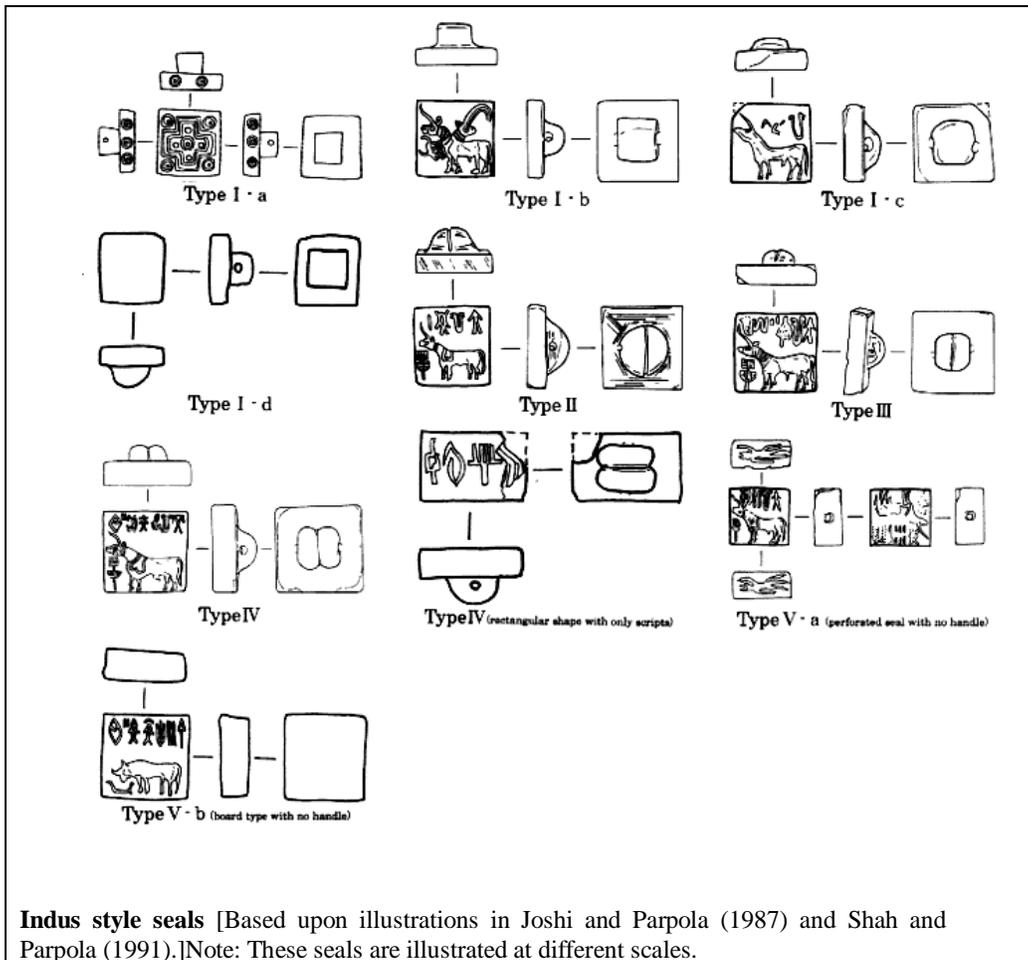
It is apposite to echo the views of Schrader who attempted a study of languages in the context of archaeological finds, to serve as an introduction to this analysis on the language of Sarasvati Sindhu Valley Civilization:

"As the archaeologist armed with pick and shovel, descends into the depths of the earth, in order to trace the footsteps of the past in bone and stone-remains, so the student of language-- washed on the shore of history from ages immeasurably remote-- to reconstruct the picture of the primeval age... (Evolving a new method called the 'Comparative Antiquities')... It is on this triple basis that the present work is founded, being designed as a comprehensive account of what we know at present about the pre-historic period..." Schrader, O., *Pre-historic Antiquities of the Aryan Peoples*, 1890, Translation by Jevons, F.B., from German Sprachvergleichung und Urgeschichte, 1890 (From the Author's Preface to the English Translation, p. iii-iv).

Archaeology of Sarasvati Civilization has unearthed many objects. Many of these objects contain glyphs which provide a glimpse into the evolution of glyphs which last into the historical periods of Bharat.

No evidence to establish genetic links between Aryan and Indo-European languages

Jim Shaffer and Diane Lichtenstein (1999), emphasise that there is absolutely no archeological indication of an Aryan immigration into northwestern India during or after the decline of the Harappan urban society. This view is reiterated by Indian archaeologists (e.g. Rao 1992, Lal 1998). Arguments are stretched, by some indologists, to explain the absence of archaeological evidence for immigrations into northwestern Bharat: "We have found that the nature of material residues and the units of analysis in archaeology do not match or fit the phenomenon we wish to investigate, viz. Aryan migrations. The problem is exacerbated by the strong possibility that simultaneous with migrations out of Eurasia there were expansions out of established centres by metallurgists/prospectors. Last, when we investigate pastoral land use in the Eurasian steppe, we can make informed inferences about the nature of Aryan emigration thence, which is a kind of movement very unlikely to have had artefactual correlates." (Shireen Ratnagar, 1999:234)



<http://bosei.cc.u-tokai.ac.jp/~indus/english/thesis01e-fg01.html>

Considering that the epigraphs of Sarasvati Civilization are dated between 3300 BCE (the early potsherd with writing found at Harappa) to 1400 BCE (the 'jar' seal found at Daimabad), the remarkable stability of the writing system in a vast area is concordant with the remarkable stability of the dialects which can be traced in a continuum from the substratum languages evidenced in lexemes of Bharatiya languages such as Nahali, Gujarati, Kannada, Telugu. Masao Noguchi of Tokai University, Japan has provided a typological analysis of the handles of square seals mostly from Harappa and Mohenjodaro to unravel a chronological sequence. He

echoes the views of Bisht who notes that Type Ib seals with no 'signs' but only 'mythological scene, an animal, or a structure motif' have been found in layers pre-dating the Sarasvati Civilization in the excavations at Dholavira. He also notes a westward spread of the cultural styles evidenced by the seals and adds that "some Central Asian cultural elements spread westward from Baluchistan, and one of these elements appeared in the "Central Asian style" seal (Gotoh 1999) in the western area of the Indus plain during the Mehrgarh VII period." <http://bosei.cc.u-tokai.ac.jp/~indus/english/thesis01e.html> (March, 2003).

The epigraphs point to a westward movement of Bharatiya into BMAC region apart from trade contacts across the Persian Gulf with the Mesopotamian region.

What guidance can linguistics provide in resolving the language(s) of the civilization, circa 5500 years Before Present? What linguistic studies should be undertaken in relation to the history of the alluvial plain, piedmont and maritime zones close to the archaeological sites of the civilization?

The terms used by linguists in categorizing chronology of language evolution and language changes in the region, are:

- Proto-Indo-Aryan (Common ancestor of all Indo-Aryan languages including Vedic, Sanskrit and all the Prakrits)
- Pre-Vedic Indic (Any stage in the development of Indo-Aryan more ancient than Vedic)
- Pre-Indo-Aryan substrate (Any ancient non-Indo-Aryan language of India replaced or absorbed by Indo-Aryan).

When the linguists of Bharat refer to 'Prakrits', they are, indeed, referring to Proto-Indo-Aryan which was later refined and organized with grammatical rules (exemplified by Paṇini's grammar, *As.t.a_dhya_yi*) into Samskr.tam.

To state that people arriving (if at all) from Bactria-Margiana Archaeological Complex – BMAC -- (say, proto-Indo-Iranian speakers) influenced the languages of the region, will be chronologically incongruous, because we are searching for a language or language(s) of much earlier periods starting from the 4th millennium BCE.

Proto-Indo-European (PIE) is accessible indirectly via its (very numerous and well-documented) offspring. The old pre-Aryan languages of India have died out leaving only substratal traces in Indo-Aryan. They cannot be reconstructed from such data, though some useful information about their structure and vocabulary can be extracted from loanword studies. That's all until somebody cracks the Indus Valley writing system.

The civilization sites are dated to between ca. 3500 to 1500 BCE. What languages could have been spoken by the settlers in Lothal, Surkotada, Dholavira, Kotdiji, Kalibangan, Rakhigarhi, Ropar? These are settlements which seemed to have a way of communicating with one another using distinctively unique and clearly identifiable glyphs on epigraphs. There are also indications that some Meluhhan colonies were established in Mesopotamia.

The archaeological evidence, which has a bearing on the search for language(s) of the civilization, is summed up succinctly by Kenoyer: "The origins of the Indus urban society can be traced to the socio-economic interaction systems and settlement patterns of the indigenous village cultures of the alluvial plain and piedmont. More importantly, the factors leading to this transformation appear to be autochthonous and not derived from direct stimulus or diffusion from West or Central Asia." (Kenoyer, J.M., 1991, Urban process in the Indus traditon. A preliminary model from Harappa, in: Richard H. Meadow ed., *Harappan excavations 1986-1990*, Madison, Wisconsin: Prehistory, p. 11).

Another archaeologist, Allchin observes that this indigenously evolved village culture continued into historical periods in Bharat: "The Indus legacy survived and was passed on more widely at the fold and village level, in

almost all regions, while the learned tradition mainly survived in the Panjab, whence it spread eastwards with the spread of settlements in Post-Harappan times. The surviving tradition, an amalgam of Indus and Aryan elements was already active before the re-emergence of cities in the Ganges valley and in North India more generally during the first millennium B.C., and served as the ideological basis upon which the cities produced their own distinctive ideology." (F.R. Allchin, 1982, *On the legacy of the Indus civilization*, in: Gregory L. Possehl, ed., *Harappan Civilization: A contemporary perspective*, Warminster, pp. 325-333).

Should we start with Zide rejecting Sanskrit as "completely inadmissible on the grounds of chronological incongruity...and so is immediately discredited." (Arlene R.K. Zide, 1979, *A brief survey of work to date on the Indus Script*, in: Gregory L. Possehl, ed., *Ancient Cities of the Indus*, Durham, Carolina Academic Press).

David W. Anthony (1991:201-202) argues in favour of Proto-Indo-European (PIE) linguistics: "It is true that we can only work with relatively late IE daughter languages, that we cannot hope to capture the full variability of PIE, and that reconstructed semantic fields are more reliable than single terms. It is also true that both the reconstructed terms and their meanings are theories derived from systematic correspondences observed among the daughter IE languages; no PIE term is known with absolute certainty. Nevertheless, the rules that guide phonetic (and to a lesser extent, semantic) reconstruction are more rigorous, have been more intensely tested, and rest upon a more secure theoretical foundation than most of the rules that guide interpretation in my own field of prehistoric archaeology. Well-documented linguistic reconstructions of PIE are in many cases more reliable than well-documented archaeological interpretations of Copper Age material remains." N.R. Waradpande (1989:19-21), however, argues that "the linguists have not been able to establish that the similarities in the Aryan or Indo-European languages are genetic, i.e. due to their having a common ancestry". He also (1993:14-15) alleges that "the view that the South-Indian languages have an origin different from that of the North-Indian languages is based on irresponsible, ignorant and motivated utterances of a missionary" (an apparent reference to the 19th century Bishop Robert Caldwell).

Palatalization

Palatalization transforms velars (*k, g*) into palatals (*c, j*); thus, the velar or "kentum" forms are considered to be the original and the palatal or "satem" forms the evolved variants. Palatalization and substratal borrowings are used as evidence to explain how Sanskrit has evolved from PIE: Skt. *jagâma* from PIE **gegoma* as a palatalization of the initial velar (before *e/i*) followed by the conflation of *a/e/o* to *a*, but the reverse is almost impossible: palatalization is a one-way process, attested in numerous languages on all continents (including English, e.g. *wicca* > *witch*). Similarly, kentum forms and the forms with differentiated vowels as attested in Greek represent the original situation, while the Sanskrit forms are explained as an innovation. Sanskrit is, however, among the oldest forms of PIE: "The distribution [of the two stems *as/s* for "to be"] in Sanskrit is the oldest one" (Beekes 1990:37); "PIE had 8 cases, which Sanskrit still has" (Beekes 1990:122); "PIE had no definite article. That is also true for Sanskrit and Latin, and still for Russian. Other languages developed one" (Beekes 1990:125); "[For the declensions] we ought to reconstruct the Proto-Indo-Iranian first,... But we will do with the Sanskrit because we know that it has preserved the essential information of the Proto-Indo-Iranian" (Beekes 1990:148); "While the accentuation systems of the other languages indicate a total rupture, Sanskrit, and to a lesser extent Greek, seem to continue the original IE situation" (Beekes 1990:187); "The root aorist... is still frequent in Indo-Iranian, appears sporadically in Greek and Armenian, and has disappeared elsewhere" (Beekes 1990:279).

Territories with kentum are not necessarily the original homeland. Dialects which expanded early into Europe, Anatolia and China, might have retained the kentum form while taking it to the IE borderlands. The later emigrant dialects (Armenian, Iranian) might have adopted the satem forms. Those areas where the speakers of Indo-Aryan languages stayed behind and who adopted the satem forms could as well be the homeland. German linguist Claus Peter Zoller (1987, 1988, 1989) suggests that a kentum form is present in Bharat in a Himalayan language called Proto-Bangani which uses *koto* 'hundred'. George van Driem and Suhnu R. Sharma (1996) tried to discredit Zoller's discovery; but, Anvita Abbi (1998) and her students have proved that Zoller's thesis is confirmed by local evidence of substratum words of Bangani.

Hittite was considered a language with features older than those found in Sanskrit among IE dialects. Hittite had a common gender, while Sanskrit differentiated between masculine and feminine genders. Hittite had laryngeals. Other IE languages retain only traces: e.g. Greek *odont-*, "tooth", shows trace of an initial H-; this initial was lost in Latin to yield *dent-*. Greek *anêr*, "man", is derived from **Hnr*, whereas Sanskrit has *nr/nara*; Sanskrit preserves the laryngeal only in the form of vowel-lengthening in a prefix, as in *sû-nara* from *su* + **Hnara*. Traces of an original laryngeal consonant occur to mark a second syllable which was later contracted with the preceding syllable: "In Indo-Iranian such forms are often still disyllabic in the oldest poetry: *bhâs*, 'light', = /*bhaas*/ < /*bheH-os*/." (Beekes 1990:180) The laryngeal yielded the three vowels a/e/o, whose representatives in the Greek alphabet happen to be derived from the three more or less laryngeal consonants in Northwest-Semitic: *aleph*, *he* and *ayn*. 'The laryngeal theory has been attacked by both OIT and mainstream circles. Misra (1992:21) claims to have "refuted" it, Décsy (1991:17) calls it "the infamous laryngeal theory". When scholars claim proof of the laryngeals in Caucasian loan-words from IE, Décsy (1992:14, w.ref. to Wagner 1984) counters that it is the other way around: "Hittite lost its Indo-European character and acquired a large number of Caucasian areal features in Anatolia. These Caucasian-type features can not be regarded as ancient characteristics of the entire PIE". Likewise Jonsson (1978:86), though accepting that the laryngeals may offer a "more elegant explanation of certain cases of hiatus in Vedic, of certain suffixal *î*'s, *û*'s", presents as "an acceptable alternative" the scenario that the laryngeal in IE-inherited Anatolian words "comes from the unknown non-IE language or languages that are responsible for the major part of the [Anatolian] vocabulary".' (Koenraad Elst, *Linguistic aspects of the Aryan non-invasion theory*)

This feature of Hittite does not however, make it to be the *Urheimat*. Hittite could also be an early emigrant language from a homeland located elsewhere.

Dialect distribution in IE family

Hans Hock, explains (1999:13) that "the early Indo-European languages exhibit linguistic alignments which cannot be captured by a tree diagram, but which require a dialectological approach that maps out a set of intersecting 'isoglosses' which define areas with shared features (...) While there may be disagreements on some of the details, Indo-Europeanists agree that these relationships reflect a stage at which the different Indo-European languages were still just dialects of the ancestral language and as such interacted with each other in the same way as the dialects of modern languages."

Isoglosses are linguistic changes which are common to several languages.

Isoglosses were either imparted by one language to its sisters, or jointly inherited or adopted it from a common source.

Greek, Armenian, Iranian, some Dardic and western Indo-Aryan languages, evidence the shift *s* > *h*, e.g. Latin *septem* corresponding to Greek *hepta*, Iranian *hafta*. In the same group, plus the remaining Indo-Aryan languages, preterits are used: Greek *e-phere*, Sanskrit *a-bharat*, "he/she/it carried".

This group itself is not homogenous; separate developments occur due to interactions with non-member languages. Best known is the *kentum/satem* divide: Greek belongs to the *kentum* group, while Armenian and Indo-Iranian (together with Baltic and Slavic) have the *satem* isogloss (and the related "*ruki* rule", changing *s* to *sh* after *r*, *u*, *k*, *i*).

Kentum languages are in a continuous belt from Anatolia through southern to western and northern Europe (with exceptions, viz. Tocharian and proto-Bangani), and the *satem* isogloss are in a belt from central Europe to India, only later fragmented by the intrusion of Turkic.

Hock provides (1999:15) a map showing ten isoglosses in their distribution over the geographically placed IE language groups: "What is interesting, and significant for present purposes, is the close correspondence between the dialectological arrangement in Figure 2 (based on the evidence of shared innovations) and the actual geographical arrangement of the Indo-European languages in their earliest attested stages. (...) the relative positions of the dialects can be mapped straightforwardly into the actual geographical arrangement if

(...) the relative positions were generally maintained as the languages fanned out over larger territory... To be able to account for these dialectological relationships, the 'Out-of-India' approach would have to assume, first, that these relationships reflect a stage of dialectal diversity in a Proto-Indo-European ancestor language located *within India*. While this assumption is not in itself improbable, it has consequences which, to put it mildly, border on the improbable and certainly would violate basic principles of simplicity. What would have to be assumed is that the various Indo-European languages moved out of India in such a manner that they maintained their relative position to each other during and after the migration. However, given the bottle-neck nature of the route(s) out of India, it would be immensely difficult to do so." (Hock 1999:16-17, emphasis Hock's).

Possibility of successive migrations out of Bharat

Koenraad Elst offers a plausible and entirely logical alternative to Hock's arguments:

"The geographical distribution of PIE dialects in the PIE homeland is unrelated to the location of their daughter languages; the isoglosses are the result of a twofold scenario, part areal effect and part genealogical tree, as follows. In part, they reflect successive migrations from the heartland where new linguistic trends developed and affected only the dialects staying behind. Gamkrelidze and Ivanov (1995:348-350) have built an impressive reconstruction of such successive migrations on an impressive survey of the linguistic material. To summarize:

- 1) Initially, there was a single PIE language.
- 2) The first division of PIE yielded two dialect groups, which will be called A and B. Originally they co-existed in the same area, and influenced each other, but geographical separation put an end to this interaction.
- 3) In zone A, one dialect split off, probably by geographical separation (whether it was its own speakers or those of the other dialects who emigrated from the Urheimat, is not yet at issue), and went on to develop separately and become Anatolian.
- 4) The remainder of the A group acquired the distinctive characteristics of the Tocharo-Italo-Celtic subgroup.
- 5) While the A remainder differentiated into Italo-Celtic and Tokharic, the B group differentiated into a "northern" or Balto-Slavic-Germanic and a "southern" or Greek-Armenian-Aryan group; note that the kentum/satem divide only affects the B group, and does not come in the way of other and more important isoglosses distinguishing the northern group (with kentum Germanic and predominantly satem Baltic and Slavic) from the southern group (with kentum Greek and satem Armenian and Aryan).

"The second part is that the isoglosses not explainable by the former scenario are post-PIE areal effects, which is why they affect historically neighbouring languages, regardless of whether these had been neighbours when they were dialects of PIE. Archaeologists (mostly assuming a North-Caspian homeland) have said that the North-Central-European Corded Ware culture of ca. 3000 BC was a kind of secondary homeland from which the Western branches of PIE spread, again more or less radially, to their respective historical locations; the OIT (Out-of-India-Theory) would allot that role of secondary western-IE homeland to the Kurgan culture. In such a secondary homeland, IE-speaking communities would, before their further dispersal, be close enough to allow for the transmission of lexical innovations or common substratal borrowings (e.g. *beech*, cfr. Latin *fagus*; or *fish*, cfr. Latin *piscis*, unattested in eastern IE languages). Communities in truly close interaction, at whichever stage of the development of IE, would also develop grammatical isoglosses.

"Hock (1999:14) himself unwittingly gives at least one example which doesn't easily admit of a different explanation: "The same group of dialects [Germanic, Baltic, Slavic] also has merged the genitive and ablative cases into a single 'genitive' case. But within the group, Germanic and Old Prussian agree on generalizing the old genitive form (...) while Lithu-Latvian and Slavic favor the old ablative".

"But clearly, Old Prussian and Lithu-Latvian lived in close proximity and separate from Germanic and Slavic for centuries, as dialects of proto-Baltic, else they wouldn't have jointly developed into the Baltic group, distinct in many lexical and grammatical features from its neighbours. So, if the Baltic language bordering on the Germanic

territory happens to share the Germanic form, while the languages bordering on Slavic happen to share the Slavic form, we are clearly faced with a recent areal effect and not a heirloom from PIE days. The conflation of cases has continued to take place in many IE languages in the historical period, so the example under consideration may well date to long after the fragmentation of PIE.

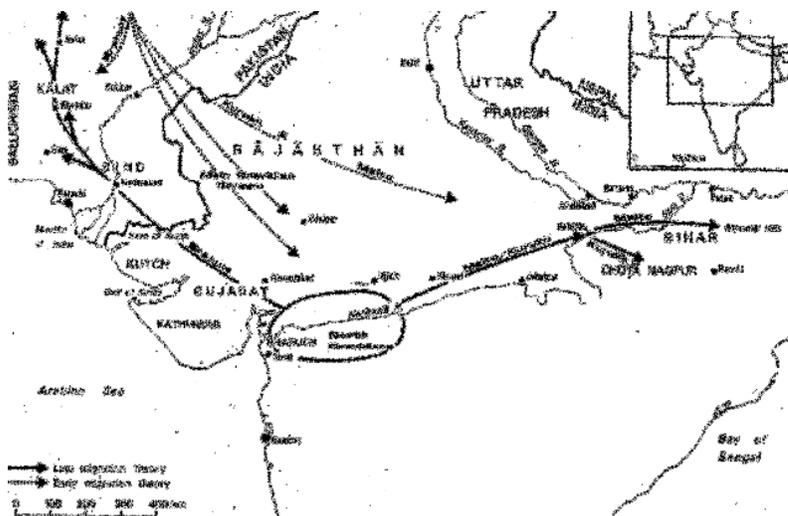
“A second example mentioned by Hock may be the split within the Anatolian group, with Luwian retaining a distinction between velar and palatal but Hittite merging the two, just like its Greek neighbour. Positing an areal influence at the stage of PIE dialectal differentiation on top of an obviously existing areal influence in the post-PIE period seems, in this context, like a "multiplication of entities beyond necessity": neighbouring languages need not also have been neighbours at the dialectal PIE stage in order to transmit innovations, because their present or recent neighbourliness already allows for such transmissions.

“As far as I can see from Hock's presentation, the twofold scenario outlined above is compatible with all the linguistic developments mentioned by him. For now, I must confess that after reading Hock's presentation, the linguistic problem which I have always considered the most damaging to an Indo-centric hypothesis, doesn't look all that threatening anymore. The isoglosses discussed by him do not necessitate the near-identity of the directional distribution pattern of the PIE dialects with that of their present-day daughter languages, which would indeed be hard to reconcile with an out-of-India hypothesis. But I cannot as yet exclude that Hock's line of argument could be sharpened, viz. by proving that certain isoglosses *must* date back to PIE times, making it tougher to reconcile the distribution of isoglosses with an Indian homeland hypothesis.” (Koenraad Elst, *Linguistic aspects of the Aryan non-invasion theory*)³

The relative convergence of Indo-Aryan and Dravidian (as well as Munda and to an extent Burushaski) in phonetic, lexical and grammatical features, forms a pan-Indian linguistic zone (vide e.g. Abbi 1994).

The oldest attested Dravidian culture was not urban; according to McAlpin (1979:181-182), the Dravidians "were almost certainly transhumants practising both herding and agriculture, with herding the more unbroken tradition".

"Dravidian influence (in IA) is less than has been expected by specialists." (Wojtilla 1986:34).



Two views of the formation of North Dravidian. [After JH Elfenbein, 1987, A periplous of the 'Brahui problem', *Studia Iranica* 16: 215-33:216].

Parpola (1994:170) points out the presence of a Dravidian substratum, starting with the place-names: "*palli*, 'village' (whence *valli* and modern *-oli*, *-ol* in Gujarat), corresponding to South-Dravidian *paLLi*; and *pāTa(ka)* or *pāTi* (whence *vāTa*, *vāTi*, etc., modern *-vāDā*, *vāD* etc. in Gujarat) as

well as *paTTana* (Gujarati *paTTan*), all originally 'pastoral village' from the Dravidian root *paTu*, 'to lie down to sleep'. In addition to place-names, other linguistic evidence suggests that Dravidian was formerly spoken in Maharashtra, Gujarat and, less evidently, Sindh, all of which belonged to the Harappan realm. It includes Dravidian structural features in the local Indo-Aryan languages Marathi, Gujarati and Sindhi, such as the

distinction between two forms of the personal pronoun of the first person plural, indicating whether the speaker includes the addressee(s) in the concept 'we' or not. Dravidian loanwords are conspicuously numerous in the lower-class dialects of Marathi."

This may explain Dravidian influence in the presently IA-speaking coastline.

The directional arrows shown by Elfenbein are not necessarily a true representation of the formation of the linguistic area in the region circa 5500 years Before Present. The arrows could as well be bi-directional with substantial interaction among the dialects of Bharata and with the areas in Baluchistan.

Pre-IE substratum in Indo-Aryan: Proto-Munda

Proto-Munda, may not be the mother but may at least be a very close blood-relative of the Munda languages still spoken in Chhotanagpur and may explain many IA words: e.g. *mayûra*, "peacock" was derived from Munda **mara* and in its turn yielded Tamil *mayil*. Another substratum source could be Language X.

Colin Masica's list of agricultural loans in Hindi (1979), allotted non-IE origins to Indo-Aryan words. Masica (1979) had found no known etymologies for 31% of agricultural and flora terms in Hindi.

About 40% of agricultural terminology in Hindi is derived from Language X (Colin P. Masica).

The importance of Gujarat in unravelling the linguistic area of Bha_rata is stated in the following terms by Colin P. Masica: "...the entire Indo-Aryan realm (except for Sinhalese) constitutes one enormous dialectal continuum...The speech of each village differs slightly from the next, without loss of mutual intelligibility, all the way from Assam to Afghanistan...Mitanni kingdom... Indo-Iranians appear in northern Syria a full half millennium before their appearance in western Iran. How did they get there?...To call these Mitanni kings 'Indo-Iranians', however, is to beg an important question...Some have held that these linguistic fragments are specifically Indo-Aryan. Others including Burrow (1955) held they represent undifferentiated Indo-Iranian, before the split between Iranian and Indo Aryan...An Indo-Aryan identification would demand an earlier dating of the Iranian/Indo-Aryan split; with it have also been associated speculations regarding the route taken by the Aryans to India (e.g., the Asia Minor route...), or, possibly a back migration of Aryans from India. (If the latter, the date of the Aryan settlement of India would have to be moved back far enough to allow not only for them to reach Syria by 1500 BC, but also for their language to have died out by then, leaving only the terminological residue noted...)...the philological evidence alone does not allow an Indian origin of the Aryans...there is the matter of the nature of the common vocabulary shared by Sanskrit with the rest of Indo-European, which points to a more northerly ultimate home...**The native Dravidian vocabulary has not been reconstructed. Burrow and Emeneau's Dravidian Etymological Dictionary (1960) only assembles materials for it...** The civilization seems to have continued peacefully in Gujarat until a comparatively late period, i.e. 800 BC (Fairservis 1975: 307), after which it dissolved into the subsequent culture, which makes that area one of prime importance in detecting any Harappan influence on Aryan language and culture." (Colin P. Masica, *The Indo-Aryan Languages*, Cambridge, Cambridge University Press, 1991).-

Nahali, Proto-Indo-Aryan substratum

Is it reasonable to assume that the region was a linguistic area ca. 3500 - 1500 BCE? [Say, with speakers of: Nahali, Burushaski, Prakrits (Proto-Indo-Aryan), Munda, Dravidian dialects]?

Let us look at the evidence of agricultural terms in the languages of the region, terms for agricultural implements, cultivation of the soil, and food items.

"In 1936 Wilhelm Brandenstein concluded from the fact that the Indo-Iranian branch had not taken part in common PIE semantic developments in the field of agricultural terminology that the Indo-Iranians must have lost contact with the main body of PIE speakers at a time when agriculture had not yet developed among them. When the Aryans entered India, accordingly, they would still have been pastoral nomads. Nowadays,

however, the lexical difference is explained by the ‘polycentric origin of the IE agricultural knowledge from two or three earlier food producing centres by cultural – and partly also by lexical – differences’ (Makkay, J., 1988, Cultural groups of SE-Europe in the Neolithic: the PIE homeland problem and the origins of the Proto-greeks, *AION*, 10, p. 125; see also Masica, C.P., 1979, Aryan and non-Aryan elements in North Indian agriculture, in: M.M. Deshpande and PE Hook, eds., *Aryan and Non-Aryan in India*, Ann arbor, p. 57). The process of borrowing has continued over the centuries. In modern Hindi 80 percent of the terminology is, as Masica’s fundamental study has made clear, of foreign origin: ‘The surprising thing is that only a small proportion of the remainder is either Dravidian or Austroasiatic, even by generous estimates’ (1979: 131). See also Schlerath, B., 1989, Viehzuchttertum and Ackerbau, *GGA* 241, 41 ff.” (Kuiper, FBJ, 1991, *Aryans in the Rigveda*, Amsterdam, Rodopi, p. 15).

Kuiper cites from Southworth the following examples of glosses, testifying to a ‘strong foreign impact’: *ku_t.a*, ‘house’; *kun.d.a*, ‘pot, vessel’; *u_r.dara*, ‘a measure for holding grain’; *apu_pa*, ‘cake’; *odana*, ‘rice dish’; *karambha*, ‘a kind of gruel’; *pin.d.a*, ‘a lump of flesh’; *ulu_khala*, ‘mortar’; *ka_rotara*, ‘sieve, drainer’; *camris.*, ‘ladle’; *kos’a*, ‘cask, bucket’; *kr.s’ana*, ‘pearl’; *ki_na_s’a*, *ki_na_ra*, ‘ploughman’; *khilya*, ‘waste piece of land’; *la_n:gala*, ‘plough’; *si_ra*, ‘plough’; *pha_la*, ‘ploughshare’; *tilvila*, ‘fertile, rich’; *bi_ja*, ‘seed’; *pippala*, ‘berry of the ficus religiosa’; *mu_la*, ‘root’; *khala*, ‘threshing floor’; *r.bi_sa*, ‘volcanic cleft’; *kevat.a*, ‘cave, pit’; *kr.pi_t.a*, ‘thick or firewood’; *s’akat.i_*, ‘cart’; *a_n.i*, ‘linch-pin’; *va_n.i*, ‘swingle tree’; *kulis’a*, ‘axe’; *ku_t.a*, ‘mallet’. (cf. Southworth, F.C., 1979, Lexical evidence for early contacts between Indo-Aryan and Dravidian, in: M.M. Deshpande and P.E. Hook, eds., *Aryan and Non-Aryan in India*, Ann arbor, pp.191-233).

Kuiper goes on to list 383 ‘foreign elements’ in the Rigvedic vocabulary of words such as: *aks.a*, *araru*, *alina*, *a_n.d.a*, *ku_la*, *krumu*, *gargara*, *chubuka*, *dr.bhi_ka*, *na_d.i_*, *phan.*, *phaliga*, *bhala*, *man.d.u_ki*, *mayu_ra*, *mala*, *yaks.u*, *yadu*, *vis’pala_*, *s’akat.i_*, *s’akuna*, *s’an.d.ika*, *s’abala*, *sini_va_li_*, *sr.bida*. The approximately 380 ‘foreign words’ listed by Kuiper are computed to be nine percent of the Rigvedic vocabulary contained in Grassmann’s dictionary. “...many among these ‘Aryans’ had non-Aryan names and...this fact points to some inescapable conclusions...Statements to the effect that the Rigveda was no longer purely Aryan are therefore correct to the extent that they refer to the language and the ethnic components: both were ‘Aryan’.” (p. 96).

The use of words such as ‘foreign origin’, ‘strong foreign impact’ for as much as 80 percent of agricultural terminology is based on the euro-centric perspective of incursion of Indo-European language into Bharat creating the Indo-Aryan. Kuiper concedes: “It should not be forgotten that it was Indo-Europeanists who began to study the non-Aryan languages of India, because to them it was quite evident that a not inconsiderable part of the Sanskrit vocabulary could not possibly be of IE origin. The preceding list was drawn up from an Indo-Europeanist’s point of view...The main point is that it should be recognized that Sanskrit had long been *an Indian language* when it made its appearance in history...A language in which simultaneously Dravidian calques arose and Indo-European laryngeals were still pronounced (viz. in *tanuam*, *suar*) was more progressive and, at the same time, more archaic than could be imagined a few decades ago.” (p. 94).

From an autochthonous perspective, these examples of glosses point to an indigenous evolution of the Prakrits, later refined into Sanskrit.

There is no basis to assume that the Bhils of Gujarat and Madhya Pradesh originally spoke a non-IE language, probably Nahali, yet: “No group of Bhils speak any but an Aryan tongue. (...) it is unlikely that traces of a common non-Aryan substratum will ever be uncovered in present-day Bhili dialects.” (von Fürer-Haimendorf 1956:x, quoted in Kuiper 1962:50).

Braziers

Bha_rati_ is a name of *Sarasvati_*, the goddess of Speech, word, eloquence, literary composition, dramatic art; *bha_rati_* means relating to *Bha_rata*, that is, India. In R.gveda (1.188.8), *Bha_rati_*, the goddess of Speech is invoked with *Il.a_* and *Sarasvati_*: *bha_rati_l.e sarasvati*. *Bha_rati_* is also the name of a bird, a quail (Telugu).

Thus, when a bull is depicted with a bird, the reference could be to *bha_rati_* the bird with a rebus representation for the following substantive etyma:

bharatiyo = a caster of metals; a brazier; *bharatar*, *bharatal*, *bharatal*. = moulded; an article made in a mould; *bharata* = casting metals in moulds; *bharavum* = to fill in; to put in; to pour into (G.lex.) *bhart* = a mixed metal of copper and lead; *bhart-i_ya_* = a brazier, worker in metal; *bhat.*, *bhra_s.t.ra* = oven, furnace.

The context for decoding inscribed objects is thus apparent. Tools of trade of metal-workers! The language is *des'i* or *bha_s.a_* or Meluhhan! Yes, the Meluhhan which was understood by both Vidura and Yudhis.t.ira in the *Maha_bha_rata*. The people from Milakku are copper-workers, since *milakku* means 'copper' in Pali language. Meluhhans are referred to in the texts of Mesopotamian civilization. Sumerian had words of a substrate language, for example, *tibira*, 'merchant' may relate to *ta_m(b)ra*, 'copper'; *san:gi*, 'priest' could relate to *sa_n:ghvi_*, 'pilgrim's companion' (*Gujara_ti_*). The key to decoding is, thus, provided by the ancient lexemes of the present-day languages of the region, with intense interactions, for example, *Gujara_ti_*, *Punja_bi_*, *Kon:kan.i*, *Kannad.a*, *Telugu*, *Tamil*, *Brahui*, *Mundari*, *Santali*. Substrate and ad-strate words of these languages of *Bha_rata* hold the key to unraveling the linguistic area of the civilization, ca. 3300 to 1500 BCE.

There are some indications of close contacts between Sumerian and Dravidian as seen from a few agricultural vocabulary:

ur 'millstone' (Sumerian); *ur-al* 'mortar' (Ta.); *ulu_khala* (Skt.)
ili 'sesame' (Sumerian), *ellu/u_lu* 'sesame oil' (Akkadian); *el.*, *el.lu* 'Sesamum indicum' (Ta.); *tila*, *jar-tila* 'sesame' (Vedic)(Blazek, V. and C. Boisson, The Diffusion of Agricultural Terms from Mesopotamia. *Archiv Orientalni* 60, 1992, 16-37)

It is possible that IE **kwe-kw-lo-* 'wheel' may be related to Sumerian *gilgul* 'wheel'; (GIS-); *gigir* 'wagon'. *a_n.i* which occurs in the R.gveda as 'lynch pin' is considered foreign to both Dravidian and Vedic. IE *rota* 'rotate' may also relate to *urut.t.u* 'roll'; *urul.* 'roll' (Ta.)

These anecdotal examples point to the need for postulating a Language X to further unravel the glosses of Old Indic of the period circa 5000 years Before Present.

Language X

What language did the braziers of *Bha_rata* speak?

Meluhhan! The language which Vidura and Yudhis.t.hira understood, as noted in the Great Epic, *Maha_bha_rata*. A language spoken not too far from Gujarat. Sumerians needed an interpreter to translate Meluhhan.

Our hypothesis is that the traders with their seals, and people who travelled in Swat and Seistan, in search of minerals, were the bronze-age smiths and lapidaries of Meluhha.

Meluhhan

There is evidence of a substrate language of ancient Sumer; this language could be located in *Bha_rata* in the contemporaneous Sarasvati-Sindhu civilization ca. 3500 -2500 BCE. Like the influence of Celtic on ancient Gaul, Sumerian shows signs of a substrate language in the use of professional names such as **sanga** 'priest', **simug** 'blacksmith' and **tibira** 'copper smith', 'metal-manufacturer'; craftsman like **nangar** 'carpenter', **a:gab** 'leather worker'; agricultural terms, like **engar** 'farmer', **apin** 'plow' and **absin** 'furrow'.

tambira = copper (Pkt.) *tibira* = merchant (Akkadian)

Sumerian <tibira> or <tabira> (written LU2 URUDU-NAGAR, i.e. "[person] copper.carpenter") means "metal worker, coppersmith".⁴

tibhi = to prop by means of a post with a V-shaped head, a prop with a V-shaped head (Santali).

tabar = a broad axe (P.lex.)

taber = face downwards, upper side down; *taber akanae* he is lying on his face, or stomach (Santali)

[Note the glyph of a woman lying upside down.]

Rebus: **t.ibri, t.ebra** = small, short of stature with large stomach (Santali)

Rebus: **tebr.a, tebor.** 'three times, thrice'; *tebr.age emok hoyoktama* you will have to give thee times that (Santali) The glyphic representation is three long linear strokes: |||

Hurrian copper casters

If Hurrian metalworkers were intermediary between Proto-Indo-European (PIE) and Sumerian for a number of words (eg.Sumerian *gigir* and PIE **kwelkos*, for example, may be compared with **tikiri**, wheel (Tamil)⁵.

Hypotheses are

- (1) that many inscribed objects of ca. 3300 BCE found in settlements on Sindhu and Sarasvati rivers relate to stone-/metal-workers;
- (2) that the Indo-Aryan word for copper is: *ta_m(b)ra* (cf. **tamba**, 'copper' in Pali language);
- (3) that metal-caster is a **bharata** which could be cognate with the **bharata**-s (a group of people) mentioned in the R.gveda; and
- (4) that the Language 'X' of Colin Masica may indeed be Meluhhan or Mleccha dialect, cognate with Nahali, a language isolate of Narmada valley or **kha_n.d.ava** vana (forest), not far from Bhr.gu ks.etra [bhr.gu = **va_run.i_** (R.gveda), i.e. people of a maritime, riverine civilization].

According to Gernot Wilhelm, the Hurrian version of *tabira* is: **tab-li** 'copper founder'; **tab-iri** 'the one who has cast (copper)'.⁶

Hurrian is attested in Mitanni epigraphs (ca. 14th century BCE) which also indicate Indo-Aryan names of Mitanni kings and the work of Kikkuli, the horse-trainer who introduced Samskr.tam (or Indo-Iranian or Indo-Aryan) technical words such as **eka**-vartana, **dvi**-vartana, **nava**-vartana for training horses.

"We cannot say when Hurrians first arrived in this area. Linguistic criteria, however, seem to indicate that the ancestors of the historical Hurrians had already inhabited the mountainous regions of eastern Anatolia for several centuries... The Sumerians probably borrowed their word for 'coppersmith' (TABIRA, TIBIRA) from proto-Hurrian [Hurrian *tab-li* 'copper founder'; *tab-iri* 'the one who has cast (copper)'].

"...letters and documents of the Old Assyrian trading colonies of the twentieth and nineteenth centuries... reveal that although practically no Hurrians lived in Kanesh (modern Kultepe), the center of trading activity, Hurrian names were common south of the Anti-Taurus Mountains in this period. We do not know when Hurrians migrated into the area between the Euphrates and the Mediterranean. The Ebla tablets of the twenty-fourth and twenty-third centuries give no indication of Hurrians in this region...

"The names of the kings of Mitanni are known to us only from the early fifteenth century and later. Not one of these names is Hurrian. Rather, they are all derived with more or less certain etymologies from an archaic form of Indo-Aryan..... the language spoken in Mitanni remained Hurrian...

"...At present the earliest known direct evidence for a Mitannian ruler is the seal of a King Shuttarna, son of Kirta. Impressions of his seal are found on two records from the second half of the fifteenth century produced by a later king, namely, Saushtatar..." (Gernot Wilhelm, 1995, The Kingdom of Mitanni in Second-

Millennium Upper Mesopotamia, in: Jack M. Sasson (ed.), *Civilizations of the Ancient Near East*, Vol. II, pp. 1243-1254).

These Hurrian contacts indicate the migration of people from the Sarasvati-Sindhu Civilization area (i.e. the region of Meluhhan speakers) towards Mitanni and perhaps, Anatolia.

“...how could these Aryan immigrants first peacefully integrate into Harappan or post-Harappan society yet preserve their language and later even impose it on their host society? Neither their numbers, relative to the very numerous natives, nor their cultural level, as illiterate cowherds relative to a literate civilization, gave them much of an edge over the natives. Therefore, the only plausible way for them to wrest power from the natives must have been by their military superiority, tried and tested in the process of an actual conquest... As things now stand, the Aryan "immigration" theory necessarily implies the hypothesis of military conquest.” [Koenraad Elst, 2000]

Agriculture and use of metals seems to have existed before the arrival of the Sumerians in the Tigris-Euphrates doab. Name of a city Kish also seems to be non-Sumerian in origin. Most of these words are likely to be loan words from one or more substrate languages.

cf. http://www.sron.ruu.nl/~jheise/akkadian/bronze_age.html

One such substrate language was Meluhhan.



The Meluhhan being introduced carries an antelope on his arm. Cylinder seal Impression. Akkadian. Inscription records that it belongs to ‘S’u-ilis’u, Meluhha interpreter’. Musee du Louvre. Ao 22 310, Collection De Clercq.

‘In a letter dated 16 May 1990, Dr. Dominique Collon comments on the

iconography as follows: ‘The seal depicts a seated figure, identifiable by her long hair as feminine and by her horned head-dress (chipped) as a deity. The flounced robe is also generally an indication of divinity. The child on her lap could be the owner of the seal but is more likely to be an attributor of the goddess. The figures approaching the goddess are probably the owner of the seal and his wife although it is possible that these are priestly figures. Several centuries later, in Old Babylonian times, it is the king who almost always carries the animal offering but he is probably seeking favourable omens and the deities he approaches are then particularly connected with omens (see Collon 1986: III.37). On these later, Old Babylonian seals, the figure carrying a situla or bucket is generally a priest but here it is clearly a woman and there is nothing to indicate that she is a priestess of a queen. Both wear Akkadian dress and nothing distinguishes them as foreigners. The significance of the kneeling male figure and the pots behind is difficult to interpret: they could be an attribute of the goddess, and the large pots on stands are used even today for water – perhaps an additional reference to the goddess’ fertility aspect. Among the seals illustrated by R.M. Boehmer (1965) seals 549 and 555 make clear that some sort of drink is involved. Boehmer’s plate 47 shows that the scene belongs to a well-established iconographical group and was not specifically created for the Meluhha interpreter – indeed it was probably chosen from a range of ready-cut seals in a seal-cutter’s workshop and the inscription was added. This would account for the

fact that the figures overlap the inscription frame on both sides. Boehmer attributes the seal to Akkadisch III period – i.e. from Naramsin onwards.” [cf. Parpola, 1994, fig. 8.4]

An Akkadian seal (after Powell, p. 390: *The Bronze Age Civilization of Central Asia*, New York, 1980) shows the translator of the Meluhhan (Sindhu Sarasvati) language (EME.BAL.ME.LUH.HA.KI) is received by a person of high rank and sitting by his lap. Another Meluhhan sitting by three jars makes a greeting gesture. Two persons enter: one carries an animal, the other a purse. British Museum tablet #79987 enumerates a 'man of Meluhha' named (...) **-ibra** in a list of foes of Naram-Sin, King of Akkad, ca. 2250 BCE. "During the second half of the 3rd millennium BC, textual sources frequently refer to trade with Dilmun, Magan and Meluhha. Dilmun is known to be the island of Bahrain, Magan is probably present-day Makran and the territory opposite it in Oman, while at this period it seems that Meluhha referred to the Indus Valley where the flourishing cities of Mohenjo Daro and Harappa have been excavated. The Indus Valley civilisation used square stamp seals but under the impetus of trade some cylinder seals appear and a Meluhhan interpreter used a typical Akkadian seal." (Collon, 1987)

An attempt to unravel the language spoken by the Meluhhan on this cylinder seal has been made, through a number of sources. Proceeding on the assumption that Meluhha as seen from Mesopotamia was the Saptasindhu region of Bha_rata, one such source is the compilation of a lexicon based on sememes from the ancient versions of present-day languages of Bha_rata. Another source is the application of many lexemes from this lexicon using the rebus method to many glyphs of the inscribed objects from Meluhha of the period, ca. 2250 BCE.

It appears that the ‘antelope’ or ‘ram’ shown on the back of the Meluhhan is a homonym for a semantic determinant connoting the nature of his profession, the helper of a merchant. This interpretation is surmised from two elamite artifacts -- the silver and gold statues of an Elamite king carrying a zebu bull.

The Elamite is announcing himself as: **ku_t.a**, 'chief'; **khu-t.**, 'bra_hman.i (zebu) bull'. On a silver statue, he carries a short-horned bull; on a gold statue, he carries a zebu bull. The short-horned bull is **homa** 'bison'; rebus: **soma** 'electrum'. The zebu is: **adar d.an:gra**; rebus: **adaru** 'native metal, panned gold' **d.an:gra**, **t.hakkura** 'blacksmith, chief'.



Elamite king, gold and silver statuette 12 Century BC, 3' high discovered 1904 by archaeologist Roland de Mecquenem at Susa's (shoush) acropolis.

So, what is the Meluhhan shown on the cylinder seal doing? He is selling copper and perhaps also other minerals, metals and metal products of the warehouse (**ma_n.d.a**: Kon:kan.i) of braziers from Meluhha.

me_n.d.ha = ram (Skt.)(CDIAL 10310). me_l.h goat (without etymology)(Brahui); mr.e_ka (unknown meaning)(Te.); me_~ka = goat (Te.)(DEDR 5087). Rebus: **med.** 'iron' (Mundari)

Melukkha (milakkhu, 'copper': Pali)! **met.ari**, hero, warrior, eminent person, merchant's clerk. mehto [Hem. Des. med.ho = Skt. Van.ik saha_ya, a merchant's clerk, fr. mahita, praised, great] a schoolmaster; an accountant; a clerk; a writer (G.lex.) mel. = tallying, balancing of accounts; a cash-book; mel.van. = a mixture, a composition; mixing (G.lex.) me_r.iyar = pu_vaiciyar, ve_l.a_l.ar, i.e. agriculturists, traders (Ta.lex.)



He is a hero, an eminent person. me_t.i, me_t.ari an eminent person, hero, warrior; min.d.a = hero; me_t.t.i = excellence, chief, head, land granted free of tax to the headman of a village (Te.); me_ti = greatness, a big man, a chief, head servant (Ka.); me_t.ari, me_t.i = chief, head, leader, lord (Te.)(DEDR 5091).

The language of the civilization is bha_s.a_ (or Hemacandra des'i_), meluhhan substrate, like Nahali, with borrowings from many language streams, thus constituting a linguistic area, ca. 3500-1500 BCE. The neolithic precursor of the civilization has recently been



discovered in two sunken rivers in the Gulf of Khambat close to the Nahali-speaking valley -- Narmada river valley. The structure and semantics of the language will be unravelled further, now that



the rebus principle for decoding the glyphs has been validated for a large number of inscribed objects..

A_yudha_ni

TA Gopinatha Rao, *Elements of Hindu Iconography*, 2 vols., Madras, 1914 provides a perspective on the mudra-s and the types of a_yudha_ni and other sacred articles carried by devata_ in the a_gama tradition of Bha_rata.

In the bronze images of S'iva – standing image of S'iva Candras'ekhara and sitting image of Uma_mahes'vara – the deity is shown carrying a weapon (an axe) on one hand and an antelope with its head turned backwards on another hand.

What is the significance of the antelope shown on one hand when a weapon is expected to be shown, consistent with the tradition of treating 'weapons' as auspicious? Is it a copper axe? melh, 'goat' (Br.); rebus: melukka 'copper' (Pali); synonym: tambira 'copper' (Pkt.); rebus: tabar 'axe' (P.)

The a_gama tradition in Tamilnadu refers to the a_yudha_ni of Somaskanda as ma_n-um mar..aiyum 'deer and paras'u axe'; and the philosophical explanation is that the ma_n- 'antelope' represents the animate world of living beings and Somaskanda is the protector of such a world..

Language X, Nahali, Vedic

A remarkable clue is provided by the existence of Nahali as an isolate language in the Narmada Valley, a valley which has assumed prominence as a neolithic precursor (ca. 10000 years Before Present) of the bronze-age civilization on the Sarasvati Sindhu River valleys. Was Nahali an Austro-asiatic language; or was it an Indo-European language? The vocabulary of Nahali⁶ contains a number of words which may be interpreted as the Indo-Aryan substratum. The Gulf of Khambat Cultural Complex (GKCC) close to the area of the Nahali-speakers is only 300 kms. from Padri, Dholavira and Surkotada which are replete with stone structures; in Dholavira, ringstones and polished pillars of stone have been found. A maritime, riverine culture of the GKCC parallels the land-based, riverine, Mehrgarh neolithic evidence.

Close to the Gulf of Khambat Cultural Complex where two submerged rivers have been discovered (possible extensions of palaeo-channels of River Tapti) are the speakers of Nahali language which is described as an Indo-Aryan language.

<http://www.hindunet.org/saraswati/khambat/khambat01.htm>

Piotr Gasiowski, a linguist active on the cybalist group: "Strictly speaking, Nahali (spoken on the upper Tapti) is not an isolate, though it's classified as such e.g. on the SIL site. Present-day Nahali is genetically an Indo-Aryan language whose lexicon shows several layers of absorbed substrates. Though the exact percentages apparently vary from dialect to dialect (while minor and endangered, Nahali is not a monolithic language), according to Kuiper's estimates the largest lexical component (ca. 36%) is borrowed from Kurku (a.k.a. Korku, a Munda language), about 9% of Nahali words are Dravidian (e.g. the numerals 2, 3 and 4, whereas 5 and higher are Indo-Aryan), and some 25% are of unknown origin. Because of the high proportion of Munda loans Nahali has also been erroneously classified as a Munda language or even a dialect of Kurku. The etymologically obscure part of Nahali vocabulary is thought to represent an ancient pre-Indo-Aryan substrate of the Madhya Pradesh/Maharashtra border. Although the figure 25% may be exaggerated, the substrate -- unrelated to any known family -- seems to be real enough. Kuiper's attempts to establish a distant relationship between Nahali and Ainu ("Isolates of the world, unite!") should not be taken too seriously. It's quite possible that Central India was once a crazy quilt of tiny families. Relics of the Nahali substrate and perhaps of other, hitherto unidentified extinct languages may be lurking in the local varieties of Indo-Aryan, e.g. in the numerous but poorly investigated languages of the Bhil group."

<http://groups.yahoo.com/group/cybalist/message/13915>

Yes, Nahali is spoken on the upper reaches of the Tapati river valley. The Tapati river extensions have been submerged in the Gulf of Khambat when the gulf was formed ca. 10,000 yrs. Before Present and resulted in the start of regular monsoons in India. Nahali provides the key to unravel further the proto-Indo-Aryan using epigraphs of the 4th to 2nd millennia.

Piotr's thoughts jibe with Emeneau's postulate on a linguistic area and Norman Brown's observations. Recognizing the structure of a proto-Indo-Aryan linguistic area may help explain the glyphs on inscribed objects found between ca. 3500 to 1500 BCE in Sarasvati-Sindhu River basins.

bharukaccha, **bharu-rat.t.ha** =a kingdom which is said to have been swallowed up by the sea (Pali.lex.Ja_taka 2.169).

Bhr.gu (cognate with **bharu-**) is **va_run.i** in R.gveda and is closely associated with the sea. Bharukaccha (Bharuch) is on the coast of Sindhu sa_gara (Arabian ocean) close to where the River Narmada joins the ocean.

Was Nahali a language of the Bhils of western Bha_rata?

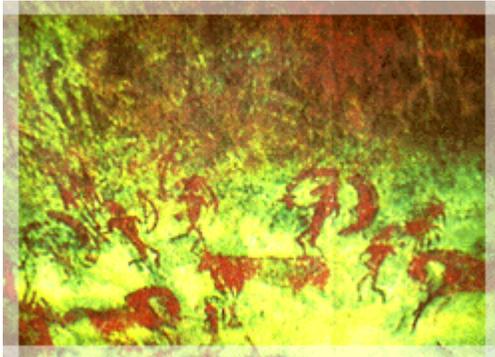
Nahali was spoken on the River Tapti, NW of Ellichpur in Madhya Pradesh. Of the vocabulary, 36% are of Kurku (Munda) and 9% of Dravidian origin. Kuiper lists 123 items of vocabulary not reducible to Austro-Asiatic, Dravidian or IE roots, and calculates that "about 24 per cent of the Nahali vocabulary has no correspondence whatever in India". (FBJ Kuiper, 1962, *Nahali, a comparative study*. Amsterdam: Noord-Hollandse Uitgevers Maatschappij, pp.49-50; 1966, The sources of Nahali vocabulary, in: H. Zide, *Studies in*

comparative Austroasiatic Linguistics, ed. N. H. Zide, The Hague, pp. 96-192). Bernard Sergent thinks that Nahali is an Austro-Asiatic language (*Genèse de l'Inde*, p.31.)

Nahali language (like Basque or Burushaski) is an isolate language unrelated to the Indo-European family.
<http://www.ship.edu/~cgboeree/languagefamilies.html>

The genetic affiliation of Nahali is controversial and can be related to the 'linguistic area' of ca. 3500 BCE in the civilization area. About 40% of the lexicon is cognate to Munda languages, and some linguists therefore put it in that group. Among the numbers, 2-4 are borrowed from Dravidian, and 5-10 from Indic. Numerals in Nahali: *bidum* (m.), *bidi* (f.), 'one'; *ir, ira* 'two'; *motho* 'three', *na_lo* 'four'; *pa~co* 'five'; *chah* 'six'; *sato* 'seven'; *atho* 'eight'; *nav* 'nine'; *das* 'ten'; *ba_ro* 'twelve'. <http://euslchan.tripod.com/isolated.htm>

Gondi *manja* 'man, person'; Tamil *mântar* 'people, men', *man* 'king, husband'; Old Japanese *wo-mina* 'woman' (Modern Japanese *onna*); Ainu *mene-ko* 'woman'; Papuan *munan, mando, mundu* 'man'; Nahali *mancho* 'man'; Egyptian *sn* 'smell'; Hausa *sansana* 'smell'; Georgian *sun* 'smell'; Tamil, Malayalam *cuNTu* 'bill, beak, snout'; Basque *sunda* 'smell'; Tibetan *sna* 'smell'; Nahali *chon* 'nose'; Seneca *oseno* 'smell'; Wintu *sono* 'nose'



"Nahale north of Amalwadi in Jalgaon District speak a language similar to Ahirani (Indo-European). Nihali and Nahali may be different languages. Nihal in Chikaldara taluk and Akola District have 25% lexical similarity with Korku (Munda). Nahal near Toranmal have 51% to 73% lexical similarity with several Bhil languages (Indo-European). They live in or near Korku villages, and identify closely with the Korku. Investigation needed: intelligibility with nearby Bhili languages, bilingual proficiency in Korku (Munda), Hindi, Marathi. Tropical forest. Mountain slope."

http://www.ethnologue.com/show_language.asp?code=NHL

Maheshwar, 90 kms. from Indore, is a town situated on the banks of the Narmada River, in Khargone district of the State of Madhya Pradesh in Bha_rata. Archaeological digs at Naodatodi, 2 kilometers away across the Narmada have unearthed remains dating from 2000 BC. In classical periods, Maheshwar was known as Mahishmati or Mahisati, and later Avanti, the state capitol of Raja Bhoja. S'an:kara and Mand.ana Mis'ra (who was a poet in the court of Ma_his.mati) discuss the karma mi_ma_msa philosophy at Ma_his.mati, a place mentioned in both the Ra_ma_yan.a and the Maha_bha_rata. It was the capital city of Ka_rtavi_rarjuna (who killed Jamadagni); it was also the capital city of the Va_ka_t.aka-s (6th cent.) who built the cave-temples of Ellora. This is the ks.etra of Paras'urama, 'Rama of the axe', a Brahmin, born to the sage Jamadagni and his wife Renuka. This is also Bhr.gu ks.etra (cf. Bharuch on the mouth of Narmada river). In the Bhr.gu tradition, Vishnu's consort is Lakshmi, the goddess of wealth and fortune. She is believed to have emerged from the samudra manthan, and considered to be the daughter of Bhr.gu and Khyati.

Not far from the region is Bhimbet.ka, where 500 caves have pre-historic paintings showing many horses and also chariots (one pictorial motif is interpreted by H.D. Sankalia, as Kr.s.n.a wielding a cakra_a_yudha (discus weapon). Horses or chariots are not imports from Central Asia into Bha_rata!

"Executed mainly in red and white with the occasional use of green and yellow, with themes taken from the everyday events of aeons ago, the scenes usually depict hunting, dancing, music, horse and elephant riders, animals fighting, honey collection, decoration of bodies, disguises, masking and household scenes. Animals such as bisons, tigers, lions, wild boar, elephants, antelopes, dogs, lizards, crocodiles etc. have been abundantly depicted in some caves. Popular religious and ritual symbols also occur frequently."
<http://www.meadev.nic.in/tourism/exotic/bh-mp.htm>



Horse depicted in a painting in Cave 4 at Bhimbetka



Domesticated horse shown on a painting in Cave no. 8 at Bhimbetka

<http://www.art-and-archaeology.com/india/>

kha_n.d.ava vana: Explorations in the beds/tributaries of Narmada have revealed traces of the Paleolithic men in East Nimar district. Omkar Mandhata, a rocky island on the bank of Narmada river, about 47 miles North-West of Khandwa, is said to have been conquered by the Haihaya king Mahishmant, a scion of Yadu family, who had named the capital as Ma_his.mati. From the early 2nd Century B.C., to the 10 century CE, the Nimar Region (earlier a part of Kha_n.d.ava) was ruled by Mauryas, Sungas, Early Satvahanas, Kardamakas, Abhiras, Va_kat.akas, Guptas, Kalachuris, Vardhanas (of Harsha Vardhana fame), Chalukyas, Ra_s.t.raku_t.as, Paramaras. There is a group of ks.atriya known as somavam.s'i_ya sahasra_rjuna ks.atriya, claiming their lineage to Ra_jara_jes'vara Sahasra_rjuna ca. 2600 BCE. http://www.sskna.org/ssk_history.html Omka_res'war is an island at the confluence of River Narmada and River Kaveri . [The same name 'ka_veri' is the name of the river which flows from Karna_t.aka through Tamilna_d.u].

It is a reasonable hypothesis that Language X can be traced to languages such as the substrate Nahali and that Language X was in fact the Vedic language. It is also assumed that Nahali exemplifies the state of the Linguistic Area, ca. 3500 to 1500 BCE in North-western Bha_rata.

Linguistic area, Civilization of Bha_rata, ca. 3500-1500 BCE

The following observations by Emeneau and Bloch will be tested through clusters of lexemes of an *Indian Lexicon*, which relate to the archaeological finds of the civilization. These clusters of lexemes are aids to the process of decoding the epigraphs containing both pictorials and signs as glyphs.

"In fact, promising as it has seemed to assume Dravidian membership for the Harappa_ language, it is not the only possibility. Professor W. Norman Brown has pointed out (*The United States and India and Pakistan*, 131-132, Cambridge, Harvard University Press, 1953) that Northwest India, i.e. the Indus Valley and adjoining parts of India, has during most of its history had Near Eastern elements in its political and cultural make-up at least as prominently as it had true Indian elements of the Gangetic and Southern types. The passage is so important that it is quoted in full: 'More ominous yet was another consideration. Partition now would reproduce an ancient, recurring, and sinister incompatibility between Northwest and the rest of the subcontinent, which, but for a few brief periods of uneasy cohabitation, had kept them politically apart or hostile and had rendered the subcontinent defensively weak. When an intrusive people came through the passes and established itself there, it was at first spiritually closer to the relatives it had left behind than to any group already in India. Not until it had been separated from those relatives for a fairly long period and had succeeded in pushing eastward would I loosen the external ties. In period after period this seems to have been true. In the third millennium BCE the Harappa culture in the Indus Valley was partly similar to contemporary western Asian civilizations and partly to later historic Indian culture of the Ganges Valley. In the latter part of the next millennium the earliest Aryans, living in the Punjab and composing the hymns of the Rig Veda, were apparently more like their linguistic and religious kinsmen, the Iranians, than like their eastern Indian contemporaries. In the middle of the next millennium the Persian Achaemenians for two centuries held the Northwest as satrapies. After Alexander had invaded India (327/6-325 BCE) and Hellenism had arisen, the Northwest too was Hellenized, and once more was partly Indian and partly western. And after Islam entered India, the Northwest again was associated with Persia, Bokhara, Central Asia, rather than with India, and considered itself Islamic first and Indian second. The periods during which the Punjab has been culturally assimilated to the rest of northern India are few if any at all. Periods of political assimilation are almost as few; perhaps a part of the fourth and third centuries BCE under the Mauryas; possibly a brief period under the Indo-Greek king Menander in the second century BCE; another brief period under the Muslim kingdom of Delhi in the last quarter of the twelfth century A.D.; a long one under the great Mughals in the sixteenth and seventeenth centuries A.D.; a century under the British, 1849-1947.'

"Though this refers to cultural and political factors, it is a warning that we must not leap to linguistic conclusions hastily. The early, but probably centuries-long condition in which Sanskrit, a close ally of languages of Iran, was restricted to the northwest (though it was not the only language there) and the rest of India was not Sanskritic in speech, may well have been mirrored earlier by a period when some other language invader from the Near East—a relative of Sumerian or of Elamitic or what not—was spoken and written in the Indus Valley—perhaps that of invaders and conquerors—while the indigenous population spoke another language—perhaps one of the Dravidian stock, or perhaps one of the Munda stock, which is now represented only by a handful of languages in the backwoods of Central India.

"On leaving this highly speculative question, we can move on to an examination of the Sanskrit records, and we find in them linguistic evidence of contacts between the Sanskrit-speaking invaders and the other linguistic groups within India...

"...the early days of Indo-European scholarship were without benefit of the spectacular archaeological discoveries that were later to be made in the Mediterranean area, Mesopotamia and the Indus Valley... This assumption (that IE languages were urbanized bearers of a high civilization) led in the long run to another block—the methodological tendency of the end of the nineteenth and the beginning of the twentieth century to

attempt to find Indo-European etymologies for the greatest possible portion of the vocabularies of the Indo-European languages, even though the object could only be achieved by flights of phonological and semantic fancy... very few scholars attempted to identify borrowings from Dravidian into Sanskrit...The Sanskrit etymological dictionary of Uhlenbrck (1898-1899) and the Indo-European etymological dictionary of Walde and Pokorny (1930-1932) completely ignore the work of Gundert (1869), Kittel (1872, 1894), and Caldwell (1856,1875)... It is clear that not all of Burrow's suggested borrowings will stand the test even of his own principles..." [M.B.Emeneau, *India as a Linguistic Area* [Lang. 32, 1956, 3-16; *LICS*, 196, 642-51; repr. In *Collected papers: Dravidian Linguistics Ethnology and Folktales*, Annamalai Nagar, Annamalai University, 1967, pp. 171-186].

"'India' and 'Indian' will be used in what follows for the subcontinent, ignoring the political division into the Republic of India and Pakistan, and, when necessary, including Ceylon also... the northern boundary of Dravidian is and has been for a long time retreating south before the expansion of Indo-Aryan... We know in fact from the study of the non-Indo-European element in the Sanskrit lexicon that at the time of the earliest Sanskrit records, the R.gveda, when Sanskrit speakers were localized no further east than the Panjab, there were already a few Dravidian words current in Sanskrit. This involves a localization of Dravidian speech in this area no later than three millennia ago. It also of course means much bilingualism and gradual abandonment of Dravidian speech in favor of IndoAryan over a long period and a great area-a process for which we have only the most meagre of evidence in detail. Similar relationships must have existed between Indo-Aryan and Munda and between Dravidian and Munda, but it is still almost impossible to be sure of either of these in detail... The Dravidian languages all have many Indo-Aryan items, borrowed at all periods from Sanskrit, Middle Indo-Aryan and Modern Indo-Aryan. The Munda languages likewise have much Indo-Aryan material, chiefly, so far as we know now, borrowed from Modern Indo-Aryan, though this of course includes items that are Sanskrit in form, since Modern Indo-Aryan borrows from Sanskrit very considerably. That Indo-Aryan has borrowed from Dravidian has also become clear. T. Burrow, *The Sanskrit Language*, 379-88 (1955), gives a sampling and a statement of the chronology involved. It is noteworthy that this influence was spent by the end of the pre-Christian era, a precious indication for the linguistic history of North India: Dravidian speech must have practically ceased to exist in the Ganges valley by this period... Most of the languages of India, of no matter which major family, have a set of retroflex, cerebral, or domal consonants in contrast with dentals. The retroflexes include stops and nasal certainly, also in some languages sibilants, lateral, tremulant, and even others. Indo-Aryan, Dravidian, Munda and even the far northern Burushaski, form a practically solid bloc characterized by this phonological feature... Even our earliest Sanskrit records already show phonemes of this class, which are, on the whole, unknown elsewhere in the Indo-European field, and which are certainly not Proto-Indo-European. In Sanskrit many of the occurrences of retroflexes are conditioned; others are explained historically as reflexes of certain Indo-European consonants and consonant clusters. But, in fact, in Dravidian it is a matter of the utmost certainty that retroflexes in contrast with dentals are Proto-Dravidian in origin, not the result of conditioning circumstances... it is clear already that echo-words are a pan-Indic trait and that Indo-Aryan probably received it from non-Indo-Aryan (for it is not Indo-European)... The use of classifiers can be added to those other linguistic traits previously discussed, which establish India as one linguistic area ('an area which includes languages belonging to more than one family but showing traits in common which are found not to belong to the other members of (at least) one of the families') for historical study. The evidence is at least as clear-cut as in any part of the world... Some of the features presented here are, it seems to me, as 'profound' as we could wish to find... Certainly the end result of the borrowings is that the languages of the two families, Indo-Aryan and Dravidian, seem in many respects more akin to one another than Indo-Aryan does to the other Indo-European languages. (We must not, however, neglect Bloch's final remark and his reasons therefor: '**Ainsi donc, si profondes qu'aient ete les influences locales, elles n'ont pas conduit l'aryen de l'inde... a se differencier fortement des autres langues indo-europeennes.**')" [M.B.Emeneau, *Linguistic Prehistory of India* [PAPS98 (1954). 282-92; *Tamil Culture* 5 (1956). 30-55; repr. in *Collected papers: Dravidian Linguistics Ethnology and Folktales*, Annamalai Nagar, Annamalai University, 1967, pp. 155-171].

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Indo-European language? The Gulf of Khambhat Cultural Complex (GKCC) close to the area of the Nahali-speakers is only 300 kms. from Padri, Dholavira and Surkotada which are replete with stone structures; in Dholavira, ringstones and polished pillars of stone have been found. A maritime, riverine culture of the GKCC parallels the land-based, riverine, Mehrgarh neolithic evidence.

Mlecchita Vikalpa: glyphs (or, cipher-writing) and bha_s.a_

Mlecchita vikalpa is cryptography or writing in glyphs; it is one of the 64 arts according to Va_tsya_yana's *Ka_masu_tra*. Mleccha is a word cognate with Pali Melukka which means copper. Mlecchita vikalpa may, therefore, be the work of metal workers and may be related to the writing system found on many copper tablets and inscribed weapons, apart from seals and tablets of the civilization.

Epigraphs of the civilization may be hypothesized as representing the writing system for Meluhhan or indic language; it may be possible to explain many orthographic features using indic lexemes. This *will* establish that the Meluhhans were the authors of the inscribed objects and that the Meluhhans lived on the banks of Rivers Sarasvati and Sindhu, not too far from Bharu-kaccha where the Gulf of Khambhat Cultural Complex has been discovered in 2002 by scientists of National Institute of Ocean Technology. The complex, together with two rivers which were extensions of palaeo-channels of River Tapati was submerged under the ocean ca. 10,000 years ago

Pura_n.as refer to the migration of Druhyus to the Mleccha, i.e. foreign countries. In Pali, milekkha means copper. **mleccha_khya** = 'called Mleccha', copper (Skt.)

That the antelope connotes a substantive may be surmised from the use of the glyph occupying the entire field, on one side of a tablet from Harappa: h349A h349B



One lexeme is homonymous with '**meluhha**', which semantically denotes a ram (antelope or mountain-goat), with a rebus substantive, **melukka** 'copper'. (Alternative: **med.hi**, 'a merchant's clerk').

Desi_, bha_s.a_ substrate

Category mistake

Hunter noted that three round seals with Harappa (Sarasvati-Sindhu) characters found in Mesopotamia may not be in Harappa (Sarasvati-Sindhu) language since there were marked differences in the sequence of letters. "...the four examples of round seals found in Mohenjodaro show well-supported sequences, whereas the three from Mesopotamia show sequences of signs not paralleled elsewhere in the Indus Script. But the ordinary square seals found in Mesopotamia show the normal Mohenjodaro sequences. In other words, the square seals are in the Indian language, and were probably imported in the course of trade; while the circular seals, although in the Indus script, are in a different language, and were probably manufactured in Mesopotamia for a Sumerian- or Semitic-speaking person of Indian descent..." [G.R. Hunter, 1932. Mohenjodaro--Indus Epigraphy, *JRAS*: 466-503] Analogously, an Indus (Sarasvati-Sindhu)-type seal (squarish with a perforated button on the ridged back) with cuneiform characters may be surmised to relate to a non-Harappa (Sarasvati-Sindhu) language. The non-Harappan (Sarasvati-Sindhu) origin is surmised for a glazed steatite cylinder seal found at Tell Asmar, which shows an Indus (Sarasvati-Sindhu) motif: procession of an elephant, a rhinoceros and a crocodile. (Frankfort, 1933, pp.50-53; Asthana, 1979, p.40.) Ur III texts indicate the need for interpreters to translate the Meluhhan language.

We disagree with these tentative interpretations; it is possible that they were epigraphs engraved by Meluhhan settlers. This possibility will have to be further validated by an evaluation of the entire (though, very limited -- only a few thousands) sample of messages without committing what Gilbert Ryle calls a 'category mistake,' and by using, mainly, the semantic and image clusters of this lexicon.

An *Indian Lexicon* has been presented [<http://www.hindunet.org/saraswati>] as a substantial corpus of des'i_ or bha_sha_ words, most of which are very ancient. Bronze age lexemes of the lexicon assist in the process of deciphering the language of the civilization. [See notes in Appendix]. Many words are cited from *Hemachandra Des'i_* (Hem. D.), *Dhanpala Des'i_* (Dh.D.), *An Etymological Gujarati Dictionary*, *Santali dictionary*, *Encyclopaedia Mundarica*, *Tamil Lexicon*, *Kannada Dictionary*, *Jat.ki Dictionary*, *Punjabi Dictionary*, *Sindhi Dictionary* and from many other Pra_kr.it and Dravidian languagedictionaries to identify the substratum lexemes many of which can also be isolated from tat-samas or tadbhavas (from Sam.skr.tam).

Considering the remarkable consistency and stability of the script for at least over one millennium, spread across the most expansive civilization of its time, spanning considerable distances from the Sarasvati-Sindhu doab to the Tigris-Euphrates doab and with intimations of contacts with Ancient Iran and with communities within Bha_rata, it is surmised that the des'i_ or bha_sha_ of Bha_rata may provide leads.

The corpus of inscriptions of the Sarasvati Sindhu Valley (SSVC) Civilization is analyzed based on internal evidence (structure and form). Decoding proceeds from the known to the unknown, from the known cuneiform script of Mesopotamian civilization to the unknown language and script of SSVC. Decoding is progressed using external evidence (i.e. evidence external to the internal structure and form of inscriptions). The external evidence relates to the bronze age artefacts and the semantic clusters provided by the *Indian Lexicon*.

One or more Bha_rati_ya languages preserve lexemes from the early linguistic area of the civilization, in particular, the semantics of weapons made by armourers (kut.ha_ru). There are scores of other semantic categories which point to the essential semantic unity of Bha_rati_ya languages which evolved from this proto-Bha_rati_ya idiom dated to ca. 3000 BCE

bha_s.a_ speech; language; tongue; dialect; the vrija dialect, a corruption of Sanskrit; **bha_s.an.a** a speech; a discourse; an oration; a lecture; **bha_s.aka** that which speaks, implies, or indicates; **va_yaka** a dictum (cf.

va_kya) a dictum; an aphorism; **bha_s.a_jn~a_n** the science of language; philology; **bha_s.a_ntara** translation; a version; **bha_s.i** adj. That speaks (used at the end of a compound, e.g. **bahubha_s.i**; **bha_s.ya** a gloss, a commentary; an exposition; a scholium; annotations; comments; **bha_s.yaka_ra** a commentator; an expounder; an annotator (G.lex.) cf. **des'i** adj. Native; born or produced in one's native country; relating to the des' or country above the gha_t.s (G.lex.)

bha_s., speak; **bha_s.ate** speaks, says (TBr.); **bha_s.ati** (MBh.); **bha_sati** speaks, calls (Pali); **bha_site** said (As'); **bha_s.adi** speaks (Dhp.); **bha_sai** (Pkt.); **bha_s'n.o** to promise (Wpah.)(CDIAL 9478).**bha_s.a** speech (Mn.); **bha_sa** speech, language (Pali.Pkt.); **ba_s.** word (Wg.); **ba_s.a** language (Dm.); **bas.** (Sh.D.); **bha_s.** (Ku.); **bha_s** (N.B.Mth.Kon.); **bha_sa** song (OG.); **baha** word, saying (Si.); **bas, baha** (Md.); **dubha_siya** interpreter (H.)(CDIAL 9479).

sambha_s.a conversation (Gr.hyas.); **sambha_s.a** (MBh.); **sambha_sa** talk (Pali.Pkt.); **sambha_sa** (Pkt.); **habaya**, pl. haba lawsuit, dispute, complaint (Si.)(CDIAL 12968).

des'i (scilicet. bha_sha_) f. the vulgar dialect of a country (opp. t sam.skr.ita) provincialism; des'i_tva n. ka_vya_d.; Des'in.; des'i_kos'a = vocabulary of provincialism; des'i_na_mama_la_ name of a dictionary of provincialism by Hemac.; des'i_praka_s'a name of a dictionary of provincialisms Sch. On Mr.cch.; des'i_s'abdasam.graha m. = des'i_na_mama_la_Cat.

bha_sha_ f. speech, language (esp. common or vernacular speech as opp. to Vedic or in later times to Sanskrit) Nir.; Pa_n.; Mn.; MBH.; any Pra_kr.it dialect or a particular group of 5 of them (viz. Ma_ha_ra_sht.ri., S'auraseni_, Ma_gadhi_, Pra_cya_ and Avanti_ also called Pan~ca-vidha_ Bha_sha_; description, definition, Bhag.; (in law) accusation, charge, complaint, plaint, Dhu_rtas.; Ya_jn~. Sch.; Name of Sarasvati_; Bha_sha_-sama 'Pra_kr.it-like' a sentence as arranged that it may be either Sanskrit or Pra_kr.t, Sa_h.; bha_shika mfn. belonging to common or vernacular speech Nir.; f. speech language; bha_shita spoken, uttered, said; spoken to, addressed Mn.; MBh.; a speech, language, talk.

pra_kr.ita original, natural, artless, normal, ordinary, usual, S'Br.; low, vulgar, unrefined, Mn.; MBh.; provincial, vernacular, pra_kritic.Vcar.; (in Sa_m.khya) belonging to or derived from Prakriti or the original element. [Extracts from Monier Williams' *Sanskrit-English Dictionary* 1899]

Grouping the inscribed objects of the civilization

The inscribed objects can be grouped into sets based on selected criteria. Corpus organizers (e.g., Mahadevan, Parpola) have categorized the objects by the site where the object was found and by type of object (e.g. copper plate, seal, seal impression, tablet in bas relief, incised tablet, pottery graffiti). They have also attempted to further sub-group the objects by pictorial motifs inscribed on them and by orthographic styles used to depict the motifs.

Considering that there is no apparent correlation between site where the objects were found and the messages conveyed (through pictorial motifs and texts), other categorization techniques may be appropriate to further unravel the code. One technique to identify 'sets' or 'categories' among the inscribed objects taken as total entities (and not, dissecting the objects further by the occurrences of sequences of 'signs').

The identification of such inscribed object 'sets' or 'categories' will help in narrowing down the set of lexemes which may provide a 'rebus' match with the pictorials (both pictorial motifs and signs being treated as pictorials) – lexemes which provide both substantives as well as their homonyms – lexemes taken from the limited corpus of languages within the linguistic area confined by the geographic domain of Sindhu and Sarasvati River valleys.

Milakkhu, meluhha and copper

"Gordon Childe refers to the 'relatively large amount of social labour' expended in the extraction and distribution of copper and tin', the possession of which, in the form of bronze weaponry, 'consolidated the positions of war-chiefs and conquering aristocracies' (Childe 1941: 133)... With the publication of J.D. Muhly's monumental *Copper and Tin* in 1973 (Muhly 1973: 155-535; cf. 1976: 77-136) an enormous amount of data on copper previously scattered throughout the scholarly literature became easily accessible... cuneiform texts consistently distinguish refined (**urudu-luh-ha**) [cf. **loha** = red, later metal (Skt.)] from unrefined copper (**urudu**) strongly suggests that it was matte (impure mixture of copper and copper sulphide) and not refined copper that was often imported into the country. Old Assyrian texts concerned with the import of copper from Anatolia distinguish **urudu** from **urudu-sig**, the latter term appearing when written phonetically as dammuqum, 'fine, good' (CAD D: 180, s.v. dummuqu), and this suggests that it is not just 'fine quality' but actually 'refined' copper that is in question... TIN. In antiquity tin (Sum. **nagga**/[AN.NA], Akk. **annaku**) was important, not in its own right, but as an additive to copper in the production of the alloy bronze (Sum. **sabar**, Akk. **siparru**) (Joannes 1993: 97-8)... In some cases, ancient recipes call for a ratio of tin to copper as high as 1: 6 or 16.6 per cent, while other texts speak of a 1:8 ratio or 12.5 per cent (Joannes 1993: 104)... 'there is little or no tin bronze' in Western Asia before c. 3000 BCE (Muhly 1977: 76; cf. Muhly 1983:9). The presence of at least four tin-bronzes in the Early Dynastic I period... Y-Cemetery at Kish signals the first appearance of tin-bronze in southern Mesopotamia... arsenical copper continued in use at sites like Tepe Gawra, Fara, Kheit Qasim and Ur (Muhly 1993: 129). By the time of the Royal Cemetery at Ur (Early Dynastic IIIa), according to M.Muller-Karpe, 'tin-bronze had become the dominant alloy' (Muller-Karpe 1991: 111) in Southern Mesopotamia... Gudea of Lagash says he received tin from Meluhha... and in the Old Babylonian period it was imported to Mari from Elam..."

Among synonyms for copper (**ta_mra**, **tutha**, **bha_skara**, **ravi**, **s'ulva**, **s'ulvaka**), **s'ulva** is the most frequently used term in a work of 10th-12th cent. CE. (M. Roy and BV Subbarayappa, 1976, *Rasarnava-kalpa*, Calcutta) Hence, **s'ulbasu_tra-s** may be interpreted as the manuals for processing copper, **s'ulba**. *Rasa_rn.avakalpa* treats **s'ulvaveda** as the transmutation of copper into noble metals.

Lead was used for exchange according to S'atapatha Bra_hman.a (S'Br. 5.1.2.14): "Now when he buys the king (Soma), he at the same time buys for a piece of lead the Parisruta (immature spirituous liquor) from a long-haired man nearby towards the south" (Eggeling 1894, II:9; Weber 1849: 424). In *Suttavibhanga* XI-2.1 and XII (Horner 1957, I; 241), there is a reference to the use of **bronze** as a medium of exchange: "if a nun is bargaining for a light cloth, she may bargain for one (worth) at most two and a half 'bronzes'". In the *ja_taka-s*, **kam.sa** is the term used for bronze; **tamba**, **tamba loha** and **loha** for copper; *vatta loha* may refer to an alloyed metal (Horner 1964, II: 85); **vattaka_ra-s** are workers in alloys (Horner 1964, II: 172). *Cullavagga* V.28.1 (Oldenberg 1889, II: 135) mentions dealers in bronze articles. By metathesis, **vattaka_ra** becomes **virtaka**, a generic name for a trader; thus **varta-loha** or **vattaloha** may be interpreted as 'traded copper-alloy'. *Periplus* mentions Broach or Barygaza as the port from which copper was dispatched, along with other commodities, to Persian ports (RC Majumdar, 1960, *The classical accounts of India*, Calcutta: 289).

Amarakos'a (2.9.97; K.G. Oka, *The Amarakos'a*, repr. Delhi, 1981, p. 155) reads: **atha ta_mrakam, s'ulvam mlecchamukham dvyas.ta varis.t.h odumbara_ni ca**: four words are given as synonyms: **ta_mraka**, **s'ulva**, **mlecchamukham**, **udumbaram**. The section appended to the Vedic *Kalpa* or *S'rautasu_tra* on the rules of making fire-altars, their diagrams and geometry is referred to as **s'ulbasu_tra**; if **s'ulva** refers to copper, the *su_tra* or *rajju*, the measuring rope should be interpreted as copper wire. Another interpretation could be: rules for copper (in alchemical terms). Kautilya's *Arthas'astra* (ca. 3rd cent. BC) recognizes **s'ulba** as copper. (Kangle, R.P., 1960, *The Arthas'astra*, Bombay; 2.13.16.44; 2.14.20-22, 30-31). cf. Edgerton, P., 1970, *Buddhist Hybrid Sanskrit Dictionary*, repr. Delhi, p.531: **ta_mrалоham ca sulvam**; p. 533, **sasulbika** = coppersmith.

Abhidha_na Cinta_man.i of Hemachandra states that **mleccha** and **mleccha-mukha** are two of the twelve names for copper: **ta_mram**

(IV.105-6: **ta_mram mlecchamukham s'ulvam rakt tam dvas.t.amudumbaram; mlecchas'a varabheda_khyam markata_syam kani_yasam; brahmavardhanam varis.t.ham si_santu si_sapatrakam**).

Theraga_tha_ in Pali refers to a banner which was dyed the colour of copper: milakkhurajanam (The Thera and Theriga_tha_, PTS, verse 965: milakkhurajanam rattam garahanta_sakam dhajam; tithiya_nam dhajam keci dha_ressanty avada_takam; K.R.Norman, tr., Theraga_tha_: Finding fault with their own banner which is dyed the colour of copper, some will wear the white banner of sectarians).[cf. Asko and Simo Parpola, On the relationship of the Sumerian Toponym Meluhha and Sanskrit Mleccha, *Studia Orientalia*, vol. 46, 1975, pp. 205-38).

Dialects of Mleccha

Copper-smelting had to occur on the outskirts of a village. Hence, the semantic equivalence of *milakku* as copper in Pali language.

The close semantic clustering of tools of trade of a smelter, metal-worker in Mundarica, Gujara_ti_, Mara_t.hi_, Pali and Punjabi lexemes point to the substratum indic, the linguistic area of the civilization – this dialect may be called **Mleccha** and the writing system, **mlecchita vikalpa**. It is notable that while **milakku** means copper in Pali language and **mleccha_khya** in Sam.skr.tam language also means copper.

Mleccha (Skt.) is *milakha* or *milakku* (Pali) to describe those who dwell on the outskirts of a village. (Shendge, Malati, 1977, *The civilized demons: the Harappans in Rigveda*, Abhinav Publications). A milakku is disconnected from va_c and does not speak Vedic; he spoke Prakrt. **na a_rya_mlecchanti bha_s.a_bhir ma_yaya_na caranty uta**: arya (i.e., cultured people) do not speak with crude dialects like mlecchas, nor do they behave with duplicity (MBh. 2.53.8). a dear friend of Vidura who was a professional excavator is sent by Vidura to help the Pa_n.d.avas in confinement; this friend of Vidura has a conversation with Yudhisthira, the eldest Pa_n.d.ava: **kr.s.n.apakse caturdasyam ratrav asya purocanah, bhavanasya tava dvāri pradāsyati hutāsanam, matrā saha pradagdhavyāh pa_n.d.avāh purus.ars.abhāh, iti vyavasitam pārtha dha_rtara_s.t.ra_sya me śrutam, kiñcic ca vidurenkoto mleccha-vācāsi pa_n.d.ava, tyayā ca tat tathety uktam etad visvāsa ka_ran.am**: on the fourteenth evening of the dark fortnight, Purocana will put fire in the door of your house. ‘The Pandavas are leaders of the people, and they are to be burned to death with their mother.’ This, Pa_rtha (Yudhis.t.ira), is the determined plan of Dhr.tara_s.t.ra’s son, as I have heard it. When you were leaving the city, Vidura spoke a few words to you in the dialect of the mlecchas, and you replied to him, ‘So be it’. I say this to gain your trust.(MBh. 1.135.4-6). This passage shows that there were two groups distinguished by dialects and ethnicity: Yudhis.t.ira and Vidura – and both could understand mleccha dialect – mleccha-vācāsi.

Dialect which Vidura and Yudhis.t.ira spoke: Meluhhan!

This passage from the Mah_bha_rata also shows that there were two individuals, ‘a_rya-s’ (or, people characterized by nobility of culture) distinguished by linguistic competence, Yudhis.t.ira and Vidura. Both could speak the languages of the mleccha-s; in contrast, Dhr.tara_s.t.ra and his people are NOT connoted as ‘a_rya-s’ only because of their behavioural traits.

It is a historic blunder in philological studies related to the early periods of Bha_rata to equate ‘a_rya-s’ with a particular group of people. The term, a_rya in R.gveda is used only to connote nobility or rectitude in behaviour.

Melakkha, ocean island-dwellers

According to the great epic, Mlecchas lived on islands: **sa sarva_n mleccha nr.patin sa gara dvi_pa va_sinah, aram a_ha_ryam āsa ratna_ni vividha_ni ca, andana aguru vastra_ni man.i muktam anuttamam, ka_ñcanam rajatam vajram vidrumam ca maha_dhanam**: (Bhima) arranged for all the

mleccha kings, who dwell on the ocean islands, to bring varieties of gems, sandalwood, aloe, garments, and incomparable jewels and pearls, gold, silver, diamonds, and extremely valuable coral... great wealth. (MBh. 2.27.25-26).

Elsewhere in the Great Epic we read how Sahadeva, the youngest of the Pa_n.d.ava brothers, continued his march of conquest till he reached several islands in the sea (no doubt with the help of ships) and subjugated the Mleccha inhabitants thereof.(1)

Brahma_n.d.a 2.74.11, Brahma 13.152, Harivam.s'a 1841, Matsya 48.9, Va_yu 99.11, cf. also Vis.n.u 4.17.5, Bha_gavata 9.23.15, see Kirfel 1927: 522:

pracetasah putras'atam ra_ja_nah sarva eva te // mlecchara_s.t.ra_dhipa_h sarve udi_ci_m dis'am a_s'rita_h

which means, of course, not that these '100' kings conquered the 'northern countries' way beyond the Hindukus. or Himalayas, but that all these 100 kings, sons of praceta_s (a descendant of a 'druhyu'), kings of mleccha kingdoms, are 'adjacent' (a_s'rita) to the 'northern direction,' -- which since the Vedas and Pa_n.ini has signified Greater gandha_ra. Kirfel, W. Das Pura_n.a Pan~calaks.an.a. Bonn : K. Schroeder 1927.

Erythraen Sea and Meluhha

Fifth century BC Greek historian, Herodotus referred to the body of water which linked Africa, the Arabian Peninsula, Iran and the Indian subcontinent as the Erythraen sea. This sea includes the Red sea, the Gulf of Aden, Indian Ocean, Arabian Sea, Gulf of Oman and the Persian or Arabian Gulf.

"The land of Melukkha shall bring carnelian, desirable and precious, sissoo-wood from Magan, excellent mangroves, on big-ships!" said a statement in the Sumerian myth, *Enki and Ninkhursag* (cf. lines 1-9, trans. B. Alster). "In the late Early Dynastic period (about 2500), Ur-Nanshe, king of the Sumerian city-state Lagash, "had ships of Dilmun transport timber from foreign lands" to his capital (modern Tell al-Hiba), just as a later governor of Lagash, named Gudea, did in the mid-twenty-first century. In the early twenty-fourth century, Lugalbanda and Urukagina, two kings of Lagash, imported copper from Dilmun and paid for it with wool, silver, fat, and various milk and cereal products... That these (round stamp) seals were used in economic transactions is proven by the discovery of two important tablets bearing their impressions. One of these tablets was found at Susa, and dates to the first half of the second millennium. It is a receipt for goods, including ten minas of copper (about eleven pounds or five kilograms). The second tablet, in the Yale Babylonian Collection, is dated to the tenth year of Gungunum of Larsa (modern Tell Senkereh), that is, around 1925, and records a consignment of goods (wool, wheat, and sesame) prior to a trading voyage that almost certainly had Dilmun as its goal. Dilmun seals characteristically depict two men drinking what could be beer through straws, or two or three prancing gazelles...a merchant named Ea-nasir, who is identified as one of the a_lik Tilmun, or "Dilmun traders"... Ea-nasir paid for Dilmun copper with the textiles and silver that he received from the great Nanna-Ningal temple complex at Ur...The Mari texts contain several references to Dilmunite caravans...Melukkha was a source of wood (including a black wood thought to have been ebony), gold, ivory, and carnelian...Melukkha was accessible by sea...Sargon of Akkad...boasts that ships from Dilmun, Magan and Melukkha docked at the quay of his capital Akkad...While points of contact with other regions are attested, they can hardly have accounted for the strength and individuality of civilization in the subcontinent...Unmistakably Harappan cubical weights of banded chert (based on a unit of 13.63 grams) are known from a number of sites located around the perimeter of the Arabian Gulf, including Susa, Qalat al-Bahrain, Shimal (Ras al-Khaimah), and Tell Abraq (Umm al-Qaiwain)...an inscribed Harappan shard has been found at Ras al Junayz... Harappan pottery has been found at several sites throughout Oman and the United Arab Emirates...A "Melukkhan village" in the territory of the ancient city-state of Lagash, attested in the thirty-fourth year of the reign of Shulgi (2060), may have been a settlement of Harappans, if the identification with the civilization of the Indus Valley is correct...But...there is little evidence of a Sumerian, Akkadian, or Babylonian presence in the Indus Valley... That the language of Melukkha was unintelligible to an Akkadian or Sumerian speaker is clearly shown by the fact that, on his cylinder seal, the Akkadian functionary Shu-ilishu is identified as a "Melukkhan translator"...the word "Melukkha" appears occasionally as a personal name in

cuneiform texts of the Old Akkadian and Ur III periods. "(Potts, D., 1995, *Distant Shores: Ancient Near Eastern Trade*, in: Jack M. Sasson (ed.), *Civilizations of the Ancient Near East*, Vol. I, pp. 1451-1463).

Dilmun, Makkan, Meluhha

"Around 2500 BC, Dilmun is first referred to as a supplier of wood, by Urnanshe, King of Lagash. His successors, Lugalanda and Uri'nimgina (before 2350 BC) dispensed various textiles, resins, oil and silver out of the state storehouses to merchants of Lagash. The merchants were to trade the goods in Dilmun for copper and other wares, such as onions, linen, resin and bronze 'marine spoons'... During the succeeding Old Akkadian Period (2334-2193 BC) the Mesopotamians were no longer the only traders to visit Dilmun. The seas were open to all countries and seafaring merchants from the distant lands of Dilmun, Meluhha and Makkan tied up at Akkad's quay, during Sargon's reign (2334-2279 BC). Copper was shipped directly from Makkan; people from Meluhha are mentioned in written sources as interpreters and seamen. During the reign of Gudea of Lagash, copper, diorite and wood were delivered from Makkan and Meluhha delivered rare woods (such as Sissoo wood), gold, tin, lapis lazuli and carnelian to Lagash. Naramsin warred against Makkan; Mesopotamia strove for predominance in the area...

"Ships from Makkan did not sail to the north. It appears that one or more trading centers in Makkan were visited during the voyages where Makkan wares-- chiefly copper-- and luxury items from Meluhha were bartered. Therefore it appears that many wares referred to in the written sources as 'Makkan goods', actually were materials originally brought from Meluhha. Through trans-shipment in Makkan, these goods were then later referred to as coming from Makkan; the same confusion occurs later with materials from Dilmun... Both the goods and the foreign merchants trading in Dilmun's markets influenced forms of trade. The cuneiform characters had been taken over from the Sumerians, but the system of weights used in barter derived from the Indus Valley culture. (Michael Road, *Weights on the Dilmun Standard*, *Iraq*, vol. 44, 1982, 137-141). Spreading out from Dilmun, this system of weights became very popular and was used as far away as Ebla in Syria... Dilmun is mentioned for the last time in written records, during the reign of Samsu'iluma in the year 1744 BC, with the entry... '12 measures of purified copper from Alasia and Dilmun'. With this notice, the new supplier of copper is also mentioned; Alasia (Cyprus) would control the Mediterranean and Near Eastern market for copper for the next millennium. Alasia's rise did not occur in isolation; obviously a lengthy series of crises led to the collapse of the existing system in the East. Unlike Dahlak, Dilmun did not cease to exist; Tukulti-Ninurta refers to himself as 'King of the Upper and Lower Seas' and ruler over Dilmun and Meluhha. However, Meluhha and Makkan are no longer referred to in written records in the old sense.

"...More recent archaeological researches in East Arabia have brought to light many finds which are related to the presence of Indus valley people. In the settlements of Hili 8 and Maysar-1, both of which have been investigated, Indus valley pottery is frequently found. Seals with Indus valley script and typical iconography indicate influences in Makkan down to the level of business organization. Marks identifying pottery in Makkan were taken from those used in the Indus valley, including the use of the signs on pottery used in the Indus valley. The discovery of a sea-port-- which may be ascribed to the Harappans-- at Ra's al-Junayz on Oman's east coast by an Italian expedition would seem to indicate that trade routes should be viewed in a more differentiated fashion than has been done up to now."

[Sege Cleuziou, Preliminary report on the second and third excavation campaigns at Hili 8, *Archaeology in the United Arab Emirates*, vol. 2/3, 1978/79, 30ff.; Gerd Weisgerber, '...und Kupfer in Oman', *Der Anschnitt*, vol. 32, 1980, 62-110; Gerd Weisgerber, *Makkan and Meluhha- 3rd millennium copper production in Oman and evidence of contact with the Indus valley*, Paper read in Cambridge 1981 and to appear in *South Asia Archaeology* 1981; Maurizio Tosi, *A possible Harappan seaport in Eastern Arabia: Ra's al-Junayz in the Sultanate of Oman*, Manuscript]. Gerd Weisgerber, *Dilmun--a trading entrepot; evidence from historical and archaeological sources*, 135-142 in: Shaikha Haya Ali Al Khalifa and Michael Rice (eds.) *Bahrain through the ages: the archaeology*, London, KPI, 1986. [Simo Parpola/Asko Parpola/Robert H. Brunswig, *The Meluhha village. evidence of acculturation of Harappan traders in the later third millennium Mesopotamia?*, *Journal of the Economic and Political History of the Orient*, vol. 20, 1977, 129-165. 'If the tablets and their sealed

envelopes had not been found, in fact, we might never have suspected the existence of a merchant colony.' (T. Ozguc, An Assyrian trading outpost, *Scientific American*, 1962, 97 ff.) cited after Lamberg-Karlovsky 1972.)]

The acculturation of Meluhhans (probably, people from the Sarasvati-Sindhu doab and coastal regions of Makran Coast, Gulf of Kutch and Gulf of Khambat) residing in Mesopotamia in the late third and early second millennium BC, is noted by their adoption of Sumerian names (Parpola, Parpola and Brunswig 1977: 155-159). "The adaptation of Harappan motifs and script to the Dilmun seal form may be a further indication of the acculturative phenomenon, one indicated in Mesopotamia by the adaptation of Harappan traits to the cylinder seal." (Brunswig et al, 1983, p. 110).

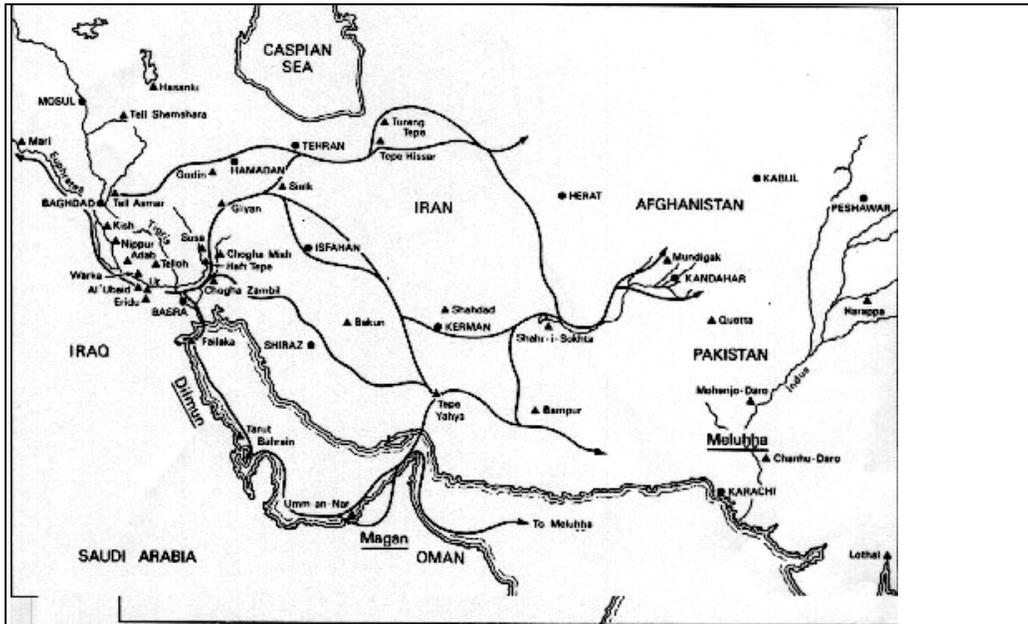
Identification of Makkan, Magan

"Oman peninsula/Makkan lies half way between the two main civilization centres of the third millennium Middle East: Mesopotamia and the Indus valley... an increasing influence of Harappan civilization on Eastern Arabia during the last two centuries of the third millennium. This influence seems to strengthen during the early second millennium where proper Harappan objects are found all over the Oman peninsula: a cubic stone weight at Shimal, sherds of Harappan storage jars on several sites including Hili 8 (period III). Maysar and Ra's Al-Junayz bears a Harappan inscription and Tosi (forth.) has emphasized the importance of this discovery for the knowledge of Harappan control over the Oman Sea." [Serge Cleuziou, Dilmun and Makkan during the third and early second millennia BC, 143-155 in: Shaikha Haya Ali Al Khalifa and Michael Rice (eds.) *Bahrain through the ages: the archaeology*, London, KPI, 1986.]

A series of articles and counters had appeared in the *Journal of the Economic and social history of the Orient*, Vol. XXI, Pt. II, Elizabeth C.L. During Caspers and A. Govindankutty countering R. Thapar's dravidian hypothesis for the locations of Meluhha, Dilmun and Makan; Thapar's A Possible identification of Meluhha, Dilmun, and Makan appeared in the journal Vol. XVIII, Part I locating these on India's west coast. Bh. Krishnamurthy defended Thapar on linguistic grounds in Vol. XXVI, Pt. II: *mel-u-kku = 3D highland, west; *tel.man. (= 3D pure earth) ~ dilmun; *makant = 3D male child (Skt. vi_ra = 3D male offspring. [cf. K. Karttunen (1989). India in Early Greek Literature. Helsinki, *Finnish Oriental Society. Studia Orientalia*. Vol. 65. 293 pages. ISBN 951-9380-10-8, pp. 11 ff et passim. Asko Parpola (1975a). Isolation and tentative interpretation of a toponym in the Harappan inscriptions. *Le dechiffrement des ecritures et des langues*. Colloque du XXXIXe congres des orientalistes, Paris Juillet 1973. Paris, *Le dechiffrement des ecritures et des langues. Colloque du XXXIXe congres des orientalistes*, Paris Juillet 1973. 121-143 and Asko Parpola (1975b). "India's Name in Early Foreign Sources." *Sri Venkateswara University Oriental Journal*, Tirupati, 18: 9-19.]

Mleccha trade was first mentioned by Sargon of Akkad (Mesopotamia 2370 BCE) who stated that boats from Dilmun, Magan and Meluhha came to the quay of Akkad (Hirsch, H., 1963, Die Inschriften der Konige Von Agade, Afo, 20, pp. 37-38; Leemans, W.F., 1960, Foreign Trade in the Old Babylonian Period, p. 164; Oppenheim, A.L., 1954, The seafaring merchants of Ur, *JAOS*, 74, pp. 6-17). The Mesopotamian imports from Meluhha were: woods, copper (ayas), gold, silver, carnelina, cotton. Gudea sent expeditions in 2200 BCE to Makkan and Meluhha in search of hard wood. Seal impression with the cotton cloth from Umma (Scheil, V., 1925, Un Nouvea Sceau Hindou Pseudo-Sumerian, *RA*, 22/3, pp. 55-56) and cotton cloth piece stuck to the base of a silver vase from Mohenjodaro. (Wheeler, R.E.M., 1965, Indus Civilization) are indicative evidence.

Umma seal impression shows a Meluhha trader in Mesopotamia; there is no comparable evidence of a Mesopotamian trader in Meluhha. Babylonian and Greek names for cotton were: **sind**, **sindon**. This is an apparent reference to the cotton produced in the black cotton soils of Sind and Gujarat.

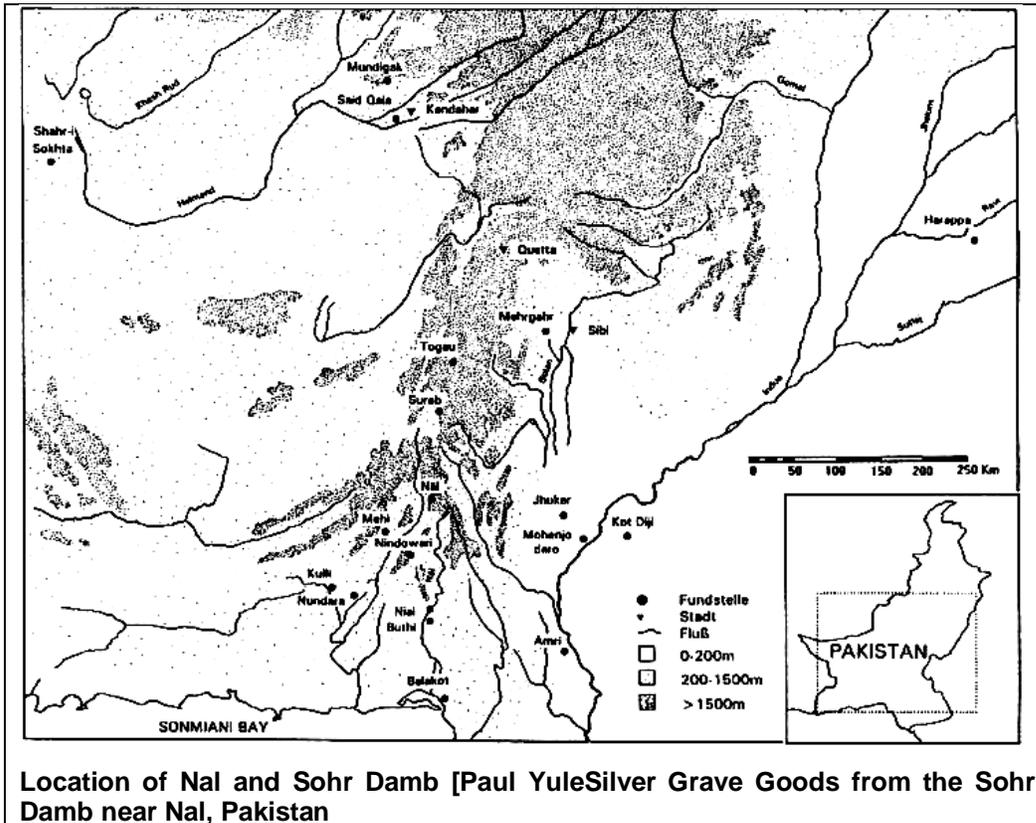


Interaction areas. After Fig. 2 in P.R.S. Moorey, 1994, *Ancient Mesopotamian Materials and Industries*, Oxford, Clarendon Press.

Euphrates River was a link in the maritime trade of the eastern Mediterranean with that of the Gulf and Meluhha beyond. The Sumerian 'colonies' on the northern bend of the Euphrates were the conduits to carry the culture of Uruk to Egypt and linked the head of the Gulf to the Egyptian Delta through the Syrian ports (Moorey, 1990). The famous bilingual inscription of Sargon of Akkad (ca. 2234-2279 BC) sets out in geographical order from south-east to north-west the trading posts: Meluhha, Magan, Dilmun, Mari, Yarmuti, and Ebla: that is, from the Indus to the Taurus -- the Indus which was also linked with central Asia through Afghanistan. (Hirsch 1963: 37-8).

Meluhha and interaction areas

- Ubaid: ca. 5500-4000 BCE
- Uruk ca. 4000-3000 BCE
- Early Dynastic I: ca. 3000-2750 BCE
- Early Dynastic II: ca. 2750-2600 BCE
- Early Dynastic III: ca. 2600-2350 BCE
- Akkadian (or Sargonic): ca. 2350-2000 BCE
- Ur III: ca. 2100-2000
- Isin-Larsa/Old Babylonian/Old Assyrian: ca. 2000-1600 BCE
- Kassite/Mitannian/Middle Babylonian/Middle Assyrian: ca. 1600-1000 BCE
- Neo-Assyrian: ca. 1000-612 BCE
- Neo-Babylonian: ca. 612-539 BCE
- Achaemenid Persian: ca. 539-330 BCE



Vratya

Mleccha-s could be related to the vratya-s of Magadha. Reference to Satvants of the Chambal valley may relate to the term, *satvata*, used in the *pan~cara_tra* tradition and *vra_tya-s* are associated with the people of Magadha.

"The literature is replete with the names of clans. The most powerful among them, commanding the greatest respect, was the Kuru-Pañcala, which incorporated the two families of Kuru and Puru (and the earlier Bharatas) and of which the Pañcala was a confederation of lesser-known tribes. They occupied the Upper Doab and the Kuruksetra region. In the north the Kamboja, Gandhara, and Madra groups predominated. In the middle Ganges Valley the neighbours and rivals of the Kuru-Pañcalas were the Kasi, Kosala, and Videha, who worked in close cooperation with each other. The Magadha, Anga, and Vanga peoples in the lower Ganges Valley and delta were outside the Aryan pale and regarded as mlecchas. Magadha (Patna and Gaya districts of Bihar) is also associated with the vratya people, who occupied an ambiguous position between the aryas and mlecchas. Other mleccha tribes frequently mentioned include the Satvants of the Chambal valley and, in the Vindhyan and northern Deccan region, the Andhra, Vidarbha, Nisadha, Pulinda, and Sabara. The location of all these tribes is of considerable historical interest, because they gave their names to the geographic area."

<http://www.britanica.com/bcom/eb/article/9/0,5716,121169+2+111197,00.html>

Fire-workers of the Rigveda

The fire-workers of the Rigveda, living on the banks of River Sarasvati, worked on one mineral: electrum (soma). The fire-workers were *vra_tya* and *ya_jn~ika*.

The Sarasvati river (which nurtured the bronze-age civilization) is adored in the Rigveda.

The desiccation of the Sarasvati river (ca. 1700-1300 BCE) led to the migrations of populations away from the banks of this river and principally eastwards and southwards.

The fire-workers of the Sarasvati-Sindhu civilization who worked with minerals and the Rigvedic peoples who specialized in processing one mineral, electrum or soma, migrated away from the Sarasvati river due to the desiccation of the river.

This leads to the formulation of two hypotheses:

A cooperative society and a continuous culture had existed right from the chalcolithic- age through the bronze-age to the historical periods on the Sarasvati-Sindhu doab and the rest of India.

Emergence of *lingua franca* in Bharat

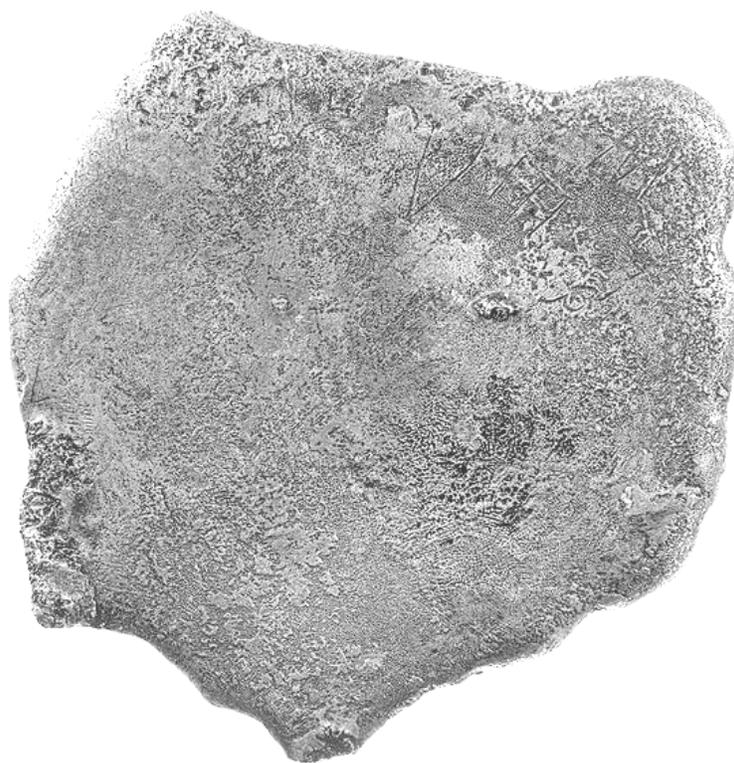
A *lingua franca* had emerged in the doab ca. 3000 BCE with intense interaction and resultant cross-borrowings of lexemes of an expansive contact zone (from Tigris-Euphrates to Ganga, from the Caucasus mountains to the Gulf of Khambat, from Kashmir to Kanya_kumari) constituting the Sarasvati-Sindhu doab and the rest of Bha_rata as an Bha_rati_ya Linguistic Area.

The assumption for establishing this concordance among lexemes removed in time, by over 1 millennium, is that the names of the arms and armour of the linguistic area, ca. 5500 BP continued, as parole, in the ancient languages of Bharat, by a hereditary tradition nurtured among the artisans (vis'vakarma) and warriors (ks.atriya) alike and by the literary tradition of *Dhanurveda Sam.hita_* and related texts.

When the River Sarasvati_ got desiccated between ca. 3900 and 3500 BP, many people of the River Basin moved into the Ganga-Yamuna doab and south of Gujarat to the Godavari River Basin and further south along the coast of Sindhu Sa_gara (Arabian Sea) and also moved west of Ga_ndha_ra in Afghanistan, resulting in the naming of a small river as Haraqaiti, in remembrance of River Sarasvati. Similar instances of cherishing the legacy of River Sarasvati are noticed in the naming of rivers near Pus.kar (Ajmer), and near Little of Rann of Kutch (Siddhapura) also as Sarasvati. The mother who nourished the forefathers of many Bha_rati_yas could not be forgotten. When a mother prays to river goddesses, she invokes the names of Gan:ga_, Yamuna_, Sarasvati_; when she goes to a ti_rthaya_tra and notices a san:gamam of two rivers, she learns from the folklore and folk traditions, that the san:gamam is triven.i, the third river being the antahsalila_ Sarasvati_ (the Sarasvati_ which flows underground). The sthala pura_n.a of the Sarasvati_ temple at Basara (Vya_sapura) on the banks of River Godavari (near Adilabad district, Andhra Pradesh) states that the mu_rti of Sarasvati_ was made by Vya_sa taking three mus.t.is (hand-fuls) of sand from the river bed. There is also a temple for Sarasvati_ on the banks of Cauvery in Ku_ttanu_r, near Swa_mimalai (the pilgrimage centre for E_raka Subrahman.ya, Ka_rttikeya).

The formulation of these hypotheses is a plea for unravelling further the as yet untold story of the formation of Bha_rati_ya languages as an exercise in general semantics.

Silver ingot with Hittite (?) hieroglyphs



**Ingot with Hittite hieroglyphs, 15th–13th century B.C.; Hittite period
Central Anatolia Silver; W. 3 1/4 in. (8.3 cm).**

Substantive: *bed.a* 'brick' (Kuwi); *ped.d.a* clod, lump of earth (Te.); *pen.t.e*, *hen.t.e*, *hen.d.e*, *pet.t.a*, *pet.t.e* clod, lump (Ka.); *hen.t.e*, *ent.e* clod of earth (Te.)(DEDR 4394)

Glyph: *bhed.a* 'ram'; *bhindi jel* 'a mythical deer'; *bhid.i jel* 'a deer'; *jel* 'a deer'; *bhid.i* 'a sheep, a ewe'; (Santali) **bhed**. A sheep; a goat (G.) **bhed.a hako** a species of fish (Santali)

bed.a 'either of the sides of a hearth' (G.) **bhin.d.a** a lump, applied especially to the mass of iron taken from the smelting furnace; *bhin.d.ia*, *bhin.d.* = a faggot, a bundle of anything (Santali.lex.) [Note the bundle of ?hayrick shown on the platform where a horned, bangled person sits].

Substantive: *bi.d.u* dross, alloy of iron (Tu.); iron filings or dust (Te.)(DEDR 4218)

Glyph: *pend.a* 'buttock'; Substantive: *bed.a* 'ingot'; *kokr.e kol* ('wry-faced tige'r); Rebus: stone furnace (or smithy)

Glyph: *pend.a* 'buttock' (Pa.); *pe.nd.a* female organ, buttock (Go.); *pe.n.d.a* anus (Go.); *pind.ari* rectum (Kui)(DEDR 4398). [cf. glyphs of standing persons ligatured to the buttocks of a bovine.]

Glyph: *pe.t.i* hermaphrodite (Ta.); *pe.d.i* id. (Ka.Te.); *pot.a* id. (Skt.)(DEDR 4434).

Glyph: *hen.d.a* vinous liquor or toddy extracted from the wild date tree (Ka.); toddy (Tu.); *pend.om* rice-beer (Ga.); *pen.d.am kalu* id. (Kond.a)(DEDR 4397).

Glyph: *bhindran*: 'to fall to the ground, to knock down', *bindar*: 'to fall down, to collapse', *bindr.an* 'to fall or tumble down backwards from a standing or sitting position' (Santali)

Glyph: *pin.d.i* 'platform' (Santali)

Glyph: *bhin.d.ia* 'the finishing thatch put on the ridge of a roof' (Santali)

Glyph: *bindi* 'a spider' (Santali)

Glyph: *bhin.d.i* 'sheaf', *bhin.d.ia* 'a faggot, a bundle of anything', **bin.d.a** = a sheaf, a bundle; to make into sheaves or bundles (Santali.lex.) *bindad.i_* a parcel, a bundle (G.lex.) [Note the clump or sheaf on the platform on which a horned person is *seated].

Glyph: *bhidia* 'a spy'; *bhiduk* 'a spy, a pretender' (Santali)

Substantive: *bed.a* 'ingot' **pin.d.a** = a lump; a quantity, collection (G.lex.) *bhin.d.a* = a lump applied especially to the mass of iron taken from the smelting furnace (Santali.lex.)

bhekhad. A clod; a lump of clay; a mass (G.)

basla = a certain kind of large fish (Santali.lex.)

basla = an adze, an axe with blade at right angles to handle; *chutar basla* = an adze fixed to the handle with an iron cramp, often with a square back, so that the instrument may be used both as an adze and as an axe (Santali); *ba_sila_* (H.)(Santali.lex.Bodding) *va_s'i* pointed knife or adze (RV.); *va_si_* adze (Pkt.); *wa_s* (Ash.); *wos* (Kt.); *wusik* (Pr.); *wa_cek* (Pas.); *ba_si* (WPah.B.Or.); *vaha, va_~ya* axe (Si.); *e_seli* adze (Pas.); *behil, behalo* (WPah.); *basilo* (N.); *ba_risi* (Or.); *basila_* (Bi.); *ba~_sila_* (H.); *va~_slo* (G.); *wa~_soli* adze (Gaw.)(CDIAL 11588). *basla* a small adze (Santali.lex.) *va_cci, va_ycci, va_t.ci* adze (Ta.); *va_cci* adze, scraper (Ma.); *po.d.c* adze (To.); *ba_ci id.* (Ka.); *ba_ci, ba_ji* (Tu.)(DEDR 5339). *basi, base* a pointed object; the tongue of a balance (Ka.); *vad.i* sharpness; *vasi* a spike, a wooden pin (Te.); *vaci, vai, val.* sharpness; the point or edge of a thing; a pointed stake; a sword; a trident (Ta.); *basidu, basadu* that which is pointed, sharp, keen, or acute (Ka.); *base* a small pointed object that sticks in the ground, a stubble of *togari* etc. (Ka.M.)(Ka.lex.)

man:gri, man:gori, man:gari = the fish (in songs)(Santali.lex.Bodding) *man:gri* = a certain fish, *clarius bacrachus*; *man:gri hako reak cu_ra_k do banuktakon* = the mangri fish has no scales (Santali); *maguri_* (H.); *man:gri baha* = the gills of the mangri fish; *man:gri goco* = adj. The beard of the mangri fish; a moustache twirled up at both nds; having such beard(Santali.lex.)

man:gar. = the alligator, *crocodilus palustris*; *man:gar.gupiye calaena* = he has gone to herd the alligators (he is dead) [connected with the custom of throwing the ashes of a funeral pyre into a tank in which alligators live] (Santali); *magar* (H.); cf. *tayan* (Santali.lex.Bodding)

mun:gar = a mallet; *sal man:garte bantha sagar. reak put.ile kutam jalada* = with a wedge-mallet (*sal* stands here for the wedges joining the parts of a solid wheel we hammer the outside plank of a solid wheel firmly in; *hende kuhu pon.d. ba_k sal mun:gar huabak* = a black crow, a white paddy-bird, a wedge mallet, all at once (an expression used at the Sakrat; a young man lies down on his back, a number of men present put their little finger (right hand) under the man lying down and saying this, lift him up (Santali); *mu_gra_* (H.)(Santali.lex.Bodding)

man:jhaut.i = headmanship, the position and work of a villae headman; *man:jhi* = headman of a village (especially a Santal village, but used by the Santals also of the chief of a Hindu or Mohammedan villae); appoint to be, become a village headman; *man:jhi* is also used by others (not by Santals) in the meaning of a 'Santal', especially in address; *ato man:jhi t.hen laime* = tell it to the village headman; *man:jhia* = a collection of headmen; *man:jhia man:jhi* = a collection of headmen and tenants come together for judging; *man:jhian* = A Santal woman; *man:jhian* = female (Desi); *man:jhia* = a male, man (Desi); *man:jhi har.am* = the old village headman (Santali.lex.)

kara ghhako = a species of fish (Santali.lex.)
ka~r.a~ hako = a species of fish (Santali.lex.)

kara = a large iron pan used to boil sugar cane juice in (Santali.lex.)
kar.a = a kind of anklet (Santali.lex.)
karha = an agricultural implement used to drag earth from one place to another (Santali.lex.)
ka~r.ec = one eyed, blind of one eye (Santali.lex.)
kar.gec = a small twig (Santali.lex.)
kar.go = to stand on the hind legs with the forelegs resting on something living, as a bear does when hugging (Santali.lex.)

karigar, karigol = artisan; na~ha~k do sanamko karigolena = all are artisans nowadays (Santali.lex.)

khot.rao = to scrape, to cut by a scraping action, to scrape out of a hollow, to gouge (Santali.lex.)
kot.ro = a species of fish (Santali.lex.)

pot.ea gar.ai, pot.ha hako, put.hi hako = a species of fish (Santali.lex.)

re~r.e~t hako = a species of fish (Santali.lex.)
re~t = a file; reta = to saw, as when cutting with knife, sword etc., to draw backwards and push forwards, as a fiddle bow (Santali.lex.)
ret.e pet.e = to dispute, altercation (Santali.lex.)

sit.ka boar. = a kind of fish (Santali.lex.)
sit.ka = a small iron rod for cleaning the hooka (Santali.lex.)

tirom hako = a species of fish (Santali.lex.)
tirom hasa = a kind of friable earth (Santali.lex.)

chala = panniers; d.an:grako chalawakoa = they put panniers on bullocks; chala badla = a pack bullock (Santali.lex.)
calka, calha, calha hako = a species of river fish (Santali.lex.)
calao = the fourth ploughing of a field (Santali.lex.)
calaua = a governor, a chief (Santali.lex.)

Rim (karn.aka, kan-) of a jar, kan, 'copper'

Rimless pot and Rim of pot



4305 Harappa. Warrior (**bhat.a**); rebus: **bhat.a** 'kiln'. Three sides of a tablet (3305), each side showing the same sign and a warrior with bull's legs and a raised club. (After Asko Parpola,



1994, Fig. 6.3, p. 91). An identical imagery occurs on another tablet (h0714) Standing person with horns and bovine features (hoofed legs and/or a tail) Icon of a person has bull's legs and a raised club.

Pict-90: Standing person with horns and bovine features holding a staff or mace on his shoulder.

The only sign shown on all three sides of this tablet and perhaps on both sides of tablet h714 is a ligatured rim of a jar with a narrow neck Sign 344.



Sign 344 is a ligature of Sign 342 with inlaid two short strokes, which normally tag to a number of glyphs in the initial segments of inscriptions. Sign 343 and 345 are ligatured respectively with inlaid one



short stroke and three short strokes. [kan.d., pot] **kan.d. kankha** = rim of a pot; rebus: **kan.d.i**, 'furnace, altar'; karn.aka, 'writer' (Santali.Skt.lex.) [Ligatured with short linear stroke, **s'al**, 'splinter'; rebus: workshop]



Daimabad-001 (Seal). This is a clear demonstration that the Sign 342 has to be read as a substantive and not a grammatical particle or syllable or alphabet.

kan.d.a = an earthenware pot (having a neck a little longer than that of a t.hili, but otherwise of about the same shape as this, only somewhat larger; ghar.a kan.d.a = a waterpot of brass (Santali.lex.Bodding) **kankha** = brim, rim of a vessel (Santali); ka~kh; kanna_ (H.)(Santali.lex.Bodding)

kan.d. = a furnace, altar (Santali.lex.) The rim of the short-necked jar thus indicates **kan.d. kanka** = gold (or



goldsmith's) furnace. Sign 342 cf. **ka~d.arn.e~** = jeweller's hammer (M.); **kan.d.a_re_i** = scrapes, engravings (Pkt.)(CDIAL 2683).

kan.t.u = the rim of a vessel (Ka.lex.)

khan.d.a instrument, implement, weapon (sword)(Santali) kham.d.a = sword (Pkt.); kan.t.am (Ta.); xar.o, xanro, xarno, xanlo, xenli_ (Gypsy); khano (S.); khan.d.a_ (P.); kha~_r. (Ku.); kha_n.d.a_ heavy knife (A.); kha~_r.o sword (N.); kha~_ra_ large sacrificial knife (B.); khan.d.a_ sword (Or.); kha~_r.a_ (H.); kha~_d.u~ (G.); kha_d.a_ (M.)(CDIAL 3793). [The Santali substrate **kanka** is Sanskritized as karn.aka = projection on the side of a vessel (S.Br.); kano = rim, border (S.); kanna_ edge, rim, handle (H.); ka_na_ = brim of a cup (B.); ka_no (G.)(CDIAL 2831).

Copper work; brazier: **kan-** copper work, copper; kan-n-a_n- brazier (Ta.); bell-metal worker, one of the divisions of the Kamma_l.a caste (Ta.lex.) kanna_n id. (Ma.)(DEDR 1402). kan- workmanship (Tiv. Tiruva_y. 5,8,3); kan-mam (Tiv. Tiruva_y. 6,2,7)(Ta.)

Orthographic accent is on the rim of the jar

kan.d.a 'pot'; **kanka** = rim or neck of a jar; the glyph -- the most dominant sign among all inscribed objects -- is an orthographic emphasis on the neck of the pot. kan.d. = furnace; kanka = gold (Santali.lex.)

Alternative: [kad.ava = a large, narrow-mouthed earthen or metal pot generally used for drawing water (Te.); **karava** = clay pot with narrow neck (Kod.); kharva = cup baked in fire (TS.) {one of Kubera's nine treasures, nava-nidhi} rebus: **karavai** = a tool of a blacksmith (Ta. kativve_rpil.l.ai. lex.); karava_yi, kharavayi_ = an instrument of braziers; an anvil or curved metallic bar on which vessels are hung to be hammered (M.Ka.te.)] Alternative glyph: Alligator **karavu**, kara_, kara_m (Ta.) [gra_ha (Skt.), garavu = to seize (Ka.);] **gha~_t.** = protuberance of snout of alligator (A.) **gan.d.e** (Te.) gha~_r.iya_l (A.B.); ghar.ya_lu = long-nosed porpoise (S.); gha~_t. = protuberance on the snout of an alligator (A.); ghar.iya_l = crocodile (N.); ghar.ia_l.a (Or.); ghar.ya_l, gharia_r (H.); ghan.t.ika = alligator (Bhpr.) [Note: As an alternative, it will be argued that the glyph may connote a monitor lizard – and not an alligator.]



m0223



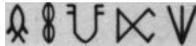
1167



[The sign in front of the one-horned bull may be Sign 162] The seal has a 'sprout' facing the one-horned bull and includes two signs, one of which is the rimmed jar.



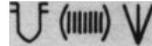
Chandigarh01



9101



Chandigarh02



9102

Chandigarh 001, 002 graffiti clearly demonstrate the accent of the pictograph is on the rim of the jar as much as on the narrow neck of the jar. A similar accent or emphasis is seen even on the copper rod (k121) which includes an incised epigraph at Kalibangan and on pottery graffiti (k-104, k-105, k-100):



Kalibangan104A



8218



Kalibangan105A



8216



Kalibangan100 k121A Inscription on rod.

Kalibangan026  8071 [The inscribed potsherd k100 was used by BB Lal to demonstrate that the writing was from right to left as the stroke of the second sign from the right is over-laid by the incision made by the jar sign which is the third sign from the right. **In over one thousand inscribed objects, the rimmed jar sign is the terminal sign of the inscriptions, attesting to the fact that this commodity or object or equipment represented by the rimmed jar, khan.d.a kanka, was a commonly held possession.** kanka (Santali) = karn.aka, 'rim' (Skt.) Rebus: kan.d. (furnace) kanka (gold)].

There are many inscriptions with just two signs, one of them being the rimmed, narrow-necked jar as in b-019, b-004, b-008, k-017:



Kalibangan017

It is the core, the very life-activity of the civilization; the furnace of a smith. Hence, it is the most frequently occurring 'sign' on the inscribed objects.





m1406At



m1406B Drummer. People tumbling over.



2827 beads

furnace

kad.i a chain; a hook; a link (G.); **kad.um** a bracelet, a ring (G.)

ka_t.i = fireplace in the form of a long ditch (Ta.Skt.Vedic)

(**kandi** 'beads' **kan.d.** 'furnace'; Pict-102: Drummer and a group of people vaulting over a bovine? An adorant? The imagery of the chain also occurs together with a water-carrier pictograph on K-20: k020 [Beads + carrying yoke: *kandi* + *kut.i* rebus: *kand. kankha* + *kut.hi* 'copper furnace + (pit) furnace']



Alternatives: *kol.i* 'water-carrier'; *kole* 'furnace'. **kad.i** 'chain, link'; rebus substantive: **ka_t.i** 'trench-furnace'.

Alternatives glyph: **be_d.i** = chain, fetter (Ka.Te.); Rebus: **bed.a** = either side of a hearth (G.)

Graphemes: **kol.i** = water carrier (M.) **xola_** = tail (Kur.); *qoli* = id. (Malt.)(DEDR 2135).

Rebus: **kol** = metal (Ta.)

kol.i a caste of water-carriers (M.); *ko_lika* weaver (Skt.); *ko_t.ikar* weaver (Ta.)(Ta.lex.) cf. *kaulika* a weaver (Skt.lex.) *ko_likan-*, *ko_liyan-* a caste of weavers (Ne_mina_ Er.ut. 16, Urai.); a kind of coarse cloth, as woven by *ko_likar* (Tol. Col. 114, Urai.); *ko_lika-p-par-aiyan-*, *ko_liya-p-par-ai* a division of the Pariah caste who weave coarse cloths; *ko_lika-k-karuvi* loom (Ta.)(Ta.lex.) *kuli* weaver (Or.); *ko_lia* weaver, spider (Pkt.); *kori_* weaver (S.); *koriar.o* spider (S.); *koli* weaver (Ku.); *koli_*, *kolhi_* Hindu weaver (H.); *kol.i_* a partic. *S'u_dra* caste (G.); *kol.i_* a sort of spider (M.); *karol.iyo*, *kara_liyo* spider (G.); in form the same as *karol.iyo* potter (CDIAL 3535).

kut.i = a woman water-carrier (Te.lex.)

kut.hi 'furnace'

That the orthographic emphasis is on the 'rim' of the pot [which is the sign with the highest frequency on the epigraphs] which distinguishes it from a 'rimless', wide-mouthed pot, is apparent:



m0862



2253



h764At



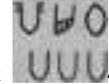
h764Bt



h765At



h765Bt



4653



h964Ait



h964Bit



5456



m0693



Kalibangan105A



h883Ait



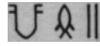
h883Bit



h652



h669



4289



h656



4286



Kalibangan017



8027

Substantive: **med.** 'iron' (Santali. Mundari) **me~r.he~t** iron; ispat m. = steel; **dul m.** = cast iron; kolhe m. iron manufactured by the Kolhes (Santali); mer.ed (Mun.d.ari); med. (Ho.)(Santali.lex.Bodding)

mer.go, mer.ho = adj. rimless (vessels); mi_r.u_ adj. Brimless, rimless (vessels having no outstanding lip); mi_r.u_ bat.ite han.d.i emok do ban: jutoka = it will not do to serve beer with a rimless brass cup (it will not run out properly); mi_r.u_ celan: = a brimless earthenware vessel; me_r. = border, edge (H.) (Santali.lex. Bodding) mi_d.u~ = having rims turned over (G.)(CDIAL 10120).

Thus the sign U may be a rebus for: **mi_r.u_ bat.i** = rimless basin; adom bat.i do kan:khagea ar adom do mi_r.u_ gea = some bat.i-s have a rim and other are rimless (Santali.lex.)

bhat.hi = a copper (Santali.lex.)

bhat.i = a still, a boiler (Santali.lex.)

Glyph: rimless pot **mi_r.u_ bat.i** Substantive, rebus: **med. bat.hi** 'iron (ore) furnace'.

Beautifully shaped and proportioned: a complete painted vase (about 6 in. high) of the prehistoric period found during the excavations at Harappa. Plate II. Material recovered from Mohenjodaro in the first season of excavations by Sir John Marshall (G.L. Possehl, ed., 1979, Ancient Cities of the Indus, Delhi, Vikas Publishing House).



khan.d.a = instrument, implement, weapon; khan.d.a puruskedae, he stretched his arm grasping the sword as high as he could; **khan.d.a bhan.d.a** = implements of all kinds, arms of all sorts (Santali.lex.) **khan.d.a puruskedae**, he stretched his arm grasping the sword as high as he could (Santali.lex.)

Substantive: **kan-** = copper (Ta.) **kan-** = copper work, **kan-n-a_r tor.il** (Tamil.lex.) **kan:ka loha** = a type of metal (Pkt.lex.) **kanaka** = wealth (G.); gold (Skt.Ka.); kanakavr.s.a = golden bull; kanaka_dhyaks.a = a superintendent of the gold, a treasurer; kanaka_luke = a golden vase (Ka.lex.) kanaka = gold, wealth (G.lex.) kanakamu = gold (Te.lex.)

kan. = arrow, wooden handle of a hoe, pickaxe or other tool (Ta.)(DEDR 1166). **kan.keyt**, kan.ki.t sickle (Ko.); kan. koty dagger-shaped knife burned with corpse (To.)(DEDR 1204).

khan.n.a = that which is dug (Pkt.lex.) **khana** = a trench, a pit, a hollow in the ground (Santali.lex.) [**khan** = a mine (Santali) ?khani = mine (VarBr.S.); khan.i = mine (Pkt.); khani (A.); khan (H.); khan. = mine, quarry (M.)(CDIAL 3813); cf. khana = a trench, a pit, a hollow in the ground (Santali.lex.)].

Glyph: rim of pot: **kanna_** edge, handle, rim (H.); **ka_nu** end of a rope for supporting a burden (N.); **karn.a** = the handle or ear of a vessel (RV 8.72.12; S'Br. 9); the helm or rudder of a ship; **karn.aka** = a prominence on handle or projection on the side or sides of a vessel [*kan-* (Santali) < *karn.a* (RV)]; **karn.akita** = having handles, furnished with tendrils (Skt.lex.) **karn.a** = ear, handle of a vessel (Rv.); end, tip (RV 2.34.3); kan.n.a ear, angle, tip (Pali)(CDIAL 2830). kan.n.aka = having ears or corners (Pali); **kan.o** = rim, border (S.); **ka_n.a** brim of a cup (B.)(CDIAL 2831). **kankha**, **kan:kha**, **khan:kha** = rim of a vessel; khan:kha habic perejme, fill it up to the brim; kan:khi = the rim of a vessel (Santali.lex.) **kan.d.a kan:kha**, **kan.d.a kankha** = the rim of a waterpot (Santali.lex.) **kankha**, **kan:kha** = brow of a hill (Santali.lex.)

Alternative:

va_si = lip (Ga.); va_y = mouth of pot (Pa.); vepot.i = lip (Kond.a.); bai_ aperture of vessel (Kur.)
ba_ mouth, aperture (Br.); va_y = mouth as of cup (Ta.); ba_yi (Ka.Tu.); veyu = mouth (Kond.a)
va_tu = mouth (S.)

va_s'i_ (RV.) **va_cci** = adze (Ta.Ma.); scraper (Ma.); ba_ci (Ka.Tu.); po.d.c = adze (To.) va_y = edge of knife (Ga.Go.Ta.Ma.); ba_(Br.); va_ (Ma.); va_dara = edge of sword (Te.); va_ya = blade, sharpness (Te.); ba_yi (Ka.Tu.); va_yi = edge of any cutting instrument (Te.)

karn. to pierce, bore (Dha_tup. 35.71); karn.i = the act of splitting, breaking through; karn.ika = a kind of arrow (the top being shaped like a ear) (Skt.) karan.amu = an instrument, means (Te.lex.)

kerani = writer, clerk (Santali.lex.) **karan.ika**, **karan.i_ka**, **karn.ika** a writer, a scribe; a villager clerk or accountant; a royal scribe or accountant (cf. as.ta_das'apradha_na); the head native official of a district collector's office; an arithmetician; karan.ika man.d.ali_ka a chief scribe (Ka.) **karan.aikamu**, **karan.i_kamu** = the office of a karn.am or clerk, clerkship, chiefly for keeping accounts; karan.amu = a writer, scribe, clerk, accountant; a village clerk or accountant; a writer caste (Te.lex.)

karani., **karn.i**, karan.ige, karn.e = a mason's trowel (Ka.); karan.ai (Ta.); karan.i_ karn.i_ (M.); **karn.i** a particular part of the plough (Ka.)(Ka.lex.) **karni_** mason's trowel (P.H.)(CDIAL 2791).

karn.amu = the rudder of a ship (Te.); **karn.a** id. (Ka.G.); karn.agra_hud.u, karn.adha_rud.u = a helmsman, a pilot (Te.lex.)

ka_n.a_ = one-eyed (Rv); ka_n.a = blind one eye, blind (Pali.Pkt.); ka_n.a_ one-eyed (B.Mth.)(CDIAL 3019).

karan.e, kan.n.e = a clot, a lump (Ka.lex.)

karn.ikika_ = a heifer; **khan.d.a** = a calf with horns half-grown (Skt.lex.)

karan.a = act, deed (RV); doing (Pali); instrument (Pkt.); karn.e~ = action, deed (M.); karan.a = occupation, trade (Si.); karn.i_ (M.)(CDIAL 2790). Karn.i_ work, act (S.); karan.i_ya duty, business (Pali); karan.i action (Pkt.); karn.i_ work, act (Ku.); karni_ (P.); karan.i_ work, authority (Or.); karni_ act (H.); karn.i_ (G.); incantation (M.)(CDIAL 2791).

karn.a = the sun (Ka.lex.) karan.a = a ray (G.lex.) **kiran.a** ray of sun (Skt.)

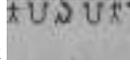
ra~t = rays of the sun, glare (Santali.lex.)

rat.o a cluster of rocks in the bed of a river (Santali)

ra~t = a car, a four-wheeled carriage; ra~t gad.i = a chariot (Santali.lex.)



m0428Bt



1607 Pict- 132: Radiating solar symbol. **bela** = time, the sun (Santali.lex.) cf. vel.a_time (Pkt.Pali.); beli (A.); bel.a daytime (Or.); vel., el. Time (M.); ve_ra time (K.); ve_le = sun, daytime (Gadba); ve_d.a sun (Kuwi); беру (Malto); bi_r.i_sun, time (Kur.)(CDIAL 12115).

On this tablet, the rebus interpretation of the radiating solar symbol can be that it relates to arka (akka-) or copper metal. The inscription on the obverse can thus be interpreted as a list of tools made of copper (metal) or furnaces used by a coppersmith.

akka, aka (Tadbhava of arka) metal (Ka.); akka metal (Te.) **arka** = copper (Skt.) cf. arh, argha a collection of twenty pearls (having the weight of a Dharan.a) VarBr.S.; worth, value, price, Mn. Ya_jn~.; arghya = valuable (Skt.) akka-ca_lai metal works (Cilap. 16,126, Urai); mint; akkaca_laiyar goldsmiths, jewellers (Ta.lex.) 5952a. Workshop of a goldsmith: aka-sa_la, aga-sa_la, aka-sa_liga, aka-sa_le a gold or silversmith; aka-sa_like the business of a gold or silver smith; akka-sa_le, aka-sa_le the workshop of a goldsmith; a goldsmith; akka-sa_liti a woman of the goldsmith caste (Ka.); akka-c-ca_lai a shop where metals are worked (Ta.)(Ka.lex.)

arka connotes the sun and also saturn in Skt. **kona_rka** is a compound: kona, 'corner'; arka, 'sun'. arka also connotes fire in Skt. The equivalence of arka as sun and Saturn, is noticed in Greek manuscripts: "...as Boll discovered, this practice of "correcting" the name of Saturn, from Helios to Kronos, was quite common among later copyists. Based on his reading of the most original Greek manuscripts, Boll drew a startling conclusion: the sun god Helios and the planet-god Saturn were "one and the same god." Now if this only seems to accentuate the puzzle, there is more. Hindu astronomical lore deemed the planet Saturn as Arka, the star "of the sun." And certain wise men of India often asserted that the "true sun" Brahma, the central light of heaven, was none other than Saturn. This in turn, reminds us of a rarely-noted teaching of the alchemists, preservers of so many ancient mysteries. The planet Saturn, they recalled, was not just a planet; it was "the best sun!" <http://www.kronia.com/thoth/thoth10.txt> a_r.va_n- the sun (Ta.)(DEDR 396). **aru** sun (Skt.); yor (Kho.)(CDIAL 612). ravi sun (Mn.Pali.Pkt.); rivi (Si.)(CDIAL 10646). ilaku (ilaki-) to shine, glisten, glitter (Ta.); el sun, light, splendour (Ta.); lustre, splendour, light (Ma.); ilakuka to shine, twinkle (Ma.); ilankuka to shine (Ma.)(DEDR 829). **arka** flash, ray, sun (RV.); a_k sun (Mth.); akka sun (Pali.Pkt.); aka lightning (Si.); vid-aki lightning flash (Si.Inscr.)(CDIAL 624). aks.an.a_lightning (Skt.); akkhan.a_id. (Pali); akan.a, akun.a id., thunder (Si.)(CDIAL 27). pakal sun, the morning sun, day, daytime (Ta.)(DEDR 3805). an:ki sun (Tirukka_l.at. Pu. 30,14); fire; agni (Kantapu. Pa_yira. 53); an:kicuma_li a deity representing the sun, one of the tuva_taca_tittar (Ta.lex.)axrna_ to warm oneself (by the fire, in the sun)(Kur.); awge to expose to the heat of the sun or fire; awgre to bask in the sun, warm oneself to a fire (Malt.)(DEDR 18).

Svastika, endless-knot and other glyphs

Arethusa and svastika_

Svastika_ is a dominant glyph among the epigraphs of Sarasvati Civilization. Over 50 inscribed objects depict this glyph.

That the head of Arethusa is imprinted on a tin ingot and on a Greek coin in the middle of a svastika_ glyph is a pointer to the decoding of the true meaning of svastika_ glyph. The morpheme which occurs in Kannada may hold a key to this decoding: **satavu, satuvu, sattu** = pewter, zinc (Ka.) **dosta** = zinc (Santali) **jasada, yasada, yasadyaka, yasatva** = zinc (Jaina Pali) **ruhi-tutiya** (Urdu) **tuttha** (Arthas'a_stra) **totamu, tutenag** (Te.) **oriechalkos** (Gk.)⁷

Homonyms are: **sathiya_** (H.), **sa_thiyo** (G.); **sathia, sotthia** (Pkt.) = svastika_ sign



Glyph: **sathiya_** (H.), **sa_thiyo** (G.); **sathia, sotthia** (Pkt.) Svastika_ sign

Meeting of four roads *svastika* (Skt.)

Early cementation processes roasted zinc ore (oxide) was mixed with copper fragments and charcoal (reducing agent) and the mixture was heated in a sealed crucible upto 1000 degrees C. The zinc vapour dissolved to yield a quality of brass. Examples of brass have been found in Lothal and Atranjikhhera (6.28 to 16.2 % zinc) dated to c. 3rd and 2nd millennia BCE respectively. Carbon 14 dates (uncalibrated) for the Zawar mines of Rajasthan (40 kms. south of Udaipur) are PRL 932, 430+100 BCE and BM 2381, 380+ 50 BCE. Mining of lead zinc ores are found in the old workings at Rajpura-Dariba (375 BCE) and Rampura-Agucha (370 BCE) . At Prakashe, a Chalcolithic site (2nd millennium BCE) in Deccan, two copper objects each containing 25.86 and 17.75 percent zinc has been found. A vase found at Bhir mound (3rd cen. BCE), Taxila contained 34.34% zinc. A part of chariot in submerged Dwarka assayed 10.68% zinc (unknown date); many copper coins and many bronze images of historical periods contain upto 25% zinc. Silver used in many punch-marked coins was obtained from Zawar mines which yielded copper, zinc, lead and silver.

On coins from Syracuse the head of Arethusa was often portrayed (ca. 500 BCE). This girls' head has often a net in her hair and is usually surrounded by fish.



Arethusa coin from Syracuse, 4th cent. BCE **Arethusa is a water divinity, as shown by the four fish circling around; she wears a diadem of beads.**



Arethusa on a Greek coin [c. 510-490 BCE] The coin shows the image of Arethusa in the middle of a **svastika** glyph. Arethusa, a nymph known in several different parts of Greece, usually the Peloponnese and Sicily. She was one of the Nereids. The river-god Alpheus fell madly in love with her, but she fled to Sicily. There she was changed into a fountain (the Fonte Aretusa, in Syracuse) by Artemis. Alpheus made his way beneath the sea, and united his waters with those of Arethusa.

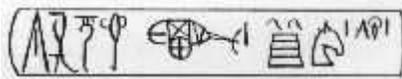
“The earliest tin ingots, apart from those shown in Egyptian tombs, are the ones recently found off the coast of Israel. Four (or more?) came from Haifa and one of these has a head of **Arethusa** impressed upon it. All four have Cypro-Minoan (?) letters.” [RF Tylecote, 1981, *The early history of metallurgy in Europe*, London, Longman, p. 12].



[Tin ingots were traded through the Levant in the 2nd millennium BC; in the autumn of 1976 two ingots were found 'in the sea near the Phoenecian port of Dor, south of Haifa. Ingot 1 and Ingot 2; Museum of Ancient Art, Municipal Corporation of Haifa; local fishermen had raised about 7 tonnes of copper and tin ingots in Haifa. The date of the two ingots is uncertain. The symbols incised on the ingots also resemble Cypro-Minoan symbols used in Cyprus and Ugarit ca. 1500 to 1100 BCE. May be, they were weighed at Ugarit and stamped as they travelled through the long overland caravan route right upto the western end. It is notable that Cyprus had no tin. Sources: Anon., Ingots from wrecked ship may help to solve ancient mystery, *Inst. Archaeo-Metallurgical Studies Newsletter*, No. 1, 1980, 1-2; Maddin, R., T.S. Wheeler and J. Muhly, Tin in the ancient Near East:

old questions and new finds, *Expedition*, 1977, 19, 35-47]

MS 249 Unidentified Minoan text on clay. Knossos, Crete, 16th cent. BCE, Linear A script?



Two glyphs incised on the ingots are comparable to the glyphs of Sarasvati Civilization epigraphs; they are: a ficus leaf (**loa** = ficus; **loha** = copper); a sprout with five petals (**tagara** = *taberna montana*; rebus: **tagara** = tin).

These ?Cypro-Minoan letters could also have been the pictographs shown on inscribed objects of Sarasvati Sindhu Valley Civilization.

Svastika, a countable object

The svastika glyph connotes a countable object as seen from the number of glyphs shown on inscribed objects, h182B, h165 and har609:



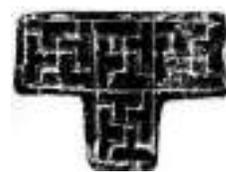
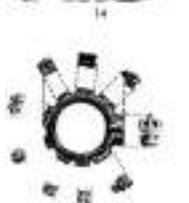
4306Tablet in bas-relief
h182a Pict-107: Drummer and a tiger. h182b Five svastika signs⁸ alternating right- and left-

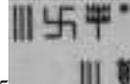
handed.  har609 terracotta tablet, bas-relief [The drummer is also shown on h182B tablet with a comparable epigraph and five svastika glyphs alternating right- and left-handed.]

Copper finger ring, Sirkap, Taxila, Stratum I, (Pl. 197, No. 24, Marshall); a total of nine symbols are inlaid on the ring including svastika_, vajra, cakra, triratna, s'ri_vatsa, Pl. XXII.



Vajra and cakra are weapons. It is likely that svastika_ is also a weapon or tool: s'akti (flag)staff, spear (MBh.); **satti** = knife, dagger (Pali); satti = a kind of weapon (Pkt.); sa_t = sword, spear (CDIAL 12251). It can be demonstrated that the 's'ri_vatsa' glyph is a derivative from a composite glyph of two fishes. If so, the glyph of two fishes may be read as: **ken.t.a kini** (lit. two fishes); rebus: **ke~r.e~** 'bell metal' + **gina** 'metal vessel'.



h165  4500 On h182 tablet, there are 5 svastika signs; on h165 seal, there are 4 svastika signs; this leads to the surmise that the svastika represents a

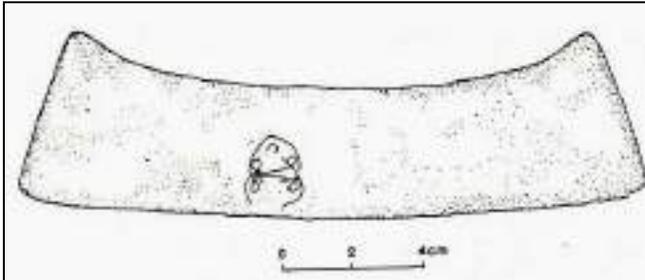
countable *object*.

The svastika glyph is associated with endless-knot glyph; the endless-knot glyph appears on a copper plate epigraph, indicating that both glyphs may connote the products made by metal-workers or equipment/processes involved in metal-work.

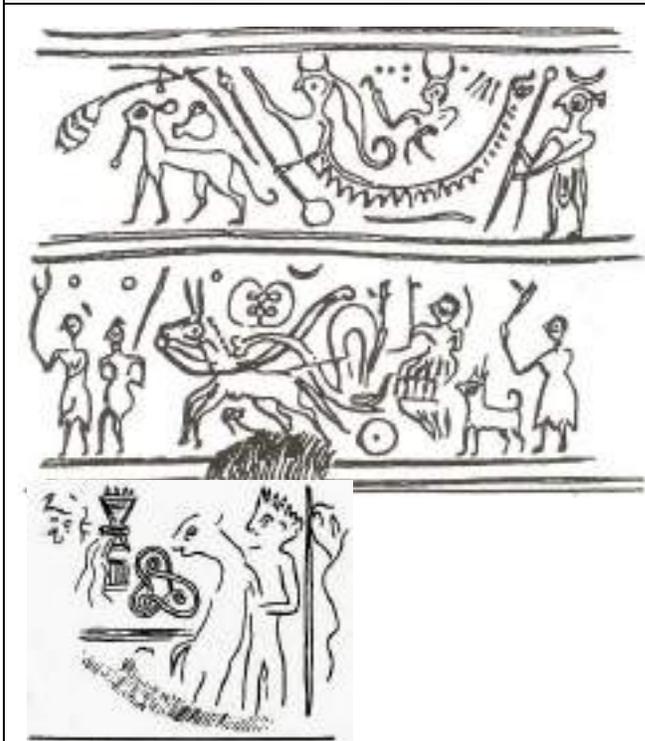


Endless-knot motif appears on the following objects:

1. Rojdi ax-head or knife of copper;
2. Sumerian cylinder seal (circa 2500 BCE); and
3. Early Dynastic seal from Lagash.



Rojdi. Ax-head or knife of copper, 17.4 cm. long (After Possehl and Raval 1989: 162, fig. 77)



Cylinder seal impression. Sumer (ca. 2500 BCE). After Amiet 1980a: pl. 108, no. 1435

Early Dynastic seal. Lagash. After Amiet 1980a: pl. 83, no. 1099

Svastika_ connotes **satva**, **sattu** 'zinc, pewter'; endless-knot connotes **kacc** 'iron'.



The endless-knot glyph and the signs may be read as:

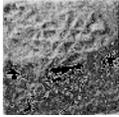
kacc iron, iron blade (Go.)(DEDR 1096). kars.i furrowing (Skt.); ka_rs.i ploughing (VS.); kars.u_ furrow, trench (S'Br.); ks.i_ plough iron (Pr.); kas.i mattock, hoe (Pas'); kas.i spade, pickaxe (Shum.); khas.i_ small hoe (Dm.)(CDIAL 2909). kr.s.ika, kus'ika, kus'i, kus'ira a ploughshare (Skt.Ka.)(Ka.lex.) kes.a plough (Pas')(CDIAL 3444). kis' plough (Kho.)(CDIAL 3455). ks.e plough iron (Pr.)(CDIAL 2809). Mattock, hoe: kas.i mattock, hoe (Pas'); Spade, pickaxe: kas.i spade, pickaxe (Shum.); kars.i furrowing (Skt.); kars.u~ furrow, trench (S'Br.)(CDIAL 2909)



V194 kasi_ trench, watercourse (S.); kassi_ small distribution channel from a canal (L.); ka~_s artificial canal for irrigation (G.)(CDIAL 2909).

kaccu = a rafter (Te.)

kacce = the organ of generation (yoni) of cows and buffaloes (Ka.M.Te.)



m443Bt **keccu** the knot which is formed by twisting; to join the end of two threads by twisting them with the fingers (Ka.); kerci a knot (Tu.)(DEDR 1965). kars.ati draws, pulls (RV.); kassate_ ploughs (Pali); karisai, ka_sai pulls (Pkt.); ks'al to drag, pull, lead (Gy.); kas. to pull (Wg.); kasan.u to tighten (S.); kassan., kassun. (L.); kas'n.u_ (WPah.); kassn.a_ (P.); kasab (Mth.); kasai harnesses, binds (OMarw.); kasvu~ to tighten (G.); ka_sanem. to tie fast (OM.)(CDIAL 2908). gajipuni to fasten, strengthen (Tu.); kaccuni to be joined fast (Tu.); kaccu to join (Ka.); kacip to fasten bullock to yoke (Pa.); kah to tie, fasten up; ka_ca_na_ to be tied tight (e.g., clothes)(Go.); gac to tie, bind (Pe.); geh-, gehpa- to bind (Mand.); gaspa to tie a knot, hang, suspend; n. hanging, suspension (Kui); gah- to tie (Kui); to bind (Kuwi); gahpo fastening, tying (Kuwi); xa_jna_ to tether, bind by the feet (Kur.)(DEDR 1099). kasiba to draw tight (A.); kac a tying, bond (B.); kacakvu~ to bind tightly (G.); kacakn.e~ to pull smartly, jerk (M.); kacka_vin.e~ to bind tightly (M.); kacate_ fastens (Dha_tup.)(CDIAL 2610). kas'a_ whip (RV.); rein (S'is'); kasa_ whip (Pali); whip, thong (Pkt.); cord, tie of a garment (M.); ka_h strip of leather for sewing leather articles (K.); ka~hi~_ tie, tape, riband (S.); kasa rope (Or.); kasa string (OMarw.); kas tape of a bodice (G.); kasaya whip (Si.); kasiba_ to whip (Or.); kasai binds, harnesses (OMarw.); kasn.e~ to bind tightly with a cord (M.)(CDIAL 2965). Image: to join: kaccir-i to join things, to unite; kaccisu to cause to join, to unite; kaccu to join; kaccat.a, kaccut.a, kacad.i (Tadbhava of kaks.a_pat.a) a cloth passed between the legs to cover the privities (Ka.); kaccad.a a tuck, truss, etc. (Te.) (Ka.lex.) Binding: kaccan:kam agreement, binding (Ta.lex.) khacayati fastens (Skt.); *khacyate_ be set, be studded (Skt.); khacita inlaid (MBh.); khacna_ to be fastened, be set, be studded (H.); khacn.e~ to set(jewels, etc.)(M.); khac crowd, crush (H.); khac tightly (G.)(CDIAL 3766). keccu, kettu to enclose, set (as precious stones)(Ka.); kettuni to set (as jewels)(Tu.); cer-r-u to set (as a jewel)(Ta.); ceyal setting work in jewelry (Ta.)(DEDR 1985). kacate_ fastens (Dha_tup.); kaca band, hem; kace_la string holding manuscript leaves together (Skt.); kasiba to draw tight (A.); kac a tying, bond (B.); kad.asn.i_ binding rope (M.); kacakvu~ to bind tightly (G.); kacakne~ to pull smartly, jerk (M.); kacka_vin.e~ to bind tightly (M.); kaciba_ to masturbate

(Or.)(CDIAL 2610). [Frequency 13]



m0457At



m0457Bt



m0457Et



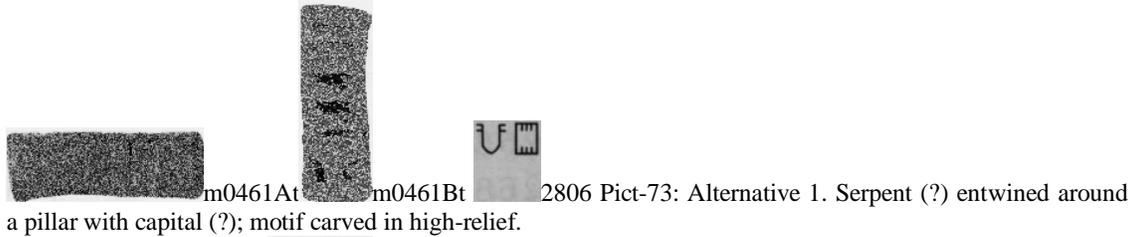
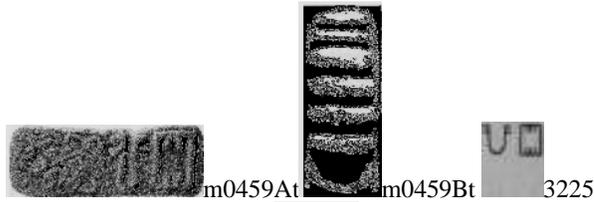
m0458At



m0458Bt



3227



Alternatives:

ko_lam = form (Ta.Ma.) Rebus: **kol** 'metal'

kan.d.a kanka 'rim of pot'; rebus: **kan.d.** 'altar, furnace' + **kan-** 'copper'

pa~er.e~ = overflow channel of a tank (Santali).

Rebus: articles of joint family (**pa~er.e~**) (Santali).

Alternatively, the endless-knot motif which follows the pair of signs (following Text 2813, for example) may be read as:

me~e.he~t = iron (Santali)

The entwined stones around a pillar or an entwined snake glyph:

mer.hao = v.a.m. entwine itself; wind round, wrap round roll up; mar.hna_ cover, encase (H) (Santali.lex.Bodding) [Note: the endless-knot motif may be a rebus representation of this semant. 'entwine itself']. **med.ha_** = curl, snarl, twist or tangle in cord or thread (M.); **meli, melika** = a turn, a twist, a loop, entanglement; **meliyu**, melivad.u, meligonu = to get twisted or entwined (Te.lex.) **merhao** = twist (Mun.d.ari)

Rebus: **melukka** 'copper'

Alternative 1: (sharp weapon; sharpness connoted by the 'knot' glyph): Substantive: **patam** = sharpness (as of the edge of a knife)(Ta.); padm (obl. Padt-) temper of iron (Ko.); pada = keenness of edge or sharpness (Ka.); **hada** = sharpness (as of a knife), forming (as metals) to proper degree of hardness (Tu.); **padna_** sharpness (Go.); padanu, padunu = sharpness, temper (Te.); **padnu** = sharpening (of knife by heating and hammering)(Kond.a); pato = sharp (as a blade); **patter** = to sharpen (Malt.)(DEDR 3907).

badha = bound; **bandha** = tied up, hindered; bandh = an iron band round the nave of a cart wheel to prevent it from splitting (Santali)

paddu = item, entry in an account (Te.); **poddu** – thing, item (Pa.)(DEDR 3919).

pantam = torch, lamp (Ta.); torch (Ma.); pantye small lamp (Tu.)(DEDR 3919). [Note the procession carrying the standard device, the one-horned bull and perhaps a torch in front.]

badhor, badhor.ja = crooked, cross grained, knotty (Santali.lex.)
badhoria 'expert in working in wood'(Santali)

Alternative 2: melh 'copper'; rebus: mer.hao 'entwined'; **mer.hao** = to entwine itself, wind round, wrap around, roll up (Santali.lex.) [Note the endless knot motif].

Glyph: *malukku* slip-knot (Ta.); *malaku* a turn, twist, fold (Ka.); *mala-gonu* to be twisted; *maluku* a turn, slip-knot (Te.)(DEDR 4734).

Melukka = copper (Pali)

Alternative 3: d.on.t.ho 'knot'; rebus: d.hon.d. 'stone-cutter'

Glyph: *d.on.t.ho*, *dhon.t.ho*, *dhon.t.o* a knot (Santali)

d.hon.d.-phod.o [M. dhon.d.a_, a stone] a stone-cutter, a stone-mason; *d.hon.d.-jhod..o* [M. *dhon.d.a_* a stone + *jhod.avum*] a stone-cutter; a stone-mason; *d.hon.d.o* a stone; a blockhead; a stupid person (G.)

Considering that on the cylinder seal impression from Sumer the motif of 'endless-knot' is shown together with a chariot accompanied by persons carrying weapons and also a dog, the entire glyptic could be related to a hunting expedition. This is consistent with the other part of the cylinder seal on the top register depicting a boat journey, also accompanied by a person carrying a spear. Thus, the 'endless-knot' as a glyph should be related to semant. 'attack' or 'killing'.

The association of the 'endless-knot' glyph with the 'svastika' glyph points to both the glyphs as related to the description of a weapon.

If the 'endless-knot' means rebus 'killing or attacking'; the 'svastika' rebus may mean 'knife or dagger', i.e., a weapon sharp enough or pointed enough to kill or be used in a hunting expedition.

The glyphs and rebus representations may thus be deduced as:

krandas 'attack!' 'kil!'; rebus: **grantha** 'knot' glyph.
sathiya 'knife, dagger'; rebus: **svastika** glyph.

Such a decoding is consistent with the depiction of the 'knot' glyph on a copper ax-head or knife from Rojdi. It is a weapon for **krandas**! Knife to kill!

granthi = knot (RV. 9.97.18); ga_n.t.ha (H.); granthin = twined together (RV 10.95.6); granth = to tie together (Vedic lex.)

L051a Seal. **granthi** = honey-comb (Pa_n. 4.3.116, Va_rtt.); cf. Nir. 1.20; granthi = knot of a cord, knot tied in the end of a garment for keeping money (Pan~cat.); a knot tied closely and therefore difficult to be undone, difficulty, doubt (Ch.Up.); granthila = knotted, knotty; grath = to be crooked (Dha_tup. 2.35); granthi = crookedness (Skt.lex.)

gan.t.lu (pl.), gan.t.i = hole bored in ears for ear-rings (Te.lex.)

brahma granthi = a sort of knot holding together the ends of dwija's sacred thread; gan.t.u = a knot (Te.lex.)
grathana_ = tying, binding, ensnaring; grathita = strung, tied (RV 9.97.18; S'Br. 11) (Skt.lex.)

kranta = the meeting place of cross-roads; a lane; a hole (Te.lex.)

A remarkable demonstration of

- (1) the continuity of the motif of endless knot in the Indian civilization from ca. 3rd millennium BC upto the 17th cent. AD. and even today, in South India; and
- (2) the parallel use of the motif of the endless knot in Mesopotamian civilization ca. 3rd millennium BC.

grantha = a book or composition in prose or verse; a code; grantha lipi = one of the various characters used in writ (Ka.lex.)

krandas = battle-cry, army (RV 10.121.6) yam krandasi_ avasa_ tastab ha_ne 'dya_va_pr.thivyau' (Vedic.lex.)
krath = to hurt, kill (Dha_tup. 19,39; caus. kra_thayati, to hurt, injure, destroy (with gen. of the person hurt, Pa_n. ii, 3.56, Dha_tup. 34.19); krathana = cutting through (as with an ax); slaughter, killing (Skt.lex.)
krathana = killing, slaughter (Ka.lex.) gan.t.u = to cut, to wound; a wound, hurt; gan.t.i = a wound (Te.lex.)

kr.ta = injured, killed; kr.ti = hurt, hurting, injuring; a kind of weapon, sort of knife or dagger (RV 1.163.3) (Skt.lex.)

krandukayyamu = tumultuous mob fight (Te.lex.)

krandadi.s.ti = having roaring speed or moving with a great noise, said of Va_yu (RV 10.100.2); kranda = a cry, neighing (AV 11.2.22); a cry, calling out (AV 11.2.2 and 4.2) krandanu = roaring (RV 7.42.1); krandya = neighing (TBr. 2.7.7.1, parjanya krandya); krandana = crier; crying out; mutual daring or defiance, challenging (Skt.lex.). khar. = a call to cattle (Santali.lex.) khat. khat. = with a swish, thud, as of a horse's hoofs (Santali.lex.) kharajru = quick in motion (RV 10.106.7)(Vedic.lex.) krandidamu, krandanamu = cry, lamentation; krandillu = to sound, to resound (Te.lex.)

kratha = name of a race always named with the Kais'ikas and belonging to the ya_dava people; name of an Asura (MB h. 2.585; Skt.lex.)

kranta = the betrothal presents taken to the bride from the bridegroom's house (Te.lex.) **grantha** = giving, da_na; bha_gi, vibha_ga (Ka.lex.)

grantha = wealth, property (Ka.lex.)

Inscribed objects containing the 'endless knot'⁹

Glyph: The endless knot = **kra_nta, ga_n.t.ha** (Hindi) and hence is shown together with the chariot. [cf, Lagash. Early Dynastic Seal with a variant of the endless knot. After Amiet 1980a: pl. 83, no. 1099.]

Substantive: **kra_nta** = invading, attacking (Skt.lex.) In the Tantra tradition, Bha_ratavars.a is divided into three parts called kra_nta-s: vis.n.u-kra_nta, ratha-kra_nta, as'va-kra_nta each part having 64 tantra-s attached.

Land east of the Vindhya ranges, extending upto Ja_va is Vis.n.u-kra_nta; the region north of Vindhya including maha_ci_na is as'va-kra_nta and the rest of the nation is as'va-kra_nta.

krandas = n. battle-cry; du. two contending armies shouting defiance [heaven and earth: Sa_yan.a]

**yam krandasi_sr.latayati_vihvyete pare vara ubhaya_amitra_h
sama_nam cid ratham a_tasthivalatasa_na_na_havete sa jana_sa indrah**

RV 2.012.08 Whom (two hosts), calling and mutually encountering, call upon; whom both adversaries, high and low, (appeal to); whom two (charioteers), standing in the same car, severally invoke; he, men, is Indra. [Whom (two hosts): yam krandasi_sanyati_vihvayete = whom, crying aloud, encountering (two), invoke; the substantive is supplied: rodasi_, heaven and earth; or, dve sene, two armies; whom (two charioteers): here also a substantive is supplied: rathinau, two charioteers; or Agni and Indra].

**s'u_ro va_s'u_ram vanate s'ari_res tanu_ruca_tarus.i yat kr.n.vaite
toke va_gos.u tanaye yad apsu vi krandasi_urvara_su bravaite**

RV 6.025.04 The hero, (favoured by you), assuredly slays the (hostile) hero by his bodily prowess, when, both excelling in personal strength, they strive together in conflict, or when, clamorous, they dispute for (the sake of) sons, of grandson, of cattle, of water, of land.

**yam krandasi_avasa_tastabha_ne abhy aiks.eta_m manasa_rejama_ne
yatra_dhi su_ra udito vibha_ti kasmai deva_ya havis.a_vidhema**

RV 10.121.06 Whom heaven and earth established by his protection, and shining brightly, regarded with their mind, in whom the risen sun shines forth -- let us offer worship with an oblation to the divine Ka.

If *gand.en* to prick (Kol.); *ka~.du* to enter, penetrate, pierce, pass through (as arrows)(Te.)(DEDR 1178) *ka_n.d.a* arrow (G.) *kan.i_* arrow (G.); *kan.ai* arrow (Ta.); kan.ayam spear, club (Ma.); *kan.aya* a kind of spear or lance (Pali.Skt.)(DEDR 1166) is rebus for *ga~t*. 'knot', the *svastika* glyph may be cognate with *sutki_* 'an instrument of stone-splitters, hammer'. Thus, a warrior riding a chariot may carry both weapons: hammer and arrow (or spear or club).

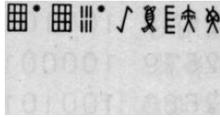
The importance of the glyph denoting **svastika** may be seen from the composition in m0488 tablet in bas relief. It occupies the center of the field and is flanked by an elephant and a tiger looking back:

m0488Atm0488Btm0488Ct

2802 Prism: Tablet in bas-relief. Side b: Text +One-horned bull + standard. Side a: From R.: a composite



animal; a person seated on a tree with a tiger below looking up at the



person; a svastika within a square border; an elephant (Composite animal has the body of a ram, horns of a zebu, trunk of an elephant, hindlegs of a tiger and an upraised serpent-like tail). Side c: From R.: a horned person standing between two branches of a pipal tree; a ram; a horned person kneeling in adoration; a low pedestal with some offerings.

On side B of a tablet (h177), kneeling person is shown in prayer in front of a standing person under an arch decorated with a toran.a of ficus leaves.

Glyph: *sal* a gregarious forest tree, *shorea robusta*; *kambra* a kind of tree (Santali)

Substantive: *sal* workshop (Santali)



m0482At



m0482Bt



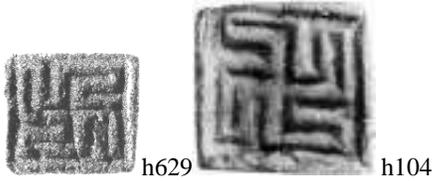
1620

Pict-65:

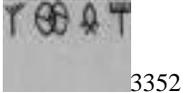
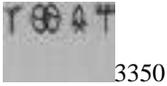
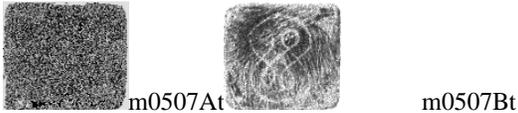
Gharial (or lizard), sometimes with a fish held in its jaw and/or surrounded by a school of fish.

On tablet m0482, the svastika follows the glyph of a tree branch '*aduru*'; hence the two signs may be read as: *aduru* 'metal' + *sathiya* 'knife, dagger' (*s'akti* -Skt.)

swadhiti (RV.AV.) **sathiya_** (H.) knife, dagger; sathia_, satthaka = knife (Pkt.Ka.)

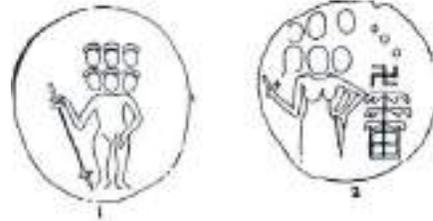


m1225B. 1311 Cube seal with perforation through the breadth of the seal Pict-118: svastika_ , generally within a square or rectangular border.



Rao finds the svastika motif more common in Mesopotamia than in the Sarasvati civilization. Paul Amiet suggests an Iranian origin for the svastika motif. [Paul Amiet, 1961, *La glyptique Mesopotamienne Archaïque*, Paris]

Yaudheya coin. Goddess Sas.t.hi on reverse. S.an.mukha with lance on obverse. Lucknow State Museum. A remarkable legacy of the Sarasvati Sindhu inscriptions is echoed in the



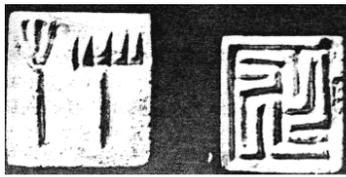
glyphs of a svastika_ above tree on railing (*Journal of the Numismatics Society of India*, Vol. V, Pt.I, June 1943) This is obviously a rebus pun on the word: satthi, s'akti, spear, sas.t.i = six, satthika = auspicious symbol. The tree may be also be a rebus representation.

Godess S'as.t.hi. Mathura, 2nd cent. Mottled red sandstone 67.8 X 34.5 cm (MIK I 5924).



"The goddess lifts her right hand in a gesture of salutation that is typical of the Kushana period. The hand is slightly turned inwards, towards the body (vya_vr.tta-mudra). Her left arm, which bends outward, rests on her hip. She wears a broad girdle, a thin band around the waist, and a sash over the shoulders and arms. her jewellery comprises earrings, a broad necklace, and bangles... on the large nimbus, which occupies the entire upper half of the stele, five more female figures are seen, which seem to emanate from the main figure. Each of the secondary figures have both arms lifted, perhaps in an expression of joy. They hold certain objects in their hands which are difficult to identify... the large size of the present

stele suggests that it was meant for a temple..." (Heino Kottkamp, Exhibit 26 in: Saryu Doshi, ed., 1998, *Treasures of Indian Art: Germany's tribute to India's cultural heritage*, Delhi, National Museum, p.33).



Two seals found at Altyn-depe (Excavation 9 and 7) found in the shrine and in the 'elite quarter'. V.M.

Masson, *Seals of a Proto-Indian Type from Altyn-depe*, pp. 149-162; V.M. Masson, *Urban Centers of Early Class Society*, pp. 135-148; I.N. Khlopin, *The Early bronze age cemetery in Parkhai II: The first two seasons of excavations, 1977-78*, pp. 3-34 in: Philip L. Kohl (ed.), 1981, *The Bronze Age Civilization in Central Asia*, Armonk, NY, ME Sharpe, Inc. "The discovery in Altyn-Depe of a proto-Indian seal with two signs deserves special mention. V.M. Masson pointed out, that what the seal depicted was a pictogram and not just a representation of animals. In his opinion this means that some of the ancient residents of Altyn-Depe were able to read this text." (G. Bongard-Levin, 1989, *Archaeological Finds in Central Asia throw light on Ancient India*, Jagdish Vibhakar and Usha Gard (Eds.), *Glimpses of Ancient India through Soviet Eyes*, Delhi, Sundeep Prakashan).

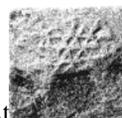


Text 4500 (Incised miniature tablet; not illustrated).

Early Dynastic seal, depicting an endless knot motif facing the turned face (**krem-**) of a battling tiger (**kol-kamar**, smelter-smith); Lagash. [After Amiet, 1980, pl. 83: no. 1099]



Terracotta stamp seal, Taxila, c. 1st cent. CE. [After Parpola, 1994, fig. 4.6]



m443At m443Bt



m1356

The seals m443 and m1356 show the endless knot motif together with the svastika_ glyph. The semantics connoted: **me.rha**, 'twisted; leader, merchant's clerk, **med.h**'; svastika_, 'caravan'; the Sumer cylinder seal impression showing a chariot-rider and a caravan, by adding the endless knot motif as a semantic determinant is a depiction of a merchants' caravan, **med.h svastika_**.

Instruments: **cutti**, **kan.aya** (hammer and spear)

Alternative readings of glyphs: 'endless knot' and 'svastika':

sutki_ an instrument of stone-splitters (M.); *cutti*, *cuttiyal* small hammer (Ta.); *cutti*, *cuttika*, *tutti* hammer (Ma.); *sutti* id. (Ka.); *sutti*, *suttige*, *suttiye*, *suttee*, *suttiye* id. (Tu.); *suttee* id. (Te.Go.); *suthi* id. (Kuwi); (DEDR 2668).



Glyph: *ga~t*. (Santali) knot
grantha a knot; tie
fr. *granth* to (Skt.)
gat.t.ho knot (G.)

sva_tta (Av. *hva_sta*) sweetened, seasoned, well-cooked (Vedic.lex.) *s'uti_* ashes (Ash.); *s'ut* earth (Kt.)(CDIAL 3709). *suti* extraction of soma juice (Skt. lex.) *suti* (Tadbhava of *s'ruti*) the *Ve_da* (Ka.lex.) *sutti-ttal* to calcine medicine, refine metal (Tailava. Taila. 109); *cutti-ceyral* to refine, sublimate (Ta.); *sutam* < *s'ruta* sacred books (Tirunu_r-. 52); *curuti* < *s'ruti* *Ve_da*, as learnt orally and not from written text (Tiva.); *cuti* id. (Ta.); *suti* (Te.Ka.Tu.)(Ta.lex.) *sutva* an offerer of soma juice; a student who has performed his ablutions (Ka.lex.) *suta_vant* = *sr.taso_ma* having the soma pressed (RV. iii.25.4); *suta_suta* what is extracted and what is not extracted; *suti* pressing; impelling (Vedic.lex.) *suta-kri* purchased with the Soma (RV. vi.31.4); *suta-pa_* drinking the Soma-juice (RV. i.155.2); *suti* pressing; impelling; *sutya_* pressing of the Soma; *sutvan* id. (RV. x.99.1)(Vedic.lex.) *suta* poured out, extracted, expressed; *su_ta* impelled, sent, despatched; *su_tye* expressing or drinking the soma juice (at a sacrifice) (Ka.lex.) *chuai* grinds, presses (Pkt.)(CDIAL 3710).

Svastika_: A marker of Bronze-age civilization in Bha_rata; its significance in the context of

bronze-working in Bha_rata with parallel imageries of Cyprus

An interesting point is that some scholars agree that the model for the symbol of svastika_ must have been an object, known and useful throughout the ancient world. [Thomas Wilson, 1896, *The Svastika_. The earliest known symbol, and its migrations; with observations on the migration of certain industries in prehistoric times*, Washington DC, The Smithsonian Institution, US National Museum, Washington DC].



Svastika_ and Endless knot: sword and instrument of stone-splitters: satti, suta

su_tika = a woman in childbed; su_ti = birth, delivery, parturition; offspring, progeny (Te.lex.) cu_ttu = anus, buttocks, pudendum muliebre; cu_r-u anus (Ta.); testicles, penis (Ma.); suti = female urinal passage (Kui); cu_ta, cu_ti, cyuti = anus (Skt.)(CDIAL 4860)(DEDR 2724). kundrka_ (Kur.); kunde = to be born, be created (Malt.) [Note a glyph: a woman giving birth].

sutti, suttige, suttiye, sutte, suttie hammer (Tu); sutte (Te.Go.); suthi (Kuwi); **sutki_** = an instrument of stone-splitters (M.)(DEDR 2668)

Cylinder seal impression, depicting an endless knot motif above the horses drawing the chariot; Sumer, c. 2500 BCE. [After Amiet, 1980: pl. 108, no. 1435]; the charioteer is a **su_ta**.

cur-r-u = to turn around, spin, take a circuitous course, be coiled, lie encircling, encircle, entwine, surround, coil up, whirl (Ta.); cur-ayuka = to turn around, wriggle (Ma.); suttu = to surround, wrap round, wind, circumambulate; coiled metal ring, coil, a turn (Ka.); sut.t.are = a whirlwind (Ka.); cutt- to wind around (Kod.); suttuni = to wind, roll, wrap, swurround (Tu.); cutt.t.a = loop, coil (Te.); cutt-

wind round (Pa.); sut- to twine (rope)(Go.)(DEDR 2715).

sutam = thread, yarn, any flimsy substance produce by insects, such as spiders, silkworms (Santali.lex.) su_tra = thread (Skt.) su_tradha_rud.u = a carpenter; a stage-manager (Te.lex.)

su_tamu = mercury (Te.lex.)

su_tye = expressing or drinking the soma juice (Ka.lex.) [Note the glyph of two persons drinking in a Mesopotamian seal].

su_tud.u = a charioteer; a carpenter; a bard, an encomiast, a reciter or teller of epics (Te.lex.) **su_ta** = a charioteer, driver, groom, equerry, master of the horse (esp. an attendant on a king who in earlier literature is often mentioned together with the gra_ma-n.i_; in the epics also a royal herald or bard, whose business was to proclaim the heroic actions of the king and his ancestors, while he drove his chariot to battle (AV); a carpenter or wheelwright; su_takarman = the office or service of a charioteer; su_tagra_man.i_ (Ka_s' on Pa_n. 7.1.56) an equerry and the chief of a village (S;Br.); su_tatva = the business or condition of a charioteer; su_ta f. the daughter of a charioteer (Pa_n. 6.3.70, Va_rtt. 9, Pat.)(Skt.lex.)

mer.ha = twisted, crumpled, as a horn (Santali.lex.) **meli, melika** = a turn, a twist, a loop, entanglement; **meliyu, melivad.u, meligonu** = to get twisted or entwined (Te.lex.) [Note the endless knot motif].

me_t.i, me_t.ari = chief, head, leader, lord, the greatest man (Te.lex.) mehto [Hem. Des. **med.hi** = Skt. van.ik-saha_ya: a merchant's clerk, fr. Skt. mahita praised, great fr. mah to praise, to make great] a schoolmaster; an accountant; a clerk; a writer (G.lex.) milakat [Ar. Milkate] property; estate; effects; chattels; goods (G.lex.)

mleccha = a man speaking any language but Sam.skr.ta and not conforming to brahmanical institutions; a kira_ta, s'abara or pulinda etc.; mleccharene kod.ava kod.agaru...kod.ava kon:garu (Ka.lex.) **med.i** = sound, roar (TS 5.7.8.1); methis.t.ha = worthy of hearing (TBr. 2.7.6)(Vedic.lex.) **mleccha** = a man speaking any language but Sam.skr.ta and not conforming to brahmanical institutions; a kira_ta, s'abara or pulinda etc.; mleccharene kod.ava kod.agaru...kod.ava kon:garu (Ka.lex.) mlaskati = to

snap with tongue (Slovan)(Vedic.lex.) mle_ch = speak indistinctly (Skt.); mle_cchati speaks indistinctly (S'Br.) brichun, pp. bryuchu = to weep and lament, cry as a child for something wanted or as motherless child (K.)(CDIAL 10384). milakkha, milakkhu non-aryan (Pali); malak savage; malakidu_a Vadda_woman (Si.); mila_ca wild man of the woods, non-aryan (Pali); maladu wild, savage (Si.); mi_cuth, mi_catas habit or life of an outcaste (K.)(CDIAL 10390). mle_ccha = non-aryan (S'Br.); maleccha, miliccha, meccha, miccha = barbarian (Pkt.); mi~_ch, mi~_cas non-hindu (K.); milech, malech Moslem, unclean outcaste, wretch (P.); mele_ch dirty (WPah.); mech a Tibeto-Burman tribe (B.); milidu, milindu wild, savage (Si.)(CDIAL 10389).

mer = a kind of large copper or brass pot (G.lex.) cf. melukka = copper (Pali); mleccha = copper (Skt.) mlecchamukha = copper; what has the copper-coloured complexion of the Greek or Mahomedans]. mer-iyā = a rock; mer-ayu = to shine, glitter (Te.lex.)

Finds of svastika on seals and finds of weapons

Svastika_ glyph occurs on over 50 inscribed objects of the civilization.

"A copper blade (Marshall 1931: pl. 136, f.3) found in one of the upper levels, though termed a spear-blade, may conceivably have been a knife (Plate IX, no.1). An exactly similar blade, but with a slightly longer tang, was found in the A mound at Kish (Mackay 1929a: pl. 39, gp. 3, f.4)... attention should be called to a steatite seal from Kish, now in Baghdad Museum, which bears the svastika symbol. This seal, both in shape and design upon it, exactly resembles the little square seals of steatite and glazed paste that are so frequently found at Mohenjodaro (Marshall 1931: pl. 144, f. 507-15).

"I do not think that I err in regarding the Kish example, which was found by Watelin, as either of Indian workmanship or made locally for an Indian resident in Sumer... The curious perforated vessels shown (Marshall 1931: pl. 84, f. 3-18) are very closely allied to perforated vessels found at Kish (Mackay 1929a: pl. 54, f. 36), especially in the fact that besides the numerous holes in the sides there is also a large hole in the base, which suggests that by this means they were supported on a rod or something similar... I have suggested, from evidence obtained by Sir Aurel Stein in southern Baluchistan, that these perforated vessels were used as heaters...(E.J.H.Mackay, Further links between ancient Sind, Sumer and elsewhere, *Antiquity*, Vol. 5, 1931, pp. 459-473).

Partner, merchant, belonging to a caravan

satthika = belonging to a caravan (Pali); satthia (Pkt.); sothi = comrade (K.); sa_thi = comrade (S.); sa_thi_ = partner, opponent (L.); sa_tthu~, sa_thi_ = comrade (P.); sa_thi (N.B.Or.Aw.H.Marw.G.M.)(CDIAL 13366). Sa_thi = companionship, friendship (Or.)(CDIAL 13367). sattha = caravan (Pali.Pkt.); sa_t.ha = village (Pas'.); sa_t. (Par.); sa_th = company (K.); sa_thu = caravan (S.); sa_th small caravan (L.); company (P.); sa_thu_ = company, train (Oaw.); sa_th, poet. Sa_tha_ (H.); sa_tha = a group of people (H.); sa_th, sa_thva_ro = company of travelers (G.); sa_th = company, companionship (M.); sa_thi = companionship, friendship (Or.); sa_th, sa_t = with (Tor.); sa_ti (Sh.); sa_th (P.); sa~_th (Ku.); sa_tha (N.); sa_the, sa_th (B.); sa_tha (Or.); sa_th (Mth.Bhoj.Aw.H.); sa_thi_ (Marw.); sa_thim (OG.); sa_thi_ for the sake of (M.); sa_rtha = caravan, troop, company (MBh.); sa_rthena = in company with (Skt.)(CDIAL 13364). Satthava_ha = caravan leader (Pali.Pkt.); satthavaha, sattha_ha (Pkt.); sa_tha_ = fellow-traveller, pilgrim, guide (B.); sa_thava_hu = caravan leader (OG.); satvu~ = merchant (Si.); satthava_hika = caravan leader (Pkt.); sa_thuya_, sa_tho = pilgrim's guide, companion (B.); sa_rthava_ha = caravan leader (MBh.)(CDIAL 13365). sa~_t = companion (Sh.); sa_th, sa_t = partner (M.); sa_than. = companion (M.); sa_thin (H.); satthuna = friend (Pali); sa_rthin = companion on a journey, merchant (MBh.)(CDIAL 13366). Cf. sa_th [Hem. Des. sattharo = Skt. samu_ha, a group; fr. Skt. sa_rtha, a caravan] company, society, association; fellowship; a partner; a company of persons on a visit of condolence (G.lex.)

This interpretation is suggested because the des'i_ phonemes for svastika_ are: suvatthi, sotthi = well-being (Pali)(CDIAL 13913). sa_thiyo = auspicious mark painted on the front of a house (G.)(CDIAL 13917). svastika_ is the emblem of the seventh deified teacher of the present era (Jainism)(G.lex.)



The symbol or the word, 'svasti' becomes an invocatory message on many epigraphs of the historical periods in Bha_rata.

svasti welfare, health, prosperity, blessing; joy, happiness, bliss (Ka.); goodness; may it be well! hail! health!; so be it! amen!; an auspicious particle used at the beginning (of a letter etc.)(Ka.lex.)svasti good fortune (RV.); suvatthi, sotthi well-being (Pali); s'vasti (NiDoc.); satthi, sotthi welfare, blessing (Pkt.); seta good fortune (Si.)(CDIAL 13915). 3349.**Image: svastika:** sathiya_, satiya_ mystical mark of good luck (H.); sa_thiyo auspicious mark painted on the front of a house (G.); sotthika, sotthiya auspicious (Pali); satthia, sotthia auspicious mark (Pkt.); svastika auspicious; auspicious mark (R.)(CDIAL 13916). svastika auspicious mark (R.); sotthika, sotthiya auspicious (Pali); satthia, sotthia auspicious mark (Pkt.); sathiya_, satiya_ mystical mark of good luck (H.); sa_thiyo auspicious mark, painted on the front of a house (G.)(CDIAL 13916). cf. svastha well, healthy (MairUp.)(CDIAL 13917). suttige rice and cocoanut kept for 'swastika', an auspicious ceremony; sutye to set apart some rice and/or cocoanut as an offering to a deity in order to cure some disease supposed to have occurred due to the wrath of that deity (Tu.lex.) s'asta auspicious, happy, well, right (Skt.Ka.); best, excellent (Ka.)(Ka.lex.) s's'te xuda_ God be praised (Pas'.); sattha praiseworthy (Pkt.); cust beautiful Dikkuma_ri_ (Pa_rs'van.); suvaccha_ (Pkt.); su_ci_ fairy (Wg.Kal.)(CDIAL 13514). sotthi [svasti (Skt.) = su + asti] well-being, safety, blessing; brings future happiness; sotthi hotu hail! sotthin in safety, safely; sotthina_ safely, prosperously; suvatthi id.; sotthi-kamma a blessing; sotthi-ka_ra an utterer of blessings, a herald; sotthi-gata safe wandering, prosperous journey; sotthi-gamana id.; sotthi-bhava well-being, prosperity, safety; sotthi-va_caka utterer of blessings, a herald; sotthi-sa_la_a hospital (Pali). sotthika, sotthiya happy, auspicious, blessed, safe; di_gha-sotthiya one who is happy for long; sotthiyya = sotiya a learned man, a brahmin; sotthivant lucky, happy; sottha_na blessing, well-fare (Pali.lex.) cottu < svam neut.nom.sing. of sva one's own (RV.)(CDIAL 13893). property, possessions of two kinds (ta_varam and cankamam); gold (Ta.); sottu (Te.Ka.)(Ta.lex.) **Swastika symbol:** cuvasti < svasti a Sanskrit indeclinable denoting auspiciousness, used at the beginning of inscriptions, calendars, etc.; cuvastikam < svastika a mystical mark; a yo_gic posture. svasti-va_cana ve_da recited in the presence of idols taken in procession (Ta.lex.) svastika a kind of mystical mark (shaped like a Greek cross with the extremities of the four arms bent round in the same direction)(Ka.lex.) svastika (sva_sta s'ubha_ ya hitam ka) a kind of mystical mark on persons or things denoting good luck; a lucky object (Skt.lex.)

(Kho.)(CDIAL 12365). s'asya best, excellent; praiseworthy, laudable (Skt.lex.) s'asa_ praise, song of praise (RV. v.41.18); s'asta song of praise (VS. xxxiii.24; RV. iv.3.15)(Vedic.lex.) s'asti praise, eulogy; a hymn of praise (sto_tra)(Skt.lex.) s'am.s to praise, extol; s'am.str. a reciter of hymns; a praise, a panegyrist (Skt.lex.) ca_sta_ < s'a_sta_ nom.sg. of s'a_str. a village deity, aiyana_r (Cu_t.a.); ca_sta_ppiri_ti feeding of brahmins for propitiating ca_sta_ (Na.)(Ta.lex.) s'a_str. a teacher, an instructor; a ruler, king, sovereign; a father; a Buddha or Ji_na; or a deified teacher of the Buddhas or Jainas (Skt.lex.) s'a_s to instruct (RV. ii.28.9); to direct (RV. x.32.4); to command (RV. viii.34.1); to praise (RV. i.189.7); to guide (RV. vi.54.2); s'a_sa commander, ruler (RV. x.152.1)(Vedic.lex.) **Well-being:** suvatthi-, sotthi- well-being (Pa.); s'vasti (NiDoc.); satthi-, sotthi- blessing, welfare (Pkt.)(CDIAL 13915). svasti good fortune (RV.); suvatthi, sotthi well-being (Pali); s'vasti id. (NiDoc.); satthi, sotthi blessing, welfare (Pkt.); seta good fortune (Si. < *soti < sustha (CDIAL 13915). svastha well, healthy (MairUp.); sattha in good health (Pkt.); sasto (Gypsy); sa_stu (Phal.); sasti_ sound, healthy (Pas'.)(CDIAL 13917). suvastika_ a goddess [suvatsa_ name of a

svastis'ri_ a Sanskrit expression used at the beginning of inscriptions, letters, etc. to denote auspiciousness (Ta.lex.) cf. sotthika, sotthiya adj. (fr. sotthi) happy, auspicious, blessed, safe; sotthi (Skt. svasti = su + asti) well-being, safety, blessing (Pali.lex.) svasti welfare, happiness (RV. i.89.6); goddess of welfare (RV. iii.38.9; TS. vi.1.5); svastiga_ leading to fortune (RV. vi.51.16); svasti-ta_ welfare (Aitre_ ya A_ran.yaka. i.5.2); svasti-da_ giving happiness (RV. x.17.5); happy, fortunate, affording happiness (RV. vi.46.9); welfare (RV. x.101.7); leading auspiciously (AV. xiv.2.8)(Vedic.lex.) **Image: svastika:** sotthi-va_cakam < svasti-va_cana a portion of the Ve_da recited with a view to auspiciousness; Ve_da recited in the presence of idols taken in procession (Vina_yakapu. 15,117); co_taka-va_kkiyam mandatory precepts (Ci. Po_. Pa_. Avai. 15); co_ttam < sto_tra expr. of salutation from an inferior (Tiv. Periyati. 2,2,6); co_ttu id. (Tirukko_. 173)(Ta.lex.) svasti-s'ri_ a Sanskrit expression used at the beginning of inscriptions, letters, etc., to denote auspiciousness (Ta.lex.) co_ttikam < svastika_sanam a yo_gic posture symbolic of success, which consists in sitting with legs crosswise while the body is held erect and at ease (Pirapo_ta. 44,7); cuvattika_can-am id.; cuvattikam, cuvasti,

cuvatti a Sanskrit indeclinable denoting auspiciousness, used at the beginning of inscriptions, calendars, etc; cuvastikam a mystical mark denoting auspiciousness; a yo_gic posture; cuvattikam a mystical design (Vina_yakapu. 15,48); a kind of sitting posture (Cilap. 8,25); co_ki < jo_gi (Ka.) < yo_gin a caste of itinerant Telugu mendicants, who are dexterous jugglers and snake-charmers, and claim a profound knowledge of charms and medicine (E.T. ii,494)(Ta.lex.) svasti good fortune (RV.); suvatthi, sotthi well-being (Pali); s'vasti (NiDoc.); satthi, sotthi blessing, welfare (Pkt.); seta good fortune (Si.)(CDIAL 13915). svastha well, healthy (MaitrUp.); sattha in good health (Pkt.); sasto (Gypsy); sa_stu (Phal.); sasti_ adj. sound, healthy (Pas'.)(CDIAL 13917). sotthika [svasti = su + asti (Skt.)] well-being, safety, blessing; brings future happiness; sotthi hotu hail! sotthin in safety, safely; sotthina_ safely, prosperously; sotthi-kamma a blessing; sotthi-ka_ra an utterer of blessings, a herald; sotthi-gata safe wandering, prosperous journey; sotthi-bha_va well-being, prosperity, safety; sotthi-va_caka utterer of blessings, a herald; sotthi-sa_la_ a hospital; sotthika, sotthiya adj. happy, auspicious, blessed, safe; sottha_na [svastyayana (Skt.)] blessing, well-fare; sovatthika safe; in the shape of a svastika; sovatthika_lanka_ra a kind of auspicious mark; sotthivant adj. lucky, happy, safe (Pali.lex.) svasti = welfare, happiness (RV 1.89.6; goddess of welfare (RV 3.38.9; TS 6.1.5: daivi_svastih, pathya_m svastim, 'svasti sam.jn~a_devata_')(Vedic.lex.) svastiga_ = leading to fortune (RV 6.51.16); svastita_ welfare (RV 1.5.2); svastida_ giving happiness (RV 10.17.5); svastimant happy, fortunate, affording happiness (RV 6.46.9); svastiva_h bringing welfare (RV 10.101.7); svastiva_han leading auspiciously (AV 14.2.8); svastyayan obtainment of welfare; procuring welfare (TS 1.2.9.1)(Vedic.lex.)

svastika the meeting of four roads; the crossing of the arms, making a sign like the cross (Skt.lex.) canti the cross roads, junction of three or more roads (Tirumuru. 225); cantikkarai junction where several roads meet (Ta.lex.)

svastika, svastikam a particular mode of sitting practised by yogins (Skt.lex.) kattari-co_ttikam < kartari + svastika gesture with both hands in which the fore-fingers of either hand are stretched out together whilst the rest are kept bent to represent a pair of scissors, ear of corn, etc. (Parata. Pa_va. 64)(Ta.lex.) cuttika_tan-am < svastika_sana a yogic

posture symbolic of success (Tirukka_l.at. 18,22)(Ta.lex.) s'ukta united, joined (Skt.lex.)

s'astra an instrument for cutting or wounding, a weapon; a sword, a knife, a scymitar, korahu (Ka.); iron; s'astraka iron (Skt.Ka.); s'astra-kriye weapon-business; s'astra_ji_va living by the profession of arms; a soldier (Ka.); s'astri a knife (Skt.Ka.)(Ka.lex.) Knife, dagger, adze; iron: s'astra instrument for cutting (S'Br.); iron (Skt.); s'astraka knife, iron (Skt.); s'astri_knife, dagger (Skt.); sattha, satthaka knife (Pali); sattha dagger (Pkt.); satthia_knife (Pkt.); s'astir, saster iron (Gypsy); s'eitr, s'e_l, leis' knife (Pas'.); s'e_thar, s'a_htar iron (K.); satthra_adze (P.); sat-a weapon, instrument (CDIAL 12367).

satthia_knife (Pkt.); s'astra instrument for cutting (S'Br.); s'astraka knife, iron (SSkt.); s'astri_knife, dagger (Skt.); sattha, satthaka knife (Pali); sattha dagger (Pkt.); s'astir, saster iron (Gy.); seitr knife (Pas'.); s'e_thar iron (K.); satthra_adze (P.); sat-a weapon, instrument (Si.)(CDIAL 12367). sasa carpenter, wheelwright (Si.)(CDIAL 5621). cf. kattari (Ta.); kattarisu (Ka.) to cut with scissors, clip, snip, shear (Ta.lex.); kattarikai (Perun.. Vattava. 14,7); a dance gesture: forefinger and middle finger are held together and pointed upward, while the thumb and the little finger remain bent, the little finger being kept stretched (Cilap. 3,18, Urai)(Ta.lex.) kartari scissors, knife (Sus'r.); kattari_id., shears (Pali); scissors, shears (Pkt.)(CDIAL 21858). { Two semantic streams lead into two morphemes: s'astra and kartari: s'astra instrument for cutting (S'Br.); sattha, satthaka knife (Pali); sattha dagger; satthia_knife (Pkt.)(CDIAL 12367). < kati.r knife; katy knife (Ko.)(DEDR 1204); tar-ika a kind of axe, chisel (Ta.)(DEDR 3140) < tar.c to cut (Go.)(DEDR 3146).

cattiram weapon used in close combat; hand-weapon as sword, lance (Pin.); spear, javelin; iron; surgeon's knife, lancet; catti-taran-< s'akti-dhara Kuma_ra as having javelin; cattiya_n- id. (In-. Na_r-. 1); **catti** spear, dart (Perun.. Makata. 20,63); trident (Perun.. Makata. 14,153); **catti** pit in which a flag-staff is planted (Perun.. Ila_va_n.a. 6,56, Kur-ip.)(Ta.lex.) catturu < s'atru enemy, foe (Civaraka. A_yutte_va. 3)(Ta.lex.) sattha (Vedic. s'astra) a weapon, sword, knife, coll. 'arms'; often in combination: dan.d.a + sattha coll. 'arms'; satthan_a_harati to stab oneself; sattha-kamma application of the knife, incision, operation; sattha-ka_raka an assassin; sattha-van.ijja_trade in arms; sattha-ha_raka an assassin; satti (Vedic. s'akti orig. identical with 'ability,

power') knife, dagger, sword; di_gha-dan.d.a-satti sword with a long handle; tikhin.a-satti a sharp knife; mukha-satti piercing words; satti a spear, javelin; satti-pajara lattice work of spears; satti-



langhana javelin dance; satti-simbali-vana the forest of swords (in purgatory); satti-su_la a sword stake; sattu (Vedic. s'atru) an enemy; sattuka an enemy; satthaka a knife, scissors; dan.d.a-satthaka a knife with a handle; satthaka-nisa_dana (cf. Skt. nis'a_tana) knife-sharpening; sattha-nisa_na (cf. Skt. nis'a_na) id.; satthaka-va_ta a cutting pain (Pali.lex.) cf. s'astra instrument for cutting (S'Br.); sattha dagger (Pkt.); satthra_ adze (P.)(CDIAL 12367). sathiya_ surgeon, oculist (H.); astra-s'astra: s'astr. one who cuts up (AV.); s'as cut (Skt.)(CDIAL 12366); s'astra instrument for cutting (S'Br.); s'asya to be slaughtered (Skt.) (CDIAL 12368); vis'asti cuts up (RV.); 3 pl. vis'asanti (S'Br.); visase_i kills; pp. visasiya (Pkt.); bisasna_ to cut up the body, scrape, hurt, kill (H.)(CDIAL 11934). **Warrior:** satti (Vedic. s'akti) ability, power (Pali); yatha_ satti, yatha_ sattin, yatha_ sattiya_ as much as one can do, according to one's ability; satta (Vedic. sattva living being; satvan strong man, warrior; sant) a living being, creature, a sentient, rational being, a person; sattava (a diaeretic sattva) id.; satta-ussada teeming with life, full of people; sattha-van.ijja_ slave trade; sattatta state of having existence (Pali.lex.) sattha competent, able (Pali.lex.)

Epigraphs with endless-knot motif



Mohenjo-daro cylinder seal with six signs, found in 'Swat and Seistan', unrolled photographically and the unbroken stamp-end of the seal; positive impression of the cylinder showing Harappan inscriptions (Robert Knox, 1994, A new Indus Valley Cylinder Seal, pp. 375-378 in: *South*

Asian Archaeology 1993, Vol. I, Helsinki) The triangle motif is similar to the motif shown on M-443B.

"The Seistan findspot of this seal is of great interest. Evidence exists for the movement of Indus commodities, and, therefore, Indus commercial activities in the direction of western Asia and, in return, from there to the Indus world. Evidence for the Harappan penetration of Seistan and farther to southeastern Iran is scanty but includes at least one other Indus inscription from an impression of a sherd discovered at Tepe Yahya, period IV A (c. 2200 BC) (Lamberg- Karlovsky and Tosi 1973: pl. 137)" (Knox, p. 377).

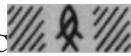
Our hypothesis is that the traders with their seals, and people who travelled in Swat and Seistan, in search of minerals, were the bronze-age smiths and lapidaries of Meluhha.



h613A



h613C



4259 Endless-knot motif?



Chanhudaro49A



Chanhudaro49B



Chanhudaro50A



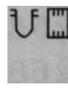
Chanhudaro50B



m0463At



m0463Bt



2813 [See

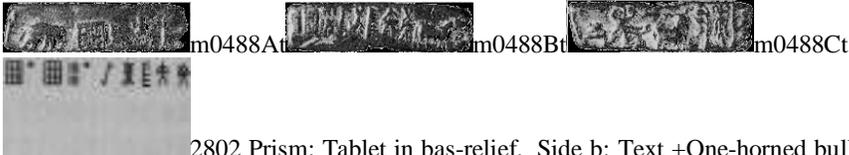
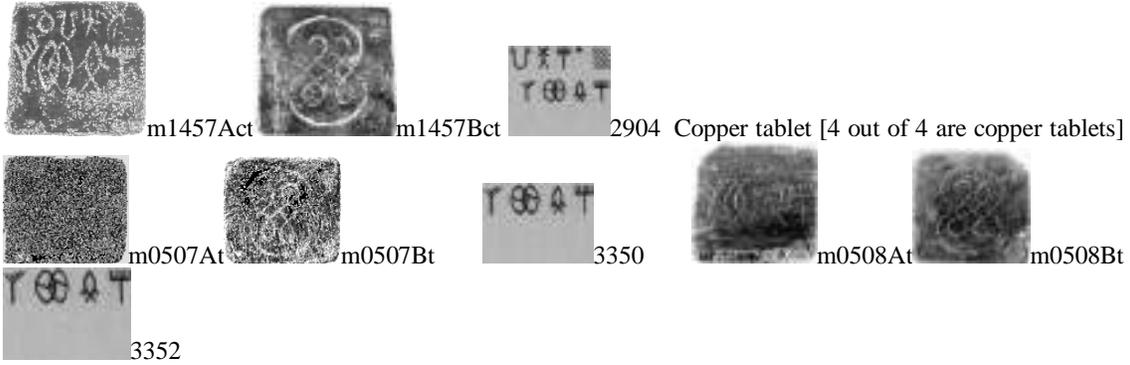


also identical



Four-crosses motif on a Mohenjo-daro tablet M-463 is comparable to the same motif which appears painted on a potsherd of Malwa ware from Navdatoli, Maharashtra, c. 1700-1400 BCE. [After H.D.Sankalia, SB Deo and ZD Ansari, 1971, *Chalcolithic Navdatoli: the excavations at Navdatoli, 1957-59*. Poona: 216f., fig. 87: D 585 (sherd

8355 I A 13/5; After Paropla, 1994, p.55, fig. 4.4).



2802 Prism: Tablet in bas-relief. Side b: Text +One-horned bull + standard. Side a: From R.: a composite animal; a person seated on a tree with a tiger below looking up at the person; a svastika within a square border; an elephant (Composite animal has the body of a ram, horns of a zebu, trunk of an elephant, hindlegs of a tiger and an upraised serpent-like tail). Side c: From R.: a horned person standing between two branches of a pipal tree; a ram; a horned person kneeling in adoration; a low pedestal with some offerings [if it is a skull, it could be **man.t.ai** = skull (Ta.)].

man.d.a = a branch; a twig (Te.lex.)

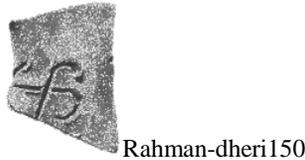
man.d.i = kneeling position (Te.lex.) mandil, mandir = temple (Santali) ma_d.a = shrine of a demon (Tu.); ma_d.ia = house (Pkt.); ma_l.a a sort of pavilion (Pali); ma_l.ikai = temple (Ta.)(DEDR 4796).

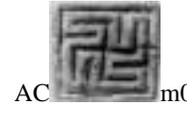
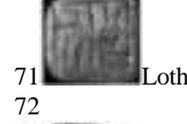
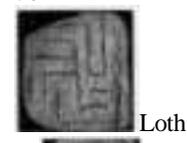
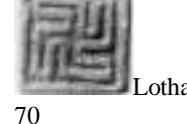
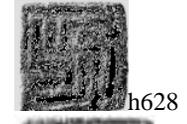
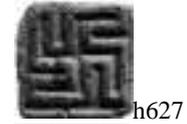
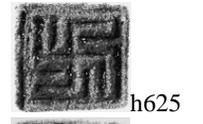
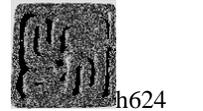
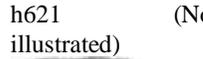
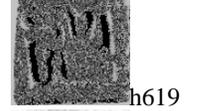
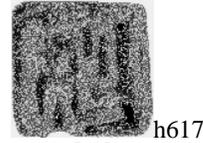
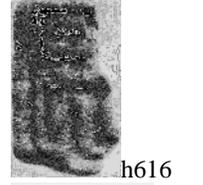
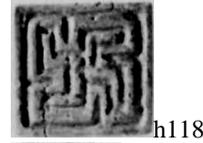
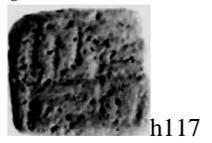
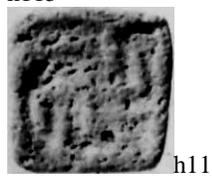
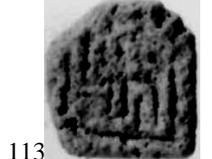
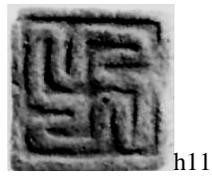
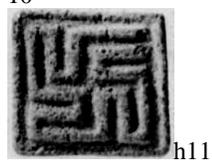
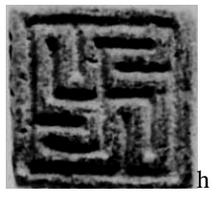
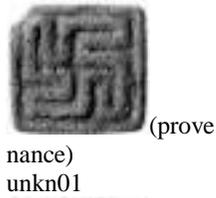
man.d.iga = an earthen dish (Te.lex.) **man.d.e** = a large earthen vessel (Tu.lex.) **man.di** earthen pan, a covering dish (Kond.a); cooking pot (Pe.); brass bowl (Kui); basin, plate (Kuwi)(DEDR 4678). man.d.e = head (Kod.)(DEDR 4682).

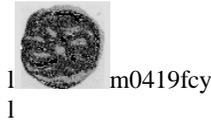
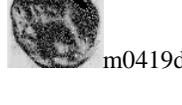
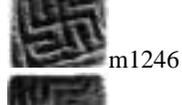
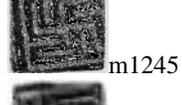
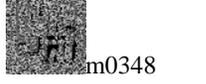
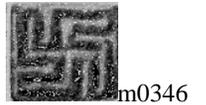
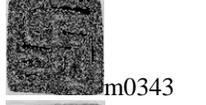
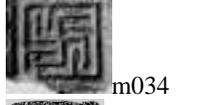
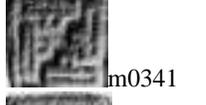
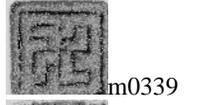
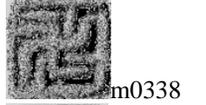
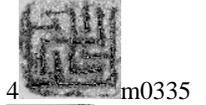
man.d.a_ = warehouse, workshop (Kon.lex.)



seal Pict-118: svastika_ , generally within a square or rectangular border. m1389t







Svastika_ symbol used in historical periods



Stone toilet tray, Sirkap, Taxila, Stratum II (pl. g = No. 246, Marshall);

Gold amulet, Svastika_, 1st cent. CE, Sirkap, Taxila (Pl. 191, No. 85, Marshall).

Copper seal, svastika_, Sirkap, Taxila, stratum II, legend indistinct, pl. 55 no. 27, Marshall).



BHIMBETKA	ROCK-SHELTER PAINTING	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
"	"	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
HARAPPA (HARAPPAN CULTURE)	SEAL + SEALING	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
MOHENJODARO (HARAPPAN CULTURE)	"	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
RANGPUR MALWA WARE (CHALCOLITHIC)	POTTERY	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
DIST. COORG DIST. GIMBATOR (MESOLITHIC)	"	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
PRAYAGPUR (5th PERIOD 2 A) RUPAK (PERIOD V)	SEAL + SEALING	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
TAXILA	DIFFERENT ORBITS	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
GHATA, KUDA, KALE, JUNNAR NASIK	CAVE INSCRIPTION	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐

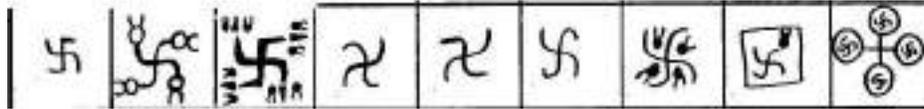
[Pl. 27, Svastika_ symbol: distribution in cultural periods]



[Pl. 28, A, Ramnagar, Lotapur, Mamdar, Singavaran: Punch-marked coins]

B	NAGARI PINDE	"	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
C	KAUSAMBI	UNINSCRIBED + INSCRIBED CAST COPPER COINS	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
D	KADA	COPPER COINS	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐
E	ERAN	COPPER PUNCH-MARKED COINS	卐 卐 卐 卐 卐 卐 卐 卐 卐 卐 卐

[Pl. 28, B to E: svastika_ symbol on punch-marked/cast copper coins]



[Pl.28, F: Ujjayini, copper coins with svastika_ symbol]

TAXILA	”	卐		
AYODHYA	”	卐	卐	卐
ARJUNAYANA SIBIS KUNINDA KULUTA YAUDHEYA	”	卐	卐	
SĀTAVĀHANA	COINS	卐	卐	

[Pl. 28, G to J, Taxila, Ayodhya, Arjunayana, Sibis, Kun.inda, Kuluta, yaudheya, S’a_tava_hana coins: Svastika_ symbol]

Thomas Wilson, [curator, Department of Prehistoric Anthropology], notes: “(svastika_) is characterized by straight bars of equal thickness throughout, and cross each other at right angles, making four arms of equal size, length and style.” While not finding definitive clues as to its time or place of origin, Wilson concludes that the svastika_ was perhaps the first symbol to be made with ‘a definite intention’ and a continuous or consecutive meaning, the knowledge of which passed from person to person.



The view that the symbol may perhaps have represented a known object, is echoed by Ashley and Butts. H.J.D Ashley wrote: “In the first instance probably the svastika_ may have represented the course of the sun in the heavens revolving normally from left to right.” (1925, *The Swastika: A study, The Quest*, January 1925). Edward Butts noted: “...It is evident that the svastika_ figure is only emblematic of what it originally was, from the fact that it must have been a more useful device and of very necessary application to have forced itself into the needs of so many widely distributed localities.” [1901, *Statement No.1: The Swastika*, Kansas City, Franklin Hudson Publishing Co.]

Friedrich Max Mueller characterized the symbol with its hooks facing leftward as *suavastika*, but there is no corroboration for such a lexeme. Wilson analyzed the occurrence of the symbol on artifacts – from funeral urns to spears – and attempted a classification by physical and symbolic properties to fathom some logic as to why the symbol has been prevalent in so many cultures for so long. It is difficult to surmise that the sign was just ornamental; it had some specific symbolic importance.

Troy. Svastika_ with four birds. [Compare the two ducks shown with the symbol in Cyprus. Source: Dr. Henry Schliemann, 1885, *Tiryns: the prehistorical palace of the kings of Tiryns*, New York, Charles Scribner’s Sons]. “According to the migration theory (as opposed to the coincidence theory), the svastika_’s earliest known habitat is a wide territory beginning at the valley of the river Indus in India and extending westward across Persia and Asia Minor to Hissarlik (where the remains of ancient Troy were found) on the shore of the Hellespont...W. Norman Brown contented (1933, *The Swastika: The study of the Nazi claims of its Aryan Origin*, Emerson Books) that ‘for combined age, frequency, and perfect execution, the examples from the Indus Valley are the most interesting.’..Brown noted that the svastika_ was among India’s ‘first civilized

remains, as early as 2500 BCE, possibly 3000 BCE, and appears in forms perfectly developed, in contrast with slightly older but primitive and less perfect forms found farther westward.' More important, Brown concluded that it existed in India before the arrival of the Aryans. 'Like other symbols which the Aryans of India used on coins and stone sculpture, it came to them from non-Aryan predecessors. It was a simple minutia of the spoils the victors had taken from those they had vanquished.'..The svastika_ was also discovered in the early 1930s in explorations of the ancient civilization in Baluchistan (in Central Asia)..The next chronological stratuth' (as Brown calls it) for the svastika_ appears at Hissarlik, the site of Homer's Troy, and many older cities that had risen and perished before it...According to Brown (and contrary to Schliemann's assertion), it was at Hissarlik or elsewhere in Asia Minor that the Indo-Europeans may for the first time have met the svastika_, but this is only a supposition." (Steven Heller, 2000, *The Swastika: symbol beyond redemption?* New York, Allworth Press, pp. 28-33).

W. Norman Brown who refuted the claim of Indo-European origins of the svastika_ was emphatic that the people who first used the symbol were the 'Japhetic' and the Indus Valley Peoples. "Whatever these various peoples were, they were not Indo-Europeans; and the Indo-Europeans, as far as our evidence indicates, did not know the svastika_ until a thousand years after the time of its earliest preserved specimens." He further adds: "Egypt seems to have been without it (svastika_) until very late, when Greece had arisen. Ancient Assyria and Palestine, as far as I know, were also without it... Although by 2000 BCE it extended across to the Hellespont, it passed to the north of the great Semitic territory and missed that people. The jews did not use it. Early Christianity seems not to have known it. The Christians used the svastika_ only after their religion was well established in Europe."



Many bronze articles with svastika_ sign; Dates: Unknown [Source: Thomas Wilson, *Report of National Museum, 1894*]. Celts who were proficient bronze- and gold-workers also used the svastika_ motif.

Bronze pin-head from the Caucasus



Marks of three svastika_ on black pottery from Caucasus

Fragment of bronze ceinture from Necropolis of Koban, Caucasus



Bronze pin from

Bavaria



svastika_, from Germany



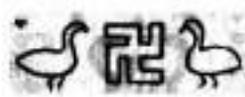
Spearhead with



Footprints of the Feet of the Buddha; note the svastika_ just below the fingers. [Source: Alexander Cunningham, 1962, *The Stupa of Bharhut: a Buddhist monument, Varanasi, Indological Book House*].

Cypriot artifact with svastika_. Note the symbol on the stylized, flower-like wheel of the chariot.

Ireland. Triskelion on carved wood.



Cypriot artifact with svastika_ flanked by two ducks.

Altar from south of France.

Cypriot artifact with svastika_ on the shoulder of the warrior holding a bull model in his left hand; his hind-part is the hind-part of a bull?



Ancient coins of Bharat with svastikas, normal and ogee (After Figs. 231 to 234 in Thomas Wilson, opcit). The coins were found by Cunningham at Behat near Shaharanpur. E. Thomas

assigns them to about 330 BCE. (Edward Thomas, *Jour. Royal Asiatic Soc. (new series)*, I, p. 175). The svastika sign does not appear in Indo-Bactrian (ca. 300 to 126 BCE), Indo-Sassanian (from 200 to 636 CE) or later Hindu or Mohammedan coins. The sign of svastika becomes an integral part of the temple architectural tradition and becomes a sacred symbol of the Hindu, Buddha and Jaina traditions.

On Siddham and other symbols used in Bharatiya inscriptions

The following pages are devoted to a survey of symbols used in Bharatiya tradition of epigraphy and relating many symbols to the lexical concordances. The range of topics covered is extensive and is intended to evolve a method for understanding the use of symbols in writing systems. The survey begins with the use of **siddham** symbol.

This is a wide ranging survey of many lexemes in search of the substratum glosses which may be related to Sarasvati hieroglyphs.

The survey establishes that it is an error, in semantic terms, to treat the dialectical continuum of Bharat as composed of water-tight compartments of language families. There has been intense interaction among all the people of Bharat right from the days of their lives on the banks of River Sarasvati when a civilization dawned with bronze-workers. This interaction has resulted in many borrowings and re-borrowings. More linguistic studies need to be undertaken to delineate the Proto-Bharatiya idiom which was in vogue in the linguistic area on the banks of Rivers Sarasvati and Sindhu between ca. 3500 BCE and 1400 BCE. An attempt at cracking the code of the Sarasvati Hieroglyphs will be presented in the volume containing Sarasvati Epigraphs.

The resources presented herein are intended to be the data base to support this attempt. The database is obviously as diverse as the orthographic extravaganza evidenced by the hieroglyphs contained in pictorial motifs and signs alike on over 4,000 inscribed objects..

An invocation: **siddham** lit. success has been attained; an invocation found in early inscriptions at the commencement of the text; sometimes confused with pranava; generally indicated in later records by a symbol having several varieties; sometimes indicated by the letter cha (EI 30; CII 3); Alphabet: siddham name of the Indian alphabet derived from late brahmi and from which are derived north Indian alphabets like nagari, wrongly called kutila etc. (IEG, p.310). siddhi (CII 4) emancipation; sometimes used at the beginning of documents to ensure the success of the undertaking (IEG). "At the beginning of an inscription generally and also at its end occasionally, there is an auspicious symbol or word or passage in adoration to a deity. The word siddham and svasti at the beginning of inscriptions are commonly found, though siddham gradually came to be represented by a symbol found at the beginning of numerous inscriptions. Among other auspicious symbols, occasionally we have the svastika (Archaeological Survey of South India, Vol. I, Plate 69; Archaeological Survey of Western India, Vol. IV, Plate 49, Nos. 5-7, 9, 11, 13-14), the trident-on-wheel called triratna [ASWI, Vol. IV, Plate 49, Nos. 8, 10, 15; sometimes called nandipada (Rapson's catalogue, p. clxxv), British Museum Catalogue of the Coins of the Andhras, London, 1908], the s'ri_vatsa [together with the svastika symbol at the beginning of the Hathigumpha inscription of Khavela (Select Inscriptions, Plate facing p. 208)], the tree-in-railing (at the end of the Hathigumpha inscription, ibid., Plate facing p. 209), and certain unidentified symbols (ASWI, Vol. IV, Plate 44-- Bhaja No. 7; Plate 45-- Kuda Nos. I,6,16; Plate 46-- Kuda Nos. 20, 22, 24, 26) in early inscriptions (cf. Epigraphica Indica, Vol. XXXIII, p. 247 and Plate facing p. 251)... A man:gala, i.e. a benediction or an auspicious word, at the beginning, in the middle and at the end of a composition was believed to ensure its completion and preservation. The auspicious word siddham is found at the beginning of numerous early records (cf. Select Inscriptions, pp. 157, 160, 164, 165, 169, 176, 191, 193, 196, 200, 203, 204, 205; for the contractions sdha and sdhi cf. ibid., pp. 150, 156). This word was in later times generally indicated by a symbol of a varying shape. The symbol was sometimes followed by the auspicious word svasti which, in some cases, stands singly at the beginning of epigraphic records (ibid., p. 331, text line 1; p. 403, text line 1; Epigraphic Indica, Vol. XXVIII, Plate facing p. 62, text line 1). Sometimes the man:gala : siddhir-astu, having the same import as siddham, as also a bigger man:gala sentence beginning with svasty-astu, is found at the end of the documents (cf. Select Inscriptions, p. 298, text

line 24; p. 385, text line 41; p. 409, text line 30; p. 327, text line 9; p. 397, text line 8; p. 441, text line 55; p. 455, text line 15). In some cases again a symbol, which is apparently a variant of the siddham sign, appears at the end of a document and, in rare cases, also in the body of its text especially at the end of a section of it (cf. Epigraphica Indica, Vol. III, p. 129, Plate, text line 24; Select Inscriptions, p. 457). Besides the siddham symbol, various other auspicious symbols also appear in inscriptions.

"An inscribed fragment of a pillar was discovered in the village of Barli in Rajasthan by the late Pt. G.H. Ojha in 1912 (Ojha : Pra_ci_nalipima_la_ (Hindi), p. 2)... the first letter (form: O with a right loop on top) was read as vi_... Dr. K. P. Jayaswal... denied this mark as a sign for long medial i_... dated it to 374-373 B.C. (JBORS, 1930, p. 67-68)... Dr.D.C. Sircar... restores as siddham.. He places the record in the 1st century B.C." (C.S. Upasak, The history and palaeography of Mauryan Bra_mi_ Script, Nalanda, 1960, pp. 185-186). <http://sarasvati.simplynet.com/dictionary/2863to.htm>

Incidence of duplicate texts

Texts of inscriptions which occur more than once have been arranged by Parpola (1984, p. 120) into five groups by final signs (read from right to left). The first group is seen to have a high incidence of duplicates. The inscription (item 2 of Group I) occurs at Kalibangan with a rare iconographic motif. Parpola surmises, **'on the basis of Kalibangan seals, this group of officials may have been of a military nature, either soldiers or guards, for the motif may be interpreted as a deity of war'**. (Parpola, 1994, p. 120).

Person with pigtail, metal pit furnace; boring instrument for epigraph-writers



Nausharo09



Kalibangan050c



8031 Pict-53: Composition: body of a tiger, a human body with bangles on arm, a pig-tail, horns of an antelope crowned by a twig.



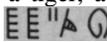
8024 Steatite, Caspers, 1982, Pl. 1b, and Amiet, 1972. shows the duelling



Kalibangan065aKalibangan065A6Kalibangan065E

cylinder seal; Thapar, 1975, p. 28 No. 4; cf. During a stamp seal from Mohenjodaro with a similar 'centaur', Collon, 1987, Fig. 605. This cylinder seal impression shows the duelling figures but with an extra arm; the ligatured body of an animal is also known on stamp seals. Pict-104: Composition: A tree; a person with a composite body of a human (female?) in the upper half and body of a tiger in the lower half, having horns, and a trident-like head-dress, facing a group of three persons consisting of a woman (?) in the middle flanked by two men on either side throwing a spear at each other (fencing?) over her head.



m0311 Pict-52: Composite motif: body of a tiger, a human body with bangles on arms, antelope horns, tree-branch and long pigtail.  2347

Substantive: *sund* 'pit (furnace)'; *sum*, *sumbh* a mine, a pit, the opening into a mine, the shaft of a mine; *sum bhugak* the entrance to a mine, pit's mouth (Santali). *sun.d.i* a semi-hinduised

aboriginal caste; this caste are the distillers and liquor sellers; *sun.d.i gadi* a liquor shop (Santali) *cun.d.* to boil away (Ko.); *sun.d.u* to evaporate (Ka.); *cun.d.u* to be evaporated or dried up (Te.); *s'un.t.hi* to become dry (Skt.)(DED 2662).

Glyph: *su_nd gat.* knot of hair at back (Go.); *cundi_* the hairtail as worn by men (Kur.)(DEDR 2670).

The person with pigtail is ligatured to a tiger, *kol*; rebus: *kol* 'metal'; thus, the ligatured glyph can be read as: metal pit furnace: *kol + sund*

On Kalibangan 065 cylinder seal, a glyph also shows fencing.

Glyph: *garid.i, garid.i_* fencing, fencing school (Te.); *garad.i, garud.i* fencing school (Ka.); *garad.i, garod.i* id. (Tu.); *karat.i, karut.i, kerut.i* fencing, school or gymnasium where wrestling and fencing are taught (Ta.)

Rebus: *gharr.a* 'an instrument for boring used principally to bore holes in arrow shafts to admit the arrow heads; to bore holes'; *gharr.atek bhugakkeda* 'it was bored by means of a 'gharr.a'; *sen:gel gharr.ateko toda* 'they produce fire by friction' (Santali) *garad.avum* to form or fashion (letters in learning to write) by drawing a style or dry pen through the letters of the copy-book (G.)

Glyph: *garad.o* a copyslip for little children to write with a style or dry pen (G.) kan.t.am iron style for writing on palmyra leaves (Ta.); *gan.t.amu* id. (Te.)(DEDR 1170). *gharad.a_yo, gharad.can.um, ghad.can.um* compact structure, frame or make; closeness, compactness; *ghad.avum* [Skt. *ghat.* to form] to fashion, to forge; to shape; to make by hammering, chiseling, chipping; to manufacture; **ghad.tar** manufacture; an article manufactured by beating, hammering, or cutting; skill displayed in a manufactured article; the wages of a manufacturer or artisan, who makes an article (G.)

Glyph: *gharad.iyo* a wooden ladle with which little cakes are turned in a frying pan (G.)

Glyph: *ghared.i_* a pulley; *gha_ri_* the circumference (G.)

d.a_kin.i = 'sword' of a female demon

d.a_n:khli_, d.a_n:khal.um [Hem. Des. d.aggali_ = Skt. bhavanoparibhu_mi talam, an upper storey of a house] a small branch of a tree issuing from a larger one; **a twig** (G.lex.) [Note the imagery of a tree branch issuing from a larger one on a Kalibangan seal 050].

Glyph: *sal* a gregarious forest tree, *shorea robusta*; *kambra* a kind of tree (Santali)
Substantive: *sal* workshop (Santali)

Substantive: *khanta gad.a* a pit from which earth has been dug out (Santali)

Glyph: *ka_nta* woman (Skt.)

Glyph: ad.aru twig (Tu.Ka.)(DEDR 67)

Substantive: *kohle* 'smith'; *aduru* native metal (Ka.); *ajirda karba* very hard iron (Tu.)

Glyph: *kul* 'tiger'

kol metal (Ta.) **kol** = pan~calo_kam (five metals) (Ta.lex.) Thus, the entwined figures of 3 or more tigers may connote an alloy of 3 or more metals.

The cylinder seal thus conveys the possession of a priest (*garad.o, garod.o*): metal furnace smithy: *khanta gad.a, aduru kol*; the epigraph (three linear strokes + sprout): 3 *phut.ia* (3 copper ingots)

The ligatured person seems to speak out the possession [Glyph: *vali* to say, tell, narrate; n. sound (Ta.); *valli* to bark (Kor.); *vallih* to call, invite (Go.)(DEDR 5283)]:

Substantive: *bali* = iron ore, iron stone sand; the Kol iron smelters wash the ore from the sand in the river bed; *balgada* ‘sand carried down by a flow of water’ (Santali)



Anau, 450 kms east of the Caspian, in Kara Kum desert.

Glyphs used on Anau seal



Anau (means: ‘new water’) seal (black stone 1.3 X 1.4 cm.); two views.

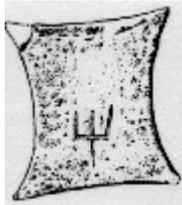
The seal has four signs comparable to the signs which occur on epigraphs of Sarasvati Civilization.

‘The implication of the seal (dated to c. 2300 BCE) is incredible,” Dr. Hiebert said, because there’s no existing evidence that these people had a written language. And the characters engraved in the stone stamp are unlike any ever seen. “It’s not ancient Iranian, not ancient Mesopotamian...not Chinese.” Anau civilization 2200 to 1800 BCE; discoveries of Dr. Fredrik T. Hiebert Source: New York Times, July 31, 2001 <http://www.nytimes.com/2001/07/31/science/social/31SEAL.html>



4418 This text occurs principally on *miniature* tablets of Harappa over 21 times.

A three-pronged glyph (duplicated ‘harrow’) -- comparable to a variant of Sign 171 -- appears on a copper ingot (the so-called ox-hide ingot):



Crete. Inscribed Cretan copper ox-hide ingot (After Fig.82 in: Sinclair Hood, 1971, *The Minoans: Crete in the Bronze Age*, Thames and Hudson) In the Late Bronze Age, oxhide and plano-convex shaped ingots were used in the Aegean; elsewhere, only small plano-convex (bun-shaped) ingots were used."Bronze tools and weapons were cast in double moulds. The cire perdue process was evidently employed for the sockets of the fine decorated spear-heads of the Late Minoan period. Copper was available in some parts of Crete, notably in the Asterousi mountains which border the Mesara plain on the south, but it

may have been imported from Cyprus as well. The standard type of ingot found throughout the East Mediterranean in the Late Bronze Age was about two or three feet long, with inward-curving sides and projections for a man to grasp as he carried it on his shoulder. Smaller bun-shaped ingots were also in use." (Sinclair Hood, *opcit.*, p. 106). A variant of the inscribed sign, a comparable logograph, like a trident or a sheaf of corn, is used on inscribed objects of the Sarasvati Sindhu civilization.

The reading, from left to right: (*kod.*, artisan’s workshop; *aduru bari*_, native metal (blacksmith), *dhokra*, metal-worker, *bakher*, homestead)

23. | (The long linear stroke which occupies the entire width of the seal is: **kod.a**, **kor.a** = in arithmetic one; 4 kor.a or kod.a = 1 gan.d.a = 4 (Santali.lex.) Substantive rebus: **kod.**, ‘artisan’s workshop’.The long linear stroke seen on this Anau stone seal, also appears on the Dholavira sign-board.

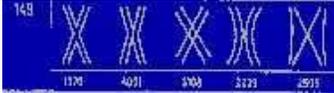
24. duplication of sign  Sign 171 [See variants in Signs 172  and

 V173] *ad.ar* 'harrow'; rebus: *aduru* 'native metal'; *bar* 'two'; rebus: *bari_* 'blacksmith'; Glyph: *ma_va at.t.* 'to harrow'; *at.t.* to strike (Pa.); *ad.ar* an attack (Ka.); *at.ar* to beat, strike, mould by beating (Ta.)(DEDR 77). Cf. *adru* broken grain (Malt.); *adar* waste of pounded rice, broken grains (Kur.)(DEDR 134). *a~r.gom* 'a clod crusher, a harrow without teeth; to harrow; *a~r.gom bhuk* 'this hole into which the shaft to which the cattle are yoked, is inserted into the harrow' (Santali)

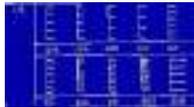
a

Substantive: *aduru* 'native metal'

25.

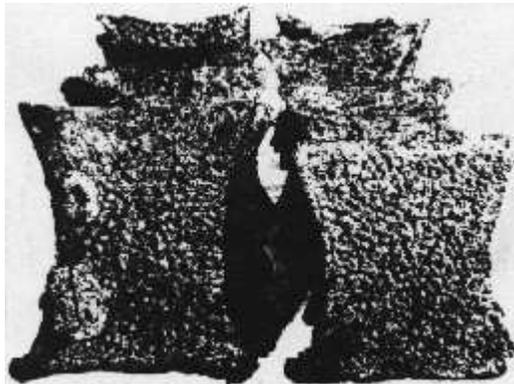
 V149  V137  *d.on:ka* footpath (Te.); *d.on:g* way (Nk.)(DEDR 2981). [See the rock-cut reservoir in Dholavira, scooping out in stone.] *dhokra* metal-worker (Santali) *d.hon.d.-jhod.o* a stone-cutter; a stone-mason; *d.hon.d.o* a stone (G.) *t.hok* a blow or stroke with a stick or a cudgel; *t.hoka_-t.hok* repeated hammering (G.)

26.



V176 **bakhor** 'teeth of a comb' **bakher** 'homestead'

Metal to which was attached a great price



Theban tomb painting showing man carrying an ox-hide copper ingot with a Minoan vase in his hand (After Clark, 1965; cf. Fig. 1.9 R.F.Tylecote, 1987, *The early history of metallurgy in Europe*, Longman, London)

Ox-hide ingots of copper in the Heraklion Museum, Crete. Size

54X31 cm. weight: 20 to 30 kg (Fig. 6.15 R.F.Tylecote, 1987, *The early history of metallurgy in Europe*, Longman, London)

"That Cyprus produced copper from its local ore bodies in pre-Classical antiquity is not an issue in dispute...All metal objects of Late Cypriot II and III from the island were tin bronze, showing that metallic tin or tin objects must have been imported, and it may be presumed that the re-use and recycling of tin bronze artefacts was a regular practice during this period. In this context it will be recalled that the Cape Gelidonya ship also carried tin ingots. Likewise objects of silver and gold from Cyprus belonging to the fourteenth and thirteenth centuries BCE could only have been made of imported metal, whether or not the craftsmen were local or foreign. The flourishing metal industry of the island at this time betrays morphological and stylistic

influences from both the Aegean and the Near East, and the finds on the Cape Gelidonya shipwreck show that a tinker could have sailed with the vessel...The irruptions of the Sea Peoples in the Levant at the close of Late Cypriot IIC, that is, the thirteenth century BC, put an end to the trading and cultural interchanges between the two countries of the region, and transformed the material civilization of Cyprus..." (R.S.Merrillees, *Archaeological Symposium: Early metallurgy in Cyprus 4000-500 BC*; Historical Summary, in: James D. Muhly, Robert Maddin and Vassos Karageorghis, eds., 1982, *Early Metallurgy in Cyprus, 4000-500 BC*, Larnaca, Cyprus, Pierides Foundation, pp. 375-376).



Seal-inscription; the antelope with its head turned back is associated with a sharp-edged single-bladed axe (*pelekhys*) (Semant. Tamil: *pil.a* = to split with an axe); in Harappan script, two animals are depicted with their heads turned back: the antelope and the tiger. The lexeme related to 'the looking back' and the antelope glyph will be related to metalsmith in Meluhha as the decoding process unravels. (Source: *Scripta Minoa*; After P 22b in Fig. 5: F. Melian Stawell, 1931, *A Clue to the Cretan Scripts*, London, G. Bell and Sons Ltd.)



Cyriot copper, in the shape of so-called oxhide ingots (representing one talent, or about 29 kg of copper), were shipped across the Mediterranean.

Signs
the short-



Copper plano-convex or 'bun' ingots with incised marks. The incisions are comparable to

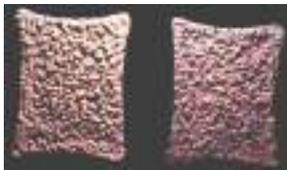


the signs: Sign 256 249, 250, 251 and 252; the ligature is comparable to tail shown on an antelope glyph and also ligatured to



signs, for e.g. Sign 91:

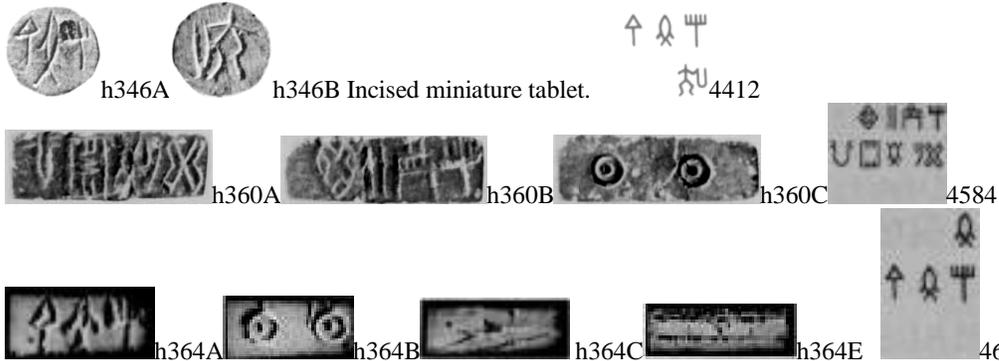
many



A pair of small 'oxhide' ingots of a shape representing an earlier type (Buchholtz's type Ib). A total of five were found, of which two pairs were cast in the same mold. [After figures from: Bronze Age Shipwreck Excavation at Uluburun] <http://ina.tamu.edu/ub-ingots.htm>

Controversy has surrounded the identification of the home port of the ship wrecked off Cape Gelidonya, Turkey. In an attempt to contribute further information pertinent to the solution of this problem, samples for metallurgical study were taken from eight of the copper ingots that were carried on the ship: four oxhide-shaped, two plano-convex, and two slab-shaped. Analysis of these samples shows that, with a single exception, the structure and composition of the ingots are little different from ingots found in Cyprus, Crete, Greece, and Sardinia. The inferences to be drawn from the metallurgical research are 1) that the ingots represented typical items of international trade and 2) that the home port of the ship and lading port of the ingots cannot be determined since the ship and crew were operating in the international sphere. It may also be surmised that at least a part of the Bronze Age trade was in the hands of private entrepreneurs. [James D. Muhly, Tamara Stech Wheeler and Robert Maddin *The Cape Gelidonya Shipwreck and the Bronze Age Metals Trade in the Eastern Mediterranean* *Journal of Field Archaeology* 4 (1977) 353—362].

Harrow glyph

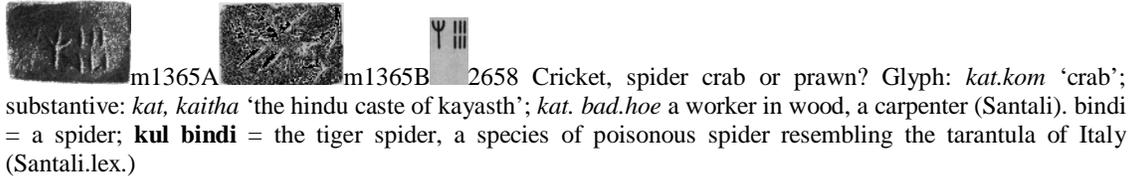
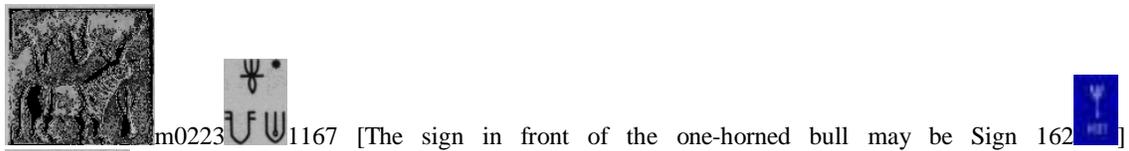


Thus, Sign 348 may connote: *phot*. 'sprout' (substantive: copper ingot) + *ad.ar* 'harrow' (substantive: *aduru* 'native metal')

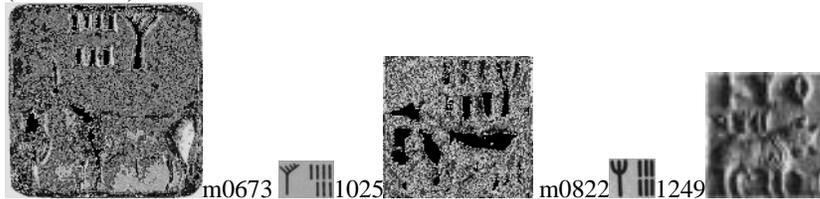


{The duplication of the 'harrow' glyph may connote: *ad.ar* 'harrow' + *bar* 'two' (substantive: *aduru* 'native metal' + *bara* 'oven, furnace')}

The following epigraphs show the use of glyph: **tagara** = *taberna montana*; rebus: *tagara* 'tin'; alternative: *phut.ia* (sprout); substantive: copper ingots.



substantive: *kat*, *kaiitha* 'the hindu caste of kayasth'; *kat. bad.hoe* a worker in wood, a carpenter (Santali). *bindi* = a spider; **kul bindi** = the tiger spider, a species of poisonous spider resembling the tarantula of Italy (Santali.lex.)



Chanhudaro22a  6115

Impression of a cylinder seal. Chlorite or steatite. 1.8 cm. High. L. 1983.125.4 The incision is in drilled style. A **caprid** faces right; to its left and floating in the field is a small, unidentified creature followed by a **boar**,

placed along the vertical axis. The undulating lines above and below the boar are probably **snakes**. The pictographs also occur on SSVC inscribed objects.[After Fig. 27 in: Holly Pittman, 1984, *Art of the Bronze Age: Southeastern Iran, Western Central Asia, and the Indus Valley*, New York, The Metropolitan Museum of Art, p. 58].



Modern Impression of a stamped seal: hunters and goats, rectangular pen (?), early 2nd millennium B.C. Gulf region (ancient Dilmun) Steatite or chlorite; H. 1/2 in. (1.27 cm) "The earliest stone seals of the Gulf region were made of steatite hardened by firing and often glazed after they were carved. The

impression of the hemispherical stamp seal depicted here shows a male figure in the upper field who grasps a caprid by the neck. To the left, a male figure holds a staff. Below, a recumbent caprid reclines beneath a gridded rectangle. A snake and perhaps a monkey(?) are also depicted in the field. The hemispherical form and round sealing face are typical of seals of the Gulf region, as are the incised lines and concentric circles that decorate the back of this seal. Similar seals have been found in Mesopotamia, Iran, and the Indus Valley, areas with which Gulf merchants traded and with whom they shared a common visual vocabulary." http://www.metmuseum.org/toah/ho/03/wap/hod_1987.96.22.htm

The caprid may connote: *mlekh* 'goat', *mer.go* 'antelope (with horns turned backwards)'; rebus: *meruku* 'glitter, silver'; hence, the glyph may connote silver smith. The figure of a person holding a staff is



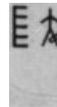
reminiscent of the sign of Sarasvati Civilization: *me~d* 'body'. 2565 Pict-37 Goat-antelope with a short tail



h286A



h286B



4429 Incised miniature tablet a

Goat-antelope

with

short tail



m0418acyl



m0419acyl



m0419dcyl



m0419fcyl



h349A



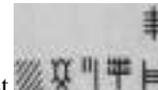
h349B



h701At



h701Bt



5329



Lothal048



7025



Chanhudaro Seal obverse and reverse. The oval sign of this Jhukar culture seal is comparable to other inscriptions. Fig. 1 and 1a of Plate L. After Mackay, 1943.

Glyph: *me~t* 'eye' (Santali)

Glyph: *me_d.i* glomerous fig tree, *ficus racemosa* (Ka.); *ficus glomerata* (Te.); *me_r.i* id. (Ko.)(DEDR 5090). [Thus *lo* 'iron' + *me_d.i* 'iron implement' may be both phonetic determinants reinforcing the substantive ('iron') indicated by the glyph: 'leaf'.]

khapar = tin, a metal once used largely to make ornaments, but now out of use (Santali) Metath. *kharva?* 2357.

A treasure: **kharva, kharba** one of the nine treasures of *Kube_ra* (Skt.lex.) *kharb* one hundred arbs, equal to 100 billion (Punjabi.lex.) *kharva* = baked pottery (Skt.lex.) *karavi, karu, garu* a mould (Tu.lex.) *karuvi* instrument, tool, implement (Cilap. 16,186) (Ta.); id. (Ma.); means, materials, as for a sacrifice (Kur-al. 421); armour, coat of mail; saddle; assembly, collection, flock, group (Tol. Col. 354, Urai); *karuvi-p-put.t.il* scabbard, sheath; *karuvippai* instrument-case, barber's bag (Ta.lex.)

khap = a notch, a hollow into which another piece of wood is fixed, a mortise; *khapur kha~yu~k* = a pit, a pitfall (Santali) 2082. Prong of a trident; groove: Image: notch; rung of a ladder: *khop* rung of a ladder (orig. 'notch in a plank or trunk used as a ladder')(A.); dint (M.); *khupiya_ notch* to place the foot on (A.); *khopani* pressing the toes in to prevent slipping (A.)(CDIAL 3937). 2084. Image: pair; separation:

2079. Waterlift: *kavalai* a kind of waterlift (Ta.); *kapile* (Te.); *kapali* (Ka.); *kappi* (Ma.); *kapi* (Tu.)

kabba_re = a heron (Ka.lex.)

kapar = head, skull, fate, luck; *khapri* = the skull; *adh khapri* = one half of the head or skull (Santali) *kapa_laka* small bowl (Pali).

ka-rwas a small earthenware vessel in which a little dhan is placed and sent with a bride to her new home. The pot is ornamented with figures drawn in white; *korpa* to gather together by little, perquisites received by yearly servants when harvesting crops, also by daughters previous to marriage; *kara* a large iron pan used to boil sugar cane juice in (Santali.lex.)

cf. **khappara** shard, begging bowl (Pkt.)(CDIAL 3831). *karpara* an iron sauce-pan, a frying-pan; a pot or vessel in general (as of a potter); a potsherd, piece of a broken jar as in *ghat.akarpara*; the skull; a kind of weapon (Skt.lex.)

khapar ghara = a tiled house; **khapra** = a roofing tile, a large piece of broken earthenware; *khapra pit.ha* = bread made from flour and water and baked in a piece of broken earthenware; *khaprol* = roofing tiles, tiled; *khaprol or.ak* = a tiled house (Santali)

Buffalo: **kavari** < *gavala* buffalo (Kalla_. 53,30)(Ta.lex.) *gavala* wild buffalo (Pkt.Skt.); *gauri ga_i* (N.)(CDIAL 4096). Buffalo's horn: *gavala a buffalo's horn* (Ka.Skt.lex.)

kavari = chowrie (Ta.); *kavaram* = hair plait (Ma.); *kavari* id.; woman with fine hair; *yak* (Ma.); *kabari* tufted hair of females (Tu.); *kavara, kabara, kavari_, kabari_ braid of hair* (Skt.)(DEDR 1327). **kabri_** = a braid of hair (G.lex.) **kabari, kavari** a braid or fillet of hair; a knot of braided hair; *kabari-yagra* the point of a braided hair (Ka.lex.) *kapardin* having braided hair (RV.)(CDIAL 2743)

kavar tine, as of a trident (Ta.); *kava* (Te.Tu.Ma.); *kaval* (Ka.); groove or a kind of mortise on the top of a gate or door-post to receive a beam; *kavat.u* (Ta.)(Ta.lex.) *kavat.u* separation, division (Malaipat.u. 34)(Ta.lex.)

kava pair, couple (Te.); *kavalu* twins (Te.); **kapli** a pair of branches, horns or antlers (Malt.)(DEDR 1325).

kavari = chariot (Katirve_1 Pil.l.ai Ta. lex.)

Long-legged person

Glyph: *d.han:gar*, *d.a_n:gra_* = ox, bull

Glyph: *kan:kar.*, *kan:kur.* ‘very tall and thin, large hands and feet’ (Santali) cf. *kan:gar* ‘furnace’

Glyph: *d.han:ga* ‘tall, long shanked’ (Santali) *t.an:ka* leg (Pkt.); *t.an:ga* (S.); *t.a_n:ka* leg, thigh (Or.); *t.a_n:ku* thigh, buttock (Or.)(CDIAL 5428).

t.an:ka spade, hoe, chisel (R.); *t.an:ga* sword, spade (Skt.); *t.an:ka* stone mason’s chisel (Pali); *t.am.ka* stone-chisel, sword (Pkt.); *t.ho_* axe (Wot.); *t.hon:* battle-axe (Bshk.); *tanger* axe (Tor.); *t.ho_n:gi* (Phal.); *t.onguru* a kind of hoe (k.); *t.a_n:gi* adze (N.); *t.a_n:ki* chisel (H.); *t.a~_k* pen nib (G..H.); *t.a_ki_* chisel (H.); *t.a_n:gi* stone chisel (A.); *t.a_n:g*, *t.a_n:gi* spade, axe (B.); *t.a_n:gi* battle-axe (Or.); *t.a~_n:ga_* adze (Bi.); *t.a_n:i* axe (Bhoj.); *t.a_n:gi_* hatchet (H.)(CDIAL 5427). *t.an:kita-man~ca* a stone (i.e. chiseled) platform (Pali); *t.a~_kvu~* to chisel (G.); *t.a~_kn.e~* (M.)(CDIAL 5433) *t.an:kas’a_la_* mint (Skt.)(CDIAL 5434). *taks.an.i* = a carpenter’s axe; *taks.akud.u* = a carpenter; name of one of the kings of the *na_ga* or serpents of *pa_ta_l.a* (Te.lex.) cf. *dhan:gl.a dhan:gli* ‘to cut or dig quickly or hastily’ (Santali)

Serpent, Tail of serpent

Substantive: *kal*, *kol* ‘a machine, any contrivance, a trap, the spring of a pigeon trap (Santali)

Glyph: *kal* ‘a snake’ (Santali)

Substantive: *mun.d.a* ‘a Kolarian tribe inhabiting the Chota Nagpur division’ (Santali)

Glyph: *mon.d.* ‘tail of serpent’ (Santali)

Glyph: *mun.d.ha*, *mun.d.hak* ‘stump of tree, a log’ (Santali)

Glyph: *tagar.* ‘a trough’ (Santali) Glyph: *d.a_n:gra_* = wooden trough or manger sufficient to feed one animal; *tagar.re surti ar cunko sipia* = they mix surti and lime in a trough (Santali.lex.) *taga_rum* [Pers. *tagarih*] a bricklayer’s trough (G.lex.) [Is this a representation of a trough shown in front of the short-horned bull and other animals on many seals? The possibility is enhanced because the shrub also appears in front of a short-horned bull.]

Glyph: *takar* sheep, ram, goat, male of certain other animals (*porutakar ta_kkar-ku-p- pe_run takaittu* : Kural.486); male elephant; male shark (Ta.lex.) (*ya_li*, elephant, shark)(Ta.); *takaran* huge, powerful as a man, bear, etc. (Ma.); *tagar*, *t.agaru*, *t.agara*, *t.egaru* ram (Ka.) *tagaru*, *t.agaru* id. (Tu.); *tagaramu*, *tagaru* id. (Te.); *tagar* id. (M.)(DEDR 3000). *tan:gad.i_*, *tagara* a ram (M.H.); *tagade_ra* having a ram for his vehicle: fire; *tagarven.agisu* to cause rams to fight (Ka.lex.)

Substantive: *tibira* ‘merchant’ (Akkadian) *tamba* ‘copper’ (Santali)

Glyph: *tebr.a*, *tebor.*, *tibr.a* ‘thrice, three times’ (Santali) *tagad.o* = [Skt. *trika* a group of three] the figure three (3)(G.lex.) [A ligature of three tigers: *tebr.a* ‘three’, *kol* ‘metal’; rebus: **tibira** ‘merchant’ **kol** ‘metal’]

Glyph: *taber* ‘face downwards, upper side down’; *taber akanae*, ‘he is lying on his face, or stomach’ (Santali)

Glyph: *tapor* ‘a hod, cover of a cart’

Gypsy: *kutru*, *kutu* ‘a dog, a puppy’; *kutu kutu* ‘a call to a puppy’ (Santali)

File (for blacksmiths): *ka_karn.i_*

There are variations in the ‘fish’ glyph. They may connote variety of possessions:

kakr.a ‘fish’; *ka_karn.i_* ‘file for blacksmiths’

ir-avu, *ir-a_*, *ir-a_l* prawn, shrimp (Ta.); *ir-a_vu* prawn, shrimp (Ma.)(DEDR 517). *ira_vuka*, *ra_kuka* to file; *aram* file (Ma.); *ira_vu* to file, polish; *aram* file (Ta.)(DEDR 228).

Glyph: *ir-avu, ir-a_l* honeycomb (Ta.)(DEDR 518).



Lothal051a



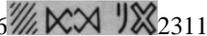
7057 Pict-127: Upper register: a large device with a number of small circles in three rows with another row of short vertical lines below; the device is horned. A seed-drill?



V217

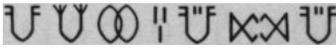


m0126



2311

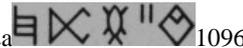
Kalibangan043



8039 Pict-59: Composite motif



m0042a



1096



Kalibangan091A



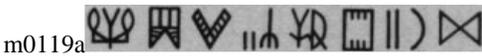
8212 [Pottery]



m393AC

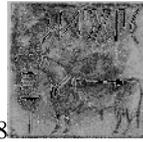


2120



m0119a

2018



h007

4008



V214

V219



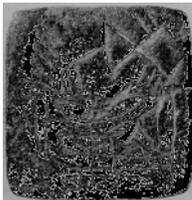
V224



V228



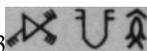
V229



h099



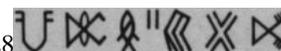
4223



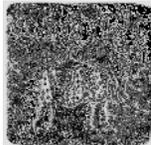
2469



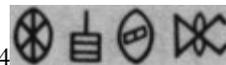
m0628



1033



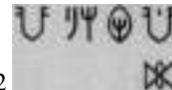
m1134



2651



Surkotada 2



9092

Glyph: *kapci* scissors, to clip with scissors; up *kapci gidikataeme* cut off his hair (Santali)

Substantive: *kapi* a battle-axe (Santali)

Types of battle axe: *bhalua kapi* [*bhalua*: a battle axe, so named from its resemblances to a swallow with outstretched wings; *bhalwa* 'used by blacksmiths when punching holes in iron'; the punch passes through this

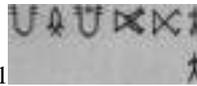
iron into a hole in the *bhalwa*] ; *hoekok kapi*; *khupa kapi*; *kherco kapi* (small) [lit. *kherco* ‘chipped, having a piece out of the rim’]; *ayar kapi* [lit. *ayar* ‘oblique’]; *hado kapi* [lit. *hado* ‘bony and big’]; *gudia kapi* (broad); *sikria kapi*; *potam cupi ten: goc* [lit. tail of pigeon axe](Santali)

Brazier’s pincers, artisan’s workshop

kut.t.a-k-kur-at.u a kind of brazier's pincers; cf. **kut.t.am** smallness, littleness (Ta.lex.) **Image: vice: khod.** vice (M.); **khod.a_** cramp (M.); **khod.um.** (G.); **khom.d.a_** (B.); **khora** paralytic (Si.); **khod.** vice (G.); **khori_** vice (H.); **khod.** malediction, disease (H.); **khod.a** (Pkt.); **khod.o ... khajah-** (OM.); **khod.i- (dos.a-)** (Ap.); **khod.a khora** (Skt.)(Bloch, p. 324). cf. **kot.ukki** vice (Ta.lex.) **kot.ir-u** pincers (Ta.); **kot.il** tongs (Ma.); **kor.** hook of tongs (Ko.); **kut.ilika_** smith's tongs (Skt.)(DEDR 2052). **kur-at.u**, pincers; **kot.ir-u** cheek, jaw; marks of elephant's must (Ta.lex.); **kot.icci** jaws (Ta.); **kot.uppu** cheek, jaw (Ta.); **kot.ia** temples (Ma.); **kod.eji** the inside of the cheeks (Tu.); **ku_dr.u_**, **ku_d.ru** jaw (of human beings)(Kuwi)(DEDR 2051). [Note the second and third glyphs of a pair of ‘tongs’ on text 2420.]



m0304AC Pict-81



2420 Animals surrounding represent a variety of

furnaces.

Substantive: **kod.** ‘artisan’s workshop’.

Bat



s'e~_s.t.ri = bat

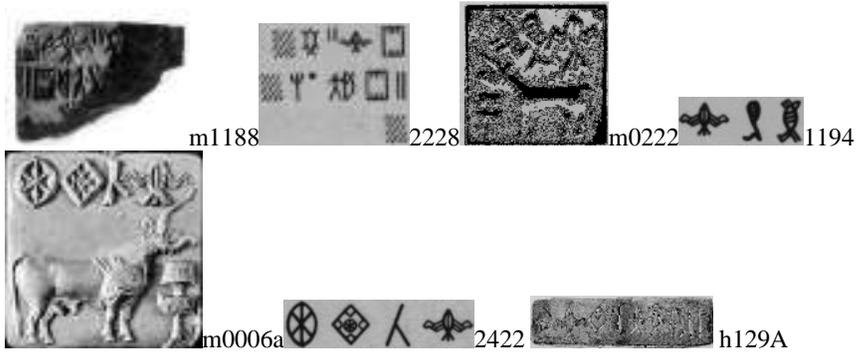
bardu~r.u~c = bat (Santali)

Bat, flying-fox = *vagguli* (Pali), *ba_vali*, *ba_voli* (Tu.), *va_til* (Ma), *vavva_l* (Ta.) Bat = *va_lgu.da* (Skt.)

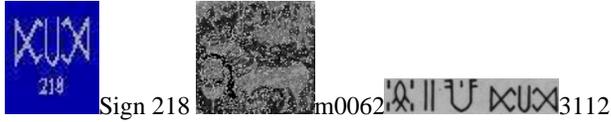
Rebus: **bha~wa~r**, **bha~ora** = a boring instrument resembling a brace (Santali) cf. *bhramara* turning (Skt.lex.)

bawat.t.a, **bhawat.a**, **bharwat.t.a** = an armlet with an amulet; the eyebrows (P.lex.)

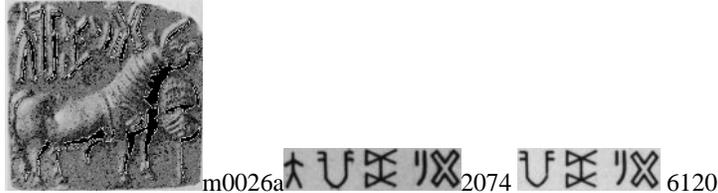
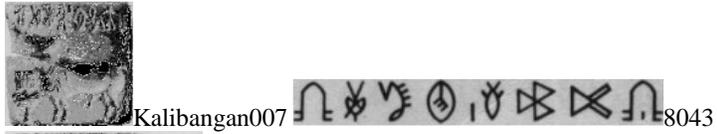
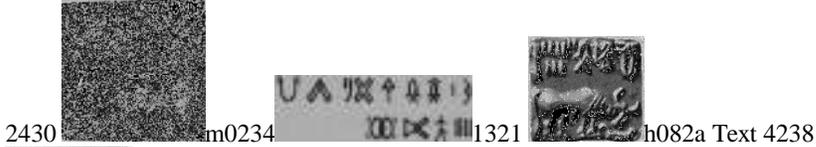
ba_vat.o = a kind of corn (G.lex.)

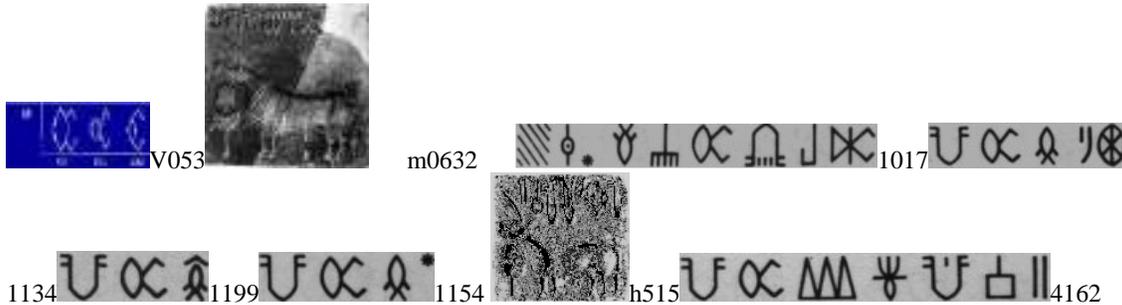


kammat.a, 'coiner'; **kod.a**, 'workshop'



Ligatures of Sign 218: **kod.a** + **me~t me~t nepel** = v. see face to face (Santali); rebus: med. 'iron'; (alternative: **med.hi**, 'writer, merchant's clerk'); **kammat.a**, 'coiner'.





vaka_ri_, *vaka_riyo* a ware-house keeper, a merchant; *vaka_r* [Hem. Des. *vakkha_ri-am* = Skt. *ratigr.ham* a brothel] a godown; a warehouse; a store-room (G.) *baka_la* [Arabic *bakka_l* a greengrocer] a petty shopkeeper; a *va_nia* (G.)

bagalo an Arabian merchant vessel (G.)

Alternative: *bake* forceps (Malt.); *bakka_* claws of a crab, forceps, shears (Kur.)(DEDR 3814). *bakr.ali*, *bark*, *brak* to claw (Kui); *bagaru* to scratch with claws (Ka.)(DEDR 5202). (Glyph: claws; substantive: forceps).

ban:ka_ crooked, bent, curved (Kur.); *van:ka* crooked, bend (of river)(Pali.Pkt.Skt.); *vang* to bend (Kol.); *va~_ka* crooked (Te.); *va_n:ku* bending (Ta.)(CDIAL 11191; DEDR 5335).

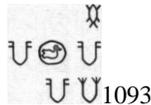
baktale, *bagutale* parting of the hair by combing, combing the hair into curls, crown of the head, chaplet (Kod.)(DEDR 5202).

va_gh [Dh. Des. *vaggho* fr. Skt. *vya_ghra*] a tiger; a bold man (G.)

Duck



Mohenjodaro MIC, Pl. CVI,93



1093

Substantive: *ta_ra_m* a copper coin, 1/2 pice or 1/2 fanam (Ma.); *ta_ra* a copper coin of two *ka_su* (Ka.); two pie (Tu.)(DEDR 3168).

Glyph: *ta_ra_* duck, heron (Ta.); *ta_r.a_yu* duck (Ma.)(DEDR 3169).

karkara = a hammer (Skt.lex.)

karkara = a sort of duck or goose (Ka.lex.)

What does the 'swan' in a circle signify in the script of the Bharatiya Civilization?

It occurs just once in the inscriptions.

The lexemes for 'swan' are many; a few of them are presented here with a list of possible homonyms. A remarkable semantic cluster emerges. The homonyms for lexemes such as *nemi*, *cakka*, *ta_ra_*, *pariti* are relatable to the 'wheel' of a vehicle. Another semantic cluster: *plava* = a duck is homonymous with a float or boat.

Tamil lexemes (which are concordant with Sanskrit lexemes) attest a compound: cakra-va_l.am or just, va_l.am. The association of 'cakra' with the apparent movement of the Sun in Indian literature is well-known. R.gveda su kta (1.164) elaborates on the 'wheel' imagery while expounding on cosmic 'time'.

The homonym (of -va_l.am in cakra-va_l.am) is va_l. = a sword! (which is perhaps what this pictograph is intended to convey). This hypothesis has to be confirmed further, with reference to the entire inscription within which this Sign 82 is sequenced. If other pictographs in the inscription constitute a 'weapons' set, the interpretation of the Sign as 'sword' will hold; if they constitute a set of 'ratha' or battle car parts, the Sign may be read as nemi or pariti (tire of a solid disc wheel or a spoked-wheel).

As a ligature, the pictograph may connote: circle + swan, i.e. cakra + va_l.am; in which case, the homonyms may be cakra + va_l. = discuss + sword.

At this stage, it is apposite to point to the 'association' of the pictograph with the 'ratha'; as further progress is made in deciphering other pictorials such as 'six-spoked wheel' (single and duplicate) and -- six-spoked wheel followed by " -- (perhaps a short-hand for duplicate or double or two-wheeled), it may be possible to pin-down the bon mot which matches the pictograph so vividly depicted in Sign 82: either a sword or a 'ratha' with 'pavi' javelin-like paridhi which is also depicted on a solid disc wheel model in Mesopotamian civilization.

7367.Image: two: bar, barea two; bar gel twenty; bar isi forty (Santali.lex.) vira, ira two (Ka.); -vir an affix for the plural, masculine and femine, e.g. tande-vir, ta_yvir, sosevir fathers, mothers, daughters-in-law (Ka.lex.) i_r = two (Tamil.lex.)

i_rva_l. = sword to cut trees and wood; i_rvu = to cut, to cleave, to hew (Tamil.lex.)



Sign 82

Some alternative homonyms to match the pictograph (? a ligature of circle + swan):

khera_ = large duck (Jat.ki_); ker.a = shield; geri = fish-hook

ta_ra_ = duck; ta_rai = discus weapon (Ta.); ta_ru = the arrows of weavers which hold the yarn (Ma.)

8056.Image: duck: plava a kind of duck (Skt.Ka.)(Ka.lex.) cf. plu float (Skt.)(CDIAL 9025).Image:

4755.Image: duck: ta_ra_ duck (Pata_rtta. 890)(Ta.lex.) ta_r-a_vu duck (Ma.)(DEDR 3169). tarat. a kind of duck (Skt.)(Skt.lex.) cf. ta.r, t.a_reng (hen) cackles (Kol.); tarp- to cackle (Pa.)(DEDR 3173). a_ri duck (Dm.Kal.); a_ri_ (Gaw.); al.i (Kho.); e_r (Bshk.); a_r (Tor.); he_r.i_ (Phal.); a_r.i_ (S.); a_r.i turdus ginginianus (B.); a web-footed bird (Or.); a_r. turdus ginginianus (H.); a_d.l.i_ (M.); a_d.i_ (M.); a_reli_ duck (Gaw.); a_ti an aquatic bird (RV.); a_t.a a partic. kind of bird (Pali); a_d.i (Pkt.); a_r.i duck (Wg.); warg-a_r.i_ lit. 'water-duck'(Ash.)(CDIAL 1127). tarad a kind of duck (Skt.lex.) cf. taran:ga wave (R.Pali); taram.ga (Pkt.); taran:g (P.); taran. brook, current, stream of water (Ku.); taran:ga, tagara wave (Si.)(CIDAL 5699).

4349.Image: goose: ta_d.igya the barred-headed goose, anser indicus (Ka.lex.)

3057.Image: goose: cakkaram ruddy goose, anas casarca; cakra-va_ka-p-pul. (Ta.lex.); kal.akam kala-hamsa, hamsa, swan; lime mortar; sheaf of paddy (Ta.lex.) cakrava_ka the ruddy goose anas casarca (RV.); cakkava_ka (Pali); cakava_e (As'); cakkava_ya, cakka_a (Pkt.); c.a_kav the ruddy sheldrake casarca (K.);

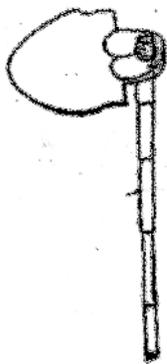
cakuo a. casarca (K.); cakva_, cakvi_ (P.); c.ekkro~, pl. c.ekkru (WPah.); cakhewa_ (N.); sakowa_, sa_kai (A.); caka_ (B.); caku_ (Or.); cakui (Or.); cakawa_, cakewa_ (Mth.); cakawa_ (Aw.); cakai_ (Aw.H.); cakwa_ (H.); cakvo, cakvi_ (G.); c.akva_, c.akvi_ (M.); sakva_ (Si.)(CDIAL 4551). cf. cako_ra the red partridge, perdix rufa (MBh.Pali); cako_raka (Skt.); cker (Wkh.); cago_ra, cao_ra, cao_raga (Pkt.); siyura_, sivura_ (Si.); cakoru (S.); cakor (P.); cakro, ca_kura_, ca_kuri_ (WPah.); ca_khoro (Garh.); ca_khur.o (Ku.); ca_khuro (N.); cakor (B.Mth.H.G.M.); can:ko_ra (Pali)(CDIAL 4536). sa~k a goose (Santali.lex.)

86.Image: swan: a_s, a_sa_ duck (Kon.lex.) ayam < ham.sa swan (Tiva_); ham.sa mantra, ajapa_mantiram (Ka_cippu. Tiruve_ka. 28)(Ta.lex.) ham.sa goose (RV.); ham.saka (Skt.); ham.sa goose (Pali.As'.Pkt.); hanza (Sh.); unzu, anzi (K.); haju (S.); ha~_s duck (N.); ha~_h duck, goose (A.)

Substantive: *hako* 'an axe' (Mundari)

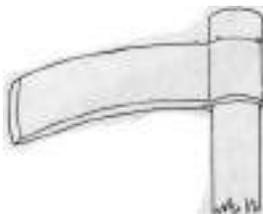
Glyph: *bhed.a hako, hako* 'a species of fish' (Santali)

hake kud.lam (Has.) **hake-kud.i** (Nag.) = collective noun for all implements for work in the fields and jungles; hakekud.laman = adj. Possessed of such implements; hakekud.lamane = he has all the implements necessary for field and jungle work (Mundari.lex.)



kudlam, Pl. XIII, 7, *Encyclopaedia Mundarica*.

kud.lam, kulam (Has.) synonym of **kud.i** (Nag.) = a hoe either imported (cala_ni kud.lam) or forged by the village blacksmith (**bar.aekud.lam**). The latter, kud.lam is shaped as shown in Pl. XIII,7, is from 10 to 11" at its broadest part. Down to two thirds of its length it is ¼" thick and then thins down. The handle-ring is made separately and welded to the blade. The two wings joining the ring to the blade are about 4" long and 4 ½" broad. The handle, whether of bamboo or other wood (generally, of a hesel sapling), is nearly 3' long. The Mundas have no spades, no shovels, and yet in the cultivation of rice they have often to throw quantities of earth from one spot to another, either to level the field or to make or repair its ridges. As it must be done with the hoe, it is no wonder that they like a broad-bladed instrument. (Mundari.lex.)



hake, Pl. XX, 7 *Encyclopaedia Mundarica*.

hake (cf. English to hack; Dutch hakken) = a middle-size for cutting wood, the larger one being called har.amhake, and the smaller one **kond.e**, in contrast to kapi, tabala, pharsi and gan.das, which are battle axes. (Mundari.lx.)

kond.e, Pl. XX,6 *Encyclopaedia Mundarica*.

Rebus, homonym:
kose bar.aedae = she
crooked, bent; kon.d.et,
(Santali.lex.) [Note the
turned back].



kond.e kose = to turn away the face sullenly; kon.d.e turns her head to one side (Santali.lex.) **kon.d.e** = kon.d.et kon.d.et = bent, twisted, off the straight orthography of an antelope or a tiger with its head

A characteristic feature of orthography is duplication. See, for example Rehmandheri seal with a pair of scorpions and a pair of antelopes.

For example, if two spoked-wheels are shown, they may be explained as *bar + sal* (furnace, oven, cf. Hindi *bharsa_ri_*).

Alternatively, the pair of 'wheel' glyphs could connote *dokhra gad.h* (metallurgists' fort).

Similarly, if the glyphs show: gaur's horn + tiger's mane + bracelets + antelope + sheaf + platform, the rebus words are: *cu_la + cu_la + bindi + bhin.d.a + pin.d.i*. Hence the underlying substantive is: *sal + cu_la + bhin.d.a* (meanings: workshop, furnace, iron smelting furnace) Alternatively, the 'wheel' glyph could connote (*dohra*) *gad.h* (metallurgists' fort)

Two scorpions: *kamar + bar* (*kamar* 'blacksmith'; *kamar kidin* 'a small species of scorpion'), i.e. blacksmith + oven.

Glyph: *boda* 'a ram' (Santali)

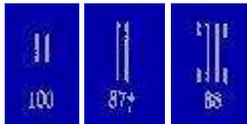
Glyph: *bod.a bin*: 'a brown rock-snake' (Santali)

Glyph: *boar.i* 'variety of the rice plant' (Santali)

Glyph: *bar, barea* 'two' (Santali)

Glyph: *bare* steep slope (Ka.Kod.Tu.); *bare* precipice (Ka.); *varai* mountain, peak, slope of hill (Ta.)(DEDR 5274)

Glyph: *varai a_t.u* ibex, *hemitnagus hylocrius*, jungle sheep (Ta.); *par o.r.* Nilgiri ibex (To.)(DEDR 5274)



|| *got.an.*; *got.ec*, *got.en* used with numerals, also with 2,3, and 4, when reduplicated; *mo~r.e~ got.ec hor.ko tabekana* there were five people; *babar got.an*: two each; *pepe gor.an*: three each; *popon got.an*: four each; *gel got.en do bape saphalena? are got.ec doko okaena?* Were there not ten of you cleansed? Where are the nine?

Substantive: *kod.* place where artisans work (G.); *got.h*, *got.* place where cattle are collected at mid-day (Santali)

The glyph of duplication *bar got.an*: may be rebus for: *bhar* 'oven' + *got.* 'workplace of artisans'. This may also explain the animals depicted on a single of Indian file. *gotgoto* in single or Indian file: place where artisans work. Or, in a group: *got.h* place of assembly.(of workers)

[**bhar** an oven; *bharan* to spread or bring out from a kiln (P.lex.) *bhaha_ra_*, *bhaha_ri_* little earthen furnace (P.)(CDIAL 9482). *bari_* 'blacksmith, artisan (Ashmolean)(CDIAL 9464). *bha_r* grain-parcher's fireplace (Bi.); *bharsa_ri_* furnace, oven (Hindi)(CDIAL 9685).]

kin = two (Santali); **gina** = metal vessel (Kond.a)

Thus, many animal glyphs have to explained as artisans or tools of trade of the professions available in a workshop. Thus, the possessions or occupancy of the artisans are depicted on many inscribed objects, seals and tablets alike, copper plates and bangles alike.

Lizard *d.okke*; *dhokra* 'metal worker' [Depicted on the top register and in the center surrounded by other animals or glyphs] *hako* 'fish', *hako* 'axe'

Elephant trunk 'ibha sun.d.'; *ib* 'iron'; *sund* 'pit, furnace'

Boar, rhinoceros '*gan.d.a garur.*'; *kan.d.* 'furnace'; *garur.* 'mould'

karu mould; *karukku* engraving, carving, embossed work (Ta.); *karu* bas-relief (Ka.); *karu, garu, karavi* a mould (Tu.); *garra* form, mint (Kuwi)(DEDR 1280).

Tiger '*kul*'; *kol* 'smithy'; Tiger wry, to carry the head sideways *kokr.e kol*; or *gote kol*; rebus: *kod.* place where artisans work, *kol* 'smithy'; jumping tiger *kamsa kol* 'bronze smithy.'

kol metal (Ta.) **kol** = *pan~calo_kam* (five metals) (Ta.lex.) Thus, the entwined figures of 3 or more tigers may connote an alloy of 3 or more metals.

kokr.e to carry the head sideways; *kokr.e* wry; Rebus: *kakr.a* 'stone' kol 'furnace' (iron ore furnace); *khokrao* to engrave

gote, gotle wry, oblique (Santali)

Brahmani bull *adar d.an:gra*; *aduru d.han:gar* 'native metal', *d.han:gar* 'blacksmith'

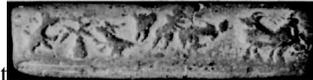
Bull, bull in pairs: *dhun:gra dhun:gri* 'to quarrel fiercely with each other'; *d.an:gar* bull

Heifer, young bull: *ko_d.e*; *kod.* place where artisans work; *go~r.e~* pannier; got. assembly place; *kwi.r.* 'horn' (To.); *ko_d.u* id. (Ka.Tu.) *ko.t.* castle (Ko.)

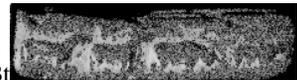
Buffalo (wide horns): *d.abe, d.abea* wide horns; *d.ab, d.himba, d.hompo* 'lump (ingot?)' (Santali); *kod.ru* buffalo; *kod.* place where artisans work; *kol* smithy; *d.ha_ba_* workplace (P.) *d.i_ba* fire to spark out (Mand.); *d.iba* fire to crackle (Pe.)(DEDR 2961). [Glyph; *d.heba, d.hiba* short of stature; *d.eble* small; d.ebe debe short; *d.ebe d.ebe* a 'rattat' played on the drum at a hunt (Santali) cf. short-statured one-horned young bull or heifer. *d.abo* a cattle-pound (G.) *dop dap in (id)* to make bumping noise of sexual intercourse (Ko.)(DEDR 3069).]



m0489At



m0489Bt



m

0489Ct

Glyphs on m0489A: elephant trunk, boar/rhinoceros, tiger, tiger face turned, lizard with fish: furnace types

ibha sund, gan.d.a garur., kol, kokr.e kol, d.okke: rebus, *ib* 'iron', *sund* furnace; *kan.d.* 'furnace', *garad.a* 'engrave'; *gara_d., gara_d.o* a ditch, a pit (furnace)(G.); *kol* 'furnace, smithy'; *kokr.e kol* 'furnace' 'engrave'; *kakr.a hako* : *kan:gra* 'portable furnace', *hako* 'axe'

Glyphs on m0489C: young bull, antelope, bullock, brahmani bull, lizard with fish: Possessions and occupancy

ko_d.e, med.h, d.angra, adar d.an:gra, d.okke hako: rebus: *kod.* place where artisans work; *mer.h* merchant's assistant; *d.han:gra* blacksmith; *aduru d.han:gar* native metal blacksmith; *dok* possession and occupancy, *hako* axe

Glyphs on m-0489B: metal type(s)

Glyph: *tagalu, tagilu, tagulu* to have sexual intercourse with (Ka.)(DEDR 3004). *daniyu* to copulate (Te.); *danivu* copulation (Te.)(DEDR 3148).

Glyph:

sundu coition (Ka.)(DEDR 3291).

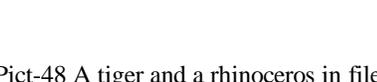
sund pit furnace (Santali)

Glyph: *sal* a gregarious forest tree, *shorea robusta*; *kambra* a kind of tree (Santali)

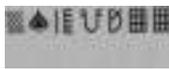
Substantive: *sal* workshop (Santali)



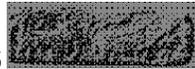
m1405Bt



2841



1626



Pict-47 Row of uncertain animals in file.



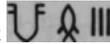
Lothal217A



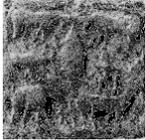
Lothal217B



m0294 One-horned bull?; elephant



1376

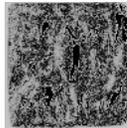


m0439t

m440AC A person (monkey?) shown together with five animals (two bulls, boar, elephant, antelope) surrounding a lizard



m1393t



m1394t

Rhinoceros (boar)

Substantive: *bad.hi* 'a caste who work both in iron and wood' (Santali)

Glyph: *badhia* 'castrated boar'; *bhator* 'boar' (Santali) *pan.d.*, *pan.d.u* hog, pig (Ga.); *pandi* (Kod.Te.) (DEDR 4039).

Substantive: pit? *gan.d.i* hole, orifice (Te.); *kan.d.i*, *gan.d.i* opening, hole, window (Tu.) (DEDR 1176).

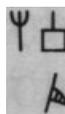
Glyph: *gan.d.e* 'to place at a right angle to something else, cross, transverse'; *gan.d. gan.d.* 'across, at right angles, transversely' (Santali)

Substantive: **bhar** an oven; *bharan* to spread or bring out from a kiln (P.lex.) *bhaha_ra_*, *bhaha_ri_* little earthen furnace (P.) (CDIAL 9482). *bari_* 'blacksmith, artisan (Ashmolean) (CDIAL 9464). *bha_r* grain-parcher's fireplace (Bi.); *bharsa_ri_* furnace, oven (Hindi) (CDIAL 9685). *bhat.hia_r*, *bhat.ia_la_* grainparcher's shop (P.) (CDIAL 9658). *bhart-i_ya_* = a barzier, worker in metal (Gujarati.)

vara_ha = boar (Skt.)



Kalibangan039



8011



m446At



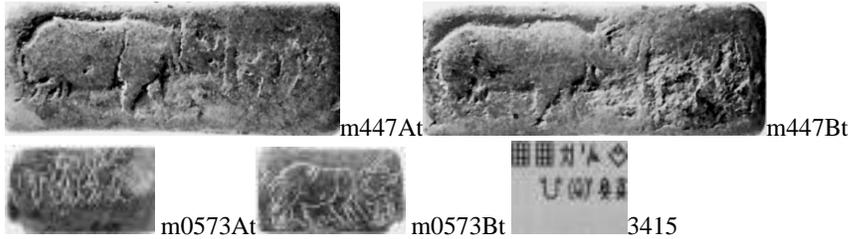
m446Bt



2854

Glyph: *t.akkiam*, *t.akkayam*, *it.akkiam* flag, swallow-tail banner, standard hoisted on a car (Ta.); *t.akke*, *t.ekke*, *t.ekkeya*, *t.heke* banner, standard (Ka.); *t.ekkemu*, *t.ekkiyamu* flag, banner (Te.) (DEDR 2938). **d.en:kan.i**, **d.en:kan.a**, **d.hen:kan.i** = the flag-staff (with or without its flag) on the bastion of a fort (Ka.lex.)

Substantive: *dak* 'possessions, occupancy'. The two signs on line 1 of text 8011: coppers (*pot.h, put.hia*) + *trapu* 'tin'. The sign connoting 'tin' appears on a tin ingot from a marine archaeological find, perhaps from Crete.



Substantive: *sa_l* = shed, workshop (Bengali) **saloi kamar** = a kind of blacksmith [Another kind is **kolhe kamar** = iron-smelter] *sal* = house, as in school house; shop, as in workshop; place, as in dancing place; *kamar* *sal* = a smithy; *ban.d.i sal*, *paura sal* = a liquor shop; *ak sal* a place where sugarcane is pressed; *kut. sal* = a carpenter's or joiner's workshop; *dare butareko sal akada* = they have set up a forge under a tree (Santali.lex.) *s'a_la_* [Skt. *s'a_la_*] a place, a house; a school; an academy (G.lex.) *sa_la_* [cf. Vedic *s'a_la_*; Lat. Cella cell; OHG *halla*, E. *hall*] a large (covered and enclosed) hall, large room, house; shed, stable etc.; *aggi-s'a_la_* a hall with a fire; *kumbhaka_ras'a_la_* potter's hall; *yan~n~as'a_la_* hall of sacrifice (Pali.lex.) *s'a_lika* a village of artisans; a weaver; a toll, tax (Skt.lex.) *sa_la, sa_le* a man who has a room or shop; *s'a_li* belonging to a house; endowed with, possessed of, possessing, having (Ka.lex.) A tax on shops: *ca_li-pakuti* a tax on shops (R.T.); *ca_likai* toll, customs, duty (Ta.lex.) *sa_liga* a man who has a room or shop; *sa_liti* a woman who belongs to a man that has a shop or room; *sa_le, s'a_le, sa_li* a hall, a room etc.; a school; a man who has a room or shop; *sa_like* business in a room or shop; *s'a_lika* belonging to a house; *s'a_lika* a village of artificers; *s'a_like* a small house, a room; *s'a_li_na* attached to the house or to one's own room; *s'a_le* a hall, a saloon (Ka.lex.) Feeding-house: *ca_lai* < *s'a_la_* alms-house, feeding-house (T.A.S. I,9); sacrificial hall (Kampara_. Tiruvava. 84)(Ta.lex.) *ca_lam* surrounding wall, fortress; *ca_lampam* < *sa_lamba* that which has a support (Ta_yu. Tikruvarul.vi. 3)(Ta.lex.) *s'a_la_* shed, stable, house (AV.); *s'a_lam adv.* at home (S'Br.); *s'a_lika* house, shop (Skt.); *sa_la_* shed, stable, large open-sided hall, house (Pali.Pkt.); *sa_la* house (Pkt.); *sal* cattleshed (Ash.); *s'a_l* (Wg.Dm.); *sa_l* cattleshed on summer pasture (Pas'); shed, workshop (B.); hall, house, school (.); *s'al* cattleshed (Kho.); *s'eli* goat-pen (Kho.); *hal* hall, house (K.); *sa_lh* house with thatched roof (L.); *xa_l, xa_li* house, workshop, factory (A.); *sa_la* shed, stable (Or.); *sa_r* cowshed (Bi.); cowshed (H.); *sa_l*. workshop, school (M.); *sal-a, hal-a* hall, market-hall (Si.)(CDIAL 12414). *ka_l* family, relationship (Ta.); *ka_li* herd of cows (Ta.); cow, cattle (Ma.); *ka_l* pillar (Ma.); *trikkal* tripod of three sticks on which tent is hung (Br.)(DEDR 1479).

Glyph: *sal* 'wedge joining the parts of a solid cart wheel' (Santali) *cala_kku* burin, engraver's tool; *cala_kai* needle-like tool of steel (*cala_kai nur.ainta man.ittul.ai*)(Man.i. 12,66); surgeon's probe; ramrod; spear, javelin; iron rod or stake; lath for roofing; *cala_kai-p-pa_rai* sharp pointed implement for digging; *cala_kai-y-at.i* to nail on laths, prepare laths; *cala_kai-y-a_n.i* lath-nail (Ta.lex.) Needle, probe, bodkin; arrow: *xala_pin* (of bamboo, wood, or iron)(A.); *sala_i_pin* (in spinning yarn)(L.); *sal.a_i* needle in shuttle, spindle (P.); needle, probe, bodkin (H.); coarse needle, short stick (Bi.); *sara_i* iron or wooden poker (Mth.); *sal.a_, sal.ai_, sal.i_pin*, spike, skewer (M.)(CDIAL 12349). *salay* spike (K.); *s'ala_ka_* arrow (Pali)(CDIAL 12349).

Glyph: *sal* = the Indian gaur, *gavaeus gaurus*; *sal sakwa* = a horn made from a horn of the gaur (Santali)

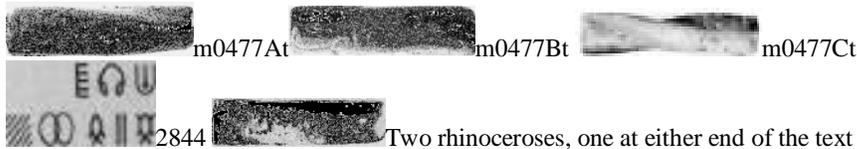
Substantive: *cu_la_i* 'kiln, furnace, funeral pile' (Tamil) *culha* fireplace; *sulgao, salgao* to light a fire; *sen:gel, sokol* fire (Santali.lex.)

Glyphs: *cu_la* 'tiger's mane, head-dress, bracelet' See the seal showing a set of animals, surrounding a seated, horned person with the face depicting tiger's mane (m0304):

<http://www.hindunet.org/saraswati/chank/salsak1.jpg>

Substantive: *basla* 'a small adze' (Santali)

Glyph: *basla* 'a fish' (Santali)



Swedish Bronze Helmet Plate Matrix Depicting Warrior with Boar-Crested Helmet. 8th Cent.

The ligaturing of a 'boar' on top of the warrior's helmet finds a remarkable parallel in the homonyms of the languages of Indian civilization: **kholaka**, helmet; **kola**, boar.

Substantive: **khad.aga**, **khad.aka** 'rock'; **khad.akum** 'a small rock' (G.)
kha_d.a a ditch; a hollow; **kha_d.o** a pit; **kha_d.o khaiyo** several pits and ditches (G.)

Glyphs:

khat.a 'six' (G.)

kata = a pit saw (Santali)

khad.ako 'a heap'; khad.aco a crag; a cliff; a steep rock (G.)

khad.a 'grass, weeds'; Hem. Des. **khad.am** (G.)

khad.aki [Hem. Des. khad.aki_ = Skt. laghudva_ram, a small door; khid.ki_ (M.)] a courtyard; a compound; a street, a lane (G.)

kat.akam (Ta.)(IL 1519) metal helmet

khad.ga = rhinoceros, boar (Skt.lex.) khad.aga 'a rhinoceros' horn' (G.) Boar's tusk; **kha~g** (H.) kha_g (B.H.Ku.N.); khagga = rhinoceros (Pali.Pkt.) khagaha_ (OAw.) khagauto = bowl made of rhinoceros horn or hide used in offering water to the manes (N.) *gan.d.a garur*. 'Boar, rhinoceros' (Santali); *karu, garu, karavi* a mould (Tu.); *garra* form, mint (Kuwi)(DEDR 1280).

kat.uvan-pan-r-i boar (Ta.)(DEDR 1140) **ka_n.t.a_mirukam** boar (Ta.)

Rebus: *kan.d.* 'furnace'; *garur.* 'mould'

karu mould; karukku engraving, carving, embossed work (Ta.); *karu* bas-relief (Ka.);

khad.agum a species of small tiger (G.)

kulikamu = the weapon of Indra; the thunderbolt (Te.lex.)

kor.ga = to become blunt as the edge of a knife (Santali.lex.)

khola, boar, helmet; koli_, water-carrier

kholaka = helmet (Skt.lex.) [koli-sarpa, name of a degraded warrior-tribe (MBh. 13.2104; Hariv. 782: kolispars'a); a kind of weapon (Skt.lex.) cf. kol, kolhe = the Koles, an aboriginal tribe of iron smelters speaking a language akin to that of the Santals (Santali.lex.) kho_la = a kind of hat; helmet (Skt.); kur cap (Kt.); kereti (Avestan); wol.ik (Pr.); kho_lat.a_ (Pas'); xolat.ek cap (Pas'); khu (Kal.); khoi pointed cap

(Kho.); kho_i (Sh.); khol. hooded cloak (M.); holu cloth cap covering the cheeks, helmet (S.); xo_1 (Psht.)(CDIAL 3942). cf. khol covering (Ku.); sheath (N.B.H.)(CDIAL 3944).

kola = boar (Skt.lex.) kola = a hog (Ya~jn~. 3.273); name of a degraded warrior-tribe (Skt.lex.) Corrupted from krod.a, a hog, chest; krod.a_sya, having a snout like a hog? (Hala_yudha 2.71: kola = hog). cf. **kul** = the tiger (Santali.lex.) kro_d.a breast, bosom (AV); kor.i_ breast of a quadruped (L.); koli_ chest of an animal (L.)(CDIAL 3607).

Furnaces of workers in wood and iron (carpenters, metal-workers)

bat.hi, furnace; **bad.hi** = worker in wood and metal

Glyph: **badhi** 'to ligature, to bandage, to splice, to join by successive rolls of a ligature' (Santali) **pat.t.e** = stripe or streak of paint (Te.); pad.ita stripe, streak (Te.); **pat.t.i**, pat.t.e = stripe (Ka.)(DEDR 3877).

bad.hi = worker in wood and metal (Santali).

bad.d.u = creeper (Ga.); a thick or strong creeper or rope (Te.)(DEDR 3882). [Note the creeper with ficus leaves depicted as an arch upon a standing person.]

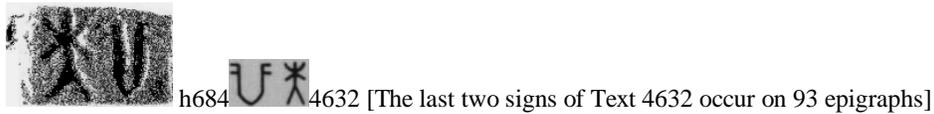
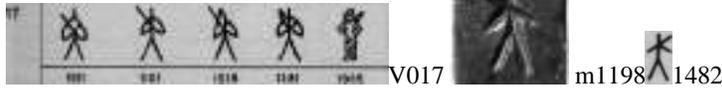
bat.i = a furnace for melting iron-ore (Santali.lex.) **bat.hi** = a furnace for melting iron-ore (the same as **kut.hi**)(Santali.lex.Bodding) bhat.t.hi_ = [Skt. bhr.s.ti frying; fr. bhrasj to fry] a kiln, a furnace; an oven; a smith's forge; a stove; the fireplace of a washer-man; a spirit still; a distillery; a brewery (G.lex.)

bhat.a = a furnace, a kiln; **it.a bhat.a** = a brick iln; bhat.i = an oven, kiln, a still, a boiler, a copper (Santali.lex.) bha_t.-bhut. = frying; bhut.i-bha_t.i hasty frying (N.); bhr.s.ti = act of frying or parching (Skt.)(CDIAL 9597). Bhat.t.ha = gridiron (Pkt.); but.hu = level surface by kitchen fireplace on which vessels are put when taken off fire (K.); bat.hi_ distilling furnace (S.); bhat.t.h = grain-parcher's oven; bhat.t.hi_ kiln, distillery; bhat.h (L.); bhat.t.h, bhat.t.hi_ furnace; bhat.t.ha_ kiln (P.); bha_t.i oven or vessel in which clothes are steamed for washing (N.); bhat.a_ brick- or lime-kiln (A.); bha_t.i = kiln (B.); brick-kiln, distilling pot (Or.); bhat.hi_, bhat.t.i_ brick-kiln, distilling pot (Or.); bhat.hi_, bhat.t.i_ brick-kiln, furnace, still (Mth.); bha_t.ha_ kiln (Aw.); bhat.t.ha_ kiln; bhat. kiln, oven, fireplace (H.); bhat.t.a_ pot of fire; bhat.t.i_ forge (M.); bhras.t.ra = frying pan, gridiron (MaitrS.)(CDIAL 9656). Bhras.t.raja produced on a gridiron (Skt.); bhat.ku_har, bhat.ku_hra_, bhat.hura_, bhat.hora_ cake of leavened bre3ad (P.)(CDIAL 9657). bhat.hia_r, bhat.ia_la_ grainparcher's shop (P.)(CDIAL 9658). Bhra_s.t.ra = gridiron (Nir.); adj. Cooked on a gridiron (Pa_n.); bha_d.a oven for parching grain (Pkt.); bhar. to roast, fry (Phal); bha_r. oven (L.); iron oven, fire, furnace (Ku.); bha_r grain-parcher's fireplace (Bi.); bhar.-bhu_ja_ grain-parcher (Bi.N. of Ganges); bha_ru_ , pl. bha_ra_ oven, furnace (Oaw.); bha_r. oven, grain-parcher's fireplace, fire (H.); bha_d.i oven (G.); bha_d. (M.)(CDIAL 9684). bharsa_ri_ furnace, oven (H.)(CDIAL 9685). bhad. crackling fuel (M.); bhar. Crackle, rush (H.); bhar.bhar.a_t crackling of fire (Ku.); bhar.kan.u = to blaze (S.); bhar.k flash (P.); bhar.ak flash, display (H.); bhar.ku~ blaze (G.); bhat.akvu~ to blaze (G.)(CDIAL 9365). **bha_d.a** [Skt. bhra_s.t.raka fr. bhrasj to parch] a kiln or oven for parching corn; a pan in which corn is parched; a large well; bha_d.iyo = an earthen pot with a hole in its side in which corn is parched (G.lex.) **bhat.t.hi_** [Skt. bhr.s.ti frying] a kiln; a furnace; an oven; a smith's forge; a stove; the fireplace of a washerman; bhat.hiya_ro an eating-house keeper; a baker, a cook (G.lex.)



m1653 ivory plaque  1905 The sign shown on Text 1905 is a representation of an armed person, carrying a spear protruding above his left shoulder. [A clear pictographic indication of the

association of the ligatured sign with a 'warrior' or 'an armed guard']



The epigraph 1905: eye 'me~t'; iron 'me~r.he~t';

Alternative 1 for Sign 17: *bhat.a* 'warrior'; rebus: *bhat.a* 'furnace, kiln'

Alternative 2 for Sign 17: *pahar* 'guard'; *paghal* 'pig-iron'



Four signs of the epigraph, from the left: *ko_li* a stubble of *jo_l.a* (Ka.); *ko_le* a stump or stub of corn (Te.); *kol* 'smithy'; *bal* 'bangle'; *bal* 'iron ore, iron stone stand';

Alternative 1 for Sign 17: *bhat.a* 'warrior'; rebus: *bhat.a* 'furnace, kiln'

Alternative 2 for Sign 17: *pahar* 'guard'; *paghal* 'pig-iron'
kan.d.kankha 'copper furnace'

Glyph: *dahna* the right hand (Santali)

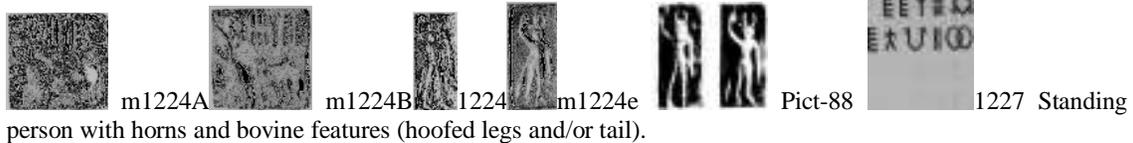
Substantive: *dahn:ga dahn:gi* blazing, flaring; *dahni dag* mark of burning, scar (Santali)

Substantive: *dahna* a small quantity of grain given daily to an agricultural labourer during harvest over and above his wages (Santali); *dahnau* to pray, to honour, to worship, to appease, to propitiate (Santali)

Substantive: *d.han:gra* 'blacksmith'

Glyph: *kud.i* right, right-hand (Te.)(DEDR 1654).

Substantive: *kut.hi* 'a furnace for smelting iron ore, to smelt iron'; *kolheko kut.hieda* koles smelt iron (Santali)



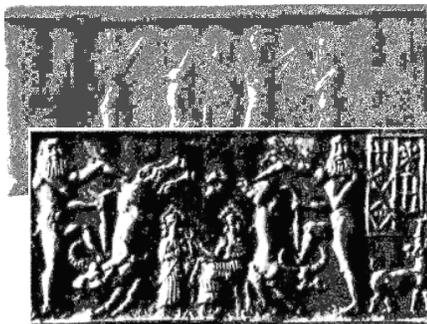
The ligature of the back of a bull to the horned person may connote:

d.hagara_m pl. 'the hips, the buttocks' (G.); rebus: *d.han:gra* 'blacksmith'

Such ligaturing is also evidenced in Akkadian cylinder seals:



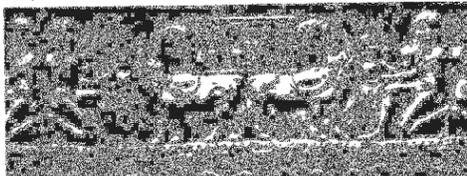
Akkadian cylinder seal. Inscription: 'Naram-Sin of Akkad: Ukin-Ulmash his son'. The 'Sarre cylinder', Collection Othmar Keel, Fribourg; cf. Collon 1987: no. 528 Buffalo in conflict with a lion.



Akkadin cylinder seal. A person ligatured to a bull fights a buffalo; a person ligatured to a bull fights a lion. The Oriental Institute of Chicago (AS. 33: 113). After Boehmer 1965: no. 230

Late Akkadian cylinder seal. Enki, 'water-god' sits between two buffaloes. The fighter on either side places a foot on the head of the buffalo. After Boehmer 1965: no. 223

A late Akkadian cylinder seal ca. 2200 BCE. Musee du Louvre/AO 22303 (Collection Clercq).
 De Water flows from the pot of Inscription: scribe, (is) Cf.



Enki and is offered to the two buffaloes. 'S'argalis'arri, king of Akkad: Ibrnis'arrum, the your servant'. After Boehmer 1965: no. 232. Colloon 1987: no. 529.

Alternative: kun.d.e = buttock; the buttocks, the posteriors, the anus (Ka.); **kun.d.i** (Ta.Ma.); kut.t.i, kutte, gudde (Te.); kulla_ (M.); mu_di (Ma.)(Ka.lex.)

kun.d.e = the bottom of a vessel (Ka.lex.)

Rebus: **kun.d.i**_ chief of village

kat.a market (Ma.); **kat.ai** shop, bazaar, market (Ta.);(DEDR 1142).

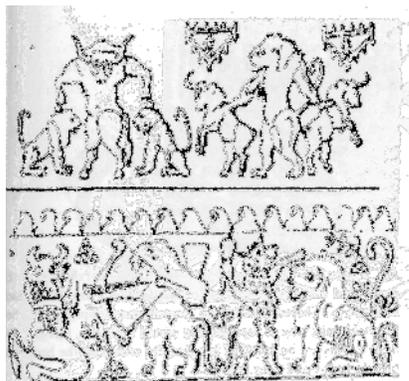
bayar, bayar kad.a = an entire, uncastrated buffalo; rut, be lascivious (Santali); boya_r (B.)(Santali.lex.Bodding)

sal = Indian Gaur, *Bos Gaurus* (or, *Gavaeus Gaurus*). Now extinct in the Santal Paragnas. Also called **bir kad.a**, forest buffalo. Sal bitkil, the cow of the Gaur; sal sakwa, a horn made from the horn of the Gaur (Santali); saili, sakil (Mun.d.ari)(Santali.lex.Bodding) sail = the Indian Gaur of bison, *Gavaeus Gaurus* (Mundari.lex.) **kad.a** = a buffalo bull (Santali) **kat.ama_** bison (Ta.)(DEDR 1114).

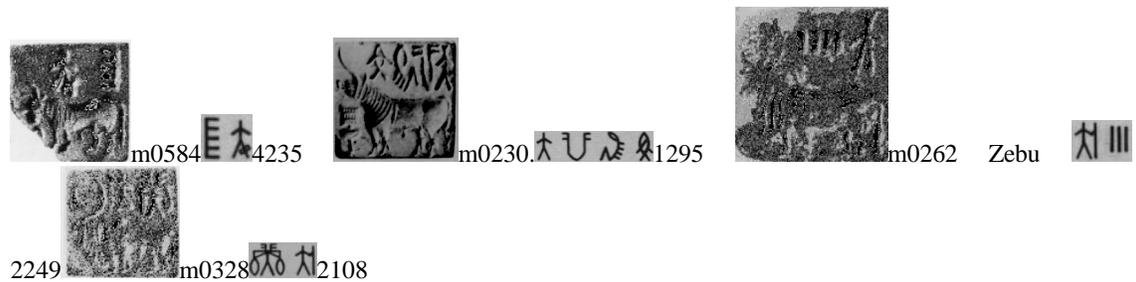
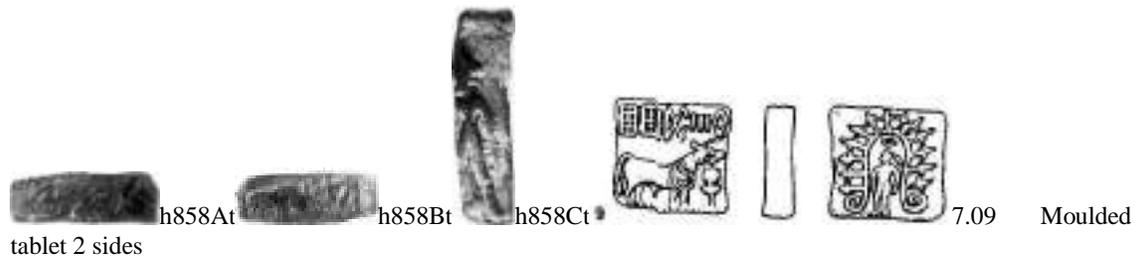
goraka = wild buffalo

gorka spear (Pa.Go.); goh-ka, gohka id. (Go.)(DEDR 2126). kahli a fish-spear (Santali.lex.) goraka = metal arrow

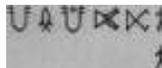
Two seals from Susa, ca. 3100-2900 BCE. Proto-Elamite. The contest of lion and bull; the top seal



shows two one-horned bulls being subdued by a lion; and a bull subduing two lions; the bottom seal shows that the bull confronts a lion-bodied archer and the bull holds a raised club as it confronts the lion. After Amiet 1980, *La Glyptique mesopotamienne archaïque*, 2nd edn., Paris: pl. 38, no. 585 (=a) and no. 591 (=b). The two triangles shown on the seal on top may be comparable to the 'fire-altars' found in civilization sites with a central stele.



pin.d.a = the body; pin.d.a-jn~a_n = the science of anatomy (G.lex.)

The importance of the 'body' glyph is seen in the Seal m0304 Text  2420 where the glyph appears together with the glyphs of: buffalo, tiger, rhinoceros and elephant, all surrounding the horned, seated person. A pair of 'antelopes' also adorn the platform on which the person is seated in a yogic posture.

Standing person with horns: *ka_d.i* 'body'; *ka_t.i* 'furnace'
d.abe large horns; *d.ab*, *d.himba*, *d.hompo* 'lump (ingot?)' (Santali)

Ancient inscriptions found in Gulf of Khambhat Cultural Complex

Image of a seated person on a tablet in bas relief found in Gulf of Khambhat Cultural Complex

That the Gulf of Khambhat Cultural Complex (GKCC), with early origins dated to ca. 9000 years Before Present, is a precursor of the Sarasvati Sindhu Valley Civilization is dramatically confirmed by a triangular tablet with an image engraved in bas relief.

Many finds which are characteristic of the so-called pre-Harappan artefacts include the finds such as: a bathing complex, structures of multi-storeyed buildings comparable to those found at Mohenjodaro, use of gabar bands to divert water from river channels -- a feature common along the River Sindhu in the Sind region--, triangular cakes, some triangular cakes with circles drilled in, long cylindrical and perforated stone beads and many types of semi-precious stone beads. What are referred to ancient inscriptions in the exhibits kept at the National Institute of Ocean Technology complex in IIT Campus, Chennai are discussed.

Image of a seated person often referred to as a yogic posture is a remarkable motif on some inscribed objects. The image is also depicted on tablets carved in bas-relief at Harappa as confirmed by the 1998 finds at Harappa by Kenoyer and Meadow.

Two remarkable finds of the Gulf of Khambhat Cultural Complex (GKCC); these may constitute the world's oldest inscriptions found so far and perhaps also the oldest writing system of the world dated to ca. 9000 years Before Present:

One is a triangular sandstone tablet, shaped like an equilateral triangle about 6" at the base. At the apex, the head-dress of a seated person is faintly visible, since the slab is weathered by the sea waters; the entire

composition is in carved in bas-relief. The orthography of the weathered slab is comparable to similar seated persons depicted on some inscribed objects discovered at Harappa and Mohenjodaro.

On another smaller triangular tablet a sign in bas-relief is faintly visible. The sign is comparable to a triangle

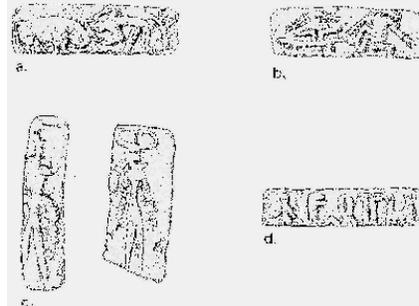


with horizontal lines. The sign is comparable to Sign 204 on some inscribed objects.

Harappa. Two tablets. Seated figure or deity with reed house or shrine at one side. Left: H95-2524; Right: H95-2487.



Harappa. A series of small tablets. A. man fighting a horned bull; a small plant with six branches; b. seated yogic posture with arms resting on knees; both arms with bangles; traces of a horned headdress and long visible on some impressions; a second individual, also hair and wearing bangles, sits on a short stool; ; c. deity with horned headdress with a curved branch projecting leaves; bangles visible on both arms; d. inscription with six signs; the first sign appears to be form of an animal; the last shows a person.



short-figure in covered hair are with long standing with three some

To hit with fist (tablet showing man fighting with bull): *kud.rau*; Rebus: *kod.rao* 'to scrape out, to gouge out' hence, scraper.



Slide 142. Molded tablets from Trench 11 sometimes have impressions on one, two, three or four sides. This group of molded tablets shows the complete set of motifs. One side is comprised entirely of script and has six characters, the first of which (on the very top) appears to be some sort of animal. A second side shows a human figure grappling with a short horned bull. A small plant with at least six branches is discernible behind the individual. The third panel portrays a figure seated on a charpoy or throne in a yogic position, with arms resting on the knees. Both arms are covered with bangles, and traces of a horned headdress and long hair are visible on some of the impressions. A second individual, also with long hair and wearing bangles, is seated on a short stool to the proper left of the individual on the "throne." The fourth panel shows a deity standing with both feet on the ground and wearing a horned headdress. A branch with three pinal leaves projects from the center of the headdress. Bangles on seen on both arms.

Sin: bon:ga! Sun god. [Rebus representation: sim.ha, 'lion'; sin:g, 'horn' (s'r.n:ga, 'horn' Skt.); bon:ga, eminent person; gavala, 'buffalo horn'; pum.gava, 'eminent person' Skt.] **pum.gava** = a bull (La_ty. Hariv.); a hero, eminent person, chief; pum.gava-ketu = "marked by a bull", Name of S'iva. **sin: bon:ga** = sun god (Santali.lex.)

pon:ga of ebullition or of exalted courage (Ka.); pon:ku prosperity, fortune (Ta.); pon:kal abundance, splendour; n. pr. of a festival, abundance, profusion; pon:kam increase, abundance, joy, splendour; pokkam abundance, eminence, splendour; pommu (pommi-) to swell, excel in appearance; pommal abundance, thickness, plumpness; bommen-al to swell (Ta.); pon.n.al ostentation (Ma.); pon.n.accam display, boasting (Ma.); pompur..i growth, greatness (Ka.); pon:gad. proud flesh (Tu.); pon:gu to rejoice, be elated, be puffed up, be proud; n. joy, pride (Te.); pon:gincu to please, flatter, puff up, coax; pon:ka pride, haughtiness; bugulu-

konu to increase, swell, rise; pompiri abundant, full (Te.); pon:gipit id.d.eng to exaggerate (Kol.); pon.i- (-t-) to be bloated, swell up (Kond.a)(DEDR 4469).

The seated person may be read as **pum.gava(la)**; gava, 'buffalo horn'. Since the depiction is of an eminent person, with face depicted as a lion, he could be bon:ga, 'eminent person'; sin:g bon:ga, 'sun god' (sin:g rebus, 'lion' as a phonetic determinant).



m1203A

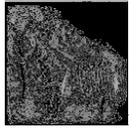


m1203B



1018

Note the gimlet (**tamiru**) precisely indicated on the standard device on m1203A, the sharp point is drilling into a disc-shaped bead].



m0299 Composite animal with the body of a ram, horns of a bull, trunk of an elephant, hindlegs of

a tiger and an upraise serpent-like tail.  1381

Glyph: *pahar*, *pahra* guard (Santali) *bhad.a* a warrior, a hero (G.); *bhat.a* warrior (Skt.)

Substantive: *bhat.a* furnace, kiln (Santali)

m417AC Pict-62: Composition: six heads of animals: of one-horned heifer, of short-horned bull (bison), of antelope, of tiger, and of two other uncertain animals) radiating outward from a hatched ring (or 'heart' design).



1383

bhat.a = a warrior (G.lex.) *bhad.a* a warrior; a hero; adj. Strong, mighty; opulent; an opulent person (G.lex.) **bhar.** = soldier (B.); warrior (G.); hero, brave man (Ku.); *bhat.a* = hired soldier (MBh.) *pat.ai* = army, weapons, battle (Ta.); *pat.a* = battle, army (Ma); *pad.eyila* = soldier (Ka.); *pad.eval.a* = a general (Ka.); *pad.ava* = fight, battle; *pad.avalamu* = van of an army; *pad.ava_lu* = commander of an army (Te.)

batur.i = a young bull; *batur.iko* hukarea = young bulls low (Mundari.lex.) cf. *bat.u* = boy (esp. a young Brahman), term applied contemptuously to an adult (MBh.); *bar.u* a Brahman title (B.); servant (Or.); *bar.ua* Brahman boy, pupil (H.); *bad.u_u* (OG.)(CDIAL 9121). *bhat.t.o* = a contemptuous term for a *bra_hman.a*; *bhat.a*, *bhat.t.a* = a title affixed to the names of learned *bra_hman.as*; a learned man (G.lex.)

In association with the six heads of animals, the term *bhat.a* 'furnace' can be related to types of minerals subjected to smelting/melting in the furnace or kiln:

One-horned heifer or steer: *damr.i* (rebus: *ta_mbra* 'copper')

Bison: *bali* (rebus: *bali* 'iron stone ore')

Antelope: *melh* (rebus: *melukka* 'copper')

Tiger: *kol* (rebus: *kol* 'smithy')

6455. **Image: leaf: phat.** leaf (Dm.); **pat.a_**, **pu_t.**, **pad.d.ak**, **pha_t.ak** (Pas'); *pat.t.a* (Shum.); *par.* (Wot.); **phat.a** (Gaw.); *pat.u* a long leaf (Sh.); *pot.*, *pat.a* (D.); *pa_t.u*, *pat.u*, *pat.hu*, *pat.he* leaf (Sh.); **pa_t** leaf, leaves and grass (Ku.); *patra* wing-feather (VS.); leaf, petal (Ka_tyS'r.); leaf of book (Skt.); *patta* wing, feather, leaf (Pali); *patti_*, *pattika_* leaf (Pali); *patta*, *pattaya*, *pattia_* wing, leaf, page (Pkt.); *patri*, *patrin* leaf (Gypsy); *s'a_pa_tr* butterfly (Pas')[cf. *patan:g* butterfly (Wot.)(CDIAL 7721)]; *pat* leaf (Bshk.); *path^ar*, *patras* (K.); *pa_s.* (Tor.); *chilu-pat.ru* goods and chattels (S.); *pattar* leaf, foliage; *patra_* palm-leaf fibre (L.); *patra_* page (L.); *patri_* leaf (L.); *pattar*, *patra_* leaf (L.); *patt*, *patra_*, *patta_* leaf (P.); *patri_*, *patti_* leaf, almanac (P.);

pat.i_, pat.lo~ leaf (WPah.); pa_to horoscope, metal plate used to repair something broken (Ku.); pa_ti_ leaves, letter (Ku.); pa_t leaf (N.A.B.H.); thin metal plate (H.); pa_ti leaf, flowers used in worship (N.); pa_ta_ leaf, blade (B.); Pinnate-shaped leaf: pinnate-shaped leaf (M.); pa_t, patta_ leaf, page, epistle (Mth.); pa_t, patai_ leaf (Bhoj.); pa_ta_, pa_ti_ (Aw.); pa_ta_, patta_ leaf (H.); pa_ti_, patti_ leaf, epistle, clue (H.); pa_tru~, pa_tu~ leaf (G.); pa_tri_ packet of leaves and flowers (G.); pa_te~ leaf, blade (M.); pa_ti_ narrow leaf (M.); fat, fai leaf (Md.); pet.ege_ feather; wet.ege letter paper (Pr.); pata wing, feather, leaf (Si.)(CDIAL 7733). 6689.Laurus cassia: patra the leaf of the laurus cassia; a leaf (Ka.Skt.)(Ka.lex.) 6688.Feather: patti, patra a feather (Ka.); patra-na_d.ike the fibre or vein of a leaf (Ka.)(Ka.lex.) 6454.Leaf: patrakka leaf (esp. of laurus cassia)(Bhpr.); pat^ar, pat^ur^u leaf (esp. of cinnamomum albiforum)(K.); patra_ c. albiforum (P.)(CDIAL 7734). patrala leafy; leaflike, thin (Skt.); pattala leafy; leaf, leaves (Pkt.); patul^u mat made of pieces of wood and reeds (K.); pattal leaf-platter (P.)(CDIAL 7736).

bat.i = a metal cup or basin; bhat.i = a still, a boiler, a copper; dhubi bhat.i = a washerman's boiler; jhuli bhat.i = a trench in the ground used as a fireplace when cooking has to be done for a large number of people (Santali.lex.) bha~utic = a leaf cup, a cup made of leaves pinned together (Santali.lex.)

pattar wooden trough for feeding animals (Na_lat.i, 257); **pat.t.at.ai** plank used for crossing a channel (W.)(Ta.); **pattal** a wooden bucket (Patir-r-up. 19,23)(Ta.lex.) patalai large-mouthed pot (Aric. Pu. Viva_ka. 292); ornamental pitcher mounted on a tower (Tiv. Periyati. 3,8,2); boat (Ta.); pa0s- large, broad-mouthed clay-pot (To.); patli cooking pot (Go.Malt.)(DEDR 3909). Image: trough: **pan-r-ippattar** hog-trough; water-scoop for irrigation (Cilap. 10,110, Urai.); **pattal** a wooden trough for feeding animals; ditch, depression (Nar-. 240)(Ta.lex.)

[Note the ligature of a bovine's hinder-part to a standing, horned person.] Image: back; behind: **pattar** further behind (WPah.); **pattrau~** hinder (WPah.); apa_ktah back (AV.); pa_kta_t from behind (RV.); pa_c- behind (RV.); pate~_i after (Ash.); al patai (Wg.); pat (Pas'); pata behind (Gaw.); patae afterwards (Gaw.); pade back, again (Wot.); pat after (Bshk.); patai second; patka again (Bshk.); pat, pad behind (Tor.); pato_ (Mai.); phat (Sh.); pot^u hinder, subsequent; patⁱ behind (K.); patte behind (WPah.); pati_r after, beyond (Ku.); patama adv. back (NiDoc.); patyum^u hindmost (K.); pettio~ hinder (WPah.)(CDIAL 7732).

vartaka = bell-metal, brass (Skt.)(CDIAL 11347).

vartana = occupation (G.Skt.)

pattar merchants; perh. vartaka; Goldsmiths: **pattar** a caste of goldsmiths (Ta.); battud.u id. (Te.); Goldsmith's trade; storehouse: bha_n.d.as'a_la_ storehouse (S'atr.); bhar.asa_ra cupboard for keeping food in (OH.); bha_d.sa_l, bha_d.sa_r, bhansa_l storehouse, granary (H.); bad.ahal pottery (Si.); bad.ahal, bad.a_la_ goldsmith; bad.al-vad.a goldsmith's trade (Si.); bad.ahl potter (Si.); bha_n.d.a treasure (Skt.); bha_n.d.aka goods (Skt.); bhan.d.a stock-in-trade, goods (Pali); -bhan.d.aka = articles, implement; bhan.d.ika_ collection of goods, heap, bundle (Pali); bham.d.a = utensils, goods (Pkt.); bham.d.ia_ bag (Pkt.)(CDIAL 9440).

Guild of workmen: **pat.t.ar-ai** community; guild as of workmen (Ta.); pat.t.ale id. (Ka.)(Ta.lex.) pat.t.ar-ai factory, rice-hulling machine, machine (Ta.)(Ta.lex.) 6472.Workshop: pat.t.ad.e, pat.t.ad.i anvil, workshop (Ka.); pat.t.at.ai, pat.t.ar-ai, anvil, smithy, forge (Ta.); pat.t.ika, pat.t.ed.a anvil (Te.); **pat.t.ad.a** workshop (Te.)(DEDR 3865). Goldsmith's small hammer: bhar.i goldsmith's small hammer (N.); bham.d.a barber's utensils (Pkt.); bha~_r.i, bha~_ir. razor case (B.)(CDIAL 9440). pan.t.akkalam gold ornament (Man.i. 26,23); pan.t.am gold; wealth, riches (Tiv. Tirukkur-un. 11); pan.t.akka_ran- rich man; owner of goods (Ta.lex.) Goldsmith: bad.ahal, bad.a_la_ goldsmith (Si.); bad.al-vad.a goldsmith's trade (Si.); bad.ahal potter (Si.); bha~d.sa_l, bha~d.sa_r, bhansa_l storehouse, granary (H.); bad.ahal pottery (Si.)(CDIAL 9441). pala-pat.t.at.ai store room in which diverse articles are kept; people of various castes; a general tax on merchants and artisans (Ta.lex.) For semant. 'artisan' X 'workshop' : Workshop; anvil; smithy: pat.t.ar-ai, pat.t.arai machine; rice-hulling machine; factory; pat.t.at.ai smithy, forge (Ta.); pat.t.ad.i id. (Ka.) (Ta.lex.) pat.t.at.ai anvil (Kur-al., 821); pat.t.ar-ai anvil (Ta.); pat.t.ad.e, pat.t.ad.i anvil, workshop (Ka.); pat.t.ika, pat.t.ed.a anvil; pat.t.ad.a workshop (Te.)(DEDR 3865). pat.t.at.aiya_r master of a shop; overseer (Ta.lex.) bha_n.d.ika_ an

implement, a tool, utensil; **bha_n.d.am** any tool or instrument, an implement (Skt.lex.) **Support; anvil:** at.a-support, anvil; at.ai prop, slight support (Ta.); at.ai-kal anvil (Ta.); at.a-k-kallu anvil of goldsmiths (Ma.); ar.gal small anvil (Ko.); ad.e, ad.a, ad.i the piece of wood on which the five artisans put the article which they happen to operate upon, a support (Ka.); ad.egal, ad.agallu, ad.igallu anvil (Ka.); at.t.e a support, stand (Tu.); d.a_-kali, d.a_-kallu, da_-kali, da_-gali, da_yi anvil (Te.)(DEDR 86). ad.d.i_ iron rest for supporting tools in turning (L.); ad.a_v the wooden beam supporting a log when being sawn (K.); ad.d.o support for a log being sawn (WPah.); ad.an.u to build (S.); a_r.o support, bolt of door (Ku.); a_d.n.i_ a stand (G.); ad.aya prop, stopper (Si. perhaps direct < at.ai (Ta.)(CDIAL 188). ot.hi~gvu~, at.hi~gvu~ to lean; ot.hi~gan. a prop (G.)(CDIAL 772). adhikaran.i_ anvil (Skt.); smith's anvil (Pali)[explained as: originally meaning 'serving, that which serves, i.e. instrument' (Pali.lex.); ahigaran.i_ a piece of apparatus for a smith (Pkt.); yi_ran, dat. yu_ru anvil (K.); aharan.i, aran.i (S.); arin., e_run. (L.); airan., aihran, a_hran. (P.); arhini (WPah.); ern.e smithy (WPah.); a_ran (N.); aheran, a_hran anvil (H.)(CDIAL 252). adhikaro_ti puts at the head of (MBh.Pkt.); ye_run to sort or arrange the warp for the loom (K.)(CDIAL 253). pat. side (left or right)(Ko.); pat.t.i direction, side (Go.)(DEDR 3871)]. **Anvil:** pratika_ya target (Skt.); pariya_t.ha_ wooden framework over a well on which the drawer stands; carpenter's block, anvil block; paret.ha_ anvil block (Bi.); pariat.h, parait.h, parhat.a_ fodder chopping block (Mth.)(CDIAL 8544). **pat.t.at.ai** piece of board temporarily used as a seat (Ta.lex.) [?pat.u + at.ai : pat.u to hit or strike against (Ta.)(DEDR 3853) + at.ai support (Ta.)(DEDR 86)].

bhad.d.u_ copper cooking vessel (P.); bhad.d.u (N.)(CDIAL 9368). bha_~r. = necked vessel for milk or ghee (Bi.); bha_~r.a_ milking vessel (Bi.); bha_~r. large earthen pot, vessel for milk or ghee (Mth.); utensil (Bhoj.); bha_~d.u~ pot (G.); bha_~d., bha_~d.e~ (M.); bha_n.d.a pot, dish, vessel (Mn.); bha_n.d.aka small cup (Skt.); bhan.d.a utensils (A_past.); bham.d.a = vessel (Pkt.); bha_n.d. cooking pot (WPah.); bha_~d.e pl. metal vessels (WPah.); bha_~r.o large pot or cooking rice (N.); bha_n.d.a cooking pot (Or.)(CDIAL 9440).

6471. **Grain-pit; ditch:** **pa_~tar-a** grain-pit or cellar (Te.); pa.tar grain storage pit (Kol.); pend- to bury (Pa.); pendup- (pendut-) id. (Ga.); pa_ntu cavity, hollow, deep hole (Ta.); pattar, pattal ditch, depression (Ta.); pa_tu to bury, fix in the grain-pit, cellar (Kond.a)(DEDR 4080). **To store up grain:** pat.t.at.ai-kat.t.u-tal to store up grain in an enclosure of straw; pat.t.at.ai-kat.t.i an avaricious person; pat.t.at.ai corn-rick, enclosure of straw for grain, wattle and daub, granary; stock, heap, pile, as of straw, firewood or timber (Ta.lex.) **Pitfall:** pa_tampi a pitfall (Te.)(DEDR 4080). **Image: to fall down:** prapatati flies down, falls down (RV.); papatati falls down or into (Pali); pavad.ai falls (Pkt.); pavan.u to fall, happen (S.); pevan., **pres. part.** ponda (but **pp.** pe_a_) to fall; povan. to fall, happen, lie down (L.); paun.a_ to fall (P.); pu_n.u_ (WPah.)(CDIAL 8675). prapatana falling down (Gaut.); papatana falling (Pali); pavad.an.a (Pkt.); paun.u pitfall dug to catch wild animals (S.)(CDIAL 8676).

kut.hi = a furnace for smelting iron ore, to smelt iron (Santali.lex.)

[Rebus: **kut.hi** 'tree'; **kut.he** 'leg of chair'; **ku_di_**, **ku_t.i_** (Skt.lex.) **ku_di_** (Vedic) 'bunch of twigs']

Yogi in penance: kamad.ha; portable furnace: kamat.a

Mohenjo-daro. Sealing. A person in yogic posture seated on a stool. Fish, alligators (lizards) and snakes surround.



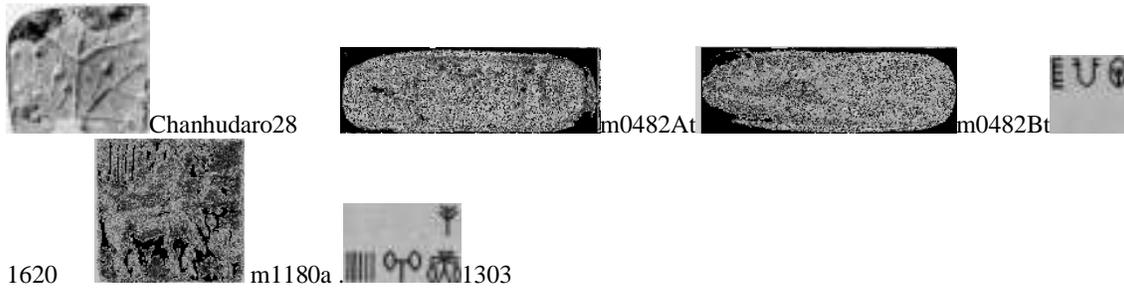
Ashmolean Museum, Oxford. [Note: snub-nosed crocodile?]

kamad.ha, kamat.ha, kamad.haka, kamad.haga, kamad.haya = a type of penance (Pkt.lex.)

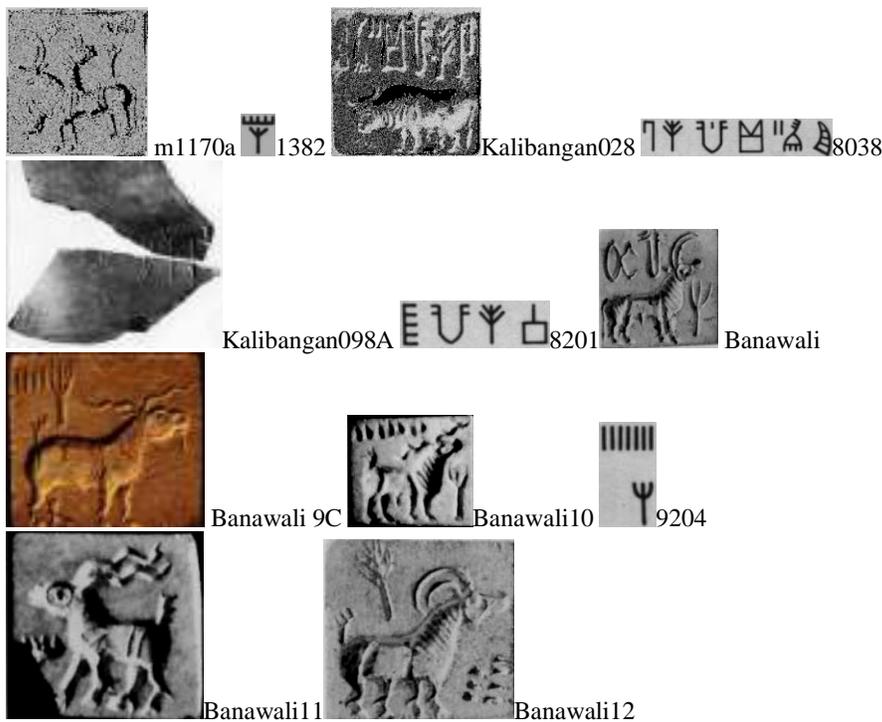
kamat.amu, kammat.amu = a portable furnace for melting precious metals; kammat.i_d.u = a goldsmith, a silversmith (Te.lex.)

kamba, ka_mba = handle (Kuwi); ka_me_ stalk of a spoon (Go.)(DEDR 1454). [Note the glyph of a ladle ligatured to a rimless pot.]

On many inscribed objects, the orthographic distinction between a small tree, a sprout and a stump is blurred and may be subject to varying rebus interpretations:



kun.d.i_ = chief of village.



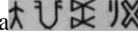
kotar [Skt. **kot.ara** = a hollow, a hole; cf. **kot.aravum** = to dig, to carve] a den; kotaran.i_ an engraving; an instrument for engraving; **kotaravum** [Skt. kr.d cut] = to engrave, to carve (G.lex.)

kut.am = hub of a wheel (Ta.lex.)

kut.i = the upper end of a husking pole (Mundari.lex.)

kot.ho = the upper part of an an:garakha (G.lex.)

ku_t.u nest, coop (Ta.); **ku_n.t.u** hen-coop (Ma.); **gu_d.e** nest (Ga.)(DEDR 1883).

m0026a  2074 [Note the top part of the standard device, shaped like a coop?]

Note the imagery of a coop or cage on some orthographic styles of the 'device' in front of the one-horned bull.

ku_t.u top of the drill for boring holes; mortise, groove, in carpentry (Ta.lex.) [Note some variants of the standard device depicted like a coconut shell]. **gud.iga_re** a turner and a cabinet maker (Tu.lex.)
gud.ga_r turner (Kon.lex.) **gud.iga_re** a turner and a cabinet maker (Tu.lex.)



Headman **kor-r-avan-** (Ta.)(IL 1829)
Naked woman **kot.a_ri** = naked woman (IL 1829a)
Branch of a tree **ko_t.u, ko_t.aram** (Ta.)

khu-t. kat.a = land reclaimed by the cultivator (Santali)

khu-t. = a community, sect, society, division, clique, schism, stock; **khu-t.ren** per.a **kanako** = they belong to the same stock (Santali) **khu_t.** Nag. **khu~t., ku_t.** Has. (Or. **khu_t.**) either of the two branches of the village family. These are **paha_r.khu_t.** Nag. **pa_r.a_ku_t.** Has. The elder branch, to which the official village sacrificer must belong, and the **mund.akhu_t.**, the younger branch, in which the position of village chief is hereditary. (Mundari.lex.) **ku_t.a** a house, dwelling (Skt.lex.) **kaut.a** living in one's own house, hence, independent, free; **kaut.ika-taks.a** (opp. to **gra_ma-taks.a**) an independent carpenter, one who works at home on his own account and not for the village (Skt.lex.) **gra_ma-ku_t.a** = village chief (Skt.lex.)

kut.ha_ru = writer (G.) **kut.ra** = to make into pieces; **khutur** = sound of crunching; **khutri** = to shred, to make into small pieces (Santali) **khot.rao** = to scrape, to cut by a scraping action, to scrape out of a hollow, to gouge (Santali.lex.) **kut.aga, kut.ika, kut.aka** = one who beats; **kalukut.iga** = one who beats stone (Ka.lex.) **khun.t.iyo** = a man versed in witchcraft (Surat.G.lex.) **kot.t.eti** hews, breaks, crushes (Pali); **ku_t.ab** to roughen a millstone with a chisel (Bi.)(CDIAL 3241).**ku_t.ud.u** = a stone cutter (Te.lex.) **kut.ha_ri** = an axe-bearer, a chief of the door-keepers (Ka.lex.) **kot.t.i** = going one's rounds as a watchman; **ko_t.ika_d.u, kot.t.ika_d.u** = watchman (Te.lex.) **as.t.a_das'apradha_na** = the eighteen nobles in close attendance on a king: **paurohita, dan.d.ana_tha, adhyaks.a, adhika_ri, mantri, pradha_na, maho_gra_n.i, bhan.d.a_ri, sena_na_yaka, sandhivigrahi, pratiha_ri, antasthita, dva_rapa_la, karan.ika, dan.d.apa_n.i, kut.ha_ri, sthalava_ra, yuvara_ja** (Ka.lex.) **go_dari** = a man of the Moochi caste, who live by lacquer work, painting toys (Te.lex.) **god.a_ri, god.agari** = a shoe-maker, a cobbler; **god.agara** = a caste of cobblers (Te.lex.) **kot.t.ad.i** = a storehouse, warehouse, godown; **kot.a_ri, kot.ha_ri** = a store-keeper; **kot.a_ramu, kot.a_ru** = a place to keep grain, salt etc.; a store-house, bank-stall, **magazine**, depository (Te.lex.) [Note the semant., 'magazine', in the context of **kut.ha_ru** = armourer].

Tent, house **kut.a_ram** (Ta.)(IL 4872)

kut.aramu, kut.haramu = the post round which the string of the churning stick passes (Te.lex.) [Note the post around which a symmetrical imagery with two heads of 'one-horned bulls' and nine leaves are depicted on an inscribed object.]



Central 'ligatured' glyphs of a seated person in penance

kamad.ha, kamat.ha, kamad.haka, kamad.haga, kamad.haya = a type of penance (Pkt.lex.)

kamat.a = a portable furnace (Te.)

m0304AC Pict-81: Person (with three visible faces, or, with tiger's mane) wearing horned head-dress, bangles and armlets seated on a platform (with a pair of sheaves, antelopes looking

backwards) and surrounded by five animals: rhinoceros, buffalo, antelope, tiger and elephant.

2420

Text: *bha~ora* 'brace, boring instrument'; *bara* 'oven'; *bar* 'two'; *hako* 'fish'; *hako* 'axe'; *kan.d.kanka* 'rim of pot'; *kan.d.kanka* (copper) furnace; *ten:go* 'standing'; *t.en:goc* 'a small axe'

kundavum = a manger, a hay-rick (G.lex.) **kundhavum** = a heap of hay or sticks (G.lex.) **kuntam** = haystack (Ta.); **kuttar-i** = a stack, a rick (Ka.)(DEDR 1724). [Note the haystack on the stool on which a person sits].

kat.iya_ buffalo heifer (G.); **kad.a** buffalo (Santali); **kad.a** = a buffalo (Santali.lex.) **kat.a_damu** = a he-buffalo (Te.lex.)

- **ka_t.i**, furnace (trench)(Ta.)

kad.i_ a chain; a hook; a link (G.); **kad.um** a bracelet, a ring (G.)

kad.iyo [Hem. Des. *kad.a-i-o* = Skt. *sthapati* a mason] a bricklayer; a mason; *kad.iyan.a*, *kad.iyen.a* a woman of the bricklayer caste; a wife of a bricklayer (G.)

- **kol**, put.t.e **tiger**, **jackal** (Santali.); **kol** furnace, forge (Kuwi) [The jumping tiger: *put.i*, 'to jump'; **put.a**, 'calcining of metals'; thus rebus of glyph connotes, **put.a**: a furnace for calcining minerals].
- **kha~_g** (H.) *kha_g* (B.H.Ku.N.); **khagga** = **rhinoceros** (Pkt.); **kan:g**, portable brazier (B.)
- *karat.i* = **elephant** (Te.); **khara_di**_ = turner (G.) cf. *kara_d.i*_ = a deep hollow in the bed of a river always filled with water; **karad.o**, **kara_d.i**_ a goldsmith's tool (G.lex.) Alternative: *ibha* + *s'un.d.* (elephant + trunk); rebus: *ib* 'iron' + *sun.d.* 'furnace'

In addition to the four animals, the following glyph also occurs in the glyphs surrounding the seated person; another type of furnace!

ko_lamu = adornment (of a bride or an idol)(Te.lex.)

Glyphs:

d.opo 'a very small mound or hillock' (Santali)

dapal to strike each other, to fight (Santali)

Substantives:



Substantive: *hasani*, *hasanti*, *hasantike* a portable fire-place, a chafing dish (Ka.) *hasani*_ a portable fire-place; *hasani_man.i* fire; *hasantika*_ a portable fire-place; *hasanti_id.*; has to open, bloom, blow; to brighten up, or to clear up (Skt.)(Skt.lex.) cf. **Dholavira: beads (Courtesy ASI)**

Beads **ha_s** necklace, beads (Pe.); *ha_c* id. (Mand.)(DEDR 2434).

pa_cam = eye of a needle, sewing, thread (Ta.); *pa.c* = eye of a needle; *vulva* (Ko.) [*ve_dhya* = to be pierced (Skt.)]

Die, dice: *pa_sika*, *pa_s'akamu* = a die used in games (Te.) *pa_s'a* (MBh.) *pa_saka* (Pali); *pa_saga* (Pkt.); *pa~_so* (Ku.); *pa_sa*_ (N.B.); *pasa*_, *pa_sa*_ game of dice (Or.); **pa_sa**_ = die (H.P.); *pha_sa*_ (M.); *pa_so* (G.)

Substantive: *mandar* ‘the headman of a village’; *man.d.wari* ‘the Marwari caste of hindus’

Glyph: *asan man.d.ao* ‘to sit tailor-wise for a long time, to sit about with nothing to do; lazy; to lie down, as an animal in its lair’; *asan man.d.ao akanae, hokrho kan leka* ‘he has taken up his position as if he were a watchman’ (Santali)

man.d.ao ‘to occupy a new house, to take up one’s residence’; *man.d.hwa, man.d.ua, man.d.wa* ‘a temporary shed or booth erected on the occasion of a marriage’; *man.d.om* ‘a raised platform or scaffold’; *ma-r.om* ‘a platform, used to keep straw on, or from which to watch crops’ (Santali)

Glyph: *mandar.i, mandar.ia* ‘a drummer, drum musicians’ (Santali)

◀Betwixt the buffalo horns is a sheaf: *bhin.d.a* ‘iron lump’; *daeka kad.ru* ‘a buffalo having long, spreading horns with an upward turn’; *deko* ‘hindu’ or *t.aka* ‘silver’; tiger’s mane (*cu_l.ai*); bangles (*cu_l.a*); head-dress (*cu_d.a*); platform (*pin.d.a*), sheaf (*bhin.d.a*), deer (*bhindi*) [Reconstructing the broken portion of the seal, it is likely that a pair of sheaves and a pair of deer (antelopes) are depicted, the term for ‘two’ is: *bar, barea*; the rebus is: *bha_r* grain-parcher’s fireplace]

◀*mukut.* ‘crest, diadem, turban’; rebus: *mukhia* ‘chief, principal, elder, leader’; *mukta* ‘a lump, mass, quantity’ (Santali), *mukhyud.u* ‘principal person’ (Telugu)

◀*badhi* ‘to ligature, to bandage, to splice, to join by successive rolls of a ligature’

◀*bad.hi* ‘a caste who work both in iron and wood’; *bat.hi* ‘furnace’

◀Reading: *cu_l.ai* ‘furnace’; *bhin.d.a* ‘iron lump (ore)’+ *bha_r, bhat.i* ‘furnace’ [iron furnace] of a *deko* ‘hindu’ or *t.aka* ‘silver’

Denoting a chief with horns, kut.am



m1431E 2805 Row of animals in file (a one-horned bull, an elephant and a rhinoceros from right); a gharial with a fish held in its jaw above the animals; a bird (?) at right. Pict-116: From R.—a person holding a vessel; a woman with a platter (?); a kneeling person with a staff in his hands facing the woman; a goat with its forelegs on a platform under a tree. [Or, two goats flanking a tree on a platform, with one antelope looking backwards?]

Pair of goats: **kin** = two (Santali); rebus: **ginna** = metal vessel (Te.)

A way to designate a chief of a village is to ligature a ‘body’ glyph with ‘horns’:

gra_maku_t.a, gra_maku_t.aka = chief of a village (Skt.lex.)

ku_t.i = a hat (turban) peg or stand; ku_t.a, gun.t.a = a peg (Ka.lex.) *gu_t.amu* a stake, a post; a peg, a tent pin (Te.lex.)

ku_t.a = horn (RV 10.102.4; AV 8.8.16; AitBr. 6.24; S’Br. 3.8.1.15; JBr.1.49.9; 50.1 (JAOS, 19, 114).

The glyph ‘horns’ also represents ‘hammer’ and suffixed to a_ra- the metal, *a_raku_t.a* ‘brass’:

a_raku_t.a = brass (Skt.) *a_raku_t.a* = arsenical copper¹ [Arthas’a_stra].

¹ **lodhra** = sulphurate of arsenic [Arthas’a_stra]. **Ta_la** = sulphurate of arsenic [Arthas’a_stra]

Hunter **lotha_**, **luddhaka**; otter **ludhir.o**; kite **luddhi_**

5550. **Hunting**: **lu-** (**lut-**) to beat game; **lup**, **lup gat**. part of the forest where the beaters are stationed (Pe.); **luh-** (**-t-**) to hunt with group of men (Kuwi)(DEDR 5190). **ludhha** covetous, greedy (Gaut.); hunter; **ludbhaka** hunter (MBh.); **luddha** greedy; **luddhaka** hunter (Pali); **luddha**, **loddha**, **lud.d.ha** greedy; hunter (Pkt.); **ludhir.o** otter (S.); **luddhi_** kite (L.); **lodha_** hunter (Or.); **lu_dhad.i_** *adj.* desirous (OG.)(CDIAL 11084). **vilo_bhati** allures (MBh.); **vilo_he_i** tempts (Pkt.); **bil.ohiba_**, **bilohiba_** to allure, charm (Or.)(CDIAL 11913). **lutstso** rascal (Kon.lex.) **Covet**: **lipsa_** desire to gain (MBh.); **liccha_** id. (Pkt.); **licch** rent paid by cultivators to landlord (L.)(CDIAL 11062). **luhb** be desirous (Skt.); **luhna_** to be infatuated, covet (H.); **aor. alubhat** (Dha_tup.)(CDIAL 11085). **lubhyati** is eager, is desirous (MBh.); **lubbhati** covets (Pali); **lubbha** (Pkt.); **lubev** to be vicious; **lubni**, **lublin** harlot (Gypsy); **lubha_na** to excite desire (H.); **lubha_vai** (OMarw.)(CDIAL 11086). **lo_bha** eager desire (Mn.); greed (Pali); **lo_ha** (Pkt.); **lo_** longing (L.); **loh** desire (A.); **loho** tenderness, affection (M.); **loba** desire, greed (Si.)(CDIAL 11147). **a_lo_bhi_t aor.** is desirous (Dha_tup.); **lo_hati** (Skt.); **lohan.** to desire, wish (L.)(CDIAL 11148). **lo_bhana** allurement (R.); greediness (Pali); **lohan** gentle persuasion by holding out false hopes (A.)(CDIAL 11149). **lo_bhin** covetous (BhP.);

Assyrian eru = copper; Sanskrit a_ra = copper

tutia = sulphate of copper, blue stone (Santali)

Substantive:

Monier-Williams' lexicon suggests that the root for *kastira* was *ka_ns* (to shine). There is a possibility that the root might have yielded *kan:sa_* which means bronze or copper-tin alloy. (AV, 10.10.5: s'atam. *kan:sa_h* indicating the possible use of the metal as an exchange unit). Homeric times refer to tin along with ivory coming from India (V. Ball, 1880, A geologist's contribution to the History of Ancient India, in: *Journal of Royal Geological Society of Ireland*, Vol. 5, Part 3, 1879-89, Edinburgh, pp. 215-63). Ball reiterates Lassen's comment that the Greek word **kassiteros** was derived from *kastira* whereas Bevan feels (E.J. Rapson ed., 1921, *The Cambridge History of India*, Vol. I, Delhi, Indian Edn., S. Chand and Co., p. 351) that **kastira** was derived from *kassiteros*. Such a controversy also existed about **a_raku_t.a** in Sanskrit and *oreichalkos* in Greek ('mountain copper') which refer to brass. Pliny called this aurichalcum or golden copper (since brass is yellow) (Pliny, *Naturalis Historia*, 34.2 and 37.44).

Tin foils used in decoration: **kan:guri** tin foils used in decoration (Tu.lex.) **kasti_ra** tin (Skt.); *kathi_r* tin, pewter (H.); *pewter* (G.); *kathi_l*, *kathi_la_* tin, pewter (H.); *kahti_l* tin; *kathle~* large tin vessel (M.)

ku_t.ud.u = a stone-cutter (Te.lex.)

ku_t.akamu = mixture (Te.lex.)

ku_d.ali, *ku_t.ami*, *ku_d.ika* = junction (Te.lex.)

ku_t.a_mu = a hall in a house (Te.lex.)

ku_t.amu = the summit of a mountain (Te.lex.)

ku_t.uva = an army, a host; a collection; *ku_t.uvamu_ka* = an army consisting of untrained rabble, or irregular troops (Te.lex.)

ku_t.avarusalu = a necklace of four to eight thin gold chains hanging together (Te.lex.)

khun.t.iyo a man versed in witchcraft; a wizard (Used in Surat district)(G.) *khu~t.* a community, sect, society, division, clique, schism, stock; *khu~t.ren per.a kanako* 'they belong to the same stock'; *khur.pi* 'an apartment'

lilohi_ greedy (OH.)(CDIAL 11150). **lo_bhyate_** is enticed (Skt.); **lo_bhayati** entices; **lo_bhijam.ta** (Pkt.); **lu_bun** to feel desire (K.)(CDIAL 11152). cf. **vilo_bhayati** perplexes (Skt.)(CDIAL 11913a). **pralubdha** seduced (Mn.); **pralubhyati** is lustful (S'a_n:khGr.); **paluddha** seduced (Pali); **paludu** fond of, greedy; desire, passio (Si.)(CDIAL 8762). **pralo_bhayati** causes to lust after, enices (MBh.); **palo_bhe_ti** is greedy (Pali); **palo_bhe_di** tempts, entices (Pkt.); **polobanava_** to entice (Si.)(CDIAL 8769). **pr.a_nj-** (**pr.a_nc-**) to hunt, wander about in search of game (Pe.); **pla_mba** (**pla_mbi-**) to hunt, chase, seek; **n.** hunting, a hunt (Kui)(DEDR 4612). **Violence:** **lohar** lust, violence, oppression (P.)(CDIAL 11147). **a-lo_bha** the not going astray (of **ratha**) (AitBr.)(CDIAL 11147a). **lubbh** agitate, disturb (Skt.); **lubdha** confused (AitBr.); **lujhan.u**, **luchan.u** to be agitated by grief or anger (S.); **lujjhan.** to quarrel (L.)(CDIAL 11084a).

lodhra, rodhra = the tree *Symplocos Racemosa* (it has yellow flowers, and the red powder scattered during the Holi festival is prepared from its bark) (Skt.)

(Santali) *kud.i* 'house' (Ta.); *kur.ia* 'a small hut' (Santali) *ku_t.ta_li* associate, partner in trade (Ta.Ma.); *ku_t.uvu* heap, collection, army; *xo_n.d.rna_* to be brought into the company of (Kur.)(DEDR 1882).

kut.i 'a piece' (Santali)

kut.au, khut.au 'to give on contract, to demand an account; pase tasrupatko kut.auali 'perhaps he will demand an account of the produce.'

Glyph: *kut.haur.i* 'a heap, a pile' (Santali)

The dots on the device may thus connote copper metal ingots.

ku_t.am = a hammer (Santali) **ku_t.am** blacksmith's sledge, hammer (Ta.); heavy hammer (Ma.); **ku_t.a** (Skt.); **ku_d.a** (Pkt.)(DEDR App.29; <Poss. IE.) **ku_t.a** iron mallet (MBh. <Drav.); sledge hammer (Pali)(CDIAL 3391). **ayo_ku_t.a, ayaku_t.a** iron hammer (Pali); **yakul.a** sledge-hammer (Si.); **yavul.a** (<**ayo_ku_t.a**) (Si.)(CDIAL 592). **ku_t.ud.u** = a stone-cutter (Te.lex.) **ku_t.a** '...the most probable sense is hammer (So Bloomfield, *Zeitschrift der Deutschen Morgenlandischen Gesellschaft*, 48, 546; *Hymns of the Atharvaveda*, 585), which suits every passage adequately. The St. Petersburg Dictionary renders it 'horn', which is the sense accepted by Whitney (Tr. of the Atharvaveda, 505) for the Atharvaveda passage where it occurs. Geldner thinks that it means 'trap' (Vedischer Studien 1.138; 2.7; cf. von Bradke, *Zeitschrift der Deutschen Morgenla_ndischen Gesselschaft*, 46, 458; Kuhn's *Zeitshrifvt*, 34, 156; Weber, *Indische Studien*, 9, 222).' [*Vedic Index*, I, pp. 176-177]. cf. *ku_t.u* - nest (Ta.)(DEDR 1883). *ku_t.a* (Skt.); *ku_d.a* (Pkt.)(CDIAL 3391; cf. Burrow, *BSOAS* 34.550 (1971)]. *kut.asi* = a hammer (Santali.lex.) *gu_t.amu* = a wooden hammer, mallet; a stake, post; tent pin (Te.lex.) *ku_t.a_ka* = a hammer (Ka.lex.) *gu_t.amu* = a wooden hammer; mallet (Te.) **ku_t.a** a kind of implement; any prominence or projection; most excellent first; part of plough, ploughsare, body of a plough; an iron mallet (MBh 14.4.6)(Skt.lex.) *kut.t.uka* to pound (Ma.); *kut.t.*-to pound (Kod.); *kut.t.ayati* to pound, strike lightly (CDIAL 3241; DEDR 1671). *kot.t.u* to hammer; *kot.t.an-*, *kot.t.a_n*-mallet (Ta.); *kot.t.i* mallet (Ma.); *kot.t.eti* to pound (Pkt.); *kot.t.o* to pound, beat (Nahali)(CDIAL 3241; DEDR 2063).

ka_msako, ka_msiyo = a large sized comb (G.)

kan.i_ (Skt. *kan.a* 'a grain') a small particle; the facet of a diamond (G.) *ka_n.i* = a fraction of time or space; 1/20 of an estate (Ma.)(DEDR 1444).

ka_n~cavum = to seduce, to deceive, to copulate; *kan~cani_* = a courtesan (G.) *kasaban.* = a courtesan, a whore, a harlot (G.) *kasab* = harlotry (G.)

ka_n~cad.o, ka_cin.d.o = a chameleon (G.)

kas'an.um, kasan.um (metath. *kan.usa*) = an ear of corn (G.) *kaj* = barley (Ko.); *koj id.* (To.); *gajja* (Pkt.)(DEDR 1106).

aduru 'native metal'

era = woman; rebus: *era, eraka* 'copper' (Ka.)

Glyph: *ad.aru* twig (Tu.Ka.)(DEDR 67) The twigs worn on the seven standing persons may connote 7 copper (*era*) metal (*aduru*) furnaces: *kaccu* a kind of corslet worn by Indian women in ancient times (Ta.); bodice to confine the breast (Ma.); ?< *kan~cuka* (Skt.)(DEDR 1098) If the early form is *kan~cu* it may be rebus for: *kamsa, kasa* 'bronze'. Hence, the seven robed persons may connote: metal bronze pit-furnaces (*aduru, kamsa*) cf. *khanta gad.a* a pit from which earth has been dug out (Santali)

ka_nta woman (Skt.)

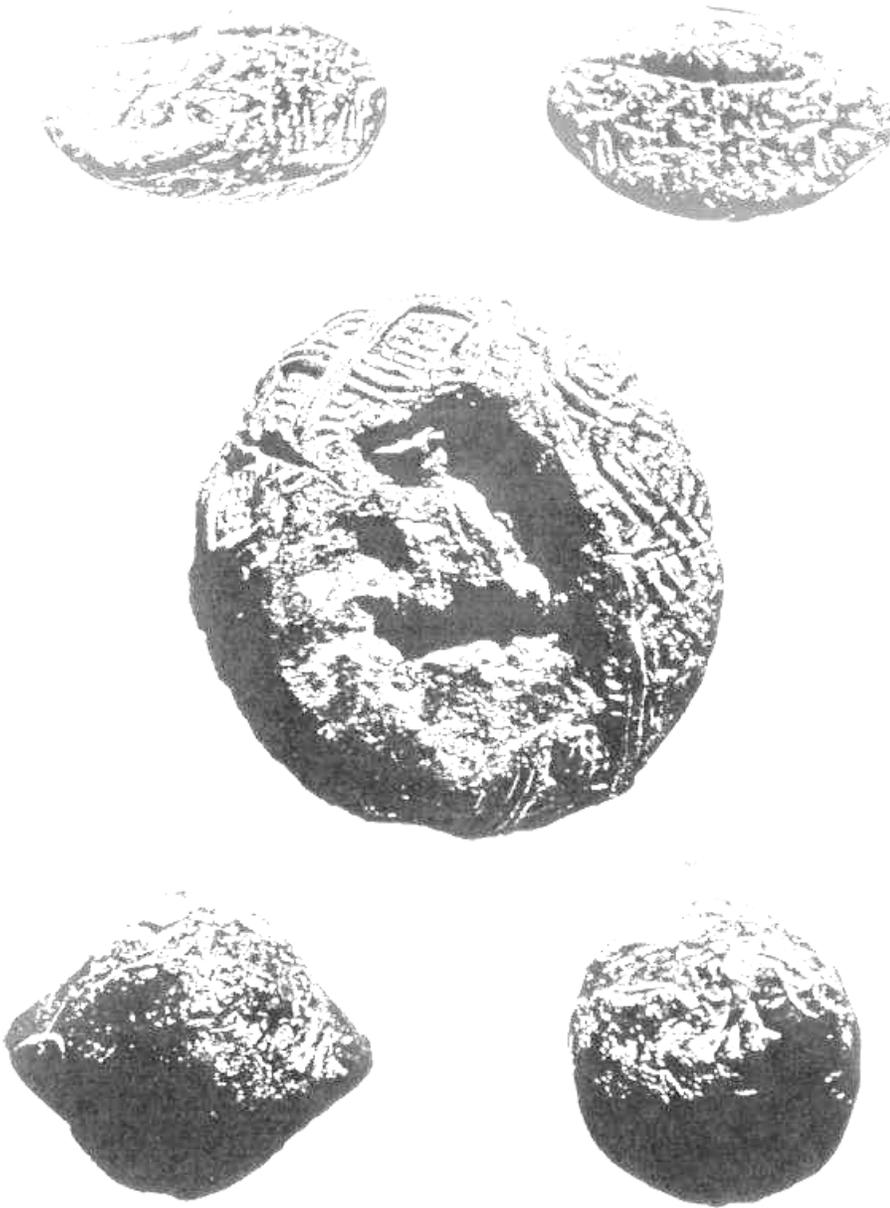
kasi = a castrated goat; **bhed.a kasi** = a wether; *kasi* = to geld, to castrate; *kasi sadom* = a gelding (Santali) *khasi_*, *kha_si_*, *khassi_* (Arabic) castration (G.) **sakam** = a veiled name for a goat (Santali) *chaga* = goat

(Skt.) *aja*, *aja_* = goat (RV 7.18.19). **ceccai** he-goat (Pur-ana_. 286); sheep (Ja_n-a_. Pa_yi. 5,12); aries of the zodiac (Vita_n-a. Nalvin-ai. 9)(Ta.); *tcutcu* (Te.)(Ta.lex.) *canju* antelope (Kur.); a deer (Malt.); *cacu* deer (Skt.)(DEDR 2294). Synonyms are: *basta*, *cha_ga*, *chagala*. Goats and sheep were *aja_vayah*. Goatherd was *ajapa_la* (VS 30.11; Taitt.Br. 3.4.9.1) **jha_k** flock (M.); *za_k* crowd (A.); *jha~_k* flock (B.); *jha_n:ka* flock (Or.); *jha~_k* flock (H.)(CDIAL 5323). *cha_lla_*, *cha_la_* pertaining to goats; **m.** flock of goats (L.)(CDIAL 5010). *mer.ho*, *mer.o* ram for sacrifice (N.); **mersa_g** ram (A. -**sa_g** <? *cha_gya* herd of goats (Skt.); **sa_ga_** flock of sheep or goats (M.)(CDIAL 5011); cf. *saga* denoting *pha_tries* or clans in Gond.) *ca_kam* < *cha_ga* he-goat (Ta.lex.) *cha_ga* he-goat (RV.); *cha_gala* coming from a goat (Sus'r.Pkt.); goat (R.Pkt.); *ca_galiya* goatherd (Pkt.); *cha_wul* he-goat (K.); *cha_la* goat (Pkt.); *cha_wul*, *cha_wul^u* (K.); *cha_li_*, *cha_liya_* (Pkt.); *cha_wajⁱ* he-goat; *ca_wali-pu_t* kid (K.); *cha_la_*, *ca_li_* goat (L.); *ca_la_n* of or belonging to a goat (L.)(CDIAL 5009). **chaga** goat (Skt.); **cha_ga** he-goat (RV.)(CDIAL 4958). **cherua_** goat (in general)(Bi.)(CDIAL 4962). **cana**, **ca~r.a** kid (Ash.); **can** new-born kid (Mj.); **ce~**, **co~** (Wg.); **chani** goat (Kho.); **cu~** (Kt.); **chani_k**, **canar.** a male kid (Pas'.)(CDIAL 4961). **chor.u** goat; pl. **che_r.i** he-goat; **che_r.o** (K.); **che_r.o** (WPah.); **cher.i** goat (Or.)(CDIAL 4959). **chagala** goat (TS.); **chakala**, **chakalaka** (Pali); **chagalaga** (Nidoc.); **chagala**, **che_la**, **che_laga** (Pkt.); **cilo**, **cilo_** sheep (Ash.); **cula** lamb (Wg.); **cele_** goat (Tir.); **caloik** small kid (Shum.); **seya_l** goat (Wot.); **chalo** kid (Gaw.); **che_l** goat (Bshk.); **cha_l** (Tor.); **cael** (Mai.); **sa_li** (Gau.); **cha_li** (Sv.); **cha_l** newborn kid (Phal.); **che_li** goat (Phal.); **chal** kid (Sh.); **chali** she-goat (D.); **ce_li** she-goat; **cel**, **che_li** (K.); **chela_**; **cha_li_** (L.); **chela_** goat more than one-year old (P.); **chila_r**, **chila_ru_** young kid (P.); **che_lu_** kid; **cheur.u** (WPah.); **cheli** goat (B.); **chel.i** (Or.); **cher** (Bi.); **che_ri** (Bhoj.); **chela_**, **cheli_**, **chera_**, **cheri_** (H.); **cha_la_** pl. goat; **cha_li_** (OG.); **cha_l.i_** goat; (Kathiawar) **ca_l.u_** sheep; **ca_li_** she-goat (G.); **s'el.i_** goat; **s'el.d.u~** (M.); **chelo** kid (S.); **chella_** (P.); **chelli_** she-goat; **chelli**, **chellu** kid (WPah.); **cirr.u_** he-goat (K.); **cherr.o** goat (WPah.); **cherr.u** male kid; **cher.ri** f. (WPah.); **s'er.d.u~** goat (M.); **cha_gar** he-goat; **cha_gri_** f. (Bi.); **chagari_** goat (Aw.); **sa_gal.** goatskin, leather made from it (M.)(CDIAL 4963). **cha_gala** coming from a goat (Sus'r.); goat (R.); coming from a goat; goat (Pkt.); **cha_galiya** goatherd; **cha_la** goat; **cha_li_**, **cha_liya_** f. (Pkt.); *cha_wul*, *cha_wulu* he-goat; *cha_waji*; **ca_wali-pu_t** kid (K.); **cha_la**, **cha_li_** goat (L.); **cha_la_n** of or belonging to a goat (L.); **ca_li_** goat (L.)(CDIAL 5009). **cha_lla_** pertaining to goats; flock of goats; **cha_la_** (L.)(CDIAL 5910). **sa_ga_** flock of sheep or goats (M.)(CDIAL 5011).

Glyph: *kasa*, *kassa* blood (Kuwi); *kasavva* wet, damp (Pkt.); *kasi* to ooze, trickle, flow (Ka.)(DEDR 1091). [cf. glyph of menstruating woman; *kar* (*kat.*) to give birth to (Pa.)(DEDR 1109) cf. *gad.a* mine]

kasad.o a waistband of silver or gold (G)
bin: *kancur* slough of snake (G.)

Substantive (spit): *ka_ng* to become hot (Nk.); *ka.ng* heat of fire or son; *ka.ko.l* a spit (*ko.l* stick) (Ko.); *xa_xar* fire, anger (Br.); *kandu* boiler, cooking utensil, oven (Skt.)(CDIAL 2726; DEDR 1458). *ka_vali*, *ka_vale* a plate or pan for firing or baking; *ka_valige* frying pan (Ka.); *ka_vali*, *ka_voli* id. (Tu.)(DEDR 1488). *kakor*, *kan:kar*, *ka_nkar* 'small stones, gravel' (Santali)



Hero stands before stag attacked by lion, another lion (crossing) fights bull; Seal impressions: Chagar bazar; BM 129370; Wiseman, *opcit*, 1962, Pl. 32a-b; Lump bearing four impressions of the same seal. Clay. Seal Impressions from Nineveh; all impressions shown on Plate 32c, d and e are from Kuyunjik (X.15; H.17): BM 127390; Wisema, *opcit*, 1962, Pl. 32c; Large jar stopper bearing two seal impressions, one rolled round three-quarters of the edge. Trees-pattern with crossed lines between; guilloche with hachuring. Baked clay. L.A.A.A. XX, 1933, Pl. LXV; Jamdat Nasr period. BM 127389; Pl. 32d-e; Bulbous shaped clay sealing, pierced for string attachment. Two bulls, back to back. Baked clay (L.A.A.A. XVIII,1930, p. 82, pl. XXII, 10.

“Baluchistan: Copper occurs widely in Baluchistan...The Chagai region has three areas of occurrence: Ras Koh in Kharan and Lar Koh, both with chrysocolla (oxide ore with 36% copper content) as the ore-type, and the areas of Robat Koh, Malik-iSiahKoh and Saindak Koh where there is carbonate of copper in some veins (Buller 1906: 127-29). The extensive presence of slag can be inferred from the fact that at Robat a small fort was built with copper slag as the principal building material. If Buller’s record is to be believed, preindustrial copper smelting was practiced in Chagai till the last quarter of the 19th century. On the other hand, some slag specimens from the Sandak mines of the area are dated around 3500-3000 BCE.” [Dilip K. Chakrabarti and Nayanjot Lahiri, 1996, *Copper and its alloys in ancient India*, Delhi, Munshiram Manoharlal, p.13; Buller, H., 196, *Baluchistan District Gazettee Series IV and IVA. Bolan and Chagai*, Karachi]

The fort built of copper slag evokes the R.gvedic description of pura a_yasi_ (metallic forts).

अच्छिद्रा सूनो सहसो नो अद्य स्तोतृभ्यो मित्रमहः शर्म यच्छ ।

अग्ने गृणन्तम् अलतहस उरुष्योर्जो नपात् पूर्भिर् आयसीभिः ॥

(nodha_ gautama) 1.058.08 Son of strength, favourably-shining Agni, grant to your worshipper on this occasion uninterrupted felicity; offspring of food, preserve him who praises you from sin with guards of metal.

तस्मै तवस्यम् अनु दायि सत्रेन्द्राय देवेभिर् अर्णसातौ ।

प्रति यद् अस्य वज्रम् बाहोर् ध्रु हृत्वी दस्यून् पुर आयसीर् नि तारीत् ॥

(gr.tsamada (a_n:girasa s'aunahotra pas'ca_d) bha_rgava s'aunaka) 2.020.08 Vigour has been perpetually imparted to Indra by his worshippers (with oblations), for the sake of obtaining rain; for which purpose they have placed the thunderbolt in his hands, wherewith, having slain the Dasyus, he has destroyed their metal cities.

गर्भे नु सन्न अन्व एषाम् अवेदम् अहं देवानां जनिमानि विश्वा ।

शतम् मा पुर आयसीर् अरक्षन् अघं श्येनो जवसा निर् अदीयम् ॥

(va_madeva gautama) 4.027.01 Being still in the germ, I have known all the births of these divinities in their order; a hundred bodies of metal confined me, but as a hawk I came forth with speed. [i.e., until the sage comprehended the differences between the body and soul, and learned that soul was unconfined, he was subject to repeated births; but in this stage he acquired divine knowledge, and burst through the bonds with the force and celerity of a hawk from its nest; va_madeva s'yena ru_pam a_stha_ya garbha_d yogena nihsr.tah = Va_madeva, having assumed the form of a hawk, came forth from the womb by the power of Yoga (Ni_timan~jari)].

m273 [The membrane hanging down the neck of the antelope may be **a_ram** (Tamil) which connotes **arsenic** which when alloyed with copper produces brass, **a_ra-ku_t.a**; the mid-rib of leaf depicted on this seal may be **ri_r**. which is cognate with **ri_l** (copper, brass or bronze or perhaps, **rit** = 'tin').



cf. *rks.a* male antelope (Skt.) **r.s'a, r.s'as** = the male of a species of antelope (AV 4.4.7); r.s'ya, r.s.ya = the male of a species of antelope, the painted or white-footed antelope (RV 8.4.10; AV 5.14.3; VS; AitBr.); r.s'yaka = having the colour of or looking like the white-footed antelope (R.)(Skt.) r.s.a the male of a species of antelope (AV 4.4.7); (Latin: alces); r.s.ya = r.s.a (RV 8.4.10: r.s.yo na tr.s.yan r.s.ya_khyo mr.ga iva); r.s.yada = a pit for catching antelope (RV 10.39.8)(Vedic.lex.) r.s.ya = male deer; r.s.yada (Vedic.lex.) rojjha = a kind of deer (Pkt.); rojhu, rojha the white-footed or painted antelope (S.); rojh (P.); rojh (H.G.); ro_hia a kind of deer (Pkt.)(CDIAL 10870). rohita = reddish (RV)(CDIAL 10866).

r.s.u = flame, glow (RV 10.6.1; 1.127.10; 5.25.1; 8.71.15)(Vedic.lex.)

A homonym which may also connote r.s. : spear

risa_ = a particular animal (AV); **risi** = eagle, bird of prey (Ku.)(CDIAL 10744).

A silver axe was found in Northern Afghanistan (c. 1900-1750 BCE); this axe had the motif of an eagle with two heads confronting a lion. Metropolitan Museum of Art [Ed. Time-Life Books, 1987: 156].

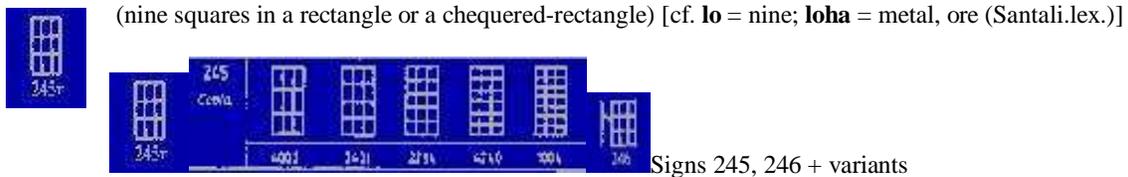
If the lexeme to represent this pictograph of an antelope is **r.s'** or **r.s.** it is hypothesised that **rit** [see the following lexemes] may be interpreted as a copper additive, '**tin or arsenic or zinc**' to create the alloy bronze.

re~d. = headless body, corpse (Ku.); ren.t.a_ = obstinate, perverse (Or.)(CDIAL 10815).

re~t = a file (Santali.lex.) reta = to saw, as when cutting with knife, sword etc., to draw backwards and push forwards, as a fiddle bow; reto reto = imitative of the sound produced when sawing wood (Santali.lex.)

Chequered square with nine rectangles

A number of signs appear in duplicated pairs: for example, Sign 245 occurs in 70 pairs.



The duplications of divided rectangles are apparently not duplicated alphabets or syllables.



Animals have bound feet and surround a square object on which the person stands. Fig. 89; Susa, stamp seal from the Gulf, Teheran Museum, MDAI, 43, no. 1718; a person, naked and thin, has a stylised head shaped like a narrow arch with indentations to mark the nose and mouth.



Two bull heads emanating from a chequered square; two persons drinking; altar and sun; bull in the lower register. Fig. 99; Failaka; no. 174 impression.



A person flanked by two bulls, each standing atop a chequered square. Fig. 100; Failaka no. 83 impression.



46 Entwined serpent in the middle; two antelopes standing atop a chequered rectangle; two bulls in lower register. Fig. 101; Failaka no. 82.



Bulls; antelopes; person; chequered square; trough? Fig. 104; Failaka; no. 89 impression.

Altin-depe; metal (silver) seal from southern Turkmenistan with the pictograph of a ligatured animal with three heads. Indian influence is seen in the three-headed ligature which occurs on the silver seal from Altin-depe. That this object is in silver metal is significant. The existence of silver and copper seals (apart from the use of copper plates as inscribed objects) denotes the importance attached to and value conveyed by the message on the seal.



Needle, probe, bodkin; arrow: **xala**_ pin (of bamboo, wood, or iron)(A.); **sala_i**_ pin (in spinning yarn)(L.); **sal.a_i**_ needle in shuttle, spindle (P.); needle, probe, bodkin (H.); coarse needle, short stick (Bi.); **sara_i** iron or wooden poker (Mth.); **sal.a_**, **sal.ai_**, **sal.i_** pin, spike, skewer (M.)(CDIAL 12349). **salay** spike (K.); **s'ala_ka_** arrow (Pali)(CDIAL 12349).

Substantive: **d.ha_l.ako** = a large metal ingot; **d.ha_l.aki_** = a metal heated and poured into a mould; a solid piece of metal; an ingot (G.) **d.ha_l.avum** = to fuse; to melt; to cast (a metal)(G.) **dul** 'to cast metal in a mould' (Santali) **d.ha_l.u** cast, mould; way, style (Ka.); **d.ha_l.a** (M.); **d.a_l.a** lustre, radiance; beauty, loveliness, gracefulness (Ka.); **d.ha_l.a** (M.); **d.a_lu**, **d.a_l.u**, **da_l.u** (Te.)(Ka.lex.) **d.ha_lan**. to melt, to mould, to form, to figure, to shape, to coin; **d.hala_i_**, **d.hala_un**. the price of casting, pouring, melting; **d.halna_**, **d.halja_n.a_** to be cast, to be poured out (as wine into a cup); **d.halwa_i_** pouring out, melting; the price of pouring out, melting out (P.lex.)

Glyph: **d.a_l_**, **d.a_li_**, **d.a_l.um** [Dh.Des. **d.a_l**, **d.a_li_** = Hem. Des. **d.a_li_** = Skt. **s'a_kha_** a branch of a tree] a branch of a tree (G.)

Glyph: **d.ha_l.iyum** = adj. sloping, incliding; **d.ha_l** = a slope; the inclination of a plane (G.)

Glyph: **d.ha_l.iyo** = a water-course, an aqueduct (G.)

Glyph: **dol** 'the shaft of an arrow, an arrow' (Santali)



Person kneeling under a tree with branches, facing a tiger. [*Chanhudaro*

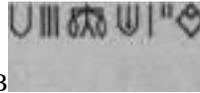
Excavations, Pl. LI, 18]   6118



h177A



h177B



4316 Pict-115:

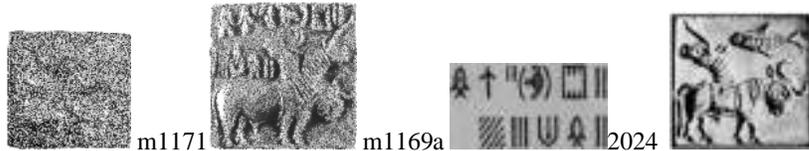
From R.—a person standing under an ornamental arch; a kneeling adorant; a ram with long curving horns.

The leftmost glyph on Epigraph 6118 is a thorny tree:

sekra a hindu caste who work in brass and bell metal; **sekrec**, **sekrec sekrec** to clink, applied to the sound produced by metallic objects coming into contact with each other (Santali) **sekyaka_ra** (EI 12; BL) a brazier; engraver; cf. **sen:kra_** goldsmith (B.); **sega_n.a** official designation of uncertain import (Chamba inscr.)(IEG, p.308).

sekra a small tree, *zizyphus rugosa*; **sekrec** a large forest tree, *lagerstremia parviflora* (Santali)

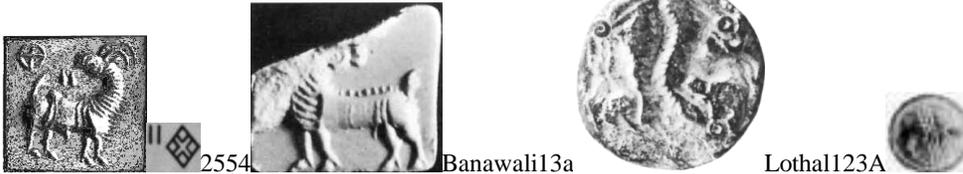
Composite animal, antelope looking back



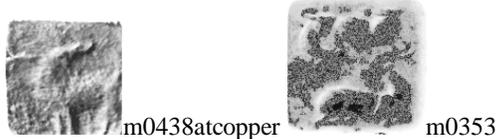
m0298).



m0271 Goat-antelope with horns turned backwards and a short tail



Lothal123B m0505At m0505Bt 1702



kamar 'looking back'; thus, an antelope looking backwards is: *melh* 'goat'*kamar* (*melukka kamar* 'copper-smith'); a tiger looking backwards is: *kol* 'tiger' *kamar* (*kolhe* 'smelters of iron' + smith)

2234.Cultivator: *kamata* the cultivation which the owner carries on with his own stock, but by the labour of another who is paid for his work (Ka.Te.); *ka_mat* (Upper India); *kamatiga*, *kammatiga* the man employed to cultivate with the farming stock of the owner (Ka.)(Ka.lex.)

kamba, kambha = a post, a pillar (Ka.Te.Tu.Ta.Ma.); a mast (Ta.Ma.Ka.lex.)

kambi = wire; an iron band (Ka.Ta.Te.M.Tu.); *kammi* = the iron tire of a carriage wheel; a wire, a bar; the line or border at the end of a cloth (Te.lex.)

kambi = a shoot, a branch or joint of a bamboo (Ka.lex.)

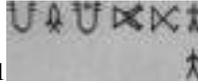
kambi = a club, a mace (Ka.lex.)

kammera_ku, *kamme_era_ku* = a kind of betel leaf darker and more pungent than the common one (Te.lex.)

Animal and glyph groups



m0304AC Pict-81



2420 Animals surrounding represent a

variety of furnaces.

- ◀ *barha* 'boar', *bhar* 'oven'; *badhia* 'castrated boar'; *bad.hoe* 'carpenter'
- ◀ *kad.ru* 'buffalo'; *khan.d.ar.an.*; *khan.d.run.*: 'pit (furnace)'

[**sal** = buffalo; e.g. kollan- sal = smith's workshop]

sal = Indian Gaur, *Bos Gaurus* (or, *Gavaeus Gaurus*). Now extinct in the Santal Paragnas. Also called bir kad.a, forest buffalo. *sal bitkil*, the cow of the Gaur; *sal sakwa*, a horn made from the horn of the Gaur (Santali); *saili*, *sakil* (Mun.d.ari)(Santali.lex.Bodding) *sail* = the Indian Gaur of bison, *Gavaeus Gaurus* (Mundari.lex.)

sal = v. open a smithy, work a smithy; open a beer-shop, a sugar-cane press; *ale manjhi tolare kamarko sal akata* = the blacksmiths have a smithy in that part of the village where our headman has his house; *teken kamarko sal akata* = the blacksmiths are working to-day (have started their forge)(Santali.lex.Bodding) t.an:kas'a_la_mint (Skt.); t.aksa_l, t.aksa_r (N.); t.a~ksa_l, t.a~ks_l. t.eksa_l (B.); t.aksa_r (Bhoj.); t.aksa_l, t.aksa_r (H.); t.a~ksa_l. (G.); t.a~ksa_l (M.); t.aksa_l.i_mint-master (G.); t.a_ksa_lya_ (M.)(CDIAL 5434). pan.ya article for sale (S'Br.); pan.iya to be sold or bought (Pali); article for trade (Pali); pan.n.a, pan.ia (Pkt.); pan.yas'a_la_shop (Skt.Pkt.)(CDIAL 7719-7720).

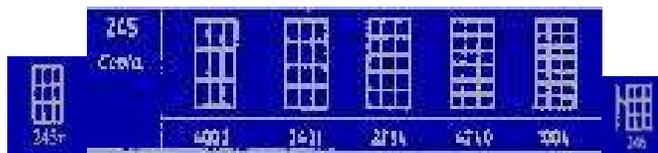
Wheel-right, weaver, trough, young buffalo

ks.attr. attendant, door-keeper (AV.); khattar attendant (Pali)(CDIAL 3647). Charioteer: ks.attr. charioteer (VS.); **khattar** charioteer (Pali); kha_ti_member of a caste of wheelwrights (H.)(CDIAL 3647). kattiri < khatri (G.) dialect of gujara_ti and the spoken language of the Saura_s.t.ras in the Tamil country (G.Madu.D. 74)(Ta.lex.) 1546.Weavers: kha_tri_member of a caste of Hindu weavers (G.); khat.ri_washerman, dyer (S.)(CDIAL 3647).

kat.ra_, kat.r.a_ = piece of ground enclosed and inhabited, market town, market, suburb (H.); kam.t.i_ = space near a village, ground near a mountain, neighbour- hood (Pkt.); kan.t.a = boudary of a village (Skt.); ka~_t.he = arable land near the edge of a hill (M.); ka_t.h = border, edge (M.)

kar.ru, kad.ru_buffalo calf (male or female)(Kur.); kat.a_male of sheep or goat, he-buffalo (Ta.); male of cattle, young and vigorous; child, young person (Ma.)(DEDR 1123). kat.a_ri = young, plump bull, heifer (Ta.); **kat.r.a_** = young buffalo (Ku.); kat.iya_ = buffalo heifer (H.); kat.hr.a_ young buffalo bull (H.)

kar.a_ (Kur.) kat.a_r (P.), kat.ha_ri (Tu.), kat.t.a_ri_ = knife (Pkt.) karttr.ka_ = knife, dagger (Skt.) mus.- kat.a_ri_ = dagger (Gaw.) ka_tr = scissors (L.)(IL 1674)



Signs 245, 246 + variants

kat.ra_, **kat.ra_a** = piece of ground enclosed and inhabited, market town, market, suburb (H.); **kam.t.i_** = space near a village, ground near a mountain, neighbour- hood (Pkt.); **kan.t.a** = boundary of a village (Skt.); **ka~_t.he** = arable land near the edge of a hill (M.); **ka_t.h** = border, edge (M.) cf. **kat.ai** shop, bazaar, market (Ta.); **kat.a** market (Ma.)(DEDR 1142).

kat.hra_ = a tub, a platter, a trough; **kat.a_ram** = cauldron (Ta.); **kat.a_ram**, **kit.a_ram** cauldron, boiler (Ma.); **kad.a_ya**, **kad.a_yi** large round boiler of copper, bell-metal, or iron (Ka.); **kad.a.ya** large copper vessel (Kod.); **kad.a~yi** boiler of bell-metal (Tu.); **kat.a_ha** boiler, cauldron, saucepan (Skt.)(CDIAL 2638);DEDR App. 22) **kat.hli**, **kat.li** a small wooden cup for holding oil (Santali) **kat.oro** a shallow cup (G.); **kat.ora_** (Skt.)

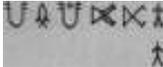
kat.hiya_ro a wood-cutter; one whose business is to split or sell fire-wood; **kat.hlo** household furniture(G.)

◀**ve_r.am** 'elephant' *sun.d.* 'an elephant's trunk'; **ve_la** 'fire sacrifice (yajn~a), *sund* 'a pit (furnace)' cf. *ku~n.d.* 'a pit'

◀**kamsa kol** 'jumping tiger'; **kamsa kol** 'bronze furnace'

Purpose of the seal m0304



m0304AC  2420

Reading: five furnace (**cu_la**)-types: **ra_n:ga** 'buffalo'; **ran: ka** 'tin', **badhia** 'boar'; **bar.ae** 'blacksmith'; **ibha** 'elephant'; **ib** 'iron'; **kol** 'tiger'; **kol** 'alloy of five metals'; **mlekh** 'antelope'; **milakkhu** 'copper'

The 'standing person' may be a sign, a part of the epigraph.

◀**ten:go**, **ten:gon** = to stand, upright position; **tetenic** 'a weaver'; **ten:goc** = responsible person; **t.en:goc** = a small axe; **t.a_n:gi** stone chisel

If this glyph of 'a standing person' (**ten:go**) is a stone chisel, it is likely that the other signs represent other tools of this *bad.hoe*, 'artisan', this owner of the seal. If so, the signs are used to represent two types of possessions:

27. through glyphs 'furnaces and other major tools-of-trade' ; and
28. through signs 'tools and weapons'.

Depiction of a pannier on a one-horned bull

What is being depicted orthographically is the waist-zone of the one-horned bull:

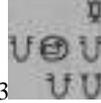
Glyph: **kamarasa_la** = waist-zone, belt (Te.) **kammaru** = the loins, the waist (Ka.Te.M.); **kamara** (H.); **kammarubanda** = a leather waist band, belt (Ka.H.) **kammaru** = a waistband, belt (Te.) **kammarincu** = to cover (Te.) **kamari** = a woman's girdle (Te.) **komor** = the loins; **komor kat.hi** = an ornament made of shells, resembling the tail of a tortoise, tied round the waist and sticking out behind worn by men sometimes when dancing (Santali) **kambra** = a blanket (Santali)

an.d.ia = rich; **adi maran: an.d.ia kanae** = he is very rich (Santali) **a_d.hya** = abounding in, rich in; rich, wealthy; arrogance (Ka.Te.); **a_d.hyata_** = arrogance (M.) **an.d.i** = a termination of respect, equivalent to sir (Te.) **ad.d.ha**, **ad.d.haka** rich (Pali); **ad.d.ha** (Pkt.) ; **a_l.hiya** wealth (Pali); **ar.ewa_ id.** (H.)(CDIAL 1108). **a_d.hiyo** = a merchant who keeps a large go-down of cotton; **a_t.a** = a heap (G.) **at.arvu** = thickness,

crowdedness; at.artti, at.arcci = closeness, crowdedness (Ta.); a.ta_ra = widespread, as the branches of a tree (Tu.); **ad.aru** = to increase; excess (Te.); at.t.ad.i, at.t.ava, et.t.am = packs of cut or fencing branches/bushes collected and piled up on bullock carts (Te.)(DEDR 84). **a_d.atiyo** = an agent; a_d.ata = agency, brokerage; Arabic. a_reyat 'borrowing' (G.) **taraku** = brokerage, fee, commission to a middleman (Ta.); brokerage (Ma.); taragu, taragari = broker (Te.)(DEDR 3090).



Mohenjodaro MIC, Pl. CVI,93 1093



kor.o Has. Syn. of ged.e, ger.e Nag. A domesticated duck, *anas domestica* (Mundari.lex.) ged.e = a duck (Santali.lex.) ka_ran.d.avamu = a sort of duck (Te.lex.) ka_ran.d.ava = a duck (G.lex.) Rebus: **got.i_** 'a lump of silver' (G.) [Note the ingot-shaped circle enclosing the 'duck' glyph]; **kod.** artisan's workshop (G.) Middle line of epigraph 1093: Middle glyph: **kor.o** 'duck'; substantive, rebus: **kod.** 'artisan's workshop' [alternative: **got.i_** 'silver ingot'] with two kan.d.kanka 'rim of pot', i.e. two altars or furnaces. Top line: **ken.t.a** 'carp fish'; rebus: **ke~r.e~** bell-metal, brass Bottom line: **kan.d. kanka** 'copper furnace' + two **pasra** 'sprout'; **pajhar.** 'furnaces'.

ko_lamu = a boat (Te.lex.) ko_l = a raft, a float (Ka.lex.) **kola** = boat (Skt.lex.) **kolimi** 'furnace' (Te.) **kol** 'metal, alloy of metals' (Ta.)

Substantive: *korn:ga* 'a Hindu caste of wood turners' (Santali)

Glyph: *kuran:ga* a deer in general (Skt.) *krusu* (pl. *kruska*), *kruhu* (pl. *kruhka*) barking deer, jungle sheep (Kui); *kurhu* antelope; *kruhu* (pl. *kruska*); *kluhu* antelope (Kuwi)(DEDR 1785). *karam.gi_* antelope (OG.); *kuran:ga* antelope (MBh.Pali); *kulan:ga* (Skt.); *kulun:ga* (TS.); *kurun:ga* (Pali); *kuram.ga* (Pkt.); *kuran:g* (P.); *kura~g* (G.); *kura~gi_*, *kura~gn.i_ f.* (G.); *kurun:ga* (Si.); *kiran:gu* the elk *rusa aristotelis* (Si.)(CDIAL 3320). *kuran:g* light chestnut colour (Kho.)(CDIAL 3321).

kuri antelope (Pa.); *kurs* deer, antelope (Go.); *kruhu*, *krusu* barking deer, jungle sheep (Kui); *kluhu*, *kruhu*, *kurhu* antelope (Kuwi); *kuran:ga* a species of antelope, antelope or deer in general (Skt.)(DEDR 1785).

Hare



Pict-42



h095



h332C



4885