

CHAPTER - V

PHONETIC

VALUE OF CURSIVE SIGNS

PHONETIC VALUE OF CURSIVE SIGNS BASED ON SEMITIC VALUE AND
THE RELATION BETWEEN INDUS AND BRĀHMI SYSTEM OF WRITING

INTRODUCTION

Although the total number of Harappan Script is 62 including pictures, they were reduced to 24 basic cursive forms (including two signs, one for man and the other for fish) in the Late Harappan Script (Fig. 43). The next step which Rao took was to evaluate the basic cursive signs. As made clear earlier a script with 62 basic signs as in the Mature Harappan system of writing can neither be pictographic nor logographic. It can only be phonetic, that is either syllabic or partly syllabic and partly alphabetic. Assigning phonetic value to Harappan signs needs much caution as the language is an unknown factor here. If one assumes a language and imposes a word value or phonetic value to a sign, basic or compound, objectivity is lost. S.R.Rao says it is better to proceed from the known to the unknown that is to give the phonetic value of comparable signs in an already deciphered contemporary or almost contemporary phonetic script. The nearest comparable Script is the Semitic Script of the 15th - 10th century B.C. (1).

SEMITIC SCRIPT

Semitic Script includes the writing of the people speaking Phoenician, Hebrew and South Arabic languages and generally known as the Old North Semitic and South Semitic Scripts. Rao has taken the earlier forms of the Semitic

Phonetic value given to basic cursive signs of Indus Script identified as such by Rao.

No.	Indus cursive sign	Phonetic value
1	U	ə
2	V	k
3	└	g
4	^	
5	∧	t
6	x	
7	○	th
8	D, Δ	ɸ
9	√, J	n
10), }	
11	○	p
12	◇	
13	□, 9	b
14	κ	m
15	p	r
16	Y	v
17	↑	's
18	W	sh
19	≡	s
20	E	h
21	⊖, H, H, H	h
22	卍	h
23	人	r
24	人	's

FIG .43

Comparative study of the semitic, Harappan and Late Harappan signs (S. R. Rao)

No.	phonetic value	Old North Semitic	Harappan sign	Late Harappan sign
1	b	□ 𐤁	□ 𐀁	□
2	g	^ 𐤂	^ 𐀂	^
3	d	Δ 𐤃	Δ 𐀃	Δ 𐀄
4	h	𐤄 𐤅	𐀅 𐀆	𐀇
5	w	Y 𐤆	Y 𐀈	Y 𐀉
6	h	𐤇 𐤈	𐀊 𐀋 𐀌 𐀍	𐀎
7	th	⊙ 𐤉	⊙ 𐀏	⊙
8	k	∨ 𐤊	∨ 𐀐	∨ 𐀑
9	s	𐤋	𐀒	𐀓
10	ay	⊙ 𐤌	⊙ 𐀔	⊙
11	p) 0 𐤍	0 𐀕) 𐀖	0 𐀗 𐀘
12	r	𐤎 𐤏	𐀙	𐀚
13	sh	W 𐤐	W 𐀛	W 𐀜
14	t	+ X 𐤑	X 𐀝 𐀞	𐀟
15	n	S 𐤒	S 𐀟	𐀠
16	's	𐤓	𐀠 𐀡 𐀢	𐀣
17	h	𐤔 𐤕	𐀣 𐀤 𐀥	𐀦
18	a	A 𐤖 𐤗	U 𐀧 𐀨	U 𐀩
19	m	𐤘	X 𐀪 𐀫	X 𐀬
20	r		𐀭 𐀮	𐀯
21	s		𐀰 𐀱	𐀲

FIG. 44

alphabetic signs traced in the Sinaitic or Proto-Arabic Script (Driver, G. R., 1976) and also taken (Fig. 44) the Gezer, Sechem, Laschish, Tellel-Hesy and Der Alla inscriptions. As many as 17 (excluding U) and their variants out of 24 cursive signs (including 'man' and 'fish' signs) (Fig. 44) and their variants in the Indus writing are identical with 17 semitic signs and their variants. It is, therefore, reasonable to assign to Indus cursive signs the same phonetic value which identical signs in Semitic Script have. It may also be noted that the Harappan and Semitic cursive scripts are both written leftward. In the days of the Mature phase of the Harappan culture (2400 - 1900 B.C.) the Indus merchants had their colonies in Bahrain, Ur, Kish, Brak and Arpachiya. The Bahrain seals of 2000 B.C. carry Indus cursive signs⁽²⁾. Recently in 1985 a round seal with a short-horned bull motif and Indus Script was found in Bahrain excavation by the Indian Archaeological team and a Bahrain seal without script occurs in Lothal. King Sargon of Agade (Mesopotamia) says that the ships from Dilmun Magan and Meluhha were anchored in Agade (near Babylon) Meluhha is often identified with the Indus region. Harappan colonies were found in Bahrain, Failaka, Ur and further north in Mesopotamia⁽²⁾.

Seventeen signs of the Late Harappan writing being graphically similar to the Semitic Script, the former have been given the same value, i.e. b (□, ϑ), g (∧, †), d (D, Δ), h (⚡, †), w (Υ, γ), h (⊖),

th ($\textcircled{0}$, $\textcircled{\oplus}$), k (Ψ , $\textcircled{\cup}$), n ($\sqrt{\text{}}$, $\textcircled{\rho}$), s ($\textcircled{\#}$),
 ay ($\textcircled{0}$, $\textcircled{\circ}$), p ($\textcircled{}$, $\textcircled{\diamond}$), r ($\textcircled{\beta}$), sh (\textcircled{W} , \textcircled{W}),
 t ($\textcircled{+}$, $\textcircled{\wedge}$, \textcircled{X}), s ($\textcircled{\text{H}}$) and h ($\textcircled{\text{H}}$) by Rao⁽³⁾.

Out of four Late Harappan and Harappan signs occurring frequently namely $\textcircled{\cup}$, $\textcircled{\times}$, $\textcircled{\rho}$, $\textcircled{+}$, two basic ones ' $\textcircled{\cup}$ ' and ' $\textcircled{\times}$ ' bear resemblance to the Semitic signs (Fig. 44). Hunter⁽⁴⁾ and other scholars have argued that signs ' $\textcircled{\cup}$ ' and ' $\textcircled{\Psi}$ ' are different in value but ' $\textcircled{\Psi}$ ' appears to be an accented form of ' $\textcircled{\cup}$ '. Sign ' $\textcircled{\Psi}$ ' occurs more frequently than its basic form ' $\textcircled{\cup}$ '. Its frequent occurrence with almost every other signs shows that it was used for spelling out words and in a number of compound signs as a medial vowel. The value assigned to ' $\textcircled{\times}$ ' in the Semitic writing is ' $\textcircled{\text{a}}$ '. In the Harappan and Late Harappan writing too ' $\textcircled{\cup}$ ' is given the value ' $\textcircled{\text{a}}$ '. With this value it acts as a vowel helper. The Hittite sign, ' $\textcircled{\cap}$ ' has the value a and in Brāhmi it is doubled ' $\textcircled{\text{H}}$ ' to form open a. The basic sign ' $\textcircled{\times}$ ' can be compared to the South-Semitic sign ' $\textcircled{\gamma}$ ' (Driver Fig. 44) with the value 'm'. Hence the same value is given to Harappan and Late Harappan sign ' $\textcircled{\times}$ '.

The Harappan and Late Harappan signs ' $\textcircled{\diamond}$ ', ' $\textcircled{\circ}$ ' and ' $\textcircled{)$ ' are given the phonetic value ' $\textcircled{\text{p}}$ ' because of their identity in graphic form with Semitic signs which have the value 'p'. As in Semitic the Harappan Script had two or three alternative signs for the same sound. It may be noted here that although 22 signs are identified as the basic

cursive signs by Rao (Fig. 22), however, the phonetic value was given only to 21 signs. The phonetic value of the sign, '  ' could not be given due to lack of supporting evidence.

In the first instance, the simple Late Harappan and Harappan inscriptions which contain only those cursive signs which are identical with Semitic signs are read and the language is determined on the basis of the phonetic value given to them. S.R.Rao has identified the language of 137 cursive inscriptions as belonging to the Indo-European family with close affinity to Old-Indo-Aryan. Though the Semitic value is given to Harappan signs the language is non-Semitic because the medial and initial vowel signs which are absent in Semitic writing are present in Indus writing. The Harappan cognates thus read are eka, daś, happt and śata for one, ten, seven and hundred. Other words such as śās - 'ruler', pa - 'protector', maha = great are all Indo-Aryan words. According to Rao the suffixes a, ae (e) and ah/ha are used for indicating the instrumental dative and genitive cases respectively. There are no signs for palatals and cerebrals but the use of conjunct consonants (Samyukta aksharas) suggests that the Indus language does not belong to the Dravidian family⁽⁵⁾. The commonly occurring Indus words pa/pā = 'protect' pak = guardian, śada = eminent, śah = victorious, da = give, bhaga = bountiful or lord or god, maha = great, pava = pure etc. are used by Harappan in the same sense in which they are used in OIA.

On the basis of the above illustration of phonetics of various signs some of the inscriptions are read (Fig. 45 - 47).

No.	Inscriptions	Reading	Site	Source
1		= <u>P</u> - <u>ā</u> = <u>pā</u>	HP	Vats (Lxxxv, 18)
	Protector or protect			
2		= <u>ma</u> - <u>ā</u> = <u>mā</u>	HP	Vats (c, 709)
	Great, <u>ma</u> is the abbreviation of 'maha' <u>Ma</u> = 'Protector,' build (RV)			
3		= <u>śa</u> - <u>da</u> = <u>śada</u>	HP	Vats (Lxxxix 149)
	'eminent			
4		= <u>Pag</u> - <u>da</u>	HP	Vats (Lxxxix 129)
	<u>Pag</u> = Strong or mighty <u>da</u> = Giver "strong giver" or "mighty giver"			
5		= <u>Pa</u> - <u>da</u> - <u>ha</u>	HP	Vats (xcv, 422)
	= 'Protector of giver'			
6		= <u>Pa</u> - <u>ka</u> = <u>paka</u>	HP	Vats (Lxxxix 165)
	'Guardian' or 'Protector'			
7		= <u>Ppr</u> = Protector	HP	Vats (xci, 246)
	√ <u>Pr</u> = Protector (RV)			
8		= <u>Pak</u> - <u>ā</u> = <u>pakā</u>	MD	Marshall (CIX, 217)
	= Guardian or Protector			
9		= <u>bhag</u> - <u>ā</u> = <u>bhagā</u> = bountiful or God	MD	Marshall (cx, 279)

FIG. 45

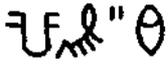
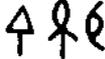
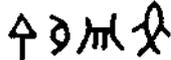
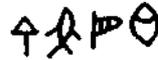
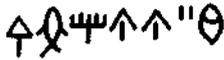
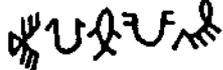
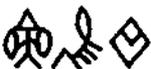
No.	Inscription	Reading	Site	Source
10		= <u>Pa</u> - <u>bhag</u> - <u>ā</u> = <u>pa</u> - <u>bhagā</u> 'Protector - Lord'	MD	Marshall (CIX, 232)
11		= <u>pa</u> - <u>sa</u> - <u>da</u> = <u>pa</u> - <u>sada</u> = protector- eminent	MD	Marshall (CIX, 225)
12		= <u>śa</u> - <u>ha</u> - <u>pa</u> - <u>da</u> = <u>saha</u> - <u>pa</u> - <u>da</u> <u>saha</u> = Ruler, <u>Pa</u> = protector, <u>da</u> = bestower Ruler, Protector, bestower	MD	Marshall (CVIII, 176)
13		= <u>pa</u> - <u>ra</u> - <u>śa</u> - <u>da</u> = <u>para</u> - <u>śada</u> chief or supreme, eminent <u>para</u> = chief or supreme (RV), <u>śada</u> = eminent	MD	Marshall (CVI, 103)
14		= <u>pa</u> - <u>śa</u> - <u>śa</u> - <u>ha</u> - <u>ś</u> - <u>da</u> = <u>pa</u> - <u>śasa</u> - <u>ha</u> - <u>śada</u> protector of commander- eminent <u>śasa</u> = commander	MD	Marshall (CIV, 32)
15		= <u>bhag</u> - <u>ā</u> - <u>śa</u> - <u>a</u> - <u>mhh</u> = <u>bhagā</u> - <u>śā</u> - <u>mhh</u> Lord - ruler - great ✓ <u>śah</u> = ruler, <u>mhh</u> = maha = great	MD	Marshall (CVII, 119)
16		= <u>pa</u> - <u>bhag</u> - <u>papr</u> Protecting - Lord - protector	MD	Marshall (CXV, 557)
17		= <u>p</u> - <u>ā</u> - <u>hā</u> = <u>pā</u> - <u>hā</u> = of protector	HP	Vats (XCV, 379)
18		= <u>aś</u> - <u>hhak</u> - <u>ā</u> = <u>Aśhhaka</u> = Aśvaka, Aśvaka is the name of a person	Lothal	S. R. Rao (CXXV, 14)

FIG. 46

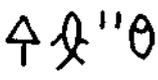
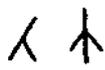
No.	Inscription	Reading	Site	Source
19		= <u>bhag</u> - <u>ā</u> = <u>bhagā</u> = Lord or God	Lothal	S. R. Rao (cxxv, 10)
20		= <u>Pa</u> " - <u>śa</u> - <u>da</u> = <u>Pa</u> " - <u>śada</u> Protector eminent. (<u>śada</u> = eminent)	Lothal	S. R. Rao (cxxv, 12)
21		= <u>ppr</u> = protector	Lothal	S. R. Rao (cxxv, 2)
22		= <u>eka</u> - <u>ka</u> = supreme (Unique)	MD	Marshall (cIII, 7)
23		= <u>trika</u> - consisting of three	MD	Mackay (215)
24		= <u>Sas</u> - <u>ka</u> = consisting of six	MD	Marshall (243)
25		= <u>hapta</u> - <u>ha</u> - Seven fold	MD	Marshall (25)
26		= <u>śa</u> - <u>t</u> = <u>śata</u> = hundred	MD	Mackay (692)

FIG. 47

After reading the above inscriptions the following meaningful phonemes are obtained : Pa = Protector, maha = Great, Śada = eminent, Pag - da = mighty or strong giver, Pa - da - hae = 'Protector of giver' Paka = Guardian, ppr = Protector, bhaga = Lord, Pa - bhaga = Protector, Lord, Pa - Śada = Protector-eminent. Saha - Pa-da = ruler - Protector, bestower, Para - śada = chief or Supreme eminent, Pa - 'śa'śa - ha - 'śada = 'Protector of commander - eminent', bhaga - sa - maha = Lord - ruler, great, Pa-bhag - Papp = 'Protecting Lord Protector' Pa-ha = 'of Protector' aś-hhaka = Aśvaka is a name of a person, eka - ka = Supreme, tri - ka = consisting of three, Sas - ka = consisting of six, hapta - ha = sevenfold, Śata = hundred. The sequence of these phonemes are very meaningful. All these words are found to be common to the Rg. Vedic language. Etymological studies of Vedic as well as Harappan words indicated that there are many common words among them which are almost similar from the point of their semantics and the clear distinction between voiced and unvoiced language. As most Indus words corresponds in form and meaning to the words in the Rg. Veda its language can only be Indo-European although the phonetic value has been given similar to the Semitic Script. One may wonder how this could happen when the basic cursive signs are given the phonetic value of Semitic signs. The medial 'U' (a), 'U' (ā), 'UF' (ae), 'UF' (ao) and initial vowels (U) (Pa), (U) (Pā), (U) (Pae) signs which are absent in Semitic writing are present in Indus writing.

An assumed language namely Proto-Indo European is suggested by some scholars. On the basis of a scrupulous study of the language of the Rg. Veda and Old Iranian, a proto Aryan may be suggested for the Indus language. This proto-Aryan itself may be considered as part of the Proto-Indo-European. A similar approach has been implemented by Rao⁽³⁾ on the basis of a comparative study of the vocabulary and grammatical features of the Harappan language with those of the Rg. Veda.

Moreover, the study of the religion and culture common to the Harappans as well as Rg. Vedic people⁽⁶⁾, has clearly indicated that the Harappan language is an earlier form of the Indo-Aryan language. It has also been noticed that the materialistic approach and spiritual life of the Harappan and Rg. Vedic people are very much alike as evidenced from their inscriptions and archaeological objects. There are many such evidences discovered at Lothal⁽⁷⁾ and Kalibangan⁽⁸⁾ in the form of altars built for fire-worship and animal sacrifice in Harappan levels that clearly indicates the ritual activities of the inhabitants usually attributed to the Aryans. The same kind of fire-worship was found to be observed in Rangpur⁽⁹⁾.

All these evidences and comparative studies of the Harappan language and the language of the Vedas encouraged us to interpret that the Harappan belongs to the Indo-European family. The Harappan and another Indo-European languages i.e. Hittite have certain common features namely preservations of ' h '. Another important features of the Harappan scribes

is the use of separate signs for voiced and voiceless stops namely 'k', 'g', 't' and 'd', 'p' and 'b' which are found to be distinguished in Tamil⁽¹⁰⁾. The outcome of all these studies and evaluation is that the Harappan language can be recognized as an earlier form of the language of Vedas.

After reading Indus inscriptions in which signs identical with Semitic signs occur, other inscriptions involving the use of non-Semitic signs of 'man' (𑀢) and 'fish' (𑀣) are read. Both are fully accented and their phonetic character is not in doubt.

As the Indus language is found to be akin to OIA, the man (𑀢) sign is given the value 'r' by Rao on acrophonic principle from the word nr/nara used for man in the Rg. Veda. Phonetic value derived from alternate words for man in OIA e.g. 'm' from manushya does not make sense when the inscriptions with this sign are read. e.g. p + m = pm meaningless, but p + r = pr (𑀢⁰) means 'protect' in Rg. Veda. Similarly, dr = pierce (RV), tra = save, rk = worship, praise (RV), rad = Shine (RV), ram = 'enjoy' etc.

The 'fish' (𑀣) sign is given the value 's' derived from 'Śakula' or 'Śafari' a variety of fish referred in Rg. Veda. The words with 'fish' sign read Śās = Punish (RV), 'Śak = 'be powerful' (RV), 'Śama = calm (RV), 'Śaka = be powerful (RV). 'Śah/Śāh = 'be victorious', 'Śada = 'triumphant' or 'eminent' (RV).

RELATION BETWEEN INDUS AND BRĀHMI SYSTEM OF WRITING

Many scholars have attempted to find correlation between the Indus Script and the Brāhmi Script which was of no use in the 5th century B.C. whereas the Indus Script is known to occur on seals, pottery etc. upto 13th century B.C.

The earliest Brāhmi characters occur in the piprahwa casket inscription which is assigned to 450 B.C. The Bhattiprolu inscription is also considered as Pre - Aśokan.

The Brāhmi Script appearing in the Aśokan inscriptions is already a beautiful and finished alphabet and exhibits no sign of adolescence or imperfection. This fact leads us to infer that writing had a long history before Aśokan inscriptions.

Langdon⁽¹¹⁾ suggested that the early syllabic alphabet of northern India, known as Brāhmi Script from which all later characters were derived is most probably a survival of the early pictographic system of the Indus valley. Hunter⁽⁴⁾ has tried to show that the Brāhmi Script descended from the Harappa Script. He has traced out the signs of Brāhmi from Indus Valley seals to a tentative affinity between the two. He ventured to suggest vowel signs on this very basis. Both Hunter and Langdon argued for a syllabic system in Harappan writing. But the time lag between the disappearance of the

civilization of Mohenjo-daro and the first appearance of Brāhmi is too great to make a direct descent probable. R.B.Pandey⁽¹²⁾ another advocate of the indigenous origin of Brāhmi believed that the Brāhmi characters were invented by the genius of Indian people and were derived from pictographs, ideographs and phonetic signs, the earliest specimens of which are to be found in the Indus valley inscriptions. D.C.Sircar⁽¹³⁾ thought that the Brāhmi alphabet seems to have been derived from the pre-historic Indus valley Script. On the other hand A.H.Dani traces the origin of Brāhmi to Aramaic Script⁽¹⁴⁾.

Despite the chronological gap between the latest Indus cursive writing of Mohenjo-daro, Rangpur, Lothal, Bet Dwarkā (BDK) and Daimabad (16th - 13th century B.C), on the one hand the Brāhmi Script of Aśokan and Piprahwa inscriptions on the other, as many as 10 Indus cursive signs including 'E' which has a different value and 'b' which occurs only in BDK inscription have a close graphic resemblance to those of Brāhmi alphabets (Fig. 48). But a few more signs which do not occur in Indus cursive writing seem to have been introduced into Brāhmi Script same time in the post Harappan phase.

Secondly, the signs for Cerebrals and Palatals which the Indus Script had not yet developed, occur frequently in Brāhmi. An indication of this intermediate stage is vaguely discernible in the Daimabad signs on pottery. It is observed that 17 cursive signs are common to the Indus and Semitic script and 10 Indus signs are analogous to those in

Brāhmi Scripts. The principle of accenting and formations of conjunct consonants are common to both. Since the Indus Script is earlier than the Semitic it is obvious that the latter borrowed signs from the former for their consonantal value. Brāhmi too must have borrowed some and added some more. Some scholars are of the view that Brāhmi was locally developed out of the Indus valley system. This hypothesis may not be wrong but how new signs were added in Brāhmi needs to be explained. Perhaps the day is not far when this also can be proved through the Megalithic signs provided as in Sanur they suggest word formation.

The non-pictorial cursive of Late levels of Lothal, Mohenjo-daro and Rangpur occurs in simplified form in the Jhajjar seal, Daimabad pottery and Sanur inscriptions providing some links here and there with the Indus and Brāhmi Script.

The discovery of the Proto-historic inscription at Bet Dwarkā by the Marine Archaeology centre of the National Institute of Oceanography in 1984 is a land mark in the evolution of writing⁽¹⁵⁾. As inscribed sherd of a votive jar of sturdy red ware was found from the intertidal zone of the site BDK - I -II. There are seven distinctly inscribed characters above the shoulder of this wide mouthed jar. Out of seven, six letters are identical with the Late Harappan characters, one of which (i.e. the fourth from left) is a combination of two signs one of which is Late Harappan. Sign for 'ga' and the other is a non-Harappan sign resembling the

Brāhmi signs for 'b' for 'ca'. The inscription runs from left to right as in most Aśokān Brāhmi inscriptions. All the signs except the compound sign bear close resemblance to the Semitic (Phoenician) letters on the one hand and Late Harappan on the other. The last three signs and part of the fourth are analogous to Brāhmi characters. The repetition of the sign in the Bet Dwarkā inscription shows the continuance of the Harappan tradition.

This 'jar' with the inscription belongs to the Late or Post-Harappan period. The date of the inscription is assigned to the 15th century B.C. because similar jar is found in association with the Lustrous Red ware at Bet Dwarkā which is dated 1500 B.C. (Rao, 1991). Its significance lies in corroborating evidence from Rangpur and Daimabad besides Mohenjo-daro and Lothal about evolution of the Indus Script and its use in simplified form in the Vedic and Epic periods. It also points to the fact that the Brāhmi Script was derived from the Late Harappan Script. Thus the discovery of the Bet Dwarkā inscription has helped on in forging one more link between the Indus and Brāhmi Script.

Comparison of the signs of Late Harappan, Bet Dworkā and
Asokan Brōhmi

	Late Harappan (1900 - 1500 B.C.)	Bet Dworkā (1300 B.C.)	Asokan Brōhmi (3rd Century B.C.)	
b	□		□	ba
g	∧	□ g	∧	ga
d	Δ D		D	dha
h	≡ E	≡ <	E	Ja
th	⊙		⊙	tha
p)	∩ pā	∩	pa
sh	W	∩ s.	∩	sa
t	∧		∧	ta
s	↑		↑	śa
m	⋈	g m	∩	ma
		d ca	d	ca

FIG. 48

REFERENCES

1. Driver, G.R. (1976) - Semitic writing, 3rd edn. OUP, 104-106, 139-140.
2. Rao, S.R. (1986) Trade and cultural contacts between Bahrain and India in the 2nd and 3rd Millennium B.C. Bahrain through the ages (ed): Haya Ali Khalifa and Michael Rice. pp, 376 - 382.
3. Rao, S.R. (1982) The Decipherment of the Indus Script, Asia publishing House, Bombay. pp, 24 - 31.
4. Hunter, G.R. (1934) The Script of Harappa and Mohenjodaro and its connection with other scripts. London. pp, 466 - 503. .
5. Ritti, Srinivas (1985) The Decipherment of Indus Script- the state of the art : Pub. In: Manjusha, S.R.Rao's 60th birth day felicitation volume. Gnanajyothi Kalamandir, Bangalore. pp, 1 -18.
6. Rao, S.R. (1991) Dawn and Devolution of the Indus Civilization. Delhi, pp, 220-281.
7. Rao, S.R. (1973) Lothal and the Indus Civilization. Bombay. pp, 135 - 143.
8. (a) Lal, B.B. (1979) Kalibangan and the Indus Civilization. Essays in Indian Proto-history (ed) Agrawal, D.P. et al., 65-97.
(b) Thapar, B.K. (1973) New traits of the Indus Civilization at Kalibangan : An appraisal south Asian

- Archaeology (1972) (ed) Norman Hammond, London. pp, 85 - 134.
9. Rao. S.R. (1963) Excavations at Rangpur and other explorations in Gujarat: Ancient India No. 18-19 (Delhi) 2-207.
10. Hand book on the second world Tamil Research Conferences (in Tamil), Madras, 1968, pp, 14-15.
11. Langdon, S. (1931) Mohenjo-daro and Indus Civilization. vol -II (ed) by Marshall, p-423.
12. Pandey, R.B. (1952) Indian Palaeography Part I, p-50. Motilal Banarsidas, Banaras.
13. Sircar, D.C. (1957) Inscriptions of Asoka, p-25. New Delhi.
14. Dani, A.H. (1963) Indian Palaeography, Oxford. pp, 12 - 20.
15. Rao, S.R. (1987) Progress and prospects of marine archaeology in India, First Indian Conference on marine archaeology of Indian Ocean countries. Goa , pp, 48-53.