The reconfirmation and reinforcement of the Indus script thesis: A logical assessment and inquiry as to the elusive and enigmatic nature of this script

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Abstract

The earliest known example of an Indus seal dates to 1873 in the form of a drawing published by Alexander Cunningham. Since then, thousands of examples of the Indus script have been discovered, and the Indus script has been subject to very serious analysis by many scholars from all over the world and still continues to fascinate, enchant and frustrate innumerable researchers who have made many a vain attempt to understand its true nature and meaning. The nature of the Indus script remains elusive and there are currently many different schools of thought – some think it represented a Dravidian language, some think it represented an Indo-Aryan language, while some are convinced it belongs to a third language group. Some argue that it represented a language while others argue it was only a complex ‘symbol system’, either with or without a linguistic content. In an earlier paper, ‘Syncretism and Acculturation in Ancient India; A new Nine Phase Acculturation model explaining the process of transfer of power from the Harappans to the Indo-Aryans’, which was published in two parts in the ICFAI Journal of History and Culture (January 2009 and 2010), we proposed methods to reconstruct the languages of the Harappans with ‘smoking guns’, and concluded that the Harappans spoke neither a Dravidian language nor Sanskrit but were intensely multi-linguistic and spoke several languages which included remote ancestors of languages which much later came to be known as Prakrits. In this paper, we take a parsimonious approach with regard to the Indus script, attempt to understand its nature, examine the logical flaws of current theories with regard to the Indus script and conclude that it is impossible to draw any hasty conclusions about the nature of the Indus script without building rock solid theoretical models and that the Indus script issue is probably less simple than the most simplistic of theories make it out to be. More importantly, we also refute ‘Sproat’s smoking gun’ which cannot prove that the Indus writing system was not stable, that is was not a writing system or that it did not have a linguistic component. We will conclude, that all things considered, further research is only likely to reinforce the idea that it was a logo-syllabic script and that any other scenario is highly unlikely.
Overview of the Indus Valley Civilization

The Indus Valley Civilization or Harappan Civilization was an Old World Bronze Age civilization (Early phase 3300–2600 BC and mature period 2600–1900 BC) which covered the north-western part of the Indian subcontinent and the surrounding regions including the whole of Pakistan, the north-western states of modern-day India, southeastern Afghanistan and the easternmost part of Balochistan, Iran and was the largest among the old world civilizations and in some respects the most sophisticated. Understanding the periodization of the Indus Valley Civilization would be of utmost importance in understanding the concepts explained in this paper, and this is given below:

<table>
<thead>
<tr>
<th>Period</th>
<th>Phase/Phase-Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Harappan</td>
<td>3300–2800 BC</td>
</tr>
<tr>
<td></td>
<td>Harappan 1 (Ravi Phase)</td>
</tr>
<tr>
<td>Mature Harappan</td>
<td>2800–2600 BC</td>
</tr>
<tr>
<td></td>
<td>Harappan 2 (Kot Diji phase, Nausharo I, Mehrgarh VII)</td>
</tr>
<tr>
<td></td>
<td>2600–2450 BC</td>
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<tr>
<td></td>
<td>Harappan 3A</td>
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<td>2450–2200 BC</td>
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<tr>
<td></td>
<td>Harappan 3B</td>
</tr>
<tr>
<td></td>
<td>2200–1900 BC</td>
</tr>
<tr>
<td></td>
<td>Harappan 3C</td>
</tr>
</tbody>
</table>

Approach followed in this paper

*It is like playing a game of ‘treasure hunt’. There are clues hidden in all kinds of places, and when you find a clue, it leads you to the next and slowly, step by step, you arrive at the treasure.*

- Romila Thapar

The approach followed in this paper is to build on the very detailed and apposite work done by scholars in the recent past, most notably by Korvink and others¹, and present a theoretical framework which can help in researching the Indus script (or ‘script’!). We will also argue that any claims regarding the decipherment of the Indus script or any claims that sweeping assertions about the Indus script can be made must be met with a considerable degree of skepticism and suspicion and instead state that future progress can come only from building better and solid theoretical models and not from drawing any hasty or a priori conclusions. This is also important given the fact that only a small portion of the IVC has been excavated.

We will also conclude that

1. It is impossible to draw any meaningful conclusions about the Indus script without building rock solid theoretical models and improving them as data expands.
2. The very reasonable theoretical possibility that longer texts existed in the Indus does not in any way conflict with any existing historical models.
3. The theoretical possibility that texts of the Mesopotamian type existed in the Indus in isolated pockets does not in any way conflict with any existing historical models.
4. Even Sproat (personal communication with the author) i.e. who describes them as ‘Canting Arms’ and Witzel (Kyoto, 2009) i.e. who describes them as ‘Occasional puns’ agree that the Indus system could have had a linguistic content. This qualifies it for full literacy i.e. Rebus Principle and Acrophony. We must also take into account the widespread usage of the script also and the fact that it was central to Indus society.
5. The very reasonable possibility that the Indus script itself qualifies for full literacy as stated above and not proto-literacy does not conflict with any existing historical models either.

¹ *The Indus script: A positional –statistical approach, Michael Korvink, 2007*
6. Farmer et al have said nothing substantially new. Even Asko Parpola has been researching the Indus script as logograms with a linguistic component. So Farmer et al and Parpola et al are probably saying largely the same thing with hardly any differences!

7. It would be naïve to assume, due to several reasons that will discussed in the paper, that the Indus script issue is as simple as it appears to be or is made out to be, due to various factors that will be discussed in the paper and as mentioned previously better theoretical models would be the key to better research.

8. There are many theoretical possibilities we cannot overlook and identifying research strategies would also be extremely important.

9. We must also bear in mind the fact that only a very small portion of the IVC has been excavated, and many cities have not been excavated at all i.e. Ganweriwala, Rakhigarhi and only a very small portion of cities like Mohenjodaro has been excavated. Therefore, any hasty conclusions must be viewed with some degree of skepticism.

10. Much more importantly, we will conclude that the Indus script is indeed a writing system, as all Western and Indian scholars have always known or assumed. Anyone who wants to prove that it is not a writing system will have to refute all the points raised in this paper. We will also discuss why Sproat’s smoking gun cannot be used to test the complexity, maturity and stability of the system or prove that it did not have a linguistic component. The refutation of Sproat’s smoking gun is an important part of this paper.

11. We will also include a discussion of writing implements and writing materials. While the existence of books and literature in the Indus has only been seen as a remote possibility, this does not rule out the possibility of longer documents used as administrative or accounting records. We will show that the possibility of longer records existing for at least accounting and administrative use does not conflict with any theories pertaining to writing implements and writing materials either.

12. We must strongly condemn any attempts misuse terms pertaining to ‘literacy’, and using a similar logic can instead even declare the Indus to be one of the most literate civilizations on earth, though both parties could still be saying the same thing. Terminology pertaining to literacy cannot be changed unless all scholars agree and demands to change terminology must naturally be met with suspicion. As a matter of fact the Indus possesses a unique interpretation of literacy, not found in contemporary societies, going both by the mass production of writing and the presence of a signboard, none of which have been observed in contemporary civilizations.

We will also lead readers through a path of introspection, and readers will themselves conclude towards the end of the paper that the Indus script issue is not as simple as it appears and that the non-existence of longer texts is a very unlikely scenario.

Circumstances which gave birth to the Indus script: Understanding the transformation of the early to the mature Harappan phase 2600 BC

The transformation from the Early Harappan phase is not well-understood but most researchers accept it was breathtakingly rapid and occurred within a period of less than a century.

Gregory L Possehl states: ²

“The immense differences between the Indus civilization as compared to the early Harappan can be seen as a replacement of the older early Harappan symbolic system with a new order and way of life. The Indus peoples turned their backs on their own past and replaced it with this and a new order and way of life. Archeologists see this new order or ideology expressed in

new signs and symbols such as new architecture, artifacts, town planning, innovations, technology and the like.

We do not know very much about the Early Harappan mature Harappan transition. The mature Harappan has a suite of artifacts and technologies that are quite different from the early Harappan, can be seen as a replacement of the older early Harappan symbolic system with a new order and way of life."

Gregory L Possehl quotes A Ghosh in the same book who states:

“Ghosh notes that “at present, the nucleus of the Indus civilization appears to spring into being fully developed... like other revolutions, the Indus civilization may in origin best be visualized as the sudden offspring of opportunity and genius. In a discussion of the development of the Harappan civilization, he observed that “ all such changes, vast as they are, could easily take place in a generation or two”"

Likewise, Possehl quotes SP Gupta who states:

“The trouble is, as wheeler has rightly observed, the urban growth of the Indus kind is usually so sudden and quick that within a generation or two it may spread over a vast area, but the archeological tool as applied to proto-historic sites is too blunt to bring out the evidence of this kind. “

J. – F. Jarrige states:

“In a discussion of his excavations at Nausharo, Jean Francois Jarrige observed, “The elements of continuity between the end of period I and the beginning of period two are such that they have very little room for a time gap between them. This suggests that the emergence of the mature Harappan civilization must have been very rapid. “

M Jansen holds the following view of Mohenjodaro

“If it was - during its urban phase, - a planned platform based city, then it would indicate an enormous step not only politically, but only financially and organizationally regarding the efforts to construct it. This step would have coincided with the appearance of seals, script, burnt-brick technology, hydrological technology such as circular wells constructed with wedge-shaped bricks, drains and bathing platforms. We are dealing with a rather small time gap of not more than 80 years where all these elements must have been developed."

Jansen’s colleague M.Cucarzi notes,

“Jansen’s thesis is therefore that Mohenjodaro represents the moment in which the urban phase explodes in the Indus civilization and, that in order to build Mohenjodaro, they constructed gigantic clay or mud platforms to raise its base level, mainly to protect themselves from the recurrent flooding of the Indus.”

The Harappans executed some of the most complex engineering projects in the Ancient World by 2600 BC and the use of a far more complex system than that is currently known or assumed would have made their tasks simpler.
Fig 1. The City of Mohenjodaro, probably planned before the last brick was laid

Fig 2. Given a choice, which option would you choose, the easy way or the hard way of doing things? Would you choose a horse-carriage when a motor car is readily available?

Massimo Vidale, in his paper, The Indus script encodes language, quote Frenez and Tosi (forthcoming) as follows:

"The socio-economic framework of the Indus civilization was complicated by its polycentric organization of production, distribution that were not administered by a central single agency. The urban structures and the settling of the Indus settlements confirm that they were not managed by a palace or temple, in a monopoly system like Mesopotamia and the Middle East. It seems therefore impossible that the administrative organization of the Indus Civilization did not make continuous and systematic recourse to the record of commercial transactions and to the signature of contracts and to the proto-notorial deeds. It would be trivial therefore to debate about the possibility that an economic and productive system of this magnitude was developed and consolidated only on the basis of spontaneous and mutual transactions."

As Iravatham Mahadevan points out in the article ‘The Indus ‘non-script’ is a non-issue’ in The Hindu May 3 2009.

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3 The Indus script encodes language, Massimo Vidale, East and West
4 ‘The Indus ‘non-script’ is a non-issue’, Iravatham Mahadevan, The Hindu May 3 2009
The Indus was by far the largest civilization of the Ancient world during the Bronze Age (roughly 3000 – 1500 BCE). It extended all the way from Shortugai in North Afghanistan to Daimabad in South India, and from Sutkagen Dor on the Pak-Iran border to Hulas in Uttar Pradesh — together more than a million sq km in area, very much larger than the contemporary West Asian and Egyptian civilizations put together.

The Indus civilization was mainly urban, with many large and well-built cities sustained by the surplus agricultural production of the surrounding countryside. The Indus cities were not only well-built but also very well administered with enviable arrangements for water supply and sanitation (lacking even now in many Indian towns).

There was extensive and well-regulated trade employing precisely shaped and remarkably accurate weights. The beautifully carved seals were in use (as in all other literate societies) for personal identification, administrative purposes, and trading. Scores of burnt clay sealings with seal-impressions were found in the port city of Lothal in Gujarat attesting to the use of seals to mark the goods exported from there. Indus seals and clay-tag sealings have been found in North and West Asian sites, where they must have reached in the course of trading.

We would also like to conclude

It seems rather implausible that when the Harappans were able to devise symbols for all their conceivable needs and enforce them over a vast region and on large populations in a manner that was without parallel in the entire ancient world, and given the fact that the quantum of archeological data currently available is relatively small in relation to the known size of the IVC, that they were not able to, or at least had ever felt the need to, at the very minimum, devise a far more complex system of written communication than the present data or the most simplistic theories can afford us to believe. Even, in the extreme and somewhat improbable scenario that it was a purely non-linguistic symbol system, there is every reason to believe that it was probably not as simple as the most simplistic among current theories suggest.

The nature of Indus society and its bearing on the Indus script

Fundamental differences between Pharaonic Egypt, Mesopotamia and the Indus are given below:

It is well-known the Pharaonic Egypt and Mesopotamia were generally ruled by Royal Authority. On the other hand, the Indus was a trade-based civilization with a relatively high and comparatively uniform standard of living and the inhabitants of the cities of the Indus were mainly traders, artisans and craftsmen. It was also most certainly intensely multi-lingual, given its size. Therefore, the Indus script probably had to be read by people pursuing many different occupations and speaking many different languages, and a script that was simple enough to be read by large sections of its population, and with a large number of word-signs as opposed to a script like Cuneiform which was so complex that it could be only used by trained specialists, would have served its purpose extremely well and would have undoubtedly contributed to the relatively high and comparatively uniform standard of living of the Indus and its breathtakingly rapid spread in a relatively short span of time.\(^5\)

If the Harappans had wanted to import Cuneiform, they would have been able to easily, given the widespread cultural contacts between the IVC and the rest of the contemporary civilized world. However, cuneiform would have been naturally very difficult to master, quite apart from the fact that it would have had to be modified extensively to handle different languages and the IVC was perhaps interesting among old world civilizations in its ability to provide literacy or at least

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basic literacy to large sections of society. This can be inferred from the ubiquity of the script, and the discovery of a signboard at Dholavira, which would suggest that it was meant to be read by relatively large sections of the population. There were notable differences between the IVC and the rest of the contemporary old world: the IVC was trade based with no known evidence of a Royal or a central authority. This would have naturally implied that the usage of the Indus script was widespread.

Even Steve Farmer concludes:  

“Judging from modern examples and research into the linguistic history of South Asia, the Indus Valley was probably intensely multi-linguistic throughout its history. This may have provided the Indus emblem system with an advantage over ordinary writing as a means of providing the civilization with social cohesion. The fact that the majority of inscriptions rely on a surprisingly small core of symbols suggests that the meaning of Indus signs could have potentially been known by almost or all of the population, resulting in a pervasive quasi-literacy far beyond that achieved in Mesopotamia or Egypt.”

The Harappans’ achievements in engineering and mathematics are also well-known, and we must understand the script in the context of these. Even Steve Farmer agrees:

“On the contrary, new evidence confirms traditional views that the symbols were central to Indus society. It also suggests that the Harappans may have created the most complex non-linguistic sign system in the ancient world, which if anything, enhances the inscriptions’ historical importance.”

On the other hand, there were class differences in the Indus too, and this has been succinctly summed up by Possehl as follows:

“Exclusionary and Corporate socio-cultural systems can be equally complex, both with large economies incorporating a multiplicity of ethnicities as well as craft and career specialists; rule vast territories; and build grand urban landscapes. But they are based on different socio-cultural principles. Ancient Egypt and Mesopotamia were more exclusionary than corporate. The Indus civilization was more corporate than exclusionary. The people of the Indus civilization formed more of a heterarchy than a hierarchy.

Realizing that we do not know what the political form of the Indus civilization was, but if it was more corporate than exclusionary, as hints in the archeological records suggest, then I can imagine that the Indus peoples were ruled by a series of councils or gatherings of leaders rather than a king. Age and gender probably counted for much in the determination of leadership, as did adherence to and practice of Indus ideology. There may have been civic councils for individual settlements, regional councils for the Domains or the political unit above the civic, and probably a supreme “Indus council”. I sense in the Indus peoples, a marked distrust in government, per se, especially strong, centralized government.

In the absence of a strong, centralized religion and religious monuments, the Indus ideology emerges as of fine importance. The ideology lacks firm substance in terms of monumental buildings (gigantic buildings, ziggurats, temples etc.) and therefore may have been more in the mind of the Indus people, than a physical reality they gazed upon in awe and fear. Like being a “good Marxist” was valued in the former Soviet Union, being a “Good Harappan” may have been what was valued by the peoples of the Indus”.

It is for this reason, that it is very reasonable to suppose, that in addition to the ubiquitous Indus seal, of which well of four thousand surviving examples have been found in a relatively

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small area excavated, that there existed some other relatively more complex form of written communication or extra-somatic aids used by relatively smaller groups of people for specific purposes, more so when such a form of communication would have made their task of enforcing a modicum of order much simpler and easier, and even more so because we now also know that the Indus script was put to a wide variety of uses. After all, given an option, which one would we choose, an easier or a more difficult way of doing things? One small excavation can therefore potentially uncover something new and make a big difference to our understanding of the Indus.

Therefore, on a very cursory observation, we can understand the following.

<table>
<thead>
<tr>
<th>Sno</th>
<th>Feature</th>
<th>Indus script</th>
<th>Egyptian hieroglyphs</th>
<th>Cuneiform</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ease of use</td>
<td>Perhaps relatively easier to learn than cuneiform and Egyptian hieroglyphs</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Could be used to write many different languages without modification or could be read in any language</td>
<td>The non-linguistic portion alone could be read in any language</td>
<td>No. Because of the rebus principle.</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Could permit mass literacy or at least mass quasi-literacy in the absence of a second script</td>
<td>Potentially yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Was characteristic of societies ruled by kings or monarchs</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Was characteristic of trade-based civilizations</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>Could have had a linguistic component, qualifying it for full literacy and allowing for much longer records</td>
<td>Very likely, yes. This does not conflict with any historical models at all</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

But is the issue as simple as it appears to be? Let us find out.

**The origins and earliest traces of the Indus script and the circumstances that gave birth to the Mature Harappan script**

There are traces of rudimentary writing in the Early Indus phase none of which qualify for full writing. These may at best be described as potter’s marks. It is therefore extremely likely that the Indus script is a manifestation of the mature Harappan culture and played a crucial role in the transformation of the early to Mature Harappan phase. On the other hand, this is not the case in the Middle East; Proto-Elamite pottery dating back to the last half of the 5th millennium BC has been found in Sialk, where Proto-Elamite writing, the first form of writing in Iran, has been found on tablets of this date. This seems to negate the idea that the Indus script was wholly indigenous in origin, and was imported from West Asia long after these cultures had entered the period of full literacy.

Jane McIntosh states:

7 The Ancient Indus Valley: New Perspectives Jane McIntosh, 2008, ABC-CLIO Inc
“During the initial period of development between 3200 BC and 2800 BC, there was an Elamite presence at Shahr-i–sohta in neighbouring Helmand, a town in which the cultures of the borderlands were in trading contact. The Elamites used a written accounting system with a complex numerical notation and script. Proto-elamite was mainly used to write personal names and lists of commodities. It has not been deciphered but the numbers and few of the signs can be read and there is considerable understanding of the structure of this script. It is likely that the inhabitants of the Indus region and the borderlands were aware of the proto-Elamite script and its uses all the possible combinations of directions of writing and the use of space on their written media, the Harappans chose the same ones as the Elamites in lines from right to left, and from top to bottom (for comparison, at much the same time the Sumerians were writing in boxes arranged in columns). The result of this influence was probably to kick-start the development of the Harappan script, which grew into a complete writing system during the transition period. In contrast, the proto-Elamite script disappeared completely.”

Therefore, this rules out the possibility that the Indus script was fully indigenously developed, but was instead developed for local needs after borrowing several concepts from the Middle East sometime between 2800 and 2600 BC at a time when both proto-Elamite and Cuneiform (Stage 2) – (neither of which are considered proto-writing at all, although like the Indus script and unlike most modern scripts they were not closely bound to spoken language) existed. By this time, both Mesopotamia and Egypt had entered the full literate phase and were no longer proto-literate. There are many structural similarities between Proto-Elamite and the Indus script such as the direction and style of writing – right to left and often boustrophedonic. According to Mortimer Wheeler, "this stability suggests a precarious maturity".

Another newly-discovered civilization, Jiroft is being excavated west of the Indus in present-day Iran. It is likely that this civilization played a major role and served as a conduit for new ideas between the Indus and civilizations further west. In addition to an alleged but still controversial independent script, examples of Proto-Elamite writing have been recently supposedly found in Jiroft which, as we said was very close to the Indus, although we do not know if they were used internally. If the Jiroftians had been able to use Proto-Elamite, why did the Harappans stick to a script as simple as the most simplistic of current theories suggest, given the fact that the IVC was much larger, more sophisticated in many respects, and much more important internationally?

Gregory Possehl also concludes:

“The early Harappan peoples were not seafarers. The Indus peoples were. Thus, the Indus maritime technology was also a part of, or resulted from the Indus ideology.”

Good food for thought: This would suggest that the Indus script did have a major role to play in the transformation of the Early to Mature Harappan phase and this is something that even those who consider it to be a symbol system acknowledge.

Therefore,

1. The Indus script was not fully indigenous in origin; it shared many characteristics with the scripts of the Middle East.
2. It was probably introduced primarily as a result of overland contacts.
3. It probably played a major role in the transformation of the Early to the Mature Harappan phase
4. It was introduced well after the Mesopotamian and Egyptian proto-literate phases ended. Both Egypt and Mesopotamia had crossed the Proto-literate phase and entered the full-literacy phase by 2900 BC.
5. It would be reasonable to conclude that the Harappans took whatever suited them and left out whatever did not. ‘Sound coding’ would have been a very useful feature
for them. We can even argue it would have been indispensible. Once they had learned how to do this, they would have done this whenever they had needed to.

The history of writing in the Middle East

We will now attempt to trace the history of writing in the Middle East so as to understand its possible influence on the Indus script.

Proto-cuneiform

One of the earliest scripts in human history had its origins well before 3000 B.C. in ancient Mesopotamia. This script was usually written using a stylus on clay tablets, and without the use of a pigment. Such clay tablets hardened almost immediately as a result of the heat. As a result of this hardening, these documents from early Babylonia were preserved intact for posterity in large numbers. Proto-cuneiform developed into the much more famous cuneiform script of later times.

Proto-Elamite

Proto-Elamite refers to a writing system used in Mesopotamia between around 3100 and 2900 BC. Proto-Elamite tablets are the earliest complex written documents from the region; the script consists of both numerical and ideographic signs. This supposed underlying language is as yet unknown, and the script itself has been only partially deciphered. The Proto-Elamite writing system was used over a very large region from Susa in the west, to Tepe Yahya in the east, and beyond. The known corpus of inscriptions consists of 1600 tablets, a majority of which have been unearthed at Susa.

Cuneiform

The Cuneiform script is one of the earliest known writing systems in the world. Emerging in Sumer around the 3000 BC, cuneiform writing originated as pictograms. In the course of the 3rd millennium BC the pictorial representations became simplified and more abstract. The number of characters in use also grew gradually smaller, from about 1,000 unique characters in the Early Bronze age to about 400 unique characters in Late Bronze Age. This had evolved into a method of keeping accounts, using a round-shaped stylus impressed into soft clay. Round-stylus and sharp-stylus writing was replaced about 2700-2500 BC by writing using a wedge-shaped stylus.

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9 Peter Damerow, “The Origins of Writing as a Problem of Historical Epistemology,” in Cuneiform Digital Library Journal (CDLJ) 2006:

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Fig 3. Stages in the evolution of Cuneiform: Stage 1 shows the pictogram as it was drawn around 3000 BC. Stage 2 shows the rotated pictogram as written around 2800 BC. Stage 3 shows the abstracted glyph in archaic monumental inscriptions, from ca. 2600 BC, and stage 4 is the sign as written in clay, contemporary to stage 3. Stage 5 represents the late 3rd millennium, and stage 6 represents Old Assyrian ductus of the early 2nd millennium, as adopted into Hittite. Stage 7 is the simplified sign as written by Assyrian scribes in the early 1st millennium, and until the script’s extinction.
The state of Cuneiform and other script in the Middle East c 2700-2600 BC

As we can see, all the scripts in the Middle East were logo-syllabic by 2700-2600 BC and it was very likely that all features of these scripts that were deemed useful by the people of the Indus were borrowed by them. Therefore, it is very likely that the Indus script had a linguistic component given its indispensability.

Sproat’s smoking gun cannot be used to test the stability, maturity or the complexity of the Indus script or to prove that it did not have a linguistic component

Sproat’s smoking gun cannot be used to test the stability, maturity or the complexity of the system or to prove that it did not have a linguistic component for the following reasons:

1. Primarily non-linguistic systems can have a linguistic component in parallel for e.g. canting arms as was discussed between Dr Richard Sproat and the author in a personal communication and was also agreed by Witzel (Kyoto, 2009). The use of Rebus punning and Acrophony would qualify it for full writing. Most contemporary writing systems in the Mesopotamian region were at best quasi-linguistic. Alphabetic systems were not invented until much later anywhere in the world, and the earliest example dates to 2000 BC i.e. Proto-Sinaitic. Indus glyphs were shorter than those found in contemporaneous civilizations because

   (a) Seal writing is always short
   (b) The Indus was a trade-based civilization and practicality and ease of use were probably extremely important. It probably had to be used and understood by a large number of people E.g. “Signboard” at Dholavira, mass production of writing (or “writing”) which set it apart from its contemporaries etc
   (c) Most glyphs probably had to be read by people speaking many different languages, but this does not mean that it did not have a linguistic component at all.
   (d) Glyphs in many cases were relatively long, 13 characters or 17 characters and were much longer than Vinca symbols and Pictish stones. Since most signs would have been logographic, they can easily qualify as full sentences. It is likely that such long seals had a linguistic content too.
   (e) Egyptian proto-writing was commonly much shorter even than the Indus texts. E.g Narmer Palette and Libyan Palette.
   (f) Inscriptions in scripts such as the Etruscan script have typically been very short. This is interestingly alphabetic. Similarly, inscriptions in the Proto-Canaanite alphabet have also been short.
   (g) Likewise Farmer’s claim that a glyph with 50 signs and random sign repetition needs to be discovered to prove the non-script thesis wrong is wholly arbitrary and perfunctory: sign repetition has been shown in the Dholavira signboard too.
   (h) All writing systems in the Middle East began as non-linguistic systems and then evolved into linguistic systems. To state the very obvious, no writing system at this point in time was fully linguistic even in the Middle East and the alphabet wasn’t invented until several centuries later, anywhere in the world.
   (i) Therefore, the average length of inscriptions in a logo-syllabic script is a function of the use or uses it was put to. Therefore, Length = function(usage)

   This also does not mean that the Indus script was not put to other uses. After all, there were class differences too in the Indus and there were only a few large cities which were separated by vast geographical distances. We already know that the Indus script was used in many other ways, too. It is also very likely that the inhabitants of any given city primarily spoke one or two languages, or that at least one or two languages were dominant in a region. The difference between logo-syllabic scripts and logographic systems can also be razor-thin. Hypothetical and real-world examples of logographic
scripts which would have been ideal for the Indus are presented in this paper. If the Indus script is logo-syllabic or has a small linguistic component as the authors themselves agree, Sproat’s smoking guns stands falsified. Note: A Logo-syllabic Writing is a system of writing whose symbols can function as either logograms or phonetic syllables or both or a system that uses a combination of logographic and syllabic signs. There are many variants of this concept all of which are discussed in this paper.

Compound signs with supposed meaning (www.harappa.com)

<table>
<thead>
<tr>
<th></th>
<th>Officer or functionary</th>
<th>Officer or functionary with priestly duties</th>
<th>Officer or functionary with military duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearer</td>
<td>Also appears to be a suffixed element, interpreted as officer</td>
<td>Clearly combination of two signs, could be related to later Indian traditions combining the two motifs.</td>
<td>Also combination, perhaps designating officer with military duties</td>
</tr>
<tr>
<td>Jar + Bearer</td>
<td>Officer or functionary with priestly duties</td>
<td>Clearly combination of two signs, could be related to later Indian traditions combining the two motifs.</td>
<td>Officer or functionary with military duties</td>
</tr>
</tbody>
</table>

Fig 4. The two graphs by Bryan Well, compares the text-length distributions in the Uruk script (above) with the Indus script (below). The mean text length in Uruk is about 7 signs, while the mean text length in the Indus script is about 5 signs. Thus, According to Bryan Wells’ analysis, this may not rule out the possibility of the Indus script having a linguistic component.

2. Another very serious drawback of Sproat’s smoking gun would however be as follows: it does not take into account the very fundamental fact that rare signs could have been used in combination with common signs to produce new meanings. It does not explain
how rare signs were used in combination with other signs. While this by itself cannot prove the linguistic nature of the script, it cannot be used to prove that the Indus script was not stable. This observation has in fact been reinforced by most recent studies. i.e. Sproat’s smoking gun does not take into account the principle of conditional entropy which they themselves agree, could apply for both linguistic and non-linguistic systems. (Zipf’s law, Markov’s model). Determinatives were common in ancient writing systems.

For e.g.

(a) The presence of only very few high repetition signs.
(b) High repetition signs occurring in the same glyph multiple times –e.g. A Signboard with ten characters discovered at Dholavira which almost certainly meant that they were meant to be read together in most cases.
(c) The fact that glyphs are rarely or almost never just one sign long which was the case with Vinca symbols.
(d) The fact that a very detailed analysis of the position, the pairing of signs and the position of combinations of signs has been done by scholars such as Michael Korvink (his very detailed study runs to over 200 pages and proceeds sign by sign), and also by Vahia et al and the general knowledge reinforced by these and other studies that the position and pairing of signs played an important role in the meaning of the signs almost certainly suggests that the entire glyph had to be read together in order to determine its meaning, with the possible exception of a few seals. Readers are strongly urged to read the above-mentioned research in original as it is impossible to reproduce them in their entirety here. Determinatives were common in ancient writing systems.
(e) The fact that the direction of writing was right to left and it sometimes followed a boustrophedonic style, implies, in the view of Wheeler, a “precocious maturity”.

Here is the frequency of signs from Iravatham Mahadevan’s concordance:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Number of signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 or more</td>
<td>1</td>
</tr>
<tr>
<td>999-500</td>
<td>1</td>
</tr>
<tr>
<td>499-100</td>
<td>31</td>
</tr>
<tr>
<td>99-50</td>
<td>34</td>
</tr>
<tr>
<td>49-10</td>
<td>86</td>
</tr>
<tr>
<td>9-2</td>
<td>152</td>
</tr>
<tr>
<td>Only once</td>
<td>112</td>
</tr>
</tbody>
</table>

Based on this, we will very easily conclude that the two most frequent signs, which were very frequent indeed, could only have been some kind of determinatives. If they were not determinatives, what else were they? We invite alternative explanations.

3. Even non-linguistic systems can be made highly expressive and we shall attempt to devise a method to assess their communication capacity. If a small linguistic component is added, they would qualify for full writing. Even non-linguistic systems can be made more complex through the use of additional features e.g.

(a) Polyvalence or polysemy which was very common among early scripts.
(b) Sign compounding i.e. a sign within a sign which can be found in the Indus on rare occasions.
(c) Complex signs derived from Basic signs.
(d) Additional meanings can potentially be obtained by changing the order of the signs. One indication of this is that the spoked wheel sign occurs in the Dholavira signboard in position two and three or in consecutive positions.
(e) Even logographic systems can use the Rebus principle and Acrophony to extend the range of logograms
(f) Use of determinatives as was common in Ancient writing systems.

4. The Rare Sign hypothesis cannot be used to prove the stability of the system. This is because of the following factors:

(a) The rare sign hypothesis is statistically unreliable at this stage given the fact that the quantum of archeological data available is extremely low.
(b) The fact that the rare signs probably had to be read in conjunction with common signs has to be borne in mind, since just two signs were extremely common and were probably determinatives.
(c) Very large number of specialized and primarily non-linguistic signs which may have been used by only by very specialized groups in an otherwise stable system.
(d) Regional variations. We must bear in mind the fact that the Indus script was used by large number of people more than in Mesopotamia or Egypt and there may have been theoretically some regional variations.
(e) Very rare signs are common even in alphabetic scripts like Telugu. The vowels .lu and .luu for example are very rare and almost never used. Rare vowels and consonants are common in Hindi and Marathi also. Both use the Devanagari alphabet.
(f) Most signs were the same across a very wide region.
(g) Bryan Wells has pointed out the rare signs were common in Proto-Sumerian and Proto-Elamite also and a graph prepared by him in shown in this paper.
(h) Even modern Indian scripts have changed over a 700 year period. That doesn't make them unstable.
(i) We must also take into account the fact that, each sign was repeated on an average almost fifty times. (4000*4.6/400=46) This figure will only greatly increase as more inscriptions are found. If we assume that the terminal number of signs is equal to 800, the total sign repetition will be equal to 1000.
(j) Likewise, the rare sign hypothesis can potentially fail if a few instances of a sign occur over a wide region.
(k) Likewise, if a rare sign is a variant of a common sign, the rare sign hypothesis can also potentially fail.
(l) Similarly arranging the small corpus of currently available inscriptions into phases Mature Harappan 3A, 3B, 3C and then analyzing them is statistically unreliable at this stage. Usage of scripts does tend to diversify with time, as would have happened almost anywhere, but we need to take into account contradictory evidence such as the supposed relationship with the scripts of the Middle East also into account.

Michael Korvink states in The Indus script: A positional-statistic approach

“I will agree that a majority of the most frequent signs in the script have a consistent placement in lines of texts. Signs representing a jar, a lance and a bearer and their variance are a few of the best known examples of terminals i.e. they occur most frequently at the end of a line or text. The sign termed fish has a greater medial frequency, which a sign described as a Diamond within a diamond and spoked wheel exhibit a high frequency in the initial placement. For a majority of the signs, however, it is difficult to establish patterns due to their extremely low frequency. Statistics from Mahadevan’s concordance reinforce this observation. “

Walter A. Fairservis in the “Harappan Civilization and its writing” likewise observes the regularity of several types of pairwise combinations and concludes that these are likely to share a common theme. Thus it is likely that the pairwise functions had a similar function in the Indus script.
5. Sign repetition may not be obvious in short text, and the test of sign repetition is statistically unreliable in short texts, more so when most signs are word-signs. The “sign board” at Dholavira, on the other hand displays sign repetition because it may have represented the name of a place and may have used determinatives. Sign repetition is also not as common in logo-syllabic scripts as it is syllabic scripts.

6. Sproat’s Smoking gun does not take into account the fact that the number of signs in the Indus script, according to most researchers is similar to most contemporaneous scripts in the Middle East. Unquestionably, the whole of the Indus hasn’t been excavated yet; but
even then it is possible to predict the total number of signs in the Indus script, if we extrapolate the number of new signs being discovered and take into account the fact that the number of new signs being discovered out of X new inscriptions being discovered is likely to statistically plateau and tend towards zero in most scenarios, given the fact that the same signs and sign combinations were used over a large region. Even in the highly unlikely scenario that it doesn’t decline significantly, this can be ascribed to the other factors already discussed in the paper. If the number of signs falls within 600, it should, when judged by this metric, fall well within the canonical definition of a logo-syllabic script. Even if the total predicted number of signs is below 1000, it should fall well with the range of the number of signs of early “fully developed” and stable scripts of the Middle East. This reinforces the idea that the Indus script was based on the scripts of the Middle East but was instead used based on local requirements. This does not appear to be the case with other proto-writing system such as the Tărtăria tablets and Gradensnitsa tablets. Thus, one of the clinching evidence that the Indus script is a writing system is this: If the Harapans, with their advanced urban civilization and engineering skill had wanted to create thousands of additional symbols to suit all their requirements, they could have done so very easily. They however did not, and instead chose to express their ideas using the same combinations of signs, and indeed over a very vast region that was four times the size of Egypt or Mesopotamia.

7. Another very serious limitation of Sproat’s smoking gun is that it cannot be used as conclusive evidence that all seals containing hitherto unknown signs have to be radio carbon dated and the fact that only 5% of the IVC has been discovered makes even the radio carbon test statistically unreliable at this stage i.e. only a tenth of the lower town of Mohenjodaro has been excavated and large cities like Rakhigarhi and Ganweriwala haven’t been excavated yet.

8. It does not still explain other factors for e.g. how the transformation from the Early to the Mature Harappan phase took place with such breath-taking rapidity. This aspect of the IVC is still poorly understood and his Smoking gun is highly unreliable at this stage. Seal writing is known to be uniformly short everywhere, since seals were often used in economic transactions but seldom for accounting. Even if a small linguistic component had been added, they could have theoretically become much longer. A discussion of writing implements and methods is included in the paper.

9. Another serious weakness of those who think it was not a writing system is that it does not account for many other factors such as abstraction of signs, which were arguably more abstract than contemporary scripts such as hieroglyphs, the presence of the same signs over the vast area, besides many other points raised elsewhere in this paper such as work already done on sign combinations.

10. Farmer suggests that there was no evolutionary change after 2600 BC. However there was a sudden transformation in the Indus writing system in 2600 BC. How could this have happened had it not been for contacts with Mesopotamia? Those who suggest there was no evolutionary change would themselves imply it was a stable system.

11. The Indus script did not disappear altogether after 1900 BC, and was indeed found in Post-Harappan contexts. This means that it could be used universally and was not necessarily tied to a particular ideology. We also suggested the “late Harappan script” used in Bet Dwaraka 1528 BC was not a late-Harappan script as universally believed, but a Post-Harappan script and was imported due to contacts with West Asia. The use of the Indus script declined perhaps due to the fact that superior writing systems were available, even if was to a limited and a privileged few, but did not die down entirely. Interestingly, the proto-elamite script which had a linguistic component, did die out and was replaced other scripts. Scripts can die out for different reasons, and in the case of the Indus script,
a key reason for its decline was the decline of the IVC itself, not withstanding its use in post-Harappan contexts.

12. Vinca Symbols were predecessors of Sumerian proto-writing and predated them by millennia. On the other hand, the Indus script, which was begun to be used somewhat after the scripts of the Middle East would have been logically been based on them, and not Vinca symbols which were already long-extinct and were used in a region that was much further away, and all or only features that were useful to them would have been borrowed and modified, if they had to be. When Vinca symbols were used, man in all probability hadn’t learned to code sound yet! Thus both (both!) geographical proximity and time need to be taken into account!

13. Some very preliminary work has been done on the similarities between the Indus script and contemporaneous scripts of the Middle East and this comparison has been attempted on a sign-by-sign basis. Most societies tend to borrow concepts from their neighbours and modify them to suit local needs (Ethnogenesis). While the absence of any similarity cannot prove that the Indus Script was not logo-syllabic, any similarities would further reinforce the theory that there were in all probability very similar to them. The Harappans could have even borrowed many of the signs, and the linguistic component could have been used to represent local languages.

14. More than 2100 Indus glyphs were found in one-tenth of Mohenjo-daro alone, according to Asko Parpola which probably worked out to 9660 characters if the average length of a seal for the entire Indus is considered. There were therefore, nearly three characters per person on an average in a small area of Mohenjodaro. We can therefore declare it the most literate civilization on earth. Terms pertaining to literacy must not be used carelessly and deliberately as they mislead students and teachers. What then was the difference between the Indus and civilizations which did not yield any trace of writing?

15. Farmer states that the Indus script was not capable of recording extended speech and himself agrees (as do all the co-authors) on many occasions that it could have had a linguistic component. This argument is meaningless. If they had learnt how to encode speech, they could have done it whenever the need arose and their ability to put down their ideas in writing would then have been limited by the vocabulary and expressiveness of the spoken language and not the script. Thus, there is no such thing as a ‘fully enabled script’. There are only two possibilities here: Logographic or Logo-syllabic. If it was Logo-syllabic, and is was most likely to have been, it could have been used to write anything in any language. It could have been used to write, at least in theory, and if the sign repetition in the Dholavira signboard is any indication, Beim Häuten der Zwiebel in German, or La Légende des siècles in French or the Adventures of Huckleberry Finn or Chaucer’s Canterbury tales or even the RV, notwithstanding the fact that the RV was passed on as an oral tradition for an entirely different set of reasons.

Likewise, Farmer states that the Indus script was not a speech encoding system in the strict linguistic sense. He may be right, but neither was any script anywhere on earth at this point in time. What, in that case, makes the Indus script less of a script than the other scripts of the period? Thus, it would be very instructive to build newer models on usages of scripts in different old world civilizations as data expands, much more so given the fact that few would dispute the relationship between the Indus and contemporary scripts.

Using the principle of Reflective Equilibrium as the future researchers Swiss Army Knife: Putting ourselves in the Harappans’ shoes to understand why they may have

http://decipherquarterly.piczo.com/?cr=2

done what they did, or to figure out what else they may have done that we do not currently know, might be an interesting and a surefire method of getting to the truth. There are many cases where humans do not act logically or rationally, but the transformation of the early Harappan to Mature Harappan phase appears to have been characterized by their burning desire to scale greater heights and religion does not appear to have had as much of an overpowering influence on Harappan society even as it had in Post-Harappan India, still popularly known as Iron age Vedic India. Therefore, we can argue,

(a) People tend to do what makes sense most of the time.
(b) People do not tend to do what doesn’t make sense for most part of the time. In other words, they will not do what they do not need to do on a sustained or a regular basis. A suitable example would be monumental inscriptions which would have been out of place in the Indus because it wasn’t ruled by monarchs. Merchants living 4500 years ago therefore, would have done, with a possible few exceptions, only what they had needed to do. We must use Occam’s razor both ways.
(c) The technology and the wherewithal have to be available, and in this case, technology could not have been a barrier at all, and therefore, it is very reasonable to believe that the Indus script had a linguistic component.
(d) Impracticality, cultural barriers and differences between the Indus and contemporaneous societies. This has been discussed at length. It would have however made a lot of sense for them to use the rebus principle, and acrophony too, in certain cases, and if they had learned how to do this, they would have naturally done this to the extent it was required, but not naturally more, automatically qualifying it for full literacy.
(e) Therefore, this being the case, if the Indus script had been used to represent one or more languages, studies will show it to be relatively closely tied to speech with sign repetition etc. If on the other hand, if most of the signs were word signs, as it was likely to have been in a majority of cases, it will not appear to be closely tied to speech.
(f) In such a case, factors which lead to the presence of a greater proportion of word-signs in inscriptions are the fact that it wasn’t ruled by monarchs, the polyglot nature of the civilization and the fact that it had to simple and practical enough to be used by traders speaking several languages. On the other hand, factors that would suggest that it had a linguistic component are that sound coding would have most certainly been useful to them, sign repetition in the Dholavira signboard, an instance where the a relatively more difficult to use feature of this script appears to have been put to a much less serious and critical use, and in a land-locked site, that was among the furthest away of all Indus sites from Mesopotamia, the complexity of the civilization, the fact that administrative records would have made governance easier and not more difficult, and other factors discussed elsewhere in the paper.
(g) Therefore, in a logo-syllabic script, Sign Repetition = function(usage). The Indus script was most certainly a logo-syllabic script.
(h) Therefore, in a logo-syllabic script, from the above logic, Relationship with spoken language = function(usage)

16. The feature to encode speech would obviously have been a prized possession: they wouldn’t have imported this feature and then modified it for local requirements unless it satisfied a need. This would point out to a greater use of this feature. It would make no sense, in the opinion of most, to state that the Harappans imported this relatively complex feature, to use it only for a decorative signboard at Dholavira (this may have represented the name of the place) which was land-locked, far from Mesopotamia and not even the most important of all sites (this in the view of most would be (!!) ridiculous). This naturally implies that much more complex manifestations of the script existed.
Even if we take into account another somewhat unlikely scenario (Scenario B) where the scope of the script was expanded in Harappan 3B as a result of contacts with other contemporaneous civilizations, to include a linguistic component, this reasoning would still hold good.

17. Similarly, the fact that a majority of the inscriptions are short does not rule out the possibility of longer texts existing. Most inscriptions were short due to the reasons discussed in this paper. We may recall the Etruscan script here. While Etruscan inscriptions have been always known to be short, longer inscriptions have also been found. Proto-writing in the Middle East was often shorter. This is because of the following reasons:

(a) We know that there was craft and career specialization in the Indus. This means that longer texts, if of an administrative nature would have served the needs of only small groups of people. Thus the ratio of long to short texts i.e. 1:x can be potentially very small, as they may have been used only by small groups of people. We also know that the ratio of sign boards is to seals is 1:4000. Lengths of inscriptions in scripts such as Etruscan demonstrate such ratios.

(b) Similarly, while seals have been found throughout the Indus, the discovery of a single room containing administrative records in a city can cause us to discard all existing notions of the Indus script or at least prove our case unfalsifiably, irrefutably and incontrovertibly.

(c) The ratio of long to short descriptions in the Indus is therefore likely to be much lower than those found in contemporaneous civilizations for obvious reasons: there were no monumental inscriptions in the Indus because there weren’t any monarchs and most seals were non-linguistic because they were meant to be read by people speaking many languages. The above ratio is likely to be vastly different for societies relying on scripts exclusively for monumental inscriptions, those utilizing it primarily for accounting and those utilizing it for seals used in trade and commerce.

Therefore, we can argue that the length of the inscriptions alone cannot be used to prove anything more so when so little of the Indus has been excavated. A script must be studied from its historical context and its characteristics too. Conversely, the discovery of a text 1,000 characters in length need not necessarily be a breakthrough in the sense that the characteristics of the script can probably be reliably inferred from the corpus of existing inscriptions if methodical research is done and that length alone cannot always distinguish between linguistic and non-linguistic systems. Texts which were much longer were non-linguistic and an example “The coming of missionaries to Hispaniola” is reproduced in this paper. For those who argue that this indicates a lower level of literacy, we can state that the Indus script was ubiquitous, and as Farmer et all themselves state, central to Indus society. Likewise, the discovery of a room of administrative records will not be surprising at all: maintaining administrative records would have been a sensible thing to do and could most certainly have been done with the script. If they had put the script to so many different uses, they could have put it to other uses as well without any additional effort or skill. As a matter of fact, this would have been one of the most sensible things to do, and any hypothesis which states, more so with the low quantum of data available, that they hadn’t would seem, in the view of most, rather unreasonable. Farmer states that he needs an inscription 50 characters long to disprove his thesis. We can state that their thesis is already “disproven” or is in serious doubt because of the following factors:

(a) Their own admission that the Indus inscriptions might have had a linguistic content and our observation that this does not conflict with historical models at all

(b) Even a ten sign inscription like the Dholavira signboard which falls short of this threshold displays random sign repetition.
(c) Given that only a small percentage of the IVC has been excavated, the probability that a much longer inscription is discovered is also very high and one might want to attempt the test of probability here given that all glyphs are not of uniform length.

18. Terminologies cannot be changed unless all scholars agree. There are only two possibilities here: Logographic or Logo-syllabic; Proto-literacy or literacy. There is enough reason to believe based even on existing evidence, that it qualifies for the latter. These terminologies are decades old. The fact that the Indus inscriptions are short is also known for decades. There is no need to invent new terminologies unless existing ones fail to satisfy a need. Therefore the use of terms such as “symbols” and statements such as “The Indus script is not a script as linguists understand the term” are meaningless. One may want to use terms such as ‘symbols’ in association with Pictish stones if he likes, but the term ‘symbols’ is meaningless here when other terms are available given that the Indus script was put to vastly different use(s) from Pictish stones.

19. Farmer’s contention that they may have only been political or religious symbols does not hold water either given that
(a) So much research has been done on the structure of the script already
(b) The script is already known to have been put to a wide variety of uses such as a signboard
(c) The script has already been found in post-Harappan contexts
(d) The script had many similarities with the scripts of the Middle East
(e) The length of some inscriptions is as long as 17 characters which makes this thesis demonstrably false
(f) Farmer states that the Harappans did not write on potsherds. A potsherd has been reportedly found with six pre-IVC symbols and dated to 3500 BC (some nine centuries before the start of the mature Harappan phase), although the dating is disputed by some other archeologists and may thus be regarded as controversial. If this is however true, it would suggest that more complex forms of writing existed in the Indus, given that the Mature Harappan phase or the IVC was far more complex than the early Harappan phase and that some "force" apparently drove this astonishingly rapid transformation over a large area. If we discount this piece of evidence, another potsherd was found during the Ravi phase a few centuries after this containing two pre-IVC script symbols.

Thus, the theory that longer texts did not exist (or could not have existed!) in the Indus seems somewhat far-fetched and is very serious doubt more so when so little of the IVC has been excavated. It would be reasonable to assume that this “force” manifested itself because small groups of people who had put the widely-used Indus script to different uses played an important role in the rapid transformation of the early Harappan phase to the IVC over a very vast region in the age of primitive transportation and the slow-proceeding bullock cart, thus strengthening their control on the rest of the populations in the process instead of weakening it! Apart from the Harappans’ other achievements, many of which were unparalleled in the ancient world, the fact that the cites of the IVC were well-planned and, in the eyes of many, planned and fully-built before they were occupied, in a manner that was unparalleled in the ancient world, would appear to reinforce this belief too. Did they not use any extra-somatic aids then, more so when these aids were readily available and were already used by them widely for even more mundane purposes? Would you choose a horse carriage when a motorcar is readily available? Given that most archeologists are still very skeptical of claims that it was a ‘symbol system’, any notion that the Indus script was as simple as the current data can afford us to believe, would most certainly have implied a highly irrational behavior on the part of the Harappans. Cogitation and introspection may even rule out this possibility completely. The fact that the IVC was polyglot cannot be a red herring either. Cities were
hundreds of kilometers apart and it is likely that each city had one or two dominant languages. This factor will however, lower the 1:x ratio discussed elsewhere in this paper.

20. Likewise Farmer et al point out to the fact that the symbols appear to be strangely frozen and that there were no scribal pressures arising out of copying of long texts. This is meaningless given the fact that the seals are short anyway, and that many of them were mass produced on molds. Thus, the Dholavira signboard will not demonstrate any 'scribe weariness' for obvious reasons!

21. Thus, everything considered, the Indus obviously HAS to be considered a literate civilization even with the corpus of existing inscriptions and in full conformity with well-established definitions of literacy. (Readers are encouraged to familiarize themselves with definitions of illiteracy, proto-literacy and literacy from any mainstream source so that they can be fully equipped). Even Farmer agrees that the Indus script would have enabled a pervasive quasi-literacy far beyond what was achieved in Egypt and Mesopotamia, and his quote is reproduced in the paper. Even Farmer et al state in the Indo-Eurasian research list that literacy in the Middle East was limited to 1% of the populations there. Then is the difference between a civilization that did not yield any trace of writing and the Indus? Even Vinca symbols are an example of Proto-writing, and the Indus script is clearly a far more complex system this. People may then wish to state that a distinction must be made between Cuneiform and the shorter Indus texts too. People’s attention can then be drawn to the fact that the Harappans mass produced writing and had a public signboard too and none of these have been found in Egypt and Mesopotamia. The fact that so little of the Indus has been excavated makes any a priori conclusions absurd. Even if we assume that no longer texts will be found, it is most likely that the Indus script qualifies for full literacy, and all the logic and reasoning is produced in this paper. Similarly according to standard definitions, even much simpler systems are classified as proto-writing. So the answer to the question “Could the Harappans ‘read and write’?” is a resounding Yes!

22. In the paper, “Syncretism and Acculturation in Ancient India: A new nine phase acculturation model explaining the process of transfer of power from the Harappans to the Indo-Aryans”12 which was published in two parts, we detailed a scenario and explained how various aspects of Indian culture were likely to have been formed. This model can be used to predict the likelihood (the absence or presence) of a vast corpus of lost literature having existed in the Indus. Such scenarios are often only seen as a possibility, even if a remote one, and as we must reiterate at the very outset, are still possible in theory, and will not conflict with the history of writing and the historical models, in both directions, even if we consider the transformation of Harappan to Post-Harappan India, because literature may not have been fully transmitted into later cultures, and may have only influenced later literature, at least in some ways. The RV was probably born due to a process known as ethnogenesis. Every new culture wants to project itself as different, superior and as containing something worth emulating. The RV was also a signature of the Gangetic plains, and the Upanishads probably a vast improvement over the Vedas, in the sense that they supposedly embodied superior philosophical thought, and were conceptualized and popularized because, they would have permitted a cultural unity and would have allowed Aryan culture to spread across the Gangetic plains and beyond (the Genetic input was small, in all likelihood, and therefore we emphasize the term culture), and would have also contained thought that the common man viewed as ideal or something that was worth aspiring for. This model cannot also rule out the possibility that longer texts serving as records of an administrative nature existed, and there was no reason for these to have been transmitted at all. It is, from our model

12 “Syncretism and Acculturation in Ancient India: A new nine phase acculturation model explaining the process of transfer of power from the Harappans to the Indo-Aryans” Parts One and Two ICFAI Journal of History and Culture Jan 2009 & 2010
presented in the afore-mentioned paper, possible to do a very detailed analysis, even hymn by hymn, indentifying most likely sources for various cultural elements. This can then be used to predict the existence of a possible lost literature as stated above, after justifying their transmission or non-transmission into post-Harappan India with reasons. However, if these longer records were of an administrative nature, purely, this method will fail miserably. The process of Ethnogenesis would have ensured it. If other types of texts existed, an analysis as to why such texts were not transmitted into later cultures, or used as a basis for later literature needs to be carried out. Therefore we cannot arrive at any hasty or a priori conclusions about the non-availability of longer texts in the Indus.

23. The theory that the Indus script was not a writing system is a non-starter because it was used in trade and commerce over a very vast region and had to be read by people speaking many languages in places as far away as Mesopotamia unlike Pictish stones. This implies the ability to understand the Indus script would have been a critical skill for merchants in civilizations which were in contact with the Indus.

24. The debate as to whether the Indus script had reached the syllabic stage is an age-old one (Logographic scripts evolved into Logo-syllabic scripts in all Old World Civilizations at this time, and this is how humans learned to read and write and there isn’t any difference at all between the Indus, Egypt or Mesopotamia excepting that the different nature of Egypt and Mesopotamia meant that it would have been used differently) and it would be necessary to re-emphasize the fact, in the light of recent research and evidence, that it did, and that those who claim that it did not are on shakier ground than ever before in the entire history of its research. The claim that it was logo-syllabic, therefore now becomes stronger than it ever did in its history. Few would even dispute the fact that the non-existence of longer texts is a very unlikely scenario.

In this context, British archaeologist Jane McIntosh states (her conclusions very strongly reinforce the conclusions presented here. Let us also recall the 1:x ratio we stated earlier in the paper):

"Farmer also draws attention to the absence of long Harappan inscriptions on potsherds. If the Harappan signs were a script, he contends, this absence would make it unique among the scripts of literate cultures, who all used potsherds often like scrap paper. This need only imply however, that the Harappans had other media that were easier to scribble on, such as cotton cloth or wooden boards, or that the writing medium was not well suited for use on sherds. Likewise the absence of long monumental inscriptions seems significant to Farmer, but the Harappans did not create monumental art or architecture on which such inscriptions might have been written; the nearest they came to this is the Dholavira signboard, which is quite possibly the tip of an iceberg of a now vanished public inscriptions."

"He (Farmer) also considers that the proportion of singleton and rare signs is unusually high; other scholars such as Parpola (2005) demonstrate that this is not so, since in general logo-syllabic scripts contain a small corpus of frequently used signs and a large number of much less common ones. Moreover, new signs are continuously added, even when the writing system is a fully developed one, something Farmer also denies. Statistically the Harappan script does not differ significantly in its sign proportions from other logographic scripts. A further point regarding the singletons is that Wells (n.d.) has demonstrated that many are variants or ligatures of basic signs, rather than completely different signs; again, this is something to be expected in a genuine script"

"Perhaps more significantly, the brevity of the majority of the Harappan texts (four to five signs on average) makes it less likely that signs would repeat within them than it is in the longer texts with which Farmer compares them (McIntosh 2008, p. 374)."
“Farmer’s arguments fail to account convincingly for the structural regularities that analyses have revealed in the use of the Harappan signs; these seem strongly to support the hypothesis that the Harappan signs represent a writing system. The theory put forward by Farmer and his collaborators has not been widely accepted, but it has been valuable in compelling scholars to look afresh at their assumptions about the script and in provoking a stimulating debate from which a deeper understanding of the script should emerge (McIntosh 2008, p. 374).”

With these arguments, we can convincingly state that the hypothesis that the Indus script was not a writing system stands falsified, and those who still feel it is not must refute all the above points. Till such a time, we declare it to be a writing system, and most likely a logo-syllabic script as it has always been known. Farmer must convincingly refute all these points and a body of unbiased and reliable scholars must accept his refutation too. Until then we will declare Farmer’s thesis wrong and state ‘back to square one’ with a warning to (pseudo)-decipherers as will be stated later in this paper.

Other types of Logo-syllabic scripts

Let us briefly overview other Logo-syllabic scripts to understand how much in common the Indus script may have had with them.

**Mayan Hieroglyphs**

Mayan writing consisted of a set of glyphs, which were painted on different types of surfaces. Most of Mayan writing can now be read fairly reliably, and scholars now have a fair idea of its structure. The Maya script was a logo-syllabic system. Individual symbols could represent either a complete word or a syllable; and the same symbol could be used for both. For example, the calendaric glyph MANIK’ was also used to represent the syllable chi.  

**Anatolian Hieroglyphs**

An example of a similar system was Hieroglyphic Luwian from Anatolia c 1400 BC which consisted of both logograms and syllabograms and a total of 500 characters. In the case of such a script, there would be very little evidence of sign repetition, too if characters representing syllables were seldom used. Hieroglyphic Luwian inscriptions were longer than the Indus inscriptions, but they were monumental inscriptions. The Harappans did not create monumental inscriptions of this type because they were a trade –based civilization.

**Egyptian hieroglyphs**

Unlike Akkadian and other scripts, Egyptian writing had no definitive vowels. Some hieroglyphs were biliteral, some triliteral. Others were determinatives placed at the end of the word to change the meaning of the word and others were only ideographs. Eventually, however, many Egyptian hieroglyphs such as the one representing mouth which was pronounced ri became the pictograph for the sound of R with any vowel. The pictograph for water pronounced nu became the symbol for the consonantal sound of N and could likewise be used with any vowel. The idea of using a pictograph to stand for the first sound in the word it also represented in a strictly ideographic sense is known as acrophony and was another important breakthrough, and greatly extended the range and utility of writing too.

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Linear Elamite

Linear Elamite was a Bronze age writing system used in the Middle East, as is known only from a few monumental inscriptions. It was contemporaneous with Elamite Cuneiform and was probably used to write the Elamite language.

It was in use for only a very brief period of time during towards the end of the 3rd millennium BC. Many scholars think Linear Elamite was a syllabic writing system derived from the older Proto-Elamite writing system, although this is in dispute. Like the Indus script, Linear Elamite has not yet been deciphered, in spite of several attempts.

There can be many types of logo-syllabic scripts

Non-linguistic systems with a linguistic component can, thus, be made very expressive, and there can be many types of logo-syllabic scripts. We can invent a hypothetical but expressive system with 600 signs, which would have been ideal for the Indus. 100 noun signs, 100 verb signs, 100 adverbs, 100 adjectives, 100 additional non-linguistic signs plus a linguistic component say which would represent (hypothetically) the first vowel or consonant of a common word that is common to the most widely spoken languages in a region. Such systems can be made very expressive and it may be possible to write anything.

<table>
<thead>
<tr>
<th>Name of script</th>
<th>Location and date</th>
<th>Type of script</th>
<th>Number of example signs found</th>
<th>Influenced by</th>
<th>Average length</th>
<th>Number of signs</th>
<th>Used for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proto-Elamite</td>
<td>Mesopotamia</td>
<td>Logo-syllabic</td>
<td>Several</td>
<td>Predecessor scripts in the same region</td>
<td>Longer than Indus texts on an average</td>
<td>500-600</td>
<td>Accounting</td>
</tr>
<tr>
<td>Proto-Cuneiform</td>
<td>Mesopotamia</td>
<td>Logo-syllabic</td>
<td>Several</td>
<td>Predecessor scripts in the same region</td>
<td>Longer than Indus texts on an average</td>
<td>500-600</td>
<td>Accounting</td>
</tr>
<tr>
<td>Cuneiform</td>
<td>Mesopotamia</td>
<td>Logo-syllabic</td>
<td>Several</td>
<td>Predecessor scripts in the same region</td>
<td>Longer than Indus texts on an average</td>
<td>500-600</td>
<td>Early versions were longer</td>
</tr>
<tr>
<td>Linear Elamite</td>
<td>Mesopotamia</td>
<td>Logo-syllabic</td>
<td>Several</td>
<td>Predecessor scripts in the</td>
<td>Longer than Indus</td>
<td>500-600</td>
<td>Several purposes</td>
</tr>
</tbody>
</table>

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How expressive was the Indus system even if we adopt a parsimonious approach?

It is possible to express a very large number of ideas using a combination of signs and sign combinations and a very detailed analysis of sign combinations and positions of signs in the Indus writing system has been carried out by other authors. It would, therefore, be possible express a large number of ideas using 600 signs. Up to 5,000 -7,500 perhaps, or even much, much more, in the view of some, even if we take into account the fact that most of the inscriptions are short? A hypothetical figure perhaps, at this stage, but a certainly large one, and a rough estimation may be made possible through better research. If, on the other hand, a small linguistic component had been added its communication power would have increased manifold, and one possible way to assess the communication power of the Indus system would be to assume that the entire seal has one meaning, and then make upward or downward adjustments for various factors.

<table>
<thead>
<tr>
<th>Script</th>
<th>Same region texts on an average</th>
<th>Trade and commerce, rituals, signboard, possibly other uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indus script</td>
<td>Over 4000</td>
<td>400-600</td>
</tr>
<tr>
<td>Indus script 2600 BC to 1900 BC</td>
<td>Probably by the scripts of the Middle East 4.6: Longest 17 characters Analomous; 26 Non-Analomous</td>
<td></td>
</tr>
<tr>
<td>Vinca symbols</td>
<td>Independent ~ 1</td>
<td>Symbol system</td>
</tr>
<tr>
<td>Tartaria tablets</td>
<td>Most probably non-linguistic Vinca symbols ~ 3</td>
<td>Symbol system</td>
</tr>
<tr>
<td>Mayan hieroglyphs</td>
<td>Probably independent Longer than Indus texts</td>
<td>Several purposes</td>
</tr>
<tr>
<td>Egyptian proto-writing</td>
<td>- Independent Longer than Indus texts</td>
<td>Several purposes</td>
</tr>
<tr>
<td>Anatolian hieroglyphs</td>
<td>Logo-syllabic Longer than Indus texts</td>
<td>Several purposes</td>
</tr>
<tr>
<td>Pictish stones</td>
<td>Non-linguistic Shorter than Indus texts</td>
<td>Symbol system</td>
</tr>
</tbody>
</table>

Number of unique inscriptions discovered | X | 100

According to the paper, “A statistical approach for pattern search in Indus writing” by Nisha Yadav, Mayank Vahia, Iravatham Mahadevan and H. Joglekar, out of a total of 2906 texts in Mahadevan’s concordance of 1977, (the number has since greatly increased), the following figures were obtained:

“*A statistical approach for pattern search in Indus writing* by Nisha Yadav, Mayank Vahia, Iravatham Mahadevan and H. Joglekar
Number of texts occurring only once: 1303
Number of texts occurring more than once: 245
Total number of unique texts: 1548
Percentage of unique texts = 53.27%

Using this formula, we get

\[(1548 \times 100) / 5\]

This gives a very large figure of 30,000. The figure of 5% is taken because, the dataset is old.

The result arrived at can be adjusted upward or downward based on several factors such as:

1. Unused but usable sign combinations – Increase
2. Glyphs with potential candidates for numerals – decrease
3. Glyphs where order of signs was irrelevant e.g. glyphs displaying lists of commodities – decrease
4. Glyphs with a linguistic content – decrease
5. Very long glyphs expressing a combination of ideas

Let us divide this figure by 4 or 5. Even then, we get 5,000 to 7,500 sign combinations, (some could argue for 10,000) and this makes it a highly expressive system. On the other hand, if a small linguistic content is added to the Indus script (it is very likely that the Indus script had a linguistic content), its communication power is extended ad infinitum, and qualifies it for full writing.

**How expressive was the Vinca symbol system which was a Proto-writing system?**

The much older Vinca symbol system, on the other hand, had only between 200 to 300 symbols, 85% of them occurring in isolation, i.e. without a pairing of signs. All scholars already consider Vinca to be examples of proto-writing (cultures with such systems are called proto-literate), and the Indus system was far more complex than this.

If the above analysis is done, it may yield 375 to 500 sign combinations at the most, or one by twentieth of that of the Indus. It is highly unlikely that the Vinca symbols had a linguistic content at all.

Based on this very simple logic we can estimate how much more powerful, the Indus system was compared to the Vinca symbols, which is an example of proto-writing.

**Writing Material and writing implements**

Let us now carry out a very brief overview of writing materials and implements and their history because they will most certainly have a bearing on the Indus question, and see if it conflicts with the possibility of longer texts in the Indus or not.

It was common from antiquity to engrave on stone or metals such as copper or Bronze, or other durable material, so that records could be permanent; Clay writing also was very popular in Mesopotamia and styluses were used as implements. Clay seals were likewise used in the Indus too. Papyrus, on the other hand, was invented in Egypt where the plant grew abundantly and was widely used from the third millennium BC. Some scholars think Papyrus was used in Mesopotamia too, although there is no consensus on this yet, and even if it was used, it may have been used in smaller quantities. We know that the Harappans wrote on metal, clay, wood and stone, and the diversity of writing materials in the Indus is also interesting, although none of
these required the use of pigments. We do not know if Papyrus was used in the Indus, and the Indus may have had some contact with Egypt, even if not to the extent it had with Mesopotamia. Even if we assume that Papyrus was not widely used in the Indus or not used at all, we at least know that the Harappans had access to the same writing materials that the Mesopotamians had, and none of these required the use of pigment-based inks. Therefore, there is nothing to suggest that the Harappans did not possess longer records.

Cuneiform and Proto-Elamite texts were apparently more numerous, but there were many cultural differences between the Indus and Mesopotamia, just as there were between Mesopotamia and Egypt. The Indus seal was fairly ubiquitous too, and there were many interesting aspects found in the Indus that haven’t been found anywhere, such as the mass production of seals and a signboard, and there is no reason to rule out the possibility that other forms of communication existed in the Indus. Let us now summarize our conclusions in a table.

<table>
<thead>
<tr>
<th>Sno</th>
<th>Type of surface</th>
<th>Requires use of pigment based inks</th>
<th>Non-perishable</th>
<th>Suitability for longer inscriptions</th>
<th>Already discovered in the Indus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Metal seals</td>
<td>No</td>
<td>Yes</td>
<td>Probably yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Clay</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Steatite</td>
<td>No</td>
<td>Yes</td>
<td>Probably yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Wood</td>
<td>No</td>
<td>Partly yes</td>
<td>Probably yes</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Stone</td>
<td>No</td>
<td>Yes</td>
<td>Probably yes</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Papyrus</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>Potsherds</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>Cotton</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Inferred</td>
</tr>
<tr>
<td>9</td>
<td>Terracotta tablets</td>
<td>No</td>
<td>Yes</td>
<td>Probably yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Farmer’s arguments on the presence or absence of writing materials doesn’t appear to hold much water either: the same technique that was used to produce a seal 13 characters long could certainly have been used to produce a seal 100 characters long either with or without a linguistic content.

Alleged writing implements in the Indus

Decorated terra cotta cones were found at both Mohenjo-daro and Harappa, but no one knows what they may have been used for. Some scholars have suggested that they were hung on a string as a plumb-bob for use by masons and carpenters. Others have suggested that they may have been toys or possibly used for writing. No traces of ink have been found on the tips, but many of the tips are worn smooth or chipped, which means there were pressed against a surface. It is not necessary that the use of pigment-based inks was a pre-requisite for Mesopotamian type writing, and Mesopotamia was after all, the cradle of civilization. Someone has to provide a convincing explanation of what these objects may have been, and unless a convincing explanation has been provided, the enigma will endure.
Fig 8 Supposed (but still controversial) writing implements in the Indus c 2300 BC. The theory of non-availability of writing materials seems invalid because the same techniques used to produce shorter glyphs could have been used to produce longer glyphs as well.

Fig 9. Indus seals
Fig 10. Story telling using pictograms: Pictograph from 1510 telling a story of coming of missionaries to Hispaniola. Length alone cannot distinguish between linguistic systems and non-linguistic systems.
Fig 11. Indus signs
The Seven component model to predict the existence of longer texts in the Indus

We can propose the following seven component model to predict the existence of longer texts in a civilization, with a study of other scripts as case studies. This is because only 5% of the IVC has been excavated yet. Also ask: Will the classification of the IVC as fully literate and not proto-literate upset historical models or not or cause them to be revised? In the case of Vinca symbols the answer is a definite yes. In the case of the Indus script, the answer is a definite no (since it was contemporaneous to Egypt)! As the longest seal is 17 characters long, the probability that a longer seal will be eventually found is also high. Likewise all the points raised in this paper must also be tested for other proto-writing systems – the difference would be substantial. We may use the ‘Test of Interchangeability’: If a structural analysis suggests that the Indus script could have been used interchangeably with the scripts of the Middle East, it would imply that it was used more befittingly. In other words, since the Harappans may have imported the relatively more difficult to use option to encode speech (as is likely from its use in land-locked and far-from-Mesopotamia Dholaivara where it was put to less critical use), and took the trouble to modify it to suit local needs, it would certainly point out to a more frequent use of the feature (and the likely existence of longer texts) and would imply that simplistic theories are highly suspect!

<table>
<thead>
<tr>
<th>Sn o</th>
<th>Component</th>
<th>Indus script</th>
<th>Other Proto-writing systems</th>
<th>Scripts with longer texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>An analysis of the script from available inscriptions. This must then be followed by the ‘test of interchangeability’</td>
<td>We have carried out an analysis and more research should be welcomed. Some work done by Korvink and others.</td>
<td>Perform this exercise for each Proto-writing system &amp; compare with Indus script.</td>
<td>It would be instructive to carry out this exercise for each script with longer texts and compare with Indus script</td>
</tr>
<tr>
<td>2</td>
<td>Understanding the Historical context of a script (contact with other civilizations, the general state of technology at the time and the origin of the script)</td>
<td>Technology could not have been a barrier at all</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>3</td>
<td>Predicting the existence of longer texts by studying successor cultures</td>
<td>We have discussed this issue in detail already</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>4</td>
<td>Looking for markers: A study of writing implements and comparison with other civilizations</td>
<td>We have discussed this issue in detail already</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>5</td>
<td>Looking for markers: A study of writing materials and comparison with other civilizations</td>
<td>We have discussed this issue in detail already</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>6</td>
<td>Using the principle of reflective equilibrium to understand why people may have done what they did and why they may not have done why they did not do. Also an analysis of the usage of the script: in what contexts were inscriptions made.</td>
<td>The paper is presented in such a way that readers will draw their own conclusions</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>7</td>
<td>The complexity and the general level of sophistication of the civilization</td>
<td>The IVC was a complex society &amp; communication would have made life simpler for them</td>
<td>-do-</td>
<td>-do-</td>
</tr>
</tbody>
</table>
There are three possible scenarios as regards the Indus script and we have already completed a balanced and logical assessment of the script in the paper.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario A</td>
<td>The Indus script wasn’t even a writing system</td>
<td>This hypothesis is no longer valid given that so much research has been done on the Indus script and its structure both before and after 2005, all of which have disproven this hypothesis already and the test of conditional entropy can at least be used to prove the stability of the system if studied along with several other factors.</td>
</tr>
<tr>
<td>Scenario B</td>
<td>The Indus script had reached the syllabic stage</td>
<td>In all likelihood, this must have happened as admitted by Farmer et al themselves. Therefore, the Indus script can be considered logo-syllabic. From the example presented in the paper, speech encoding does appear to have been one of the functions of the script and this function appears to have been built into the script and this implies that it was used commonly.</td>
</tr>
<tr>
<td>Scenario C</td>
<td>Longer manuscripts existed</td>
<td>Yes. The case for this has never been stronger than it has been now.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(a) All the arguments for this are presented in the paper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) So little of the Indus has been excavated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) The low 1:x ratio only increases the probability that longer texts existed</td>
</tr>
</tbody>
</table>
Royal inscriptions: The question of Royal inscriptions doesn’t arise given the fact that it wasn’t ruled by monarchs.

Literary records: Possible in theory, but such records as a result of royal patronage or tutelage can be ruled out. An assessment of how and why people wrote in contemporary civilizations and a study of the transformation of Harappan to Post-Harappan India can help here.

Administrative records: Almost certainly existed. The logic and the reasoning are presented in this paper.

Anyone who does not wish to agree with these conclusions must provide a systematic refutation of all these points and their refutation must be accepted by other scholars.

Conclusion

The most logical conclusion we can make is that the Indus script was technically most likely to have been a logo-syllabic script. The fact that the inscriptions are shorter than its contemporaries makes natural sense and can be understood if all the factors discussed in the paper are taken into account. So it’s more or less back to square one and back to the 1960’s where it all started. The upside to the often acrimonious debate of the past decade about the nature of the Indus script has probably been that it has altered the direction of research so as to make it analysis-driven, and such analyses will only most probably reinforce these conclusions: sensational claims that the Indus script has been deciphered will probably and hopefully become increasingly infrequent and will met with more incredulity and skepticism, and the importance of this outcome must not be understated as people will, and thankfully so, be wary of (pseudo)-decipherments. Farmer et al may take full credit for this. We reiterate that after taking into account the brevity of the existing corpus, the fact that a majority of signs may be word-signs, and the fact that the linguistic portion, if any, may have been used to write many languages, a decipherment in the strict sense of the term will never be possible with the existing corpus, much less any of the romantic Champollion types, and the public must be warned accordingly in the interests of the much greater common good. Much else, however, will probably continue to remain just the same. Until a day we stumble upon something new, at least. Readers can go through all the points raised in this paper and assess by themselves the probability that that will or won’t happen and archeologists can well do to contribute their inputs as well in order that we may formulate models of literacy for this Indus, taking into account its differences with other societies. Also, the IVC will continue to be regarded as one of the most important of the Old World Civilizations for at least three reasons other than the ubiquity and the pervasiveness of its script: Its sheer size, its sophistication and the uniqueness of its social structure.