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Towards a scientific study of the Indus Script

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Future research should deal both with structural analysis of the Indus texts aided by the computer and also with archaeological and linguistic evidence to find answers to the riddle of the Indus Script.

Additional material with Indus inscriptions are being continually unearthed from the older sites as well as from newly discovered sites. It is quite likely that we may reach a critical mass of inscriptions necessary for a successful decipherment. The criticism that there has been little or no progress towards decipherment is also not based on facts.

Photos: The Hindu Photo Library



AN URBAN CIVILISATION: The Great Bath of Mohenjodaro.

I HAVE been a researcher in this field for the last four decades. After completing the first phase of my studies of the Tamil-Brahmi script in 1968, I turned my attention towards the Indus Script, having been attracted by the pioneering work of the Russian scholars led by Yuri V. Knorozov and the Finnish scholars led by Asko Parpola. What I found especially appealing in their brilliant work is that, unlike all previous attempts to decipher the Indus Script, the computer was employed to carry out sophisticated cryptanalytical procedures on a scientific basis. I felt that similar work should be undertaken in India also.

In 1970, I was awarded a Jawaharlal Nehru Fellowship for this project. In 1970-71, a photographic card catalogue of the Harappan inscribed objects was assembled. The Indus texts and their background data were coded in a numerical format suitable for computer analysis. An experimental concordance was prepared in collaboration with K. Visvanathan with the help of an

IBM 1620 computer at the Fundamental Engineering Research Establishment in the College of Engineering, Guindy, Chennai. Publication of this paper brought me an offer of collaboration from leading computer scientists at the Tata Institute of Fundamental Research (TIFR), Mumbai. Mythili Rangarao designed the computer programmes. Professor R. Narasimhan, the doyen of computer scientists in India, guided our work at TIFR.

Interdisciplinary collaboration

This interdisciplinary collaboration resulted in the publication in 1977 of my book, **The Indus Script: Texts, Concordance and Tables**, published by the Archaeological Survey of India. As the title indicates, the book provides the basic source material in an organised manner for further research, but does not put forward any particular theory of linguistic decipherment. In retrospect, this has turned out to be a very salutary precaution, as the Concordance is now used world over by all researchers, whatever be their own views on the language of the Indus Script.



Iravatham Mahadevan, an expert on the Indus Script.

In 1977, a computerised Input Data File was compiled at TIFR; it was updated in 1980. This is the master file from which the pictorial version of the Indus Texts and the Concordance (published in my 1977 book) were created through brilliant and innovative computer programmes at TIFR. To appreciate this achievement, one must remember that the computers of the early 1970s were much less powerful than computers of today. We had to use punched cards to put in the data and also to obtain the output. There were no monitors for visual check. The pictorial version of the Indus texts has been widely acclaimed as aesthetically appealing and close to the originals, providing research scholars without access to the originals with reliable texts to pursue their own lines of research.

Professor Gift Siromoney and his colleague, Professor Abdul Huq, carried out further work on the Indus Script with the help of the computer in the 1980s at the Madras Christian College.

Their collaboration resulted in the publication of a series of brilliant research papers (and a doctoral thesis by Abdul Huq), which explored the structural properties of the Indus texts like frequent combinations of signs, segmentation of texts into words, and phrases, etc. What is especially noteworthy about their work is its scientific character without any pre-supposition on the linguistic affinities of the Harappan people and the Indus Script.

Use of computers

The potentialities of the computerised Input Data File have not been exhausted by my 1977 book or even by the further researches by Professor Siromoney and his colleagues. For one thing, much of the data compiled in the file, including details on the locus and stratigraphy of inscribed objects, are yet to be published and remain open to further research. For another, new data are becoming available both from the earlier sites like Mohenjodaro and Harappa and from newer sites like Dholavira. Stratigraphic data from sites like Lothal and Kalibangan are still unpublished.

The format of the Input Data File now stored at the Indus Research Centre (IRC) will permit all such additions, enlarging the corpus of texts and their background data for further research. I have faith that the availability of this material in an accessible computerised form will attract younger scholars from university departments of mathematics, statistics, and linguistics. They can join together in inter-disciplinary research teams to explore further the structure of the Indus Script and ultimately its linguistic character. Fortunately, the Roja Muthiah Research Library (RMRL) is well equipped with the latest computer facilities and well staffed with experts to lend strong support to the research activities of the IRC.

The IRC proposes to conduct regular workshops and colloquia on different aspects of the Indus Civilisation, including especially the Indus Script. The centre will also arrange occasional seminars inviting scholars in India and visiting scholars from abroad to present their research findings. In due course, I hope it will publish regular bulletins on the work done at the centre or by contributing scholars elsewhere. May I take this opportunity to appeal to scholars and research institutions engaged in similar work to let us have copies of their books, monographs, research papers, and other publications to enable the IRC to build up an exhaustive library on all aspects of the Harappan civilisation and the Indus Script?

No ideological bias

I should like to lay particular emphasis on the fact that the IRC is a forum for scientific investigations without any ideological bias. This does not of course mean that the centre will not undertake research into the linguistic aspects of the Indus Script. After all, linguistic decipherment of the Indus Script is the ultimate objective of research. What we mean when we say there should be no ideological bias is that we should not start with preconceived notions or presuppositions and tailor our research to fit into ideology-driven linguistic models.



Still a riddle: Some examples of the Indus Script.

Let me illustrate this statement with a couple of examples:

Analysis of the Indus texts has now conclusively established that the writing of the Indus Script was from right to left (with some minor exceptions). Yet we find some scholars claiming that the Indus Script should be read from left to right because that is how Sanskrit (or Tamil) scripts are written. It is clear that all attempts to read the Indus texts generally from the left are ab initio invalid.

Computer analysis has shown that the Indus texts possess only suffixes, not prefixes or infixes. This indicates that the Harappan language was of the suffixing type (like Dravidian), not of the prefixing type (like Indo-Aryan).

Archaeological context

It is also necessary for well-rounded research to look beyond the inscriptions and take the archaeological context into account. Let me again illustrate this with some well-known examples:



- The Indus civilisation was urban in character. The Vedic civilisation was rural and pastoral. There is hardly any description of city life in the Rig Veda.
- The Indus seals depict many animals but not the horse. The chariot with spoked wheels is also not depicted in the Indus art. On the contrary, these are among the main features of the society depicted in the Rig Veda.
- The Harappan religion, as far as we can make out from pictorial representations, included the worship of buffalo-horned male gods, mother goddesses, the pipal tree, serpents, and probably also phallic worship. Such modes of worship seem alien to the religion of the Rig Veda.

These examples (among many others) make it very improbable that the Harappan city dwellers were the same as the people of the Vedic culture.

Substantial evidence

Ruling out the Aryan authorship of the Indus civilisation does not of course automatically make it Dravidian. However there is substantial evidence favouring that supposition. I mention the most important aspects of the evidence without going into details:



- The survival of Dravidian languages like Brahui in North India.

- The presence of Dravidian loan words in the Rig Veda.
- The substratum influence of Dravidian languages on the Prakrit dialects of North India.

The evidence indicates that Dravidian languages were once spoken widely in North India and one or more of Dravidian dialects could well be the language of the Indus texts.

Let me state with all the emphasis I can command that `Aryan' and `Dravidian' are names of languages and not of races. Speakers of one language can, and frequently did, switch over from one language to another. We should not allow research into the Indus civilisation and language to be vitiated by false notions of racial or ethnic identities.

Speakers of the Aryan languages indistinguishably merged with speakers of Dravidian and Munda languages millennia ago — creating a composite Indian society, culture, and religious traditions containing elements inherited from every source. It is thus more than likely that Indus artistic and religious motifs and craft traditions have survived and can be traced in the Sanskrit literature from the days of the Rig Veda, and also in the old Tamil traditions recorded in the Sangam poetry. This is the basic assumption that underlies my own work on the interpretation of the Indus Script through bilingual parallels drawn from Sanskrit and Old Tamil works.



Quite recently, Steve Farmer and Michael Witzel proposed that the Indus Script was not a writing system at all but merely a collection of picture signs conveying messages visually but not linguistically. It is difficult to take this new theory seriously because concordances of the Indus texts compiled by different authors (G. R. Hunter, Parpola, and Mahadevan) are in essential agreement and bring out obvious linguistic features like the existence of regular sign combinations suggesting words and phrases and grammatical elements like suffixes. Scholars like Knorozov and Gift Siromoney working independently have also confirmed these linguistic features. The theory that the Indus Script is no writing at all appears to me to be defeatist, born out of frustration reflecting the lack of success of the decipherment efforts.

Solving the riddle

Lastly, let me also refer to the view that the Indus Script can never be deciphered owing to the limited material, their repetitive nature, and the absence of bilingual records. I am optimistic that sooner or later the riddle of the Indus Script will be solved.

My optimism is based on the following considerations. Additional material with Indus

inscriptions are being continually unearthed from the older sites as well as from newly discovered sites. It is quite likely that we may reach a critical mass of inscriptions necessary for a successful decipherment. The criticism that there has been little or no progress towards decipherment is also not based on facts.

While it is true that linguistic decipherment has not yet been achieved, much preliminary work like determination of the direction of writing, segmentation of texts into words and phrases, and isolation of grammatical features like suffixes has been completed. In these matters a large measure of agreement has emerged from independent work by different scholars; this gives us the hope that we are progressing in the right direction towards decipherment of the Indus Script.

I hope that future research in the IRC would deal both with structural analysis of the Indus texts aided by the computer and also with the archaeological and linguistic evidence such as the ones I have mentioned above to find acceptable answers to the riddle of the Indus Script.

(This article by one of the world's leading scholars on the Indus Valley Script is based on his address at the inaugural function of the Indus Research Centre at the Roja Muthiah Research Library, Chennai, on January 25, 2007. Rani Siromoney has gifted her late husband Gift Siromoney's research material on the Indus Script to the centre; and the author said he was "only following her noble example" in gifting his own research materials on the subject to the IRC.)

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