The Archaeology and Epigraphy of Indus Writing

Bryan K. Wells

with technical appendices by

Andreas Fuls

Archaeopress Archaeology

Archaeopress
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Front cover image: Great Bath as seen from the Stupa of Mohenjo-daro, Pakistan. Photograph taken by the author in 1999.

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Dedication

This book is dedicated to:

David H. Kelley who has led the way. Mentor, friend and colleague, Dave's open mind and heart serve as a model of humanity and intellect for future generations of scholars. His years of dedicated work and insightful analysis inspirer us all to try harder. His pioneering research is echoed in this book. Thank you Dave from all of us.

David Humiston Kelley
April 1, 1924 to May 19, 2011
(Photo: November 2003 University of Calgary, Calgary, Alberta)

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Preface

This book summarizes the research undertaken at the Institute of Mathematical Science, Chennai, India in 2009. The goal of this research was to define the relationship between the signs in Indus texts. More specifically to define the morphological processes used in combining the signs into texts. The electronic corpus and sign list developed at Harvard University (Wells 2006 and 2011) was expanded to include all of the HARP texts from material obtained from Richard Meadow (HARP director). This resulted in a online database annotating 3903 artifacts with 4794 texts and 17650 examples of 695 signs. The online database is imbedded in an interactive analytical program written and managed by Dr. Andreas Fuls of the Technical Universitat, Berlin. The analytical software uses new analytical methods developed by myself, Dr. Fuls and by Sinha *et al* (2010 and 2011). These techniques of sign and text analysis were essential to the research presented here (see Appendixes).

The Indus script has been the subject of some controversy of late. This controversy centers on the issue of whether or not the Indus script is really writing, or if they are magical symbols. It is my opinion that the Indus script is a writing system similar to other old world systems of writing in use in adjacent areas during the Bronze Age. The idea that this is not writing is based on misinformation and ill intent. There is no data to support this claim (Wells 2011) and it is only the controversy that keeps this idea in print. The structural analysis offered here demonstrates beyond doubt that the Indus signs are arranged in particular orders (syntax) and cluster in ways that can only be explained if it is a system of writing (affixing). Definable syntagmatic and paradigmatic units (Chapter 3) are irrefutable characteristics of language base writing.

Structural analysis is a method (Kelley 1976) that compares texts with overlapping but different sign sequences to discover how the elements combine in relation to each other. The interchangeable parts are called replacement set and have been used to good effect to define verbal affixing, allographic variation and polyvalence in several ancient scripts (especially Linear B and Classic Maya; Kober 1942, 1945, 1946 and 1948, and Kelley 1973). I use this method in the analysis of text segments.

Bigger issues of regional variations or multiple languages in the Indus script need further work, but without chronological control it is unlikely we will ever understand the developmental characteristics of Indus writing. There are marked regional differences in sign uses and artifact inventories. Future research should focus on defining these regional differences in text structure.

This study is based on all Indus texts, but wherever possible the analysis focused on the bulk of texts that come from Mohenjo-daro and Harappa; with other sites used in a

supporting role. Further care was taken not to mix the corpus into a monolithic unit, as it is demonstrably affected by spatial and temporal variation (Wells 2011).

One further point needs stressing: If the bulk of the texts result in sign associations or patterns of sign use, these results are not nullified by a small sample of texts that do not fit the pattern. Not that these texts are eliminated from analysis, but rather integrated as outliers often are, as separate entities. We cannot know the sources of these variations (spatial, chronological or linguistic). This is especially true of unprovenanced artifacts and those from minor peripheral sites.

The decipherment of the Indus script has had a checkered past. Of 100+ decipherments of the Indus script none has gained widespread acceptance. The reason for this is that they are in the main poorly conceive and idiosyncratic. Often only the decipherer can "make it work". The reputation as a fringe academic comes as an automatic consequence of working in this field. This results in extreme skepticism regarding any readings of signs and texts. This colorful history has served to discourage professional academics from pursuing decipherment as anything other than a hobby. The result of this is that the basic research such as regional studies and mathematical analysis has been lacking until very recently. The disinterest of qualified linguists is likely the biggest obstacle to decipherment. In most circles working on the Indus script is the kiss of death for an academic career. For this reason I hesitated to add Chapter 6 to this book, but as this sort of analysis is the first step toward decipherment, it is necessary to pursue these ideas. Chapter 6 offers several possible interpretations of Indus signs based on contextual clues. While the data collection and analysis of the corpus is necessary and important, the search for clues to specific readings is likewise an important component of decipherment. The hope is that both approaches are mutually complementary. The positional analysis and syntax of the root language must agree with the reading generated through the analysis of specific contexts. In this sense "context" refers to both the epigraphic and archaeological context of the inscription.

It is my hope that the readings in this chapter (6) will stir others to action. I look forward to the critique, which I hope goes beyond the usual out-of-hand dismissal of all epigraphic work on the Indus script as a waste of time. The idea that the Indus script is beyond decipherment and all work in that direction is "fringe" or a waste of resources makes no contribution to our understanding. It is the easy way out. It underestimates human ingenuity and the power of inter-disciplinary cooperation.

The Indus script is a difficult problem, but not beyond hope. This analysis has used an expanded database and sign list, interactive analytical software, and new analytical techniques developed in Germany and India to define detailed structures and sign associations in Indus texts. This level of international and interdisciplinary cooperation is necessary if we are to make progress towards decipherment. We have never had so

much data relating to the characteristics of Indus writing, nor has there been a time when so much technology can be brought to bear on this problem.

I believe that we need to focus future research on the structural detail given in Chapter 3 in order to identify the underlying language of the Indus script. This work falls to linguists. There are several important characteristics of Indus writing that the identification of the root language may be possible, or at least we can eliminate some of the candidate languages from consideration. I hope that interested researchers will take the material offered in this book as a challenge to step up both the quality and quantity of research into Indus writing. We are at a point in the history of research into Indus writing where online resources and data exchange are available to everyone with a home computer and an internet connection. It is my hope that they will all participate.

Introduction

Epigraphy is the study of ancient writing systems with the specific goal of decipherment. Just as "archaeology is anthropology or it is nothing" (Binford 1962), epigraphy is archaeology or it is nothing. The study of ancient writing systems has no meaning without its cultural, historical and geographic contexts. As archaeologists we are interested in artifact contexts, not just for their esthetic beauty, monetary value or political significance, but for what they can tell us about the lives of ancient people. The use of writing tells us much about the level of literacy and sophistication of social interaction, but if we can read their writing we can get at the details of social, cultural, political and economic behavior that cannot be had any other way. One basic mistake made by most researchers studying the Indus script is that they treat the corpus as homogenous, without geographic, chronological or functional differences. This is demonstrably untrue (Wells 2011). As epigraphers we are often working with fragmentary remains of people long dead. In the case of the Indus script it was last written 4000 years ago (2600 – 1900 BC). There are no known direct descendants of the Indus people, and their language is likewise unknown. General facts about Indus culture and writing are limited and many past conjectures in the literature have become imbedded in dogma as truths. For example: The Indus texts are all names; the texts are too short to have syntax; or the Indus script cannot be deciphered (fill in your own reason(s)). What is wrong with these statements is that they are not completely accurate. If we look at the corpus of Indus texts we find that 1644 texts have 7 or more signs. Further, these text comprise about half of the signs in the corpus. That is to say that half the corpus is being ignored by those who say the texts are 4-5 signs long and therefore too short to have syntax.

An examination of ancient writing systems shows that at its most basic level written communication requires a minimum of two signs. Most often this takes the form of numbers and noun pairs or noun plus verb. For example, proto-Sumerian texts from early deposits at Uruk are often Number+Noun pairs (10+goats etc., see Chapter 5). Longer texts are most often lists of Number+Noun pairs. More extreme examples such as the Dresden codex Eclipse Warning Table (Post-Classic Maya), contains Verb+Noun pairs. Not just once but all 59 entries annotating the Lunar Node. These are logo-syllabic scripts, as is the Indus script. The minimum number of signs required to express the full Subject-Object-Verb construction in a logo-syllabic writing system is 3 signs. The average text length in the Indus corpus is ≈ 4.5 signs. This is sometimes argued to be evidence that the texts are simply names. We need to cast off the limiting assumptions of the 20th Century research that has been so unproductive and begin to look at Indus writing as a problem that needs to be analyzed systematically. This analysis begins with creating a corpus and sign list (Wells 2011). The next step is to look at the structure of the texts and sign relationships. This book focuses on the analysis of the structure of Indus texts. Further, all archaeological data regarding artifact types and function should be factored into the analytical process.

The one fact that most Indus scholars would agree on is that the texts are read from right to left. It has been shown that Indus writing is most likely a logo-syllabic system (Wells 2011), but many of the details of sign use remain poorly understood. The purpose of epigraphy is to give these long dead people a voice. Whatever the texts say they will give details of ancient life that cannot be had with a pick and shovel, or in the laboratory.

Most successful decipherments come as a result of interdisciplinary academic cooperation often over several generations. Decipherment is cooperative and cumulative. There are, of course, individual brilliance and insight along the way, but much of the work of decipherment is building on the work of our mentors and colleagues filtered through critical analysis.

The best history of past research is Possehl (1996). Major contributions to our understanding of the Indus script have also been made by Knorosov (1968 and 1970), Mahadevan (1970, 1977, 1982 and 1986), and Parpola (1970 and 1994). This book is base on the techniques and methodology of these researchers and especially David H. Kelley (Kelley 1976) who made a significant contribution to the decipherment of Classic Maya writing.

It is my belief that the less we know about a writing system, the more we must turn to contextual data. By contextual data I mean historical, linguistic and archaeological data. The Indus artifacts with inscriptions also contain iconographic elements. The images can be quite cryptic, but there are repeating themes and symbols. As can be expected the iconography varies by site and artifact type (Wells 2011). The link between images and texts is not transparent in every case. There are some cases where a link between image and text can be posited (Chapter 6). The arguments for each example need to be analyzed separately. Also demonstrated in this study (Wells 2011) was the fact that sign inventories differ by site and artifact type. When the frequency of signs that occur at both Mohenjo-daro and Harappa are compared, it can be seen that certain signs are more common from one site or the other. The same can be said for artifact types. For example sign 400  occurs in 442 Indus texts. Of these 358 come from Harappa, while only 79 come from Mohenjo-daro. Of the 358 examples from Harappa, 325 are found on various types of miniature tablets.

Chapter 1 is an overview of the Indus civilization and types of artifacts with writing on them. This is not an exhaustive treatment, but rather a summary of the variety and scope of this material.

Chapter 2 gives the Indus sign list used in this analysis. Sign lists of this type (of an undeciphered script) are from necessity works in progress. A more detailed account of the analytical process of sign definition is given elsewhere (Wells 2011).

Chapter 3 is a detailed examination of the structure of Indus texts. This detailed analysis focuses on the variations in the organization of Indus texts. The syntax of Indus texts and the relationship and uses of important signs is given in detail.

Chapter 4 deals directly with the subject matter of the script. One set of inscribed artifacts from Harappa gives the key to understanding one specific type of text.

Chapter 5 looks closely at stroke (numeral) signs and their epigraphic contexts. This chapter also deals with the problems of polyvalence and allographic variations.

Chapter 6 gives several cases where we may have clues to the meaning of some Indus signs. These suggestions are not a decipherment *per se*, but language-independent values based on linguistic and archaeological contexts. These results are discussed in terms of their implications for a Dravidian decipherment. This chapter looks closely at the morphological process of Dravidian words and Dravidian syntax, and compares these to Indus texts to see if they are similar enough to suggest that Indus writing is based on these paradigms.