

THE INDUS VALLEY SEALS
A METHOD FOR THEIR STUDY

by

Elizabeth Dickerman Lovatt
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ELIZABETH DICKERMAN LOVATT
UNIVERSITY OF VICTORIA

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ABSTRACT

Supervisor: Dr. Alan Gowans

This thesis presents a method for the study of the Indus Valley seals and illustrates the method through limited application. The method, drawing on principles from several disciplines, is designed to determine what light may be shed on the Indus civilization through study of the seals. Application of the method demonstrates its possible usefulness in supporting certain theories about the Indus Valley civilization, refuting other theories, and offering still others as possibilities for further investigation.

The first two steps are preparatory. In the first step seals are studied as an artifact and their characteristics and development in three civilizations contemporary with the Indus civilization--Mesopotamia, Egypt, and Minoan Crete--are analyzed to provide material for comparison. The second step consists of gaining knowledge about the character of the Indus civilization.

The following three steps consist of categorizing and analyzing one corpus of seals--those published in E. J. H. Mackay, Further Excavations at Mohenjo-daro--to determine their characteristics and to ascertain whether any patterns of evolution or change can be detected, studying certain categories of seals, and studying selected individual seals. The method is generally broad in scope

while the final step, depending primarily on visual analysis, demands close attention to detail.

The pattern which emerges indicates a preference for one material, two seal types, and two classifications of iconography, though there is some experimentation at all times. No methodical development can be detected. Instead, a tendency to uniformity without rigid enforcement appears to have existed.

The study of groups of seals results in support for several current theories about the character of the Indus civilization. Among these are the theory of a two-class social system, the absence of a religious or secular ruler, and the existence of foreign trade relations.

The study of individual seals, based on analysis of style and content with a search for correspondences with contemporary civilizations, serves to refute one theory, based on a single seal, that Minoan Crete borrowed her cultural ideas from the Indus Valley. The study of individual seals is also the basis of the suggestion that the literate class of the Indus Valley may have derived from Africa.

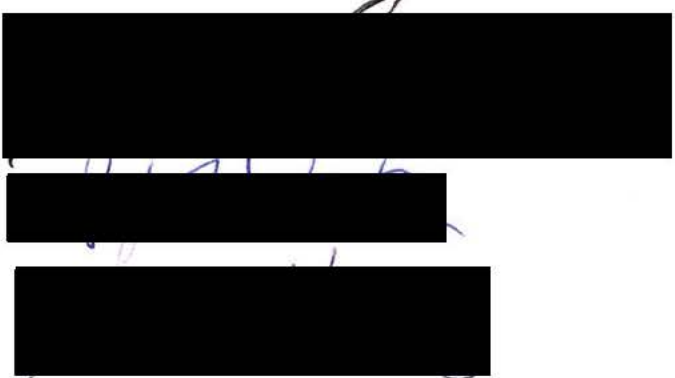


TABLE OF CONTENTS

	Page
ABSTRACT	ii-iii
TABLE OF CONTENTS	iv
LIST OF TABLES	v
LIST OF FIGURES	vi-vii
Chapter	
1. INTRODUCTION	1
2. SEALS IN THE ANCIENT WORLD.	11
3. THE INDUS CIVILIZATION	24
4. THE CATEGORIZING AND ANALYSIS OF SEALS	33
5. THE CHARACTER OF THE CIVILIZATION FROM GROUPS OF SEALS	46
6. THE STUDY OF INDIVIDUAL SEALS	54
7. SUMMARY	70
TABLES	76
FIGURES	85
BIBLIOGRAPHY	91
APPENDICES	
A. STRATIGRAPHY	95
B. TABULATION OF SEALS FROM <u>FURTHER EXCAVATIONS</u> <u>AT MOHENJO-DARO</u>	97

LIST OF TABLES

Table		Page
1.	Analysis of Seals of each Type according to Level	76
2.	Analysis of Seals by Material according to Level	77
3.	Analysis of Seals by Iconography according to Level	78
3a.	Breakdown of Iconography	79
3b.	Breakdown of Iconography	80
3c.	Breakdown of Iconography	81
4.	Analysis of Seals by Iconography according to Type	82
5.	Analysis of Seals by Iconography according to Material	83
6.	Analysis of Seals of each Type according to Material	84

LIST OF FIGURES

Figure	Page
1. E. J. H. Mackay, <u>Further Excavations at Mohenjo-daro, Delhi, 1938, (FEM), Plate XCIX, Figure 430</u>	85
2. T. G. Aravamuthan, "More Gods of Harappa," <u>Journal of the Bihar Research Society, 34 pts 3 and 4 (1948), p. 30, Figure A</u>	85
3. Detail of Figure 2	85
4. S. R. Rao, <u>Lothal and the Indus Civilization, New York, 1973, p. 3, Figure 1</u>	86
5. <u>FEM, Plate XCIV, Figure 422</u>	86
6. <u>FEM, Plate LXXXIV, Figure 78*</u>	87
7. Sir John H. Marshall, <u>Mohenjo-daro and the Indus Civilization, Delhi, rpt. 1973, (MIC), Plate CII, Figures a, b, and c*</u>	87
8. <u>MIC, Plate CII, Figures n, o, and p*</u>	87
9. <u>MIC, Plate CXIII, Figure 435</u>	87
10. <u>MIC, Plate CXIV, Figure 516</u>	87
11. <u>MIC, Plate CII, Figures d, e, and f*</u>	88
12. <u>MIC, Plate CXIV, Figures 525 and 526</u>	88
13. <u>MIC, Plate CII, Figures k, l, and m*</u>	88
14. <u>MIC, Plate CXIII, Figure 460</u>	88
15. <u>MIC, Plate CXIV, Figure 527</u>	88
16. <u>FEM, Plate XCVI, Figure 510</u>	88
17. <u>FEM, Plate LXXXVII, Figure 259</u>	89
18. <u>FEM, Plate XCVI, Figure 518</u>	89
19. Grace Burkholder, "Steatite Carvings from Saudi Arabia," <u>Artibus Asiae, 33 (1971), pp. 306-322, Plate VII, Figure 20</u>	89

Figure	Page
20. <u>FEM</u> , Plate LXXXIX, Figure 347	89
21. <u>FEM</u> , Plate XCVI, Figure 522	89
22. <u>FEM</u> , Plate XCIX, Figure 651	90
23. Madho Sarup Vats, "Exploration and Research: Harappa," <u>Archaeological Survey of India Report for 1926-27 (1930)</u> , pp. 97-108, Plate XXIa, Figures 5a and 5b	90
24. Vats, "Exploration and Research: Harappa," Plate XXIa, Figure 17	90
25. Henri Frankfort, <u>Cylinder Seals: A Documentary Essay on the Art and Religion of the Ancient Near East</u> , London rpt. 1965, p. 55, Text Figure 25	90
26. Edith Porada, "Remarks on Seals Found in the Gulf States," <u>Artibus Asiae</u> , 33 (1971), pp. 331-337, Plate X, Figure 7	90

* Figures 6, 7, 8, 11 and 13 are photographs of actual seals.

Chapter 1

INTRODUCTION

The Indus Civilization was one of the major civilizations of the world during the third millennium, B.C. The peoples of this civilization, now called Harappans, built the first cities in the Indian sub-continent. Archaeological finds indicate that their technology was advanced, that they used a script, and that their society was probably prosperous. However, little more is known about the civilization. The script has not been deciphered and, as no documents have been discovered and the existing inscriptions are brief, decipherment of the script would probably add little to our knowledge and understanding of the civilization. Positive references to this civilization in the documents of contemporary civilizations are non-existent. For clues to an understanding of the civilization the artifacts must be studied.

The artifacts which have been discovered include a variety of tools, pottery, figurines, and sealstones. Of these, by far the greatest body of material is the seals, making them the preferred class of artifact to study. This selection is further supported by the properties of the seals and by the fact that seals were a distinctive feature of many third millennium civilizations.

Many studies relating to the Indus seals have been published. The majority of these studies have been carried out by either anthropologists or Indologists. While the objective of the anthropologists is to determine the character of a culture, many of their techniques of interpretation depend on well-preserved sites excavated with good technique. No such site of the Indus civilization exists. The emphasis of the Indologists is on finding similarities between the Indus and later cultures and often on emphasizing the great age of the Indian culture. The assumption is that similar motifs will have the same meaning. While it is accepted that the antecedents of many Hindu beliefs and customs may be found in the Indus civilization, an explanation of the civilization based on the thesis that those qualities which are similar necessarily maintained the same meaning for 3,500 to 4,000 years is questionable.

None of the studies examines the properties and development of the seals for clues to the character of the civilization, nor does a generally accepted method for such study exist. This paper presents such a method, combining techniques from several disciplines and referring to contemporary civilizations, rather than to later developments, as the basis of interpretation.

Certain difficulties are created by the nature of the material available for study. Much of the information which we have about the Indus seals, and the Indus civilization itself, was recorded at a time when archaeological

techniques were less precise than they are today. This information is often incomplete. In addition, continuing excavations and research in the area of this civilization are bringing forth new information. Thus there exists the danger that any interpretation based on the facts which are known today may be invalidated by tomorrow's discoveries. Any method for interpreting this civilization must, therefore, be sufficiently flexible to adapt to adjustments or corrections of known material as well as to accommodate completely new material which may be presented in the future.

The literature pertaining to seals and to the Indus civilization, as well as to related matters which might throw some light on the subject, is extensive. This creates another problem: the defining of limits for research. To impose restrictions too early in the study might result in useful insights being overlooked. Consequently, I felt it necessary to read considerable material about seals in selected contemporary civilizations as well as all available writings which discuss the Indus seals. In addition, the perusal of all available material which has been written about the Indus civilization seemed essential. Much of this material proved not to be pertinent to the study. However, an extensive bibliography was compiled, including many titles which were not available for study. No bibliography of such scope has yet been published. This bibliography is to be presented separately at a later date. A shorter bibliography is presented with this paper. Limits of time and

geography were finally set by the selection of one excavation report as the main source book for study. This selection is discussed in Chapter 4.

A third problem is also related to source material. Although some seals are contained in North American collections (e.g. Museum of Fine Arts in Boston), the majority are to be found in museum collections in India and Pakistan. First hand study of these seals is not possible for a paper of this scope. Therefore, I have had to rely on published photographs and, in some cases, line drawings for visual study. Obviously, disadvantages result.

Methods of making seal impressions and of photographing seals and seal impressions, and the dangers and drawbacks of each method are discussed at considerable length by John Boardman.¹ The purpose of a seal is in most cases to make an impression. Therefore, a photograph of the sealstone itself ignores the artist's intention, to make an instrument which will create the desired impression. The photograph of a sealstone will show the design in intaglio, whereas the intention was to have a design in relief, and reversed. For this reason, the photograph of an impression of the sealstone is to be preferred.

A variety of substances can be used to make seal impressions, including sealing wax, plasticene, several

¹John Boardman, Greek Gems and Finger Rings (London: Thames and Hudson, 1970), pp. 10, 382, 448-49.

different types of rubber compound, and plaster. Of the materials which Boardman discusses, every one except plaster has a surface sheen which makes photographic reproduction difficult, while the obtaining of a good impression with plaster is equally difficult.

The majority of the photographs with which it was necessary to work in this study are of impressions made with plaster. The problems which this can cause may best be illustrated with the example of one seal, FEM 430.² This seal, Figure 1, was described by Mackay as displaying a scene of a tree goddess before whom kneels a worshipper, accompanied by a human-faced goat: "The apparent object in front of the kneeling figure is merely a fracture in the seal..."³ This seal has been, since that time, the subject of some study and interpretation. In each publication where it has been illustrated, the photograph is identical to that shown by Mackay. Recently, T. G. Aravamuthan questioned whether the seal itself was damaged, or whether the photographs might not have been taken of a poor impression. A new cast was taken from the seal by the Archaeological Survey of India. This cast, which is now in the Madras Government Museum, shows, according to Aravamuthan, that the

²The method of identifying seals will be discussed on page 9.

³Mackay, E. J. H., Further Excavations at Mohenjo-daro (Delhi: Manager of Publications, 1938), pp. 337-38.

apparent fracture on the earlier impression is actually a human head on a low stand⁴ (Figures 2 and 3). Whether Aravamuthan's interpretation of this object is correct, and whether such interpretation can, as he also suggests, be the basis for a theory of human sacrifice in the Indus civilization is arguable when only a photograph is available. This uncertainty and the differences between the photographs show that access to the actual seals would be necessary for a major study.

A further difficulty in the use of photographs for visual study is in the actual photographic technique employed. Boardman compares the difficulties in achieving a realistic photograph of a seal to those experienced in making photographs of relief sculpture. Heavy shadows may be dramatic, but they obscure outlines. The use of two major sources of light may show all outlines, but may also produce double shadows and flatten relief.⁵

Boardman's own solution to this problem is one which might well be applied when further study of the Indus seals is to be undertaken. He states, "the best impressions are made from silicon rubber casts, taken from latex rubber impressions. The casts, which are perfect, indestructible,

⁴T. G. Aravamuthan, "More Gods of Harappa," The Journal of the Bihar Research Society, 34, Parts 3 and 4 (1948), p. 34.

⁵Boardman, Op. cit., p. 449.

and reproduce all surface detail, including all undercutting on convex stones, can then be used many times to prepare plaster impressions, or can be viewed on their own."⁶

Difficulties also exist in the use of line drawings of seals or seal impressions either for study or for illustration of the text. Kenna, in discussing the difficulties of reproduction, remarks that "the influence of current styles and traditional values affects not only execution but the perception of an ancient motif,"⁷ while Boardman notes that "where devices are confused the subjective interpretation of a draughtsman can be seriously misleading, while the differences in drawings of the same piece by different hands show what poor sources they are for stylistic judgments."⁸

The problems arising from the inadequacies of the available research material eventually merge and lead to the major question whether a study based on this material can be of any scholarly value. The problems presented by the material have led to the formulation of a method for study of the seals which is sufficiently flexible to accommodate corrections and additions to the existing material.

⁶Ibid.

⁷V. E. G. Kenna, Cretan Seals, (Oxford: Clarendon Press, 1960), p. xii.

⁸Boardman, Op. cit., p. 10.

Through application of this method, a tentative interpretation of certain aspects of the civilization can be offered, illustrating the possibilities and consequent value of the method, with the hope that the study may encourage more detailed work on the seals themselves.

The method consists of five parts, undertaken in Chapters 2 through 6. Chapter 2 contains general information about seals, and specific information about the character and development of seals in contemporary civilizations for comparative purposes. Chapter 3 consists of study of background information about the Indus civilization, including current theories about the character of the civilization. A discussion of literature on the subject is included. In Chapter 4 the Indus seals are considered as an entity, categorized, and studied for evidence of evolution or change. In Chapter 5 certain categories of seals are studied for any light they may shed, as a class, on the civilization. In Chapter 6 selected individual seals are considered for their contribution to our understanding of this civilization. Chapter 7 is a summary.

The basic research material for this study is the collection of seals published in Further Excavations at Mohenjo-daro.⁹ The reasons for the selection of this material are discussed in Chapter 4. Selected seals from other excavations and selected sealings may also be studied.

⁹E. J. H. Mackay, Op. cit.

Copper tablets resembling sealstones will be omitted. The script on the seals will not be studied. Chronologies in Old World Archaeology¹⁰ is the basis for dating throughout the thesis except where otherwise noted.

The terms "seal" and "sealstone" are interchangeable, while the term "sealing" is used for an artifact bearing the impression of a seal. Illustrations of seals will actually be of seal impressions, as discussed on page 5, and descriptions of seals will also be of seal impressions. Illustrations and descriptions of sealing will be of the actual artifact.

The terms "Indus civilization" and "Harappan civilization" are used interchangeably, while "Harappans" is used to describe the people of this civilization. The terms "civilization," "culture," and "society" are all employed in a general, and interchangeable, sense.

Seals are customarily assigned a field number when excavated. This is a permanent means of identification. However, the seals are usually numbered in sequence in excavation reports. For ease of identification, the excavation report numbers will be used, in conjunction with the abbreviation for the excavation report. Thus, the seal from Mohenjo-daro with the field number DK 5419 will be referred to as FEM 422.

¹⁰Robert W. Ehrich, ed., Chronologies in Old World Archaeology (Chicago: University of Chicago Press, 1965).

The following abbreviations will be used to identify excavation reports and the seals published in these reports:

- FEM E. J. H. Mackay, Further Excavations at Mohenjo-daro.
- MIC Sir John H. Marshall, Mohenjo-daro and the Indus Civilization.
- Vats Madho Sarup Vats, Excavations at Harappa.

Chapter 2

SEALS IN THE ANCIENT WORLD

Seals are one of the characteristic art forms of the Bronze Age. The Mesopotamian, Egyptian, Minoan, and Indus civilizations all created seals which were works of art in miniature. Certain resemblances are to be found among the seals yet the seals from each area are so distinctive that they may be considered art forms characteristic of their particular civilization. A study of the seals of Mesopotamia will show how developments took place in one area while a brief discussion of the seals of Egypt and Minoan Crete will illustrate possible variations in ancient seals and their developments. Comparison with these seals should help to define the qualities of the seals of the Indus Valley. Before discussing these seals, however, an inquiry into the possible origins of seals and some information about their manufacture may be of value.

The time and place of the invention of seals are unknown. Speculations about the inspiration for seals include the possible use of baked clay "seals" to stamp patterns on textiles as well as human skin¹ and the

¹James Mellaart: Catal Huyuk, (London: Thames and Hudson, 1967), p. 220.

suggestion that patterns formed by matting on clay or mud may have inspired the development of seals.² It is important to note that the first suggestion concerns the transfer of a pattern with some type of pigment while the latter is concerned with the making of an impression. The transfer of a pattern might better be described as printing, and the tool which was used as a printing device. A seal, by contrast, is an instrument which has been so carved or engraved that it makes a distinctive mark when impressed on a soft substance such as clay or wax. The distinction between these is blurred in common usage.

A seal, in its most basic function, could be used for security. Goods which were to be safeguarded were placed in a vessel. Over the mouth of the vessel would be placed a piece of material which would then be secured around the neck of the vessel with cord. The cord was covered with wet clay and the clay stamped one or more times with a seal. Tampering with the contents of the vessel would be impossible without damaging the seal impressions. The sole requirement of a seal in this instance is that it should make an impression which could not be easily duplicated.

Other functions of the seal were probably natural developments. The impression would provide increased

²This explanation appears frequently.

security if it bore a design which was itself inviolable for religious or magical reasons. The need for a distinctive mark, easily identifiable but not easily duplicated, could have resulted in stamps with individual designs which eventually became marks of ownership.

Each of the above functions also had a possible later development. The seal which bore a magical or sacred symbol could become itself an amulet, providing protection or good fortune.³ The seal as a mark of ownership, in a similar way, could eventually have endowed the impression with the authority of the owner of the seal, whether used by the owner or not. In this way, seals served as signatures, as marks of authority, and as guarantees of validity or quality. The stamp of the issuing authority on coinage as a guarantee is a further development of this function, one which is still in use today.

The possible functions of a seal include, then, simple security, magical or religious significance, and indication of ownership or authority. A seal may perform only one of these functions, it may perform any two of the functions, or it may perform all three functions at the same time.⁴

³The amuletic nature may have preceded the function as a seal as some of the earliest seals were of significant shapes.

⁴Information about the possible functions of seals was derived from a seminar on seals presented in the Department of Near Eastern Languages and the Oriental Institute at the University of Chicago by Professor McGuire Gibson.

The materials of which seals were made vary greatly. The chief criteria were that the material should be suitable for carving and that it should, when incised, be capable of making repeated clear impressions. Various stones, both hard and soft, were the most favored materials, but at times glazed pottery and faience were used. Changes of material sometimes accompanied a change in style. Whether the change in material was the result of the change in style, or brought about the change in style has not been determined; however, the relationship between the cutting qualities of the material and the style are often evident.

A pottery or faience seal could be made with simple implements. A pointed stick would be adequate to incise a piece of soft clay. The clay could then be glazed if desired, and fired to provide a hard surface. Seals made in this way were less durable than those made of stone. A further drawback was that it was not possible to achieve the fine detail and precise design which could be produced by engraving stone.

The incision of stone required the use of metal implements. Softer stones, such as steatite, could be engraved freehand with a simple metal graver or burin. For the harder stones a drill was necessary. The drill, with a carefully shaped metal end, was made to rotate by means of a wheel or a bow string. Emery powder or a similar abrasive was placed on the stone to be engraved.

The rotating action of the drill caused the emery powder to wear away the surface of the stone, creating the desired design in intaglio.

Ancient seals were usually small in size, often less than one inch square, yet the execution of their designs was frequently equal or superior in skill and precision to larger contemporary works of art. Boardman comments that some of the detail on early gems is too fine to be appreciated by the naked eye today, yet he considers it unlikely that magnifying glasses were used either in the making of seals or in the study of them and their impressions.⁵ It was the unusually keen eyesight of Sir Arthur Evans which first caused him to notice the designs on Cretan sealstones and enabled him to study them. The ancient seal engravers, and perhaps even the users, must have had similarly keen sight.

Two types of seal were made, cylinder seals and stamp seals. The cylinder seal was used as a roller, creating a continuous repetitive pattern. The stamp seal created a single complete design each time it was impressed on a suitable material.

The earliest use of seals known to us took place in the Halafian period, approximately 5,000 B.C., in northern Mesopotamia. The Halafians were accustomed to carving stone amulets in the shape of animals. These

⁵Boardman, Op. cit., p. 382.

amulets were pierced with a hole, presumably to permit them to be worn as pendants. Similar pendants in a simplified shape, and engraved with geometric designs, were also made. They are believed to have been the first seals.⁶

In the following Ubaid Period in southern Mesopotamia, while seal pendants continued in use, a round button seal with a suspension loop was employed in the North, at Gawra, Eridu, and Lagash. The design remained geometrical, often being a filled St. Andrew's cross, a design which was eventually to be found throughout central Europe, the Balkans, Greece, and in the Indus Valley.⁷

The Uruk Period brought about further changes in shape.⁸ At first a conical or pyramidal shape of seal was added to the button seal. At this time, the first representational designs, always of animals, were used. These designs show keen observation of the animals and great skill in modelling in intaglio. In the late Uruk period, the cylinder seal was developed. This was quickly to become the chief type of seal, and it was a peculiarly Mesopotamian seal. Presence of a cylinder seal anywhere in

⁶V. Gordon Childe, New Light on the Most Ancient East, (New York: Norton, 1969), pp. 111-12.

⁷Ibid., pp. 120-21.

⁸Henri Frankfort, Cylinder Seals: A Documentary Essay on the Art and Religion of the Ancient Near East, (London: Gregg Press, 1965) is followed for the balance of the development of Mesopotamian seals.

the ancient world is generally accepted as an indication of contact, either direct or indirect, with Mesopotamia. With the change to a cylinder type of seal came a change in content and in style. Animals in file and religious and secular processions were made effective as designs by the continuous pattern of the cylinder. Heraldic groupings were also added to the list of subjects. In this period, human figures, architecture in the form of shrines, and animals in their natural settings first appeared. The basic content for Mesopotamian glyptic, as well as the basic cylinder type was established. Developments would take place in the future but except for the addition of inscriptions, there would be no major changes.

It was also in the Uruk period that a major conflict in the designing of Mesopotamian seals began. This was the conflict between the desire to depict representational subject matter in an identifiable narrative form and the desire to form a pattern covering the entire surface of the seal.

The Jemdet Nasr period saw a change of interest. The type had been determined, as had the content. In this period the content received little attention, with the result that it deteriorated. Now the concentration was on experiments in other directions. While the sole materials in use in the Uruk period were limestone and marble, a variety of materials were tried in the Jemdet Nasr period. Of particular interest is the use of faience. For this

type of seal there was a return to a simple geometric pattern. This geometric faience seal was a short-lived experiment in Mesopotamia, but was to be found in many other parts of the ancient world.

In addition to experiments in materials, the Jemdet Nasr period saw experiments in the shape and size of the cylinder seal, both of which had been standardized in the Uruk period, and in the mode of suspension.

The one further addition to the Mesopotamian seal was the inclusion of an inscription. This took place in the Second Early Dynastic period. At first, the inscription was fitten into an empty space between elements of the pattern, creating an awkwardness in the overall design. By the Akkadian period the inscription, if included, was placed in a panel as the central motif of a heraldic grouping, contributing to the patterning rather than detracting from it.

The cylinder seal was introduced to Egypt from Mesopotamia. It endured as the standard Egyptian type until the Sixth Dynasty. The motifs of animals and symbols used on the Mesopotamian seals were quickly replaced by an entirely Egyptian content. One type of seal, probably a funerary amulet, depicted a scene of a figure seated at a table heaped with food, while all other seals bore only an inscription, in Egyptian hieroglyphs. These inscriptions, often containing the name of a king, are the earliest examples of Egyptian hieroglyphs in existence. A balanced

geometrical arrangement of the hieroglyphs was quickly developed. The cylinder seal with inscription bearing the name of the king, the title of the official using the seal, or both, continued in use until the Sixth Dynasty, when the central authority collapsed. At this time the button-shaped stamp seal with lively naturalistic designs was introduced from Syria or Crete. No hieroglyphs appear on the Egyptian seals of this period, although the designs quickly became stylized and formal as they were reproduced by the Egyptian seal-cutters. During the Ninth Dynasty the scarab seal was developed. The scarab, carved in the shape of the sacred scarab beetle with a design engraved on the underside, became and remained the characteristic Egyptian seal type. The design was at first similar to the stylized motifs of the earlier stamp seals, but soon the hieroglyphs were reintroduced, at first inserted in empty spaces, then moving to the center of the design, and finally ousting the decoration and becoming the sole motif. The scarab with a balanced, clear, geometrical arrangement of hieroglyphs forming an inscription, continued, an Egyptian type of seal with Egyptian content and Egyptian expression.⁹

The earliest Minoan seals are dated in the Early Minoan II period or Middle Minoan I, when relations were already established with Egypt and the Near East. These seals were found in two locations, with each location

⁹Ibid., pp. 292-300.

having a distinctive type. The Mesara group, of ivory, are stamp seals in a variety of shapes, either round, square rectangular or irregular on the engraved surface, and with a variety of knobs or handles on the reverse. The designs, often in a whirling composition around the edges of the seal, are usually of animals or insects in file, or occasionally in antithetical groups with one animal right side up balanced by an identical animal upside down. The compositions rarely have a top and bottom, and the depiction of single animals, which would result in such alignment, is rare.

The other early seals are made of stone, and are three-sided prisms, each side being a square with rounded corners, and each side bearing an engraved design. The great variety of designs includes non-representational patterns such as spirals and hatching, animal designs including those of the Mesara seals and others, and scenes with human beings either standing or seated, often with a bow. Vases also form the design on some seals. The motifs are of wild life, of industry, and of hunting, in addition to semi-abstract curvilinear patterns.

In the Middle Minoan II period these earlier traditions of seals were continued while new variations were added to the repertoire. Rectangular three-sided prisms, four-sided prisms, and a variety of stamp and button seals are found. The one entirely new motif is that composed entirely of hieroglyphs. In addition, there is the

continuing variety of whirling geometric devices, animals and humans.

The Middle Minoan III and Late Minoan I periods saw a final settling on two favored shapes, the lentoid and the amygdaloid. Each of these has two convex faces, only one of which is engraved. Some of the earlier shapes are continued, but in lesser quantities. Several changes in content occur. The hieroglyphs become decorative devices probably, as Boardman suggests, as Linear A replaces hieroglyphic writing,¹⁰ and new scenes of humans in action, perhaps inspired by contemporary frescoes, appear. Two forces affect the designs, the fresh observation of natural forms and movement, and the ability to employ animals and nature in a purely decorative fashion.

The final phase of Minoan seals, Late Minoan II-III A, at Mycenaean Knossos, uses the lentoid as the common shape. The designs are of single animals, groups of animals, or animals and humans, but seldom of humans alone. A new type of motif is the monstrous creature, combining human and animals, or parts of several animals. The execution is skillful, but the movement which has been an increasingly important element in the seals is less evident.

The Minoan seals as a whole can be seen to exhibit variety in shape and content throughout their development. Each area where seals or sealings are found

¹⁰Boardman, Op. cit., p. 38.

has its own characteristics for any period. There is no uniformity between sites or periods except for decided preference for whirling movement, often with a spiral twist, horror of a vacuum, and a dislike of symmetrical or pyramidal arrangements and heraldic devices. The last phase shows a distinct change from earlier tendencies.¹¹

While Mesopotamia, Egypt, and Minoan Crete all had seals which were peculiarly their own, the development of the seal was in each case very different. The Mesopotamian seal was developed in stages, with experiments in one aspect for each stage. When a satisfactory treatment had been achieved it became the standard for later seals, and a new aspect was explored. Egypt borrowed from foreign sources the cylinder seal and later the stamp seal, quickly established Egyptian content and treatment, and eventually created the scarab seal. Fewer experiments were made. Changes often reflected political circumstances rather than methodical stylistic development. Minoan Crete showed openness to new ideas and constant experiment at all times. There was always a variety of shapes, with some disappearing and new ones appearing. The content was wide-ranging at all times, and frequently changed. The Minoan seals were constantly innovative in all aspects, although

¹¹Information about Cretan seals was derived from the following sources: John Boardman, Op. cit., R. W. Hutchinson, Prehistoric Crete, (Harmondsworth: Penguin, 1962), and V. E. G. Kenna, Cretan Seals, (Oxford: Clarendon Press, 1960).

exhibiting certain constant underlying tendencies in treatment.

Chapter 3

THE INDUS CIVILIZATION

The seals of the Indus Valley are one of the most characteristic artifacts of this civilization. It is particularly fitting that the first evidence of this civilization to be known to us should have been a sealstone.

In the 1872-73 archaeological season, Sir Alexander Cunningham, the Director-General of the Archaeological Survey of Northern India, visited Harappa and reported, "The most curious object discovered at Harappa is a seal...a smooth black stone without polish. On it is engraved very deeply a bull without hump, looking to the right, with two stars under the neck. Above the bull there is an inscription in six characters which are quite unknown to me. They are certainly not Indian letters; and as the bull which accompanies them is without a hump, I conclude that the seal is foreign to India."¹

At that time, and for some years afterward, the accepted view of Indian history was that the first Indian cities were built in the first millennium B.C. by the descendants of Aryans who had invaded India during the previous

¹Alexander Cunningham, Archaeological Survey of India Report for the Year 1872-73, (rpt. Delhi: Indological House, 1966), p. 108.

millennium. Prior to that, it was believed, India had been inhabited solely by uncivilized aborigines. The error of this view was proved by the excavations at Harappa, begun in 1920, and at Mohenjo-daro, begun in 1922. These sites were found to have been cities, apparently wealthy and well-organized, the centers of a previously unknown civilization. Further excavations, both at the original sites and at other sites, have added to our knowledge of the extent and character of this civilization.

Over one hundred Harappan settlements have now been discovered, extending over an area 1,600 kilometers from east to west and 1,100 kilometers from north to south² (Map, Figure 4). Only two major cities, Harappa and Mohenjo-daro, have been discovered, Presumably the remaining settlements were towns or villages.

The cities of Harappa and Mohenjo-daro were laid out on a grid pattern of streets. Housing varied from spacious homes built around courtyards³ to small two-room hovels,⁴ all constructed of baked brick. There were also larger buildings similar to barrack blocks or tenements.⁵

²S. R. Rao, Lothal and the Indus Civilization, (New York: Asia Publishing House, 1973), p. 5.

³Sir Mortimer Wheeler, The Indus Civilization, (3rd ed., Cambridge: Cambridge University Press, 1968), p. 50.

⁴Ibid., p. 32.

⁵Ibid., p. 54.

Each city had an efficient system of drains. Granaries were found at both sites.⁶ No evidence has been found of any structure which could be considered a temple.⁷

A number of skeletons have been found. Skull types, studied by N. K. Bose⁸ and reported by Wheeler, can be divided into two classes, Class A consisting of Proto-Australoid, Caucasian, or Eurafrikan, and Class A1, consisting of Mediterranean, Indo-European, or Caspian.⁹

Among the artifacts discovered in the two cities were pottery, eleven pieces of stone statuary, small in size, and skillfully executed, a few bronze figurines, and many terracotta figures. The terracottas consisted of animals, female figures, and also wheeled carts. Also found were beads of stone, faience, and precious metals, various tools, stone weights and miscellaneous objects, and many sealstones.

One of the outstanding characteristics of the civilization seems to have been its uniformity, extending from the duplication of city and house plans through many rebuildings to a standard system of weights and measures employed in both cities at all levels.

⁶Ibid., pp. 33, 43.

⁷Rao, Op. cit., pp. 16, 19.

⁸N. K. Bose et al, "Human Skeletal Remains from Harappa," Anthropological Survey of India, (Calcutta, 1963).

⁹Wheeler, Op. cit., p. 68.

The basis of the economy was apparently agriculture and cattle husbandry. In addition, specialists in metal working and stone carving, in potting and other utilitarian industries exhibited considerable technical ability. Evidence of foreign connections is found in the use of materials which must have originated in central Asia, north-eastern Afghanistan, and north-eastern Persia,¹⁰ and in the discovery of Indus-type seals in various sites in Mesopotamia,¹¹ and in other correspondences.

There is no evidence for the existence of kings or religious rulers, although there is evidence for strong central control.¹² Fairservis has suggested that "we can assume that a class system was characteristic of Harappan society. This is based on evidence for specialists of various kinds, for possible centralized authority, for elaboration of houses and material possessions reflective of wealth."¹³ This suggestion may be further supported by the skillfully executed stone sculpture and the folk art type of clay figurines.

The Indus script, found on a majority of the seals,

¹⁰Ibid., p. 80.

¹¹C. J. Gadd, "Seals of Ancient Indian Style Found at Ur," Proceedings of the British Academy, XVIII (1932), 191-210.

¹²Walter A. Fairservis, Jr., The Roots of Ancient India, (New York: Macmillan Co., 1971), p. 299.

¹³Loc. cit.

also appears in seal impressions on lumps of clay and on pottery, on amulet-type sealings, and incised on pottery and metal objects. Numerous attempts at decipherment have not yet resulted in a generally accepted solution. George F. Dales states as the primary problem the fact that "all of the surviving inscriptions are too short to allow any analysis of the structure of the script..."¹⁴ and considers it "doubtful that we will ever be able to write a literary, economic, religious, or administrative history of the Harappans."¹⁵ The only knowledge that we derive from the script is that some of the Harappans were literate.

Various dates have been suggested for the Indus civilization. With the warning that "it befits the archaeologist in search of chronology to tread warily in his wanderings across the wide territories of the largest of the earliest civilizations,"¹⁶ Sir Mortimer Wheeler postulates that "the nuclear cities of the Indus civilization were founded sometime before 2,400 B.C. and that they endured in some shape to the eighteenth century B.C."¹⁷ Other settlements may have been founded later, and abandoned

¹⁴George F. Dales, "South Asia's Earliest Writing Still Undeciphered," Expedition 9, No. 4 (1967), 35.

¹⁵Ibid., p. 39.

¹⁶Wheeler, Op. cit., p. 126.

¹⁷Ibid., p. 125.

earlier than these dates. As the subject of chronology is complex, and as the dateable material found in the Indus Valley is scarce, Wheeler's general limits will be accepted.

One topic which has excited considerable interest ever since the first Indus excavations is the nature of the religion. The first major interpretation of the Indus religion was undertaken by Marshall in his excavation report, Mohenjo-daro and the Indus Civilization.¹⁸ Based on the findings of his own excavation and of that of Vats at Harappa, Marshall concluded that there was a fertility cult. The chief deities were an Earth or Mother Goddess and a male god, the prototype of the god Siva. The worship of trees, both in their natural form and with the tree spirit personified, the worship or at least reverence for a wide variety of animals, and reverence for water were other aspects of the religion which Marshall believed he could detect.

Marshall's interpretation has formed the basis of much of the scholarship on the Indus religion. Recently, Herbert P. Sullivan has asked that the entire question of the Indus religion be re-examined. He has demonstrated that many of Marshall's hypotheses bear reappraisal. One problem which he considered is that of the prototype of Siva. Marshall's argument was based on a single seal, showing a figure "three-faced," seated in a yogi position,

¹⁸ Sir John H. Marshall, Mohenjo-daro and the Indus Civilization, (1931; rpt. Delhi: Indological Book House, 1973).

in the company of wild animals, with horns and headdress, all details which Marshall used to link this "deity" with Siva. Sullivan has questioned whether the god is three-faced, whether it is even male, and whether the so-called yogi position is significant or whether it may not be a natural position.¹⁹

After questioning Marshall's other hypotheses in a similar manner, Sullivan concludes that with the few archaeological facts available, nothing about the Indus religion is certain except that there appears to have been a cult centered around the figure of a mother goddess.²⁰

The literature on the Indus civilization is extensive. Primary sources are the excavation reports, which include not only factual information about the excavations but also interpretive chapters based on the finds. They are, in order of publication: Mohenjo-daro and the Indus Civilization,²¹ Further Excavations at Mohenjo-daro,²² Excavations at Harappa,²³ and Chanhu-daro Excavations.²⁴

¹⁹Herbert P. Sullivan, "A Re-Examination of the Religion of the Indus Civilization," History of Religions 4, No. 1 (1964), 115-125.

²⁰Ibid., p. 125. ²¹Marshall, Op. cit.

²²E. J. H. Mackay, Further Excavations at Mohenjo-daro, (Delhi: Manager of Publications, 1938).

²³Madho Sarup Vats, Excavations at Harappa, (Delhi: Manager of Publications, 1940).

²⁴E. J. H. Mackay, Chanhu-daro Excavations, (New Haven: American Oriental Society, 1943).

Secondary sources include books or chapters about the civilization in books, usually quite broad in scope, and journal articles which are frequently more restricted in scope.

Among the secondary sources, informative broad treatments can be found in The Indus Civilization,²⁵ The Roots of Ancient India,²⁶ and Lothal and the Indus Civilization.²⁷ The first is a good overall view of the civilization and an interpretation by an archaeologist; the second, by an anthropologist, considers the entire area surrounding the Indus before, during, and after the time of the Harappans, putting the civilization into a broader context; while the third provides news of the latest excavation, new finds, and some new thinking.

Among the journal articles, Sullivan, already mentioned, is valuable for a brief discussion and new view of the religion;²⁸ for foreign relations and trade, Rao,²⁹ Lamberg-Karlovsky,³⁰ and Mallowan³¹ are all useful;

²⁵Wheeler, Op. cit. ²⁶Fairservis, Op. cit.

²⁷Rao, Op. cit. ²⁸Sullivan, Op. cit.

²⁹S. R. Rao, "Shipping and Maritime Trade of the Indus People," Expedition 7, No. 3, (1965), 30-37.

³⁰C. C. Lamberg-Karlovsky, "Trade Mechanisms in Indus-Mesopotamian Interrelations," Journal of the American Oriental Society, 92, No. 2 (1972), 222-229.

³¹M. E. L. Mallowan, "The Mechanics of Ancient Trade in Western Asia," Iran 3, (1965), 1-7.

the latest report on stratigraphy is by Lambrick;³²
Starr has produced the only major study of the pottery;³³
for seals, in addition to the chapters in the excavation
reports, which are essential, the 1932 article by Gadd is
of interest.³⁴

³²H. T. Lambrick, "Stratigraphy at Mohenjo-Daro,"
Journal of the Oriental Institute (M.S. University of
Baroda) 20, No. 4 (1971), 363-369.

³³Richard F. S. Starr, "Indus Valley Painted Pot-
tery," Princeton Oriental Studies 8, (1941).

³⁴Gadd, Op. cit.

Chapter 4

THE CATEGORIZING AND ANALYSIS OF SEALS

The published seals of the Indus civilization number over 2,000. In order to use these seals for interpreting the civilization, some method of classification and analysis must be devised. The first step is the selection of a cohesive, well-documented body of seals for study. By categorizing these seals in a variety of ways, both dominant and subordinate characteristics can be determined, typical seal characteristics defined, and relationships explored. A chronological analysis can then be made to determine whether any patterns of development or change emerge.

The majority of the published seals are from three excavations, those at Mohenjo-daro carried out and published by Marshall and by Mackay and that at Harappa carried out and published by Vats. Marshall considered that the seals were unvarying throughout the excavations, and so did not record as much information about them as we could wish. His example was followed in the other reports. The excavations revealed a series of levels, each one of which was assumed to be a different level of occupation. Because the Harappans had robbed earlier levels of occupation to obtain building materials, and because of later disturbance, one

level of occupation could be at different depths in different areas of the excavation. Occupation level is laid down as far as possible for buildings. But the records for the seals show only the depth below surface level, of little use in determining occupation level. Although mention is made in the reports of seals found in buildings whose levels have been determined, such information is not consistent throughout. A clear picture of development of the seals, occupation level by occupation level, cannot thus be determined. In addition, though Vats includes in his list of seals all which were found at Harappa, Marshall and Mackay include only those which are illustrated, omitting from illustrations and from listing those which are duplicates. It is clear that unless reference is made to original working reports rather than the published excavation reports sound reporting of factual evidence of all seals is impossible. However, Mackay's excavation report, Further Excavations at Mohenjo-daro, lists 704 seals found in the same DK area, an area which suffered less than others from disturbance. This gives one body of seals which may be studied with considerable reliance on the accuracy of the interpretation. Using this as a basis, the other reports can be referred to when necessary.

The information in the excavation report, FEM, presents certain problems. The absence of occupation levels for seals has made it necessary to devise an artificial set of levels. This has been done using the average depths

of occupation levels as limits. The stratigraphy from the excavation report and the levels used in this paper are given in Appendix A.

Certain of the seals are not easily studied visually, because they are damaged or worn, because the photograph is not clear, or because the photocopy which was the basis of much of the visual study was inadequate. Study of the actual seal or seal impression, or even of the photograph in the excavation report might in many cases permit inclusion of these seals in the study. However, for this paper, questionable seals have been omitted. Appendix B is a list of all seals collated in the FEM report, showing which seals have been omitted and the categories in which all included seals have been placed, as well as the levels to which they have been assigned.

A description of a typical seal, derived from information in the excavation report and from visual examination of the photograph of the seal impression, will serve as the basis for an analysis of the characteristics of the Indus Valley seals.

Seal 422 in the FEM excavation report, Figure 5, is a square of steatite 2.3 x 2.3 x 0.65 inches thick. It is formed with a boss on the reverse and a design in intaglio on the obverse. The boss has a shallow groove cut from top to bottom and is perforated from side to side. The design on the obverse consists of three parts.¹ Across

the top of the seal is a row of symbols. Below this is a representation of a bull in profile, facing right. In front of the bull is an unidentified object which we shall call a standard.

The symbols are examples of the Indus Valley script. This script has not been deciphered. As mentioned in Chapter 1, page 9, its study is being omitted. Thus there will be no further description of the inscription except to state that it is not an integral part of the design.

The bull stands with head raised. Although all four legs and feet are clearly shown, only one horn and one ear are visible. The horn sweeps up and forward over the bull's head. It is equal in length to approximately one-third the length of the bull's body and head combined. The shoulders and haunch are carefully modelled. The tail, legs and feet are precisely outlined. Eye and nostril are clearly indicated. A double line curves down from the backbone, around the foreleg, and returns to the backbone. A series of wavy lines decorates the head from behind the ear to the nose.

The standard appears to be a single slender upright shaft with a bowl-shaped object at approximately its midpoint, topped by a quadrilateral object with concave sides. The bowl is decorated with two rows of small circles, each with a dot in the center. The quadrilateral object is

¹The description is of the seal impression.

decorated with a grid of slightly wavy horizontal and vertical lines.

There is no indication of movement on this seal, yet neither does the animal appear frozen in its attitude. The mood created is midway between the two, an air of calm. The concern with overall design which was evident in Mesopotamian and Minoan seals is lacking. The emphasis is on correct, mainly naturalistic, representations with careful attention to certain decorative details. There is no apparent concern with the field. The script is not incorporated in the design.

The seal, Field number DK 5419, was found in Block I, House, Room 18, at a depth of 13.8 inches below surface.

The characteristics in which other seals may differ from seal 422 include size, material, shape, method of suspension, and iconography.

Although the seals are all small, the minimum dimension apart from thickness being one half inch, the maximum, 2.7 inches, there is great variation within these bounds. Even the square seals are not necessarily precise in their squareness. Marshall points out that once the seals were cut, trimming and polishing would reduce their size considerably.² It appears that standardization of final size was not important and that the variations do not warrant further study in this thesis. It should be noted

²Marshall, MIC II, p. 372.

that this civilization did have standardized weights and measures. The fact that such standards were not applied to the seals may have some significance.

Materials used for the seals were, in addition to steatite, vitreous paste, silver, faience, marble, paste, limestone, and calcite.

The shapes of the seals were, in addition to square, rectangular, round, cubic, and cylindrical. Some have a perforated boss, others a perforated convex back, while still others have a flat back with no method of suspension. Correlations of shape and method of suspension or other treatment of the reverse give us a number of types, originally suggested by Mackay in his chapter on seals in Mohenjo-daro and the Indus Civilization³ and later followed by him in his own report. They are:

- A Cylinder seals Figure 6
- B Square seals with perforated boss Figure 7
- C Square seals with no boss and frequently inscribed on both sides Figure 8
- D Rectangular seals with no boss and frequently inscribed on both sides Figure 9
- E Button seals with linear designs Figure 10
- F Rectangular seals with perforated convex back Figure 11
- G Cube seals Figure 12 (These are not found in FEM)
- H Round seal with perforated boss Figure 13
- I Rectangular seal with perforated boss Figure 14
- J Round seal with no boss and inscribed on both sides Figure 15

The designs, or iconography, can be divided into

³Mackay, "Seals, Seal Impressions, and Copper Tablets, with Tabulation," Chapter 21, MIC.

three major groups. One group consists of script only, one of script plus another element, and the third of an element with no script. The elements may be a single animal, or a scene, which occur both with and without script, or a geometrical design which appears only without script. In addition, there are certain designs which have been classified as scratchings and others grouped as miscellaneous as they appeared to fit no major category.

Tables 1 through 6 are presented to determine whether there may be significant relationships between type, material, and iconography, and whether any pattern or patterns may be discerned, indicating change or development.

Table 6 shows that steatite was by far the most popular material, used in 586 of the 603 seals. Faience, second in popularity, was used in only nine examples, while vitreous paste and silver were used in two examples each. The other materials, marble, paste, limestone, and calcite were each used in only one example.

Steatite was used for all types of seal. The other materials were so rare that it is impossible to judge whether they might have been limited to certain types or not; however, it can be noted that of the nine types found in FEM five were found in more than one material.

A similar pattern is found in Table 5. Steatite was used for all varieties of iconography. The other materials were scattered among script only, script and one animal, and no script, geometric. Script and scene, of

which ten examples were found, is the only major iconographical type which was found only in steatite.

Steatite has been and is still today a favored material for carving. Being a soft stone, it is easy to carve, but it has sufficient hardness to make fine, sharp detail possible. An examination of a typical animal plus script seal shows that two types of carving are present, the clear, sharp carving of the symbols of the script, and the modelling with considerable lifelike detail of the animal. Steatite is clearly a suitable material for the majority of the seals, as it adapts to both types of carving.

Steatite was also used for beads, buttons, figurines, and many other objects by the Harappans. It was a favorite material put to a number of uses, not one which was reserved for any particular classification of object. Faience, vitreous paste, silver and limestone were also used for jewelry and other objects. Calcite is not mentioned in any other context than the single seal, No. 376, nor is there any other marble object than seal No. 479. The occasional use of materials other than steatite may be considered to indicate a willingness to experiment.

No significance can be found in the relationship between material and iconography. The relationship of iconography to type may be significant. The most popular seal, script with one animal, is, with one exception, always square and, with six exceptions, has a perforated boss.

This indicates a standard pattern for the most prevalent iconography. The second most favored iconography, script only, is usually rectangular with a perforated boss, but in a few cases is rectangular with no boss, or square with a perforated boss. The preference for a rectangular seal for script only is understandable, as this shape is particularly suited to a line of inscription. The square, in the same way, is suited to the animal plus script. It might be inferred that there is some standardization of type, with consideration being given to suitability of the shape for the required iconography.

Tables 1, 2, and 3 are concerned with the breakdowns of these various categories according to the depth at which they were found. Mackay divided his excavations in area DK into levels of habitation 1-9, and surface, with level 9 belonging to the earliest period and level 1 the most recent period. These levels, and the slightly altered levels adopted for the seals are discussed on pages 33 and 34 and presented in Appendix A. Although the three seals found on the surface are included, their value archaeologically is slight as they could have been deposited on the surface at any time and could have been brought from another place. The value of the three seals from level 9 is also diminished, although for a different reason. The excavation of the earliest level was less thorough than later levels. Although there is no question about the attribution of the three seals to this earliest level of

occupation, the possibility exists that a more thorough excavation would have yielded as many seals and as great a variety as was found in later levels. Nevertheless, the three surface seals and the three level 9 seals appear to fall into a pattern with the other seals, and we will assume for this study that their inclusion increases the accuracy of the analysis.

Table 1 shows that the two most numerous types of seal, B and F, were both found at the earliest level of occupation and continued to appear at all levels except that no F was found on the surface. In addition, both show a pattern of increase in numbers to the mid-levels and then a gradual decrease. The sole exception to this is in the decrease in type B at level 6. The overall pattern of increase and decrease in numbers of seals of types B and F reflects the overall pattern of numbers of seals.

At level 8, two new types, D and I, were introduced. D roughly follows the pattern of increase and decrease through level 3 after which it appears no more. I reappears only once, at level 6.

Level 7 shows the introduction of types C, E, and J. Type C continues steadily through level 4, then is eliminated. Type E makes a sporadic reappearance. Type J does not reappear.

At level 6 the appearance of types A, H, and I completes the introduction of new types. Of these types only A reappears, with one example at level 5 and one at level 3.

Level 6 shows the greatest variety, with seven different types present. From this level there is a gradual decrease in types employed, with 6 types at level 5, five types at level 4, four types at level 3, three types at level 2, and only two types, the original D and F, remaining at level 1. The surface finds are of types B and E.

The analysis of materials in Table 2 shows a slightly different pattern in that a single material, steatite, predominates. However, the steatite pattern is similar to the pattern of the major types, with the introduction at the earliest level, gradual increase in numbers to mid-level, followed by a gradual decrease. New materials are introduced in levels 8, 7, 6, 5, and 4. Of these marble, paste, limestone, and calcite are not repeated, while vitreous paste and silver are repeated only once. Faience, introduced at level 7 with three examples, has only one or two examples in each level from 5 through 2.

There is no single level showing great variety of material. The maximum number of materials found in any level is three, and this occurs at levels, 8, 6, 5, 4, and 2. The examples of materials other than steatite are only 19, and these are scattered throughout the levels, with only levels 9 and 1 being confined to steatite.

An analysis of iconography is considerably more complex, depending on visual examination and on what elements may be determined to be important. Table 3 shows an

analysis in seven general classifications and a miscellaneous group. Tables 3a, 3b, and 3c show breakdowns within four of these categories. The fifth category, script only, needs no breakdown; the others, no script with scene and scratchings are judged too small to need breakdown while the miscellany is difficult to categorize.

The two major iconographical types, script and one animal and script only are both present at the earliest level, increase in numbers to the mid-levels, and then gradually decrease. No other categories were found at the earliest level. In level 8, three new categories were introduced. Script and scene, though not found in level 7, appears in level 6 through 3 with slightly increasing numbers. After level 3 it is not seen again. No script, geometric design, appears sporadically, its maximum number of three being found in two levels where there are no script and scene. No script, one animal, appears only twice more.

At level 6 appear the only two examples of no script, scene. Two examples of scratchings are found at levels 5 and 3.

Table 3a shows that the urus bull with script, the most common seal, was found at all levels, with the greatest number in the middle levels. New iconographical types were introduced in levels 8, 7, 6, 2, and also found on the surface. The short horn bull and the humped bull, introduced in level 8, appear in all levels through 2 and 3 respectively.

The elephant, introduced in level 7 appears regularly through level 2. The other types appear less regularly.

Table 3b shows a random pattern for scenes with script while scenes without script are insufficient to detect a pattern.

Table 3c shows a random pattern of the various geometric types.

The Harappans appear to have chosen a material which was suitable for seals and to have retained this material through the period studied, although some experimenting with other materials did take place. The shape of seal selected was suitable for the particular iconography, while there was some standardization of types. Although a certain amount of experiment and change took place throughout the period, there is no evidence of evolution, of methodical experiment, or of abrupt change. The one pattern which can be detected is a steady increase in numbers of seals and in variety from the early to the mid-levels, and then a decrease in both numbers and variety. Some of the implications of these results will be considered in the next chapter.

Chapter 5

THE CHARACTER OF THE CIVILIZATION FROM
GROUPS OF SEALS

The interpretation of any ancient civilization is fraught with difficulties. When no documents have survived, no undisturbed site has been excavated by modern methods, and a script is known to have existed but has not been deciphered, the difficulties seem insuperable. However, if an understanding of such a civilization is ever to be achieved, it can come about only through applying the techniques at our disposal with the hope of gaining some illumination. While no method of study can provide a definitive answer, each method, if based on sound evidence and technique, may make some contribution to our understanding. Through analyzing the body of seals categorized in the previous chapter, we can suggest some possible facets of the character of the Indus civilization.

The analysis of seals in the previous chapter indicates that the Harappans found one or more satisfactory solutions to their problems and were inclined to persevere with these solutions, whether the choice of material for the seal, the design of a seal type to suit the iconography (and possibly the function), or an acceptable iconography. However, satisfaction with a solution did not, apparently, lead to enforced regimentation. Throughout the period

covered in the FEM report there was a willingness to experiment, to try new forms. A few of these were adopted, either permanently as was the elephant, or briefly, as was the script plus scene iconography.

The pattern of development of the Indus seals may be contrasted with those discussed in Chapter 2. The Harappans did not follow the Mesopotamian pattern of methodically solving of a series of problems. The apparent freedom to experiment throughout this period indicates a less rigid attitude than that of the Egyptians, but the experiments were far less frequent and showed less inventiveness than the Minoans. An interesting characteristic was their apparent ability to maintain a style without deterioration or stylization.

The Harappans may be judged, from the development of their seals, to have been a people open to experiment to find a better answer, though not constantly seeking the new. The tendency was to return to the solution which had proved satisfactory. This suggests a contentment, a lack of incentive to change, but not a reactionary attitude. A state of equilibrium is suggested.

In order to proceed further in interpretation of the seals it is necessary to try to determine the purpose for which the seals were used. The fact of their existence over a long period of time indicates that there was a need for such an object. Their repetitive character indicates that this need was satisfactorily fulfilled. One suggested

use for the seals was as amulets to protect against evil, enemies, or wild animals,¹ while another theory is that the social organization was based on guilds, trade unions, and corporations and that the seals might have been for the use of these organizations.² We know only that the seals existed, that certain of the seals were used to stamp shaped pieces of clay which were then baked, and that a few pieces of pottery were also stamped by seals.

Consideration of the iconography shows that the outstanding characteristic of the seals is the presence of script on the majority of the examples. The inscriptions vary considerably, which indicates that they probably must relate to something individual rather than something institutional. The obvious explanation is that the inscriptions are the names of individuals. If this is the case, why do some seals have only an inscription, others an inscription and an animal, others an inscription and scene, while still others have a simple geometric design with no script?

Examination of a number of seals bearing the one-horned bull and script shows that, not only inscriptions differ, there are also differences in the treatment of the standard in front of the bull as well as the treatment of

¹K. N. Sastri, New Light on the Indus Civilization, II (Delhi, Atma Ram, 1965), p. 114.

²Swami Sankarananda, History of Mohenjo-daro and Harappa, (Calcutta, Abhedananda Academy of Culture, 1965), p. 163.

the decorative lines of the bull's horns and neck. Examination of the other animals shows significant differences in the treatment of the decorative surfaces. In all cases, great similarities exist in the treatment of the animal's bodies. There appear to be two possible reasons for the variations in decoration. Either this is the one area in which the artist is free to exercise his artistic freedom, to add his own touch, or else there is a definite purpose in the variations. The first explanation is possible, but an insistence on the exercise of artistic freedom is generally considered to be a modern idea, and not something to be found in an ancient civilization.

The second explanation, that there was a definite purpose in the variations, seems more appropriate to the period. The variations require a keen eye for detection. The seal cutter apparently was given two specifications, that the animal be carved in a standard form of representation and that certain ornamental details be sufficiently different to make each seal distinctive. This may imply that the variations were made to enable the owner to recognize his seal, and any impressions made by his seal, without resorting to the inscription. The implication, then, is that the owners of the seals which had script only were literate and could read and recognize the inscription on the seal or seal impression while the owners of the animal plus script seals were not able to read. If this is the case, why did the inscription appear on the

seal? The best explanation would appear to be that it was there for the literate section of the population. We have, then, a picture of a population, the large part of which is illiterate, with a smaller literate group, all employing seals with inscriptions. The literates could read all inscriptions, the illiterates would resort to the slight variations in details to recognize their mark. This implies some system of record keeping, perhaps for days of work production, recompense, or some other purpose. Perhaps the different animals indicate different trades or occupations, or even different positions, with the less common ones being for supervisors. We postulate, then, a city organization in which one class, literate, administers, while others, illiterate, produce. Their seals can be read by the administrators while the type of animals may identify the trade, craft, or guild, and the variations in representation enable the owner to recognize his own stamp. The existence of a two-class system is suggested by the housing and by the art. The suggestion is supported and extended by this theory derived from the seals.

The possibility of a ruler, a king, superior to the administrative class must be considered. The existence of such a monarch in Mesopotamia resulted in the appearance of that king's name in a standard inscription on the seals. The inscriptions on the Indus seals show great variation, with no standard motto. Neither is there a recurring representation of a figure who might be a king, which would

authenticate the seal. The indication, according to the seals, is that there was no secular leader superior to the administrators.

The possibility of a ruling class composed of religious figures can be treated in the same manner. The absence of standard inscriptions, of a priestly figure, and of any symbol which might have hierarchical significance on the majority of seals indicates that, if there were priests, their power did not extend into the areas where the seals were used. As the seals were so numerous and so evident throughout the excavations, it can be assumed that they played an important role in the Harappan society. Religious leaders, if any existed, must have played a minor or restricted role. Further study of the seals for information about the Indus religion might center around the possibilities of a mother goddess, tree worship, and nature spirits, all of which have been suggested in studies based on the seals.

The seals with scenes are unnecessarily complex for identification and must have had some other purpose. Perhaps they had some ritualistic significance. H. A. Groenewegen-Frankfort has observed that the dramatic representation of myth stresses the importance of acts and events in order to enforce their actuality and present importance, rather than to rescue them from oblivion as is the case with secular monumentality.³

³H. A. Groenewegen-Frankfort, Arrest and Movement, (London: Faber and Faber, 1951), p. 165.

These seals with scenes are also few in number. That they were used to make sealings, regularly shaped, carefully stamped, and baked, is shown by the examples of such sealings which have been found. Very few sealings have been found with animal and script impressions. The sealings may have served as amulets or as tokens either as receipt for offerings or as substitutes for offerings or as souvenirs. Certainly the function of the few seals showing a scene can be assumed to be different from that of the animal with script and script only types.

The other main category of iconography, the geometric seal, does not fall into any of the classifications discussed. It is an unusually simple form. Marshall has observed that the swastika, the emblem on many of the geometrics, was known in most parts of the ancient world.⁴ There would be little advantage, in stamping goods for export, in using a seal which had significance in the Indus civilization but which meant nothing to a foreigner. However, the swastika, being recognizable throughout the ancient world as a symbol, could give widespread protection against the tampering of the goods on which it was impressed.

The purposes of the seals from Mohenjo-daro can be postulated as being: 1) for signature in record-keeping (this may well have been for use on clay tablets which have since disintegrated); 2) to make sealings to be baked and

⁴Marshall, MIC, p. 374.

then serve as amulets or souvenirs; 3) to protect goods against tampering. The script only and script plus animal would fulfill the first purpose, the scene would fulfill the second purpose, while the geometrics would serve the third purpose.

This portion of the method, consisting of examination of the categories of seals for evidence of change and for the implications the groups or relationships between groups may have, has provided insights into the possible social, political, economic, and religious aspects of the civilization. It leads to the suggestion that the Indus civilization consisted of a large illiterate body of workers and a smaller body, literate, of administrators. No royal or religious leader dominated the society, nor was there a strong group of priests. Foreign trade relations were probable. All of these conclusions support current theories. The importance of certain scenes is evident, but the meaning of these scenes is unclear. The possible meaning of one such seal and its implications, will be considered in the next chapter.

Chapter 6

THE STUDY OF INDIVIDUAL SEALS

The next step in this method of interpreting the Indus civilization consists of the study of selected individual seals. Many of the theories about the Indus civilization have been based on interpretation of single, often unusual, seals. Certain of these theories will be examined and an effort made to determine whether a different method of studying the seals can be used to support or refute them. In addition, this different method may be used to devise new theories.

In his article, "The Cretan Bull Grappling Sports and the Bull Sacrifice in the Indus Valley Civilization,"¹ C. L. Fabri used FEM seal 510, Figure 16, to show similarities between bull grappling sports in Minoan Crete and the Indus Valley. K. N. Sastri agreed with Fabri's suggestions about these similarities but pointed out that the representations are not very close. He was most concerned with whether the ideas originated in Crete or the Indus civilization. He concluded that the mainland of Asia could be credited with all Minoan aspects, stating that "there can

¹C. L. Fabri, "The Cretan Bull Grappling Sports and the Bull Sacrifice in the Indus Valley Civilization," Archaeological Survey of India Annual Report for 1934-35, (1936), 93-101.

hardly be any doubt about the fact that Crete borrowed her cultural ideas from her more civilized neighbors."² Included among the borrowings is the sport of bull-grappling.

Although many seals of the Indus Valley bear representations of the bull, this is the only seal showing the so-called bull-grappling sport. An animal, either a very long-horned bull or else perhaps a water buffalo, stands in profile, with its head turned half to the side. Over its horns somersault several human figures while another figure appears to be landing on the ground. This could be a scene of continuous narrative, showing several different moments of one continuous action, or it could be a scene showing several different acrobats at one time. In either case, it is a scene which is filled with action. The figures form a swirling movement from the top right corner across the top, down the left side, ending just before the feet of the animal. The figures are slim-waisted, their limbs slender, their bodies flexible and active. The design of the seal is such that no space is left unfilled. There is, perhaps, a horror of a vacuum. There is no script.

The content, the scene of acrobats vaulting over an animal, is reminiscent of Minoan art, supporting the

²K. N. Sastri, New Light on the Indus Civilization, (Delhi: Atma Ram, 1965), p. 44.

theory of Fabri and Sastri. However, the style of representing this content is also reminiscent of Minoan art. The active slim-waisted figures, the swirling movement and the apparent horror vacui are characteristic of Minoan art, but not of the art on the Indus seals. Indeed, on stylistic grounds, as well as those of content, the seal may be considered to exhibit Minoan qualities, while there are no qualities which may be considered Harappan, with the possible exception of the substitution of a buffalo-like creature for the more usual Minoan bull. The one firm connection with the Indus Valley is that the seal was found there.

This examination indicates that this seal cannot be used as proof that the Harappans engaged in or even knew of bull-grappling. Neither can it be used to support Sastri's argument that Crete borrowed her cultural ideals from the Harappans. The sole conclusion to be reached is that there was probable contact between the Minoans and Harappans. Such contact may have been direct. It may also, however, have been indirect, the result of being passed from hand to hand.³

FEM seal 259, Figure 17, was omitted from the

³Such "process of relay" is described by Herodotus in Book 4 of The Histories, pp. 252-53, where he told of offerings being conveyed from one nation to another along a lengthy route. While the process was in this case deliberate, a similar process could probably occur spontaneously.

analytical study in Chapter 2 because it is broken. It has not been the basis for any major theory. However, its unusual style of representation prompts further examination. This fragment of seal shows the head and shoulders of a tiger in profile. A narrow collar-like band encircles the neck. Behind this band, pairs of wavy lines extend downward from the neck and back. In front of the band, straight lines decorate the head. The long, pointed ear is tipped back, the mouth is wide open in a U-shaped curve, the tongue extended. The eye is a strongly-defined circle.

The representation of a tiger on the Indus seals is not unusual. However, this snarling, ferocious tiger can be contrasted with the more usual "friendly" tiger as seen in FEM seal 518, Figure 18. This tiger is shown with body in profile, but with face half-turned to the viewer. A series of straight lines decorate shoulders, neck, and face in a very simple way. The ear is small and rounded, the eyes round, the mouth, though not defined, appears to be closed. The tiger seems meek, not ferocious, a different animal from that presented on seal 259. All other tigers on Indus seals resemble that on seal 518, even when they are in positions which might be considered to be threatening.

The resemblance of the tiger on seal 259 is not to other Indus seals but to a series of steatite vases found throughout the Near East,⁴ as well as one fragment found

⁴FEM p. 7.

at Mohenjo-daro.⁵ While the surface decoration varies from a series of indentations creating a spotted effect to pairs of short U-shaped lines, the common characteristics are the open, U-shaped mouth, much like that on seal 259, and the deep cavity marking the eye, again like seal 259. An example is shown at Figure 19. As seal 259 is only a fragment, it seems likely that it is not, in fact, a seal, but a fragment of a steatite bowl. Its contributions to our interpretation of the Indus are twofold. It indicates the necessity for careful stylistic analysis of any object before accepting it as an Indus seal, and it supports the theory of foreign contact.

While analysis of style may lead to the exclusion of certain seals as Harappan, thus suggesting foreign contact, such contact may also be implied through study of content on seals accepted as Harappan. FEM seal 430, Figure 1, has already been discussed in Chapter 1. A supposed scene of sacrifice shows one composite animal, two main figures, one kneeling before the other, and a row of seven figures along the bottom of the seal. The figures may be humans or deities. All nine figures have long pigtails. Those of the two main figures are thick, while the others appear to be tightly bound, with fullness at the end. Such pigtails are unusual on the Indus seals.

⁵These bowls are also discussed in C. C. Lamberg-Karlovsky, "Trade Mechanisms in Indus-Mesopotamian Interrelations," Journal of the American Oriental Society Vol. 92, No. 2 (1972), 222-229.

One other instance is the centaur figure with pigtail, FEM seal 347, Figure 20.

The pigtail, according to Theresa Howard Carter, might in some situations be called an ethnic indicator. She discussed the examples of pigtails in ancient artifacts and concluded that in the third millennium pigtails were associated with the mountain men of the Zagros while in the second millennium they were associated with Anatolians and might be related to a particular class of spirit.⁶ A. J. Arkell commented on pieces of two mace-heads in the Flinders Petrie Collection of Ancient Egyptian Antiquities, both of which record the conquest of the "Pigtail People."⁷

It seems clear that the appearance of the pigtail on certain Indus seals may have considerable significance and that this detail should be studied in conjunction with such appearances in other civilizations to determine who the pigtailed people may have been and what their relationship with the Harappans may have been. It is especially important that this aspect should be explored before any attempt at interpretation of this seal, considered to be one of spiritual significance, should be undertaken.

Another idiosyncrasy in this scene and certain

⁶Theresa Howard Carter, "The Stone Spirits," Expedition, 12, No. 3 (1970), 40.

⁷A. J. Arkell, "Was King Scorpion Menes?" Antiquity, 37 (1963), pp. 31-35.

other scenes on Indus seals (e.g. Figure 2) which bears study is the peculiar position of the legs of the suppliant. The figure is in a squatting position with the far leg bent under the body, the near leg bent to the side, so that the lower limb is shown as a vertical. This arrangement of legs also appears in a Jemdet Nasr seal illustrated by Frankfort⁸ and on other Mesopotamian seals. Does it have any significance?

The identification of the one-horned bull, the most common representation on the Indus seals, has been a continuing subject of interest. Marshall first described this animal as a unicorn. He admitted that the representation of a two-horned animal in profile, with one horn concealed behind the other, was to be found in other countries. However, the Indus seal engraver made a practice of portraying the buffaloes, gaurs, and humped bulls with two horns clearly and skilfully indicated. Therefore, he concluded, the seal engraver was portraying a one-horned animal, a unicorn.⁹

What Marshall failed to do, and what the art historical method adds to the solution of this problem, was to consider the artist's probable intention.

⁸Henri Frankfort, Cylinder Seals. A Documentary Essay on the Art and Religion of the Ancient Near East, (reprint London: Gregg Press, 1965), Text Figure 12.

⁹Marshall, op. cit., p. 68.

There are, admittedly, many instances of animals shown with two horns clearly indicated. However, there are also examples of representations of animals we know to have only one horn, the rhinoceros. Examination of all examples of the rhino show that two ears are always clearly indicated, thus apparently emphasizing the fact that there is only one horn. (Figure 22). Examination of the "unicorn" shows that only one ear is indicated. The ears of the rhino and of the "unicorn" are similar in representation. Therefore, the omission of the second ear on the "unicorn" must be deliberate. The engraver, then has three variations on the treatment of horns. He can show two horns, in which case the ears are unimportant; he can emphasize the unique quality of one horn by showing two ears, or show one horn and one ear in a stylized representation of a two-horned animal.

While the majority of this study is concerned with the actual sealstones of the Indus Valley, the presence of sealings should not be ignored. One such sealing is Harappa Find No. 649, a rectangle $1 \frac{13}{16}$ inches by $\frac{1}{2}$ inch, of terracotta, Figure 23. It has been stamped on each side with a seal, but no seal has been found which bears this particular design. The first description and interpretation of this sealing were made by Vats. "On the obverse, to the left, are a man armed with a sickle-shaped weapon and a woman with upraised hands; to the right, an inscription. On the other side, is a woman, upside down, with a plant

issuing from her womb, is clearly the Earth Goddess, to whom, it may be presumed, the woman on the other side of the sealing is being sacrificed. The two standing lions are 'genie' officiating at the ritual, as such animal genii are often depicted in Mesopotamian and Minoan Art"¹⁰

Discussion of this sealing has centered around several questions. Is the sealing to be viewed as though the woman is standing on her head or on her feet? Can the woman be identified? What is the object to which she is apparently giving birth? What is the nature of the ritual on the reverse?

To determine the answer to the first question, an examination of the artist's probable intention may be valuable. Assuming that the requirement is the depiction of a female figure giving birth, what position can best represent this act? The woman should be shown reclining, therefore in some position other than the usual upright position of figures on seals. A horizontal position could have been chosen, but would have had no advantage over the selected position, with the woman lying on the ground, her head in the foreground, her feet in the background. At this time there was no method for indicating perspective, consequently the woman appears to be standing on her head. However, examination of the other motifs on this sealing

¹⁰Madho Sarup Vats, "Exploration and Research: Harappa," Archaeological Survey of Indian Report for 1926-27 (1930), p. 99.

show that perhaps even at this early date the artist may have tried to indicate depth of field. The "genie" stand in the left foreground, the script is placed high on the sealing in the center, providing a backdrop and creating space before it. The woman, viewed in conjunction with these elements, can be seen to extend from foreground through space to background, in a crude attempt at perspective.

The object to which the woman appears to be giving birth has a round or oval body with two extremities on each side which might be legs, or arms and legs, and a fifth extremity which appears to be a neck ending in a small head. There is a slight suggestion of a tail. This so-called "plant," which is the basis of designating the woman as Earth Goddess, looks more like an animal than a plant. It bears a strong resemblance to sealing Figure 24, which is described as "a crocodile ... preying on fish,"¹¹ and which has a similar body, legs, neck and suggestion of a tail. Wheeler says the object may be a plant, scorpion, or crocodile.¹² If the object is not a plant, there is no basis for the identification of the figure as Earth Goddess. Therefore, we are left with, on this side of the seal, a depiction of a woman with an object, probably an animal or

¹¹MADHO SARUP, Vats "Exploration and Research: Harappa," p. 104.

¹²Sir Mortimer Wheeler, The Indus Civilization, (3rd ed. Cambridge: Cambridge University Press, 1968), p. 106.

perhaps a crustacean or insect, apparently issuing from her womb.

The depiction of a figure giving birth, though unusual in Harappa, can be found in other areas of the ancient world. A cylinder seal from Early Dynastic Mesopotamia, Figure 25, shows two composite figures. One figure is horned, and it is this figure which appears to be giving birth to an object with two small circles for head and body, and four extremities which might be arms and legs. It is either gripped by or gripping the pincer-like foreleg of the lion which forms the left leg of the composite creature. Two pairs of figures, recalling the genii which flank the Harappa scene, also flank this scene, causing one to wonder whether the birth scene with "genii" attendants, both rare in the Indus civilization, may not have come together from Mesopotamia, as a composite idea.

A further correspondence in the ancient world is found on a seal from Bahrain, Figure 26. This has been labelled an "erotic scene." Perhaps it should be examined as a possible relation of the so-called birth scenes of Mesopotamia and Harappa.

Still another ancient source for birth scenes, though not found on seals, is Catal Huyuk, the site in Anatolia which has been carbon dated 6142 ± 98 ,¹³ predating

¹³Grahame Clark, World Prehistory: A New Outline, (2nd ed.; Cambridge: Cambridge University Press, 1969) p. 92.

the Indus civilization by approximately 3,000 years. Here, on the walls of shrines, are reliefs of females shown either pregnant or giving birth to rams or to bulls.¹⁴

Mellaart reports that the "goddess" is "invariably shown ... with raised arms and upturned legs, a positive indicative of childbirth...."¹⁵

The anthropomorphic representation of a goddess, at a time no anthropomorphic god had yet come on the scene, is what we have been led to expect of the early stage of the Mother Goddess cult. Although the Harappan birth-giving figure guarded by two genii could therefore be a mother or earth goddess, no similar explanation can be found for the scene on the reverse of the seal. The sacrifice of a female to a mother goddess as suggested, is not in keeping with current theories. If there was human sacrifice, it was of the male consort, whose blood was often used to revitalize the soil, once he had served his purpose as consort. In addition, sacrifice was usually performed in ritualistic fashion. The scene on the Indus seal seems to be more in the style of folk art than ritualistic. This is one case in which a study of later customs may be useful.

In a collection of the folklore of China, made in 1876, N. B. Dennys states that in Fuhkein a ceremony is performed shortly before the birth of a child to ward off the demons who are supposed to haunt the mother. Part of

¹⁴Mellaart, op. cit., pp. 206-7.

¹⁵Ibid., p. 124.

this ceremony consists of either burning likenesses of crabs cut out of paper, or of taking live crabs, using them in the ceremony, and then turning them into the street to frighten or propitiate the spirits.¹⁶

The "plant" to which the Harappan woman is supposed to be giving birth looks more like a crab than any other object. Is it possible that in this ancient time, a crab or other crustacean was used in a ceremony relating to birth?

Another custom reported by Dennys is that of passing "a knife edge downward between the feet of a child just as it commences to run alone. This is called 'cutting the cord of his feet,' and is supposed to facilitate his learning to walk."¹⁷ Perhaps the knife in the Indus scene is wielded for a similar ceremonial purpose, not for sacrifice.

The interpretation of an early civilization through later developments must be undertaken with great circumspection. When there is no evident line of descent, even greater circumspection must be exercised. However, as certain similarities exist between the Indus birth seal and the Chinese birth stories, and as no more likely interpretation has yet been offered, it may be worthwhile to

¹⁶N. B. Dennys, The Folk-Lore of China, (1876; rpt. New York: Benjamin Blom, 1972), p. 11.

¹⁷Ibid., p. 12.

postulate an explanation for the Indus birth seal, based partly on later Chinese custom, and partly on what has been deduced about the Indus civilization.

It is clear then, though no seal has been found, that a seal with both designs, or two seals, each with one of the designs, must have existed. There may have been various purposes for these seals of which we know nothing. However, it is evident that one use was for the making of this type of impression. In connection with birth, it would seem that the seal may have been used to make amulets for pregnant women. The birth-giving design perhaps served to frighten away demons, or perhaps to ensure safe delivery of a child while the other scene may also have been to frighten away demons, or to ensure the ability of the child to walk. This amulet could have been made for the pregnant woman to carry, or may have been proof that she had visited the necessary shrine or made the necessary offerings for safe delivery. It could have been provided to the woman by the midwife, in which case the seal might have served a secondary purpose, as the identification and signature seal of the midwife. Such an explanation, though comparatively simple, would seem to be at least as likely as the suggestion that human sacrifice was being made to an Earth Goddess.

In a study of this sort, it is also necessary to establish what motifs one might expect to find and to determine whether they are, in fact, present. The weapons

employed either for hunting or for warfare could be important, yet one of the few representations of a weapon on the seals, apart from the knife described in the birth amulet above, is of a spear which was probably added at a later date.¹⁸ In this case, we turn to the script studying it not for its linguistic value, but for its content as art.

The chief weapons employed in the third millennium were the bow and arrow and the sling. The bow and arrow, with an ancestry in Palaeolithic and Mesolithic cultures, remained essentially African weapons, while the sling, established early in Mesopotamia and the Near East, was to become the weapon of western Asia and the Aegean.¹⁹ Weapons of any sort were rare among the finds of the Indus civilization, but the sling was the most common, establishing a link with Mesopotamia and the Near East. A study of the symbols in the script, however, reveals many human figures bearing bows and arrows in a variety of postures, but none which can be positively identified as bearing slings. If the bow and arrow are to be considered essentially African weapons then a link would seem to be established between Africa and the literate population of the Indus civilization. Is it possible that the literate class, the designers of the script, were of African descent?

¹⁸Mackay, FEM, p. 336.

¹⁹Grahame Clark and Stuart Piggott, Prehistoric Societies, (Harmondsworth: Penguin, 1965), p. 177.

This final step in the method has consisted of visual analysis for content and style and a search for correspondences, primarily in contemporary civilizations but also, with reservations, in earlier and later cultures. This process can lead to the exclusion of some seals. It can show foreign contact, either direct or indirect. In addition, it can suggest new directions for further study.

Chapter 7

SUMMARY

The Indus civilization was a major civilization in the third millennium, B.C. Its people, now known as Harappans, built the first cities in the Indian sub-continent, had an advanced technology, and used a script found mainly on sealstones. No documents have been found, nor is there positive reference to these peoples in any documents of contemporary civilizations. Our knowledge of the Harappans is severely limited, being dependent on interpretation of the surviving artifacts.

The sealstones provide the greatest body of material for study. Although many studies relating to the seals have been published, the emphasis, as in most Indus studies has been on the Indus civilization as the antecedent of the later Indian culture. Many of the studies concentrate on a few unusual seals. Little interest has been shown in studying the entire body of seals for clues to the character of the civilization or in comparing and contrasting the Indus civilization with contemporary civilizations. This thesis presents a method for study of the seals, drawing on techniques from several disciplines and, to illustrate the method, applies it in a limited way.

Shortcomings in the material available for study

combined with the possibility that new archaeological finds may alter the picture at any time made it necessary to design a method sufficiently flexible to accommodate corrections and alterations. The first two steps of the method are preparatory, consisting of gaining knowledge about seals as an artifact and about their development in selected contemporary civilizations, and of gaining knowledge about the Indus civilization and current theories about its character.

The following three steps consist of the categorizing and analysis of one corpus of seals to determine their characteristics and to ascertain whether any patterns of evolution or change can be detected, the study of certain categories of seals, and the study of selected individual seals. The steps include a statistical analysis, an approach which is more akin to social science, and an approach dependent primarily on visual analysis. The method is, consequently, broad in scope while the section on visual analysis demands close attention to detail. Although no positive answers can be expected with the limited material available, the application of intelligent guesswork may provide interesting hypotheses.

The use of sealstones was a characteristic of many third millennium civilizations. Two types of seal, the cylinder or roller seal and the stamp seal were used for securing goods and for sealing documents. In addition to the probable functions of security and the indication of

ownership or authority, seals may have had magical or religious significance. Variations occurred in size, shape, treatment of the obverse material, and iconography.

The seal probably originated in Mesopotamia, where it was developed methodically, with experiments to achieve an acceptable standard in one aspect at a time. Egypt borrowed the seal, made a few experiments, but quickly established Egyptian content and treatment. The characteristic Egyptian seal was the scarab. Minoan Crete was constantly innovative at all times in her sealstones, but certain constants in treatment prevailed.

Study of the remains of the Indus civilization has suggested that one of its outstanding characteristics was uniformity, based on the duplication of city and house plans through many rebuildings, and on the existence of a standard system of weights and measures. Anthropological studies have suggested strong central control without religious or secular rulers, and the probable existence of two social classes. The possible character of the religion has excited great interest. Marshall, the first excavator of Mohenjo-daro, postulated a fertility cult with a mother goddess and a male god whom he considered to be the prototype of the god Siva, tree worship, and reverence for animals and for water. This interpretation has been accepted and has formed the basis for much of the scholarship on the Indus religion. Recently a request for a reappraisal of the whole question of the Indus religion has

been made by Herbert P. Sullivan, who questions many of Marshall's attributions and suggests that all we can know about the Indus religion is that there appears to have been a mother goddess cult.¹

One body of seals, that appearing in the excavation report, Further Excavations at Mohenjo-daro,² was selected for categorizing and analysis. Six hundred and three seals were studied through ten levels of occupation. Variations were found in shape, treatment of the reverse, material, and iconography. Correlations between shape and treatment of the reverse had earlier led Mackay to suggest ten seal types, nine of which were found in the seals studied.

The pattern which emerges is of a preference at all times for one material, two seal types, and two classifications of iconography. However, some experimentation in material takes place at most levels, and variations in both seal type and iconography occur at all levels. No methodical development can be detected. In fact, it is impossible to detect any specific differences between the earliest and the latest seals. A tendency to uniformity without rigid enforcement appears to have existed.

Study of the groups of seals is centered on an

¹Herbert P. Sullivan, "A Re-Examination of the Religion of the Indus Civilization," History of Religions 4, No. I (1964), pp. 115-125.

²E. J. H. Mackay, Further Excavations at Mohenjo-daro, (Delhi: Manager of Publications, 1938).

attempt to understand the reason for certain differences between groups. Script is included on a majority of seals. As there is great variation in inscription, they are probably individual names rather than institutional captions. Why, then, do some seals have script only, while others have script and an animal? The conclusion reached is that there were two levels of population, one of which was literate, while the other was illiterate. The literate population used script-only seals, and was able to read inscriptions from all seals, while the illiterate population required something other than an inscription to recognize their mark. This consisted of an animal, conventional in treatment except for certain decorative details, especially on the head and neck and, in the largest category, on a standard which appeared in front of the animal. This suggestion supports the theory of two classes while other theories which are supported by study of groups of seals are the absence of a religious or secular ruler and the existence of foreign trade relations.

The study of individual seals is based on analysis of style and content and a search for correspondences with contemporary civilizations. One seal, showing several figures leaping over a bull, has been used to show similarities between bull grappling in the Indus Valley and Minoan Crete³ and has even been the basis of the suggestion that Crete borrowed her cultural ideas from the Indus Valley.⁴ Stylistic analysis of this seal leads to the

conclusion that it is not an Indus seal, but was probably imported. The theory, then, is refuted by this method of study.

The presence on several seals of figures with long pigtails is of interest because of correspondences in other civilizations. The pigtail has been called an "ethnic indicator"⁵ and mention is made of the "Pigtail People," giving rise to the questions, who were these people and what were their relationships to the Indus Valley?

Visual analysis, when applied to the script appearing on the seals connects the bow and arrow, which appear frequently in the script symbols, to the literate class. As the bow and arrow were closely linked to Africa, while the sling was common in Mesopotamia and the Near East, the possibility of a link between the literate class of the Indus Valley and Africa should be considered.

This method, when applied to the Indus seals, is used to support certain theories, to refute others, and to offer still others as possibilities for further investigation.

³C. L. Fabri, "The Cretan Bull Grappling Sports and the Bull Sacrifice in the Indus Valley Civilization," Archaeological Survey of India Annual Report for 1934-35, (1936), 93-101.

⁴K. N. Sastri, New Light on the Indus Civilization, (Delhi: Atma Ram, 1965), 44.

⁵Theresa Howard Carter, "The Stone Spirits," Expedition 12, No. 3 (1970), 40.

Table 1
 Analysis of Seals of each Type*
 According to Level

Level	A	B	C	D	E	F	G	H	I	J
Surface		2			1					
1		7				1				
2		31			3	9				
3	1	57		2		14				
4		113	2	3	1	18				
5	1	90	2	2	2	20				
6	1	71	2	4		7		1	1	
7		89	3	2	3	4				1
8		24		1		3			1	
9		2				1				

*See page 38.

Table 2
 Analysis of Seals by Material
 According to Level

Level	Steatite	Vitreous Paste	Silver	Faience	Marble	Paste	Limestone	Calcite
Surface	2	1						
1	8							
2	40		1	2				
3	72			2				
4	135	1		1				
5	115			1				1
6	85		1		1			
7	99			3				
8	27					1	1	
9	3							

Table 3
 Analysis of Seals by Iconography
 According to Level

Level	Script Only	Script and One Animal	Script and Scene	No Script Geometric	No Script One Animal	No Script Scene
Surface		2		1		
1	1	7				
2	9	31		3		
3	16	51	3		1	
4	21	111	3	2		
5	22	88	2	2		
6	12	68	1		2	2
7	7	87		3		
8	4	20	1	1	1	
9	1	2				

Table 3a
 Breakdown of Iconography
 One Animal with Script

	Surface	1	2	3	4	5	6	7	8	9
Bull	1	7	25	42	92	63	51	73	15	1
Short horn Bull			1	3	7	13	4	2	2	
Humped Bull				2	4	7	3	7	1	
Elephant			2	2	4	1	3	3		
Tiger			2		2	1	2	1		
Buffalo					1	1	2		1	
Composite					1	2	3			
Rhino				2					1	1
Three-headed			1							
Antelope	1									
Mountain Goat								1		

Table 3b
 Breakdown of Iconography
 Scenes with Script

	Surface	1	2	3	4	5	6	7	8	9
Man with two animals				3						
Siva Scene					2	1				
Buffalo and Man with spear					1					
Offering Scene						1				
Tiger and man in tree							1			
Two bulls, possible script									1	
Scenes without script										
Man with two animals							1			
Bull Leaping							1			

Table 3c
 Breakdown of Iconography
 Geometrics

	Surface	1	2	3	4	5	6	7	8	9
Cross	1									
Swastika			2		1	1		3		
Swastika variation						1				
Grid			1							
4 Circles										1
Cross with 4 circles					1					

All are type E except 4 circles and cross with 4 circles which are B
 Cross is VP; 5 swastikas are faience; balance are steatite.

Table 4
 Analysis of Seals by Iconography
 According to Type

Type	Script Only	Script and One Animal	Script and Scene	No Script Geometric	No Script One Animal	No Script Scene	Scratchings and Misc.
A							3
B	4	461	9	2	4	1	5
C		5					4
D	12						2
E				10			
F	77						
G							
H		1					
I			1			1	
J							1

Table 5

Analysis of Seals by Iconography
According to Material

Material	Script Only	Script and One Animal	Script and Scene	No Script Geometric	No Script One Animal	No Script Scene	Scratchings and Misc.
Steatite	90	465	10	4	4	2	11
Vitreous Paste	1			1			
Silver		1		1			
Faience	2			6			1
Marble							1
Paste		1					
Limestone							1
Calcite							1

FIGURES



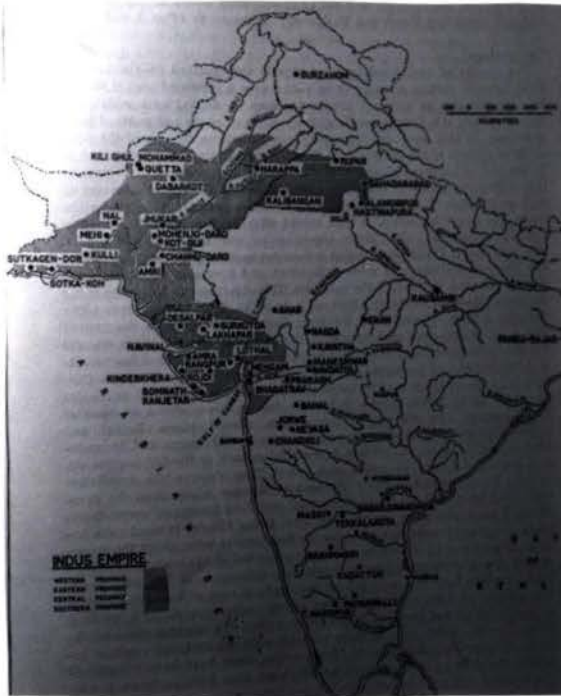
1



2



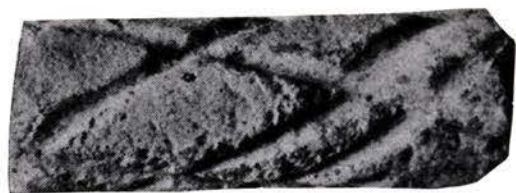
3



4



5



6



8



9



7



10



11



14



12



15



13



16



17



18



19



20



21



22



23



24



25



26

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APPENDIX A

STRATIGRAPHY

Average levels of occupations in the DK mound, reported in Mackay, Further Excavations at Mohenjo-daro. The naming was originated by Marshall and followed by Mackay.

Late Period

Phase I (a)	Ranges from 9.86 feet above to 3.2 feet below datum level.
Phase I (b)	Door sills and pavements average 5 feet below datum level.
Phase II	Door sills and pavements average 7 feet below datum level.
Phase III	Door sills and pavements average 9.9 feet below datum level.

Intermediate Period

Phase I	Door sills and pavements average 13 feet below datum level.
Phase II	Door sills and pavements average 15.9 feet below datum level.
Phase III	Door sills and pavements average 20.4 feet below datum level.

Early Period

Phase I	Average level not yet ascertained. Probably about 24 feet below datum level.
Phase II	Average level not yet ascertained.
Phase III	Average level not yet ascertained.

Levels Established for FEM Seals for this Thesis

Surface	Surface or above
Level 1	Surface to 3.2 feet below surface
Level 2	3.3 feet to 5 feet below surface
Level 3	5.1 feet to 7 feet below surface
Level 4	7.1 feet to 9.9 feet below surface
Level 5	10 feet to 13 feet below surface
Level 6	13.1 feet to 15.9 feet below surface
Level 7	16 feet to 20.4 feet below surface
Level 8	20.5 feet to 24 feet below surface
Level 9	24.1 to 30.2 feet below surface

APPENDIX B

TABULATION OF SEALS FROM
FURTHER EXCAVATIONS AT MOHENJO-DARO

All seals in the FEM tabulation are shown. Those which have been excluded from this study are marked OMIT. All other seals have type, material, and iconographical classification as used in this thesis indicated.

The seals are listed numerically within the levels assigned for this thesis. Seals 18, 55, 63, 142, 289, and 537, being in different levels from their numerical neighbours, are listed out of sequence.

The following abbreviations are used for materials: S = steatite; VP = vitreous paste; SL = silver; FC = faience; ML = marble; PA = paste; LM = limestone; CL = calcite.

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings
Level--Surface or above									
1	E	VP				x			
2	B	S		x					
3	B	S		x					

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
--------	------	----------	-------------	--------------------------	---------------------	------------------------	-------------------------	--------------------	-------------	---------------

Level 1--Surface to 3.2 feet below surface

4	F	S	x							
5	B	S		x						
6		OMIT								
7	B	S		x						
8	B	S		x						
9		OMIT								
10	B	S		x						
11	B	S		x						
12	B	S		x						
18	B	S		x						

Level 2--3.3 to 5 feet below surface

13	B	S		x						
14	B	S		x						
15	B	S		x						
16	B	SL		x						
17	E	FC				x				
19	B	S		x						
20		OMIT								
20	B	S		x						
21	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
22	B	S		x						
23	B	S		x						
24	B	S		x						
25	F	S	x							
26	B	S		x						
27	B	S		x						
28	OMIT									
29	B	S		x						
30	OMIT									
31	B	S		x						
32	B	S		x						
33	B	S		x						
34	B	S		x						
35	B	S		x						
36	E	S				x				
37	E	FC				x				
38	F	S	x							
39	F	S	x							
40	OMIT									
41	F	S	x							
42	B	S		x						
43	F	S	x							

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
44	F	S	x							
45	B	S		x						
46	F	S	x							
47	B	S		x						
48	OMIT									
49	F	S	x							
50	B	S		x						
51	B	S		x						
52	B	S		x						
53	OMIT									
54	OMIT									
56	B	S		x						
57	B	S		x						
58	B	S		x						
59	OMIT									
60	B	S		x						
61	F	S	x							
62	OMIT									
64	B	S		x						
65	B	S		x						
66	B	S		x						
67	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
Level 3--5.1 to 7 feet below surface										
55	F	S	x							
63	F	S	x							
68	B	S		x						
69	B	S		x						
70	B	S		x						
71	OMIT									
72	F	S	x							
73	F	FC	x							
74	B	S		x						
75	B	S			x					
76	B	S		x						
77	F	S	x							
78	A	FC								x
79	B	S		x						
80	B	S		x						
81	B	S		x						
82	B	S		x						
83	B	S		x						
84	B	S		x						
85	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
86	B	S			x					
87	B	S		x						
88	B	S		x						
89	OMIT									
90	B	S		x						
91	B	S		x						
92	F	S	x							
93	F	S	x							
94	B	S	x							
95	B	S		x						
96	B	S							x	
97	F	S	x							
98	B	S		x						
99	B	S		x						
100	D	S	x							
101	F	S	x							
102	B	S		x						
103	B	S		x						
104	B	S		x						
105	B	S		x						
106	F	S	x							
107	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
108	B	S		x						
109	B	S		x						
110	B	S		x						
111	B	S		x						
112	B	S		x						
113	B	S		x						
114	B	S		x						
115	B	S		x						
116	B	S		x						
117	B	S		x						
118	F	S	x							
119	OMIT									
120	F	S	x							
121	B	S		x						
122	B	S			x					
123	B	S		x						
124	B	S		x						
125	F	S	x							
126	B	S		x						
127	B	S		x						
128	B	S		x						
129	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
150	OMIT									
151	OMIT									
152	B	S		x						
153	B	S		x						
154	B	S		x						
155	B	S		x						
156	B	S				x				
157	B	S		x						
158	B	S		x						
159	F	S	x							
160	B	S		x						
161	B	S		x						
162	F	S	x							
163	OMIT									
164	F	S	x							
165	B	S		x						
166	B	S		x						
167	B	S		x						
168	B	S		x						
169	B	S		x						
170	F	S	x							
171	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
172	F	S				x				
173	C	S		x						
174	B	S		x						
175	B	S		x						
176	B	S		x						
177	B	S		x						
178	B	S		x						
179	B	S		x						
180	B	S		x						
181	OMIT									
182	B	S		x						
183	F	S	x							
184	B	S		x						
185	B	S		x						
186	B	S		x						
187	B	S		x						
188	B	S		x						
189	C	S		x						
190	B	S		x						
191	B	S		x						
192	B	S		x						
193	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
194	OMIT									
195	B	S		x						
196	B	S		x						
197	B	S		x						
198	B	S		x						
199	B	S		x						
200	F	S	x							
201	OMIT									
202	B	S		x						
203	B	S		x						
204	F	S	x							
205	F	S	x							
206	B	S		x						
207	B	S		x						
208	B	S		x						
209	OMIT									
210	OMIT									
211	B	S		x						
212	B	S		x						
213	F	S	x							
214	B	S		x						
215	B	S		x						
216	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
217	B	S		x						
218	OMIT									
219	B	S		x						
220	D	S	x							
221	F	S	x							
222	B	S			x					
223	OMIT									
224	B	S		x						
225	B	S		x						
226	B	S		x						
227	F	S	x							
228	OMIT									
229	B	S		x						
230	F	S	x							
231	B	S		x						
232	B	S		x						
233	B	S		x						
234	B	S		x						
235	B	S			x					
236	F	FC	x							
237	B	S		x						
238	B	S		x						
239	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
240	F	S	x							
241	B	S		x						
242	B	S		x						
243	B	S		x						
244	B	S		x						
245	OMIT									
246	B	S		x						
247	B	S		x						
248	F	VP	x							
249	B	S		x						
250	B	S		x						
251	B	S		x						
252	B	S		x						
253	B	S		x						
254	B	S		x						
255	B	S		x						
256	B	S		x						
257	B	S		x						
258	B	S		x						
259	OMIT									
260	B	S		x						
261	B	S		x						
262	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
263	B	S		x						
264	B	S		x						
265	B	S		x						
266	F	S	x							
267	B	S		x						
268	B	S		x						
269	B	S		x						
270	B	S		x						
271	B	S		x						
272	B	S		x						
273	F	S	x							
274	B	S		x						
275	B	S		x						
276	OMIT									
277	B	S		x						
278	B	S		x						
279	B	S			x					
280	B	S		x						
281	B	S		x						
282	B	S		x						
283	B	S		x						
284	B	S		x						
285	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
286	B	S		x						
287	B	S		x						
288	F	S	x							
290	B	S		x						
291	OMIT									
292	D	S	x							
293	B	S		x						
294	B	S		x						
295	B	S		x						
296	B	S		x						

Level 5--10.0 to 13 feet

289	F	S	x							
297	F	S	x							
298	B	S		x						
299	OMIT									
300	B	S		x						
301	F	S	x							
302	F	S	x							
303	F	S	x							
304	B	S		x						
305	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
328	OMIT									
329	OMIT									
330	OMIT									
331	OMIT									
332	B	S		x						
333	B	S		x						
334	B	S		x						
335	B	S		x						
336	F	S	x							
337	B	S		x						
338	B	S		x						
339	D	S	x							
340	B	S		x						
341	B	S		x						
342	B	S		x						
343	B	S		x						
344	B	S		x						
345	F	S	x							
346	F	S	x							
347	B	S		x						
348	B	S		x						
349	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
373	B	S		x						
374		OMIT								
375	B	S		x						
376	A	CL								x
377		OMIT								
378	B	S		x						
379	B	S		x						
380	B	S		x						
381	B	S		x						
382	B	S		x						
383	E	FC				x				
384		OMIT								
385	B	S		x						
386	B	S		x						
387	F	S	x							
388	F	S	x							
389	B	S		x						
390	B	S		x						
391		OMIT								
392	F	S	x							
393	B	S		x						
394		OMIT								
395	F	S	x							

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
396	B	S		x						
397	F	S	x							
398	B	S		x						
399	B	S		x						
400		OMIT								
401		OMIT								
402	B	S		x						
403	B	S		x						
404	B	S		x						
405	C	S								x
406	B	S		x						
407	B	S		x						
408		OMIT								
409	B	S		x						
410	B	S		x						
411	B	S		x						
412		OMIT								
413	B	S		x						
414	D	S	x							
415	B	S		x						
416		OMIT								
417	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
438	B	S		x						
439	F	S	x							
440	B	S		x						
441	B	S		x						
442	B	S		x						
443	B	S		x						
444	B	S		x						
445	B	S		x						
446	B	S		x						
447		OMIT								
448		OMIT								
449	C	S		x						
450	B	S		x						
451	B	S		x						
452	B	S		x						
453		OMIT								
454	B	S						x		
455	B	S		x						
456	B	S		x						
457	B	S		x						
458	B	S		x						
459	B	S		x						
460	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
484	B	S		x						
485	F	S	x							
486	B	S		x						
487	OMIT									
488	A	S								x
489	B	S		x						
490	B	S		x						
491	B	S		x						
492	C	S		x						
493	B	S		x						
494	B	S					x			
495	B	S		x						
496	OMIT									
497	OMIT									
498	B	S		x						
499	F	S	x							
500	H	S		x						
501	B	S		x						
502	B	S		x						
503	B	S		x						
504	B	S		x						
505	D	S	x							
506	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
507	B	S		x						
508	D	S	x							
509	OMIT									
510	I	S						x		
511	B	S		x						
512	B	S		x						
513	B	S		x						
514	B	S		x						
515	F	S	x							
516	B	S					x			
517	B	S		x						
518	B	S		x						
519	B	S		x						
520	B	SL		x						
521	B	S		x						
522	B	S			x					
523	B	S		x						
524	B	S		x						
525	B	S	x							
526	D	S	x							
527	B	S		x						
528	D	S	x							

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
529		OMIT								
530	B	S		x						
531		OMIT								
532	B	S		x						
533	B	S		x						
534	B	S		x						
535	B	S		x						
536	B	S		x						

Level 7--16.0 to 20.4 feet below surface

538	B	S		x						
539	B	S		x						
540	B	S		x						
541	F	S	x							
542		OMIT								
543	B	S		x						
544		OMIT								
545	B	S		x						
546	B	S		x						
547	B	S		x						
548	B	S		x						
549	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
550	E	S				x				
551	B	FC		x						
552	B	S		x						
553	B	S		x						
554	B	S								x
555	B	S		x						
556	B	S		x						
557	B	S		x						
558	OMIT									
559	OMIT									
560	B	S		x						
561	B	S		x						
562	B	S		x						
563	B	S		x						
564	B	S		x						
565	B	S		x						
566	OMIT									
567	B	S		x						
568	D	S	x							
569	B	S		x						
570	B	S		x						
571	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
572	B	S		x						
573	B	S		x						
574	B	S		x						
575	OMIT									
576	B	S		x						
577	B	S		x						
578	B	S		x						
579	F	S	x							
580	B	S		x						
581	B	S		x						
582	B	S		x						
583	B	S		x						
584	B	S		x						
585	B	S		x						
586	E	FC				x				
587	C	S								x
588	B	S		x						
589	B	S		x						
590	B	S		x						
591	B	S		x						
592	B	S		x						
593	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
594	B	S		x						
595	B	S		x						
596	B	S		x						
597	B	S		x						
598	B	S		x						
599	F	S	x							
600	OMIT									
601	B	S		x						
602	B	S		x						
603	F	S	x							
604	J	S								x
605	B	S		x						
606	B	S		x						
607	B	S		x						
608	B	S		x						
609	B	S		x						
610	B	S	x							
611	B	S		x						
612	B	S		x						
613	B	S		x						
614	B	S		x						
615	B	S		x						

Number	Type	Material	Script only	Script and one animal	Script and scene	No script Geometric	No script one animal	No script scene	Scratchings	Miscellaneous
616	B	S		x						
617	B	S		x						
618	B	S		x						
619	E	FC				x				
620	B	S		x						
621	B	S		x						
622	B	S		x						
623	B	S		x						
624	OMIT									
625	B	S		x						
626	B	S		x						
627	OMIT									
628	B	S		x						
629	B	S		x						
630	B	S		x						
631	C	S		x						
632	B	S		x						
633	B	S		x						
634	B	S		x						
635	B	S		x						
636	C	S								x
637	B	S	x							
638	B	S		x						

VITA

Surname: LOVATT Given Names: ELIZABETH DICKERMAN

Place of Birth: PITTSFIELD, MASS. U.S.A. Date of Birth: March 20, 1928

Educational Institutions Attended, with Dates of Entering and Leaving:

MOUNT HOLYOKE COLLEGE 1945 to 1948

UNIVERSITY OF VICTORIA, B.C. 1969 to 1972

UNIVERSITY OF VICTORIA, B.C. 1972 to 1978

_____ to _____

Degrees, Diplomas, Etc., Awarded, with Dates and Names of Institutions:

B.A. (with distinction) 1972 University of Victoria, B.C.

Honors and Awards:

University of Victoria Graduate Scholarship, 1972-73

University of Victoria Graduate Scholarship, 1973-74

Publications:

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ELIZABETH DICKERMAN LOVATT

Name

December 21, 1977

Date