Chapter 1

Introduction
Chapter 1 - Introduction

Chapter introduction

This chapter will deal with the introduction and aims, research problems, research area and chronology discussed in this thesis, as well as the research method, scheme of chapterization and summary of each chapter, as an introduction of this study.

1. Introduction and Aims

The title of the present Ph.D. dissertation is ‘Diversity of Harappan Civilization: A Case Study of the Ghaggar Basin (with Special Reference to Seals)’. This study aims at understanding the diversity of the Harappan Civilization in the Ghaggar Basin, which formed one of the crucial parts of the Civilization, based on archaeological studies of both Pre-/Early Harappan and Harappan seals.

The discovery of the Harappan Civilization that appeared in the Greater Indus region of Pakistan and northwestern India in the second decade of the early 20th century is considered to be the most significant discovery in the South Asian history mainly because it stretched back the antiquity of the settled life by two thousand years in South Asia, highlighting a period of development, existence, and ultimately the decline of the first urbanized society in the region.

The excavations carried out in 1921-22 at two sites of Harappa and Mohenjodaro (now in Pakistan), have led to the discovery of the Harappan Civilization - i.e. the first civilization in South Asia. At present, more than 1500 sites, including ten or more large city sites, are known to spread over 800,000 square kilometres covering central and south Pakistan and north-western and western India. It was a mere coincidence that both Harappa and Mohenjodaro turned out to be among the largest urban centres of this
civilization. Although the two sites are separated from each other by distance of about 600km, various artifacts such as pottery, beads as well as seals with common shapes, design motifs and manufacturing techniques were found from both the sites (Mackay 1938, 1943; Marshall 1931; Vats1940, etc.).

The earlier belief that the Harappan Civilization arose out of the spread of civilization from the west (Mode 1961; Piggot 1950; Wheeler 1953, 1966, 1968, etc.) has turned out to be a myth. A number of explorations and excavations in India and Pakistan have thrown enough light on the indigenous development of this civilization (Mughal 1970, 1988, 1990, 1991 etc).

In the meantime, although it is not yet explained sufficiently, the regional variations in the socio-political/economic structures have been pointed out within the Harappan region, which covers a vast area and diverse ecological settings (Sharma 1982; Possehl and Herman 1990, etc.). Therefore it is a necessary task to identify these regional variations in order to understand the diversity of the socio-political and cultural structure of Harappan Civilization, in the context of recent studies in Harappan archaeology.

Some scholars have already pointed out the diversity of the Harappan Civilization, especially on the basis of ceramic typology. For example, in the Ghaggar Basin, regional differences can be observed in the ceramic assemblages of the Harappan sites (such as continuity of the Sothi-Siswal ceramic tradition even in the Harappan phase along with the Harappan pottery), while the sites located in the Sindh - Balochistan region yield classical Harappan elements forming one cultural region which is distinct from the typology of the Ghaggar Basin (will be discussed in Chapter 2).

As far as previous studies of Harappan seals are concerned, they have been also been studied from various viewpoints and methodologies from the beginning of research in Harappan archaeology. These studies include comparative analysis of shapes, motifs and size of the seals, as well as attempts to decipher the Harappan script
(will be discussed in Chapter 2). But there is no detailed study of Harappan seals in context of the diversity of Harappan Civilization until now. For this reason, the present study focuses on the diversity of Harappan seals, among various other Harappan archaeological artifacts from various sites, as the primary aim of this dissertation.
The most distinctive among various categories of Harappan artifacts is the so called Harappan seal, the majority being square in shape, made of fired steatite \(^1\) (rarely copper or silver) and having boss on the reverse side so that they can be hung from neck or belts. Various motifs of animals (including imaginary or mythological

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\(1\) Steatite is a type of soft sedimentary rock commonly used for making seals and other artifacts.
animals such as ‘unicorns’ and horned elephants or tigers, etc.) are engraved on lower portion of the obverse side, along with an average of five Indus characters (or Harappan letters) inscribed on the upper portion (Figures 1.1 to 6). Some of the motifs consists of geometric designs such as concentric circles, cross and swastika, etc. (Figures 1.3-7). Although 86.5% or 1542 out of 1783 seals (total number of seal will be discussed in Chapter 4) concentrate on Mohenjodaro and Harappa as two large urban centres in this
Civilization, a few examples are discovered even at middle or small sized urban centres that are distributed in each region. These are found not only within the geographical extent of Harappan Civilization itself, covering the entire Indus Plain and its surrounding regions, but also from a number of sites in Mesopotamia, the Persian Gulf region, the Iranian Plateau as well as Turkmenistan (Joshi and Parpola 1987; Parpola et al. 2010; Shah and Parpola 1991, etc).

There is no doubt about the prime function of these artifacts as seals, since terracotta sealings with impressions of the seals themselves have been found from various sites (Figures 1.7 and 10). These seals along with the motifs and inscriptions must have served as an ‘ID card’ of their respective owners who must have been merchants or officers who were in charge of trade activities. At the same time, it is also assumed that they were also regarded as amulets, and both the motifs and inscriptions carried certain religious or symbolic meaning.

Given these special functions of Harappan seals, these artifacts were
Figure 1.5: Broken pieces of the Harappan seals discovered from the period II at Banawali (see also Figure 1.4)
Figure 1.6: Broken pieces of the Harappan seals discovered from the period II at Banawali (see also Figure 1.4)
selected as the main research material of this study. It can be pointed out here that Harappan seals are the most important indicator of the structure of the socio-economical aspect of the Harappan Civilization because of their significance and functions. For this reason, it is emphasized that the detailed study of Harappan seals will yield important clues for a better understanding of the diversity of the Harappan Civilization.

2. Research problems

The present Ph. D. work had been undertaken on the seals of Pre-/Early and
Mature Harappan periods in the Ghaggar Basin, mainly with a view to studying the aspects highlighted below, which have not been dealt with in great detail by previous scholars in the field.

**Figure 1.8**: Harappan sealings discovered from the period II at Farmana (After Shinde et al. 2011; see also Figure 1.7)

Mature Harappan periods in the Ghaggar Basin, mainly with a view to studying the aspects highlighted below, which have not been dealt with in great detail by previous scholars in the field.
Figure 1.9: A Harappan sealing discovered from the period II at Farmana (see also Figure 1.10)
Figure 1.10: A Harappan sealing discovered from the period II at Farmana (see also Figure 1.9)
1) To understand the kind of seals used during the Pre-/Early Harappan period.

In recent excavations, many seals and sealings are reported from various sites in the Pre-/Early Harappan period. Whereas those seals and sealings have been identified, the typology of the seals that had been used in the Pre-/Early Harappan period is not yet understood. The present study aims at studying various aspects of the Pre-/Early Harappan seals (i.e. motif, shape, size and distribution pattern, etc.) and the contribution of the Pre-/Early Harappan seals to the development of later forms of Harappan seals (will be discussed in Chapter 3).

2) To understand various aspects and diversity or regional variation of Harappan seals.

The Ph. D. work aims at studying various aspects of Harappan seals as the main research material (i.e. motif, shape, size, arrangement pattern, distribution pattern and manufacture techniques, etc.) in order to understand the diversity or regional variation of Harappan seals (will be discussed in Chapters 4 to 6). The main method of the present study on the seals is comparative, statistical and scientific analyses (i.e. SEM and 3D analysis).

3) To understand diversity of Harappan Civilization

The earlier belief that the Harappan Civilization was homogenous through space and time has turned out to be a myth. A number of cultural manifestations have been found within the greater complex of the Harappan Culture, which reflect local variations of cultural traditions in each region. This Ph. D. work aims at studying this diversity of Harappan Civilization through the detailed discussions and analyses of the seals discovered in the Ghaggar Basin (will be discussed in Chapter 7).

3. Research area and chronology discussed in this thesis

3-I. Research area

Although research areas of this work should ideally cover a number of sites
Figure 1.11: Sites and regions discussed in the present study
in both India and Pakistan, the focus will be on the Ghaggar Basin, which lies in the present states of Punjab, Haryana and Rajasthan in India (Figure 1.11). These parts of the Ghaggar Basin fall in a subtropical, semi-arid to sub-humid, continental and monsoonal type of climate. The geological formation in the state of Haryana ranges from the pre-Cambrian to the recent times and can be divided into the Aravalli system, the Siwalik system and the alluvial plains. The alluvium effectively conceals the solid geology of the floor. The Chautang and Ghaggar Rivers had occasionally shifted their beds in the Holocene times leaving interlocked alluvial plains along its receding course. The thickness of the alluvium varies from 100 m to more than 400 m at places. The main physiographic units in this area are the Chautang Flood plains and Aeolian plains. The Ghaggar and Chautang Rivers, though now dry, were both important for the human occupation through its history, mostly during the Pre-/Early and Mature Harappan periods as surveys in this region have revealed a heavy concentration of sites from those periods. The Ghaggar-Hakra River (‘Hakra’ is a name given to the same river in Pakistan) has been identified as the ancient Saraswati (Sarasvati) and the Chautang as Drishadvati which are very often referred to in the Rig Veda.

Many well-known archaeological sites like Banawali (Bisht 1993, 1999, etc), Bhirrana (Rao et al. 2004, 2005, 2006), Baror (Sant et al. 2005), Farmana (Shinde et al. 2011), Girawad (Shinde et al. 2011), Kalibangan (Lal et al. 2003), Kunal (Acharya 2008; Khatri and Acharya 1995), Mitathal (Suraj Bhan 1975 etc.), Rakhigarhi (Nath 1998, 1999), Tarkhanewala Dhera (Trivedi 2009), Siswal (Dikshit 1984; Suraj Bhan 1971-72), Sothi (Dikshit 1984) and Nohar (Dikshit 1984) etc. have been systematically excavated and studied in the Ghaggar Basin. Most of these sites have a cultural sequence ranging from the Pre-/Early to the Late Harappan period (c. 3500-1400 BC). This cultural sequence reflects a long history of human occupation, which may reveal the development of regional cultures and their relations with the Harappan Civilization, and the importance of the Ghaggar Basin in studying the diversity of the Harappan
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Table 1.1: Chronology of Harappan Tradition in Pakistan and northwestern India (see also Appendices 1.1 to 4)

<table>
<thead>
<tr>
<th>Year BCE</th>
<th>Mesopotamia</th>
<th>Balochistan</th>
<th>Sindh</th>
<th>Western Punjab</th>
<th>Ghaggar-Chautang</th>
<th>Gujarat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800 BCE</td>
<td>Mhr VIII</td>
<td>Jhukar, Amr III D</td>
<td>Hrp 5</td>
<td>Bnl III, Mtl IIB</td>
<td>Dlv VI</td>
<td></td>
</tr>
<tr>
<td>1900 BCE</td>
<td>Ishin-Larsa</td>
<td></td>
<td></td>
<td></td>
<td>Lt B</td>
<td></td>
</tr>
<tr>
<td>2000 BCE</td>
<td>Nsh IV</td>
<td>Mjd B, Amr III C (upper layer)</td>
<td>Hrp 3C</td>
<td></td>
<td>Dlv V</td>
<td></td>
</tr>
<tr>
<td>2200 BCE</td>
<td>Akkad</td>
<td></td>
<td></td>
<td></td>
<td>Mtl IIA</td>
<td>Dlv IV</td>
</tr>
<tr>
<td>2350 BCE</td>
<td>ED IIIB</td>
<td>Nsh III</td>
<td>Mjd B, Amr III B</td>
<td>Hrp 3B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2450 BCE</td>
<td>ED II IA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2500 BCE</td>
<td>ED II</td>
<td></td>
<td></td>
<td></td>
<td>Dlv III, Ltl A</td>
<td></td>
</tr>
<tr>
<td>2600 BCE</td>
<td>ED I</td>
<td></td>
<td></td>
<td></td>
<td>Dlv II</td>
<td></td>
</tr>
<tr>
<td>2800 BCE</td>
<td></td>
<td>Mhr VI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3000 BCE</td>
<td>Jemdet Nasr</td>
<td>Mhr V</td>
<td>Amr IC</td>
<td>Hrp 1A</td>
<td></td>
<td>Knl IA</td>
</tr>
</tbody>
</table>

ED = Early Dynastic  Mhr = Mehrgarh  Nsh = Nausharo  Amr = Amri  Cfd = Chunafdar  Mjd = Mohenjodaro  Hrp = Harappa  Knl = Kunal  Klb = Kalibangan  Bnl = Banawali  Frn = Farmana  Mtl = Mithatlar  Ltl = Lothal  Dlv = Dholavira

Civilization.

3-II. Chronology

This study will primarily deal with two periods of the Harappan Civilisation, namely Pre-/Early Harappan period (c. 3000-2600 BCE) and Mature Harappan period (c. 2600-1900 BCE) (Table 1.1). The detailed chronology of the Harappan tradition and its neighbors is described in Appendix (see also Appendices 1.1 to 4). These chronological charts, which are used in the present study, are basically based on the results of various scholars (Dales 1965, 1973; Franke-Vogt 2008a; Kamada 2000; Kenoyer 1991b; Possehl
189, 1993, 1999; Possehl and Rissman 1992; Quivron 2000; Shaffer 1992, etc.).

According to C14 dating in Harappa (Meadow and Kenoyer 2005 etc.), the Mature Harappan period is divided into three periods, namely Period 3A: Harappa A (c. 2600/2500-2450/2400 BC), Period 3B: Harappa B (c. 2450/2400-2200 BC) and Period 3C: Harappa C (c. 2200-1900 BC).

Chronological comparison and typological variation of the seals should also be taken into consideration, but unfortunately, precise data is not yet available in sufficient quantities.

For this reason, this study is based on the general chronology (i.e. Pre-/Early Harappan and Mature Harappan periods).

4. Research method

The main method of this study is comparative, statistical and scientific analyses (i.e. SEM and 3D analysis) of the Pre-/Early Harappan and Harappan seals from various sites in the Ghaggar Basin, especially Farmana, Banawali and Kunal. The following works have been conducted in order to collect data and complete the analyses of this study.

1) Participation in excavations at Farmana to understand the nature of archaeological data that associated with the Pre-/Early and Mature Harappan periods firsthand. A detailed preliminary analysis of the seals had been undertaken on the field itself.

2) To undertake a systematic, comparative, statistical analysis and a study on the Pre-/Early Harappan and Harappan seals collected from various excavated sites. A number of Institutions such as the Department of Archaeology and Museums, Haryana (Haryana, Panchkula) and Shri Krishna Museum (Kurukshetra, Haryana), etc. were visited in order to study the relevant material stored in their repositories.

3) To undertake a scientific analyses (i.e. SEM and 3D analysis) on the Pre-/Early Harappan and Harappan seals. The seals were observed through SEM and 3D images
for better understanding of the manufacture techniques in a full sense.

4) To systematically collect published data on Harappan Civilization in general and the Ghaggar Basin in particular. Numerous articles and excavation reports had been published so far, and these form a frame of reference for the present study.

5. Scheme of chapterization and summary of each chapter

This Ph.D. dissertation constitutes seven chapters, excluding some parts such as the Table of contents, Abstract, List of figures and tables, Acknowledgements, Appendices and Bibliography. In this section, the scheme of chapterization and summary of each chapter will be discussed as follows.

Chapter 1 - Introduction:

This chapter will deal with the introduction and aims, research problems, research area and chronology as discussed in this thesis, as well as the research methodology, scheme of chapterization and summary of each chapter as an introduction to this study. Details of the same are already mentioned above.

Chapter 2 - Previous Research on Diversity of the Harappan Civilization and Harappan seals:

In chapter 2, previous research on the diversity of the Harappan Civilization and Harappan seals are summarized, in order to explain and justify the selection of the Harappan seals as the main research object, among various categories of Harappan artifacts, for understanding the diversity of Harappan Civilization.

Chapter 3 - The Seals of in Pre-/Early Harappan Period in light of the Seals in the Ghaggar Basin:

Chapter 3 discusses the seals in the Pre-/Early Harappan period in light of the Seals of the Ghaggar Basin in order to understand the kind of seals that had been used in the Pre-/Early Harappan period in this region, and their significance. It is important in the course of this study to understand the nature of the immediate predecessors of the
Chapter 1

Harappan seals for this study.

Through the analysis of this chapter, it has become evident that Pre-/Early Harappan seals consist of stamp-type seals and button-type seals characterized by common motifs such as geometric designs or concentric circles, and that among these, steatite seals are concentrated specifically in the northern area, including the regions of Gomal, Punjab, and Ghaggar Basin.

Furthermore, in order to consider the significance of these seals, their distribution is compared with that of specific pottery types (i.e. Kot Diji Pottery, Sothi-Siswal Pottery and Quetta Pottery including Faiz Mohammad Ware) and the functions of Harappan seals. This chapter concludes that before the Harappan seal was invented, in the formative period of the Mature Harappan period, there was a functioning system that controlled the flow of merchants, goods, and much information in the northern area where seals with such motifs were used, and a cultural exchange that operated over a wider area than regions united by a specific pottery type.

Chapter 4 - Harappan seals and their Significance:

In chapter 4, the details of Harappan seals as a main research material of this study and their significance through the analysis of motifs and size category are discussed.

The Harappan seals can be divided into three types based on their shape and style of depicting motifs and scripts:

(I) square seals having boss on reverse,
(II) square seals having motifs and script inscribed on both obverse and reverse and thus having no boss,
(III) oblong seals having convex shaped cross section with a hole pierced across its section, instead of carving out separate boss. Only characters are inscribed on obverse without any other motifs.

This study basically focuses only on type (I) seals, since this type makes up the
largest number of seals excavated from many sites in various regions.

For the analysis, these square type seals are first classified based on the motifs and secondarily by size measurements (lengthwise and crosswise). The size measurements are simply taken by measuring photographs of each seal published in the three volumes of the Corpus of the Indus Seals and Inscriptions (hereafter abbreviated as the CISI) edited by J.P. Joshi and A. Parpola (Vol.1, 1987), by S.G.M. Shah and Parpola (Vol.2, 1991) and by Parpola, B.M. Pande and P. Koskikallio (Vol.3, 2010) and so on. In this study, only the seals found within the territory of Harappan Civilization are considered for analysis.

The number of seals from these three volumes where motifs could be identified amounts to 1740 seals, with an additional 43 seals from the more recent excavations, so far unpublished in the CISI. This amounts to a total of 1783 seals for analyses in this study, out of which 1597 seals could be measured. Measurements were recorded in millimeters, rounded to the nearest tenths. Based on scatter plots of these measurements, the seals were classified into various size categories (i.e. categories A to E). Thickness of seals is also an important factor for analysis, but unfortunately no photographs of lateral sides are shown in the CISI, and no such data could be collected. There are about 51 unfinished and 169 broken seals recorded in the CISI and other reports, but these are omitted from the present analysis. In addition, in the course of discussions on the direction of an animal motif depicted on the seals, seals having non-animal motifs (i.e. geometrical one etc.) are excluded altogether.

It is clear from the analysis in this chapter that the motifs on Harappan seals can be classified into the following categories and sub-categories. Firstly, they are categorized based on the number of objects depicted, either singularly or in groups, and secondly, either real or imaginary beings (each motifs are discussed in a full sense in Chapter 4).

It is also clear from this analysis that Harappan seals were made, though not so
rigidly regulated, on certain size categorization of their respective motifs (categories A to E). The majority of seals fall between around 17-35 mm and each group has at least two categories - large and small - which clearly indicate that there was a hierarchy among them. Even the geometric seals have large and small categories though their size distribution is unique.

The largest seals, exceeding 45 mm, are confined to the unicorn and zebu seals found from two large urban sites of Mohenjodaro and Harappa (with one exception from Chanhudaro), owned by person in charge.

Furthermore this analysis points out that the seals having a right-facing animal motif, discovered mainly from the Ghaggar Basin, show regional variations of Harappan seals, which will be elaborated upon in the following Chapters.

Chapter 5 - Design of the Harappan Seals: Consideration of the Harappan Seals Having Right-facing Animal Motif:

Chapter 5 deals with the design of Harappan seals through some aspects such as motifs, Harappan scripts, arrangement pattern of motifs, type of boss, size and distribution pattern to understand the significance of Harappan seals having a right-facing animal motif.

The patterns of motif arrangement of Harappan seals indicate a specific rule about the arrangement pattern of a main motif and the script that is engraved on the surface of the seals. The motif arrangement patterns are classified into three patterns as follows,

**Pattern I**: a main motif is engraved in the lower part along with Harappan script which are depicted on the upper part of the surface,

**Pattern II**: a main motif is engraved in the centre part and Harappan script engraved on some part of the surface, not necessarily restricted to the upper part,

**Pattern III**: only a main motif is engraved without Harappan characters.

The bosses of the seals can be broadly divided into two types as follows,
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**Type I**: a boss as a typical example is shaped in symmetry by incised center line on the square- or bullnose square-shaped boss,

**Type II**: a boss has a simple shape comparison with Type I and has a just square- or bullnose square- shaped boss without an incised center line.

Assuming the design depicted on the surface of Harappan seals is not just an aggregate of the motifs but arranged under a secure rule, we can grasp a standard of design or a rule for arranging each motif. The arrangement pattern of the motifs is analysed here again to understand a rule for arranging each motif. It is clearly that 95.7% or 1388 out of a total of 1451 seals (this total number is the number of seals having an accurate arrangement pattern of motifs, namely patterns I, II and III) is expressed as Pattern I. As is indicated by this analysis, it has to be noted that a basic rule of motif arrangement pattern is very strict. In connection to this point, it should be noted that Pattern I is basically expressed along with a left-facing animal as a main motif and a Type I boss. In conclusion, it is interesting to note that a rule of design of Harappan seals is based on ‘motifs consisting of a left-facing animal and Harappan scripts, etc. are arranged by Pattern I with a Type I boss’. The present work highlights this strict rule as an intentional design of Harappan seals, and will refer to the seal designed by this rule as ‘Type A seal’ in this study.

In the light of recent excavations, however, another type of Harappan seal has been reported. This type is characterized by a right-facing animal as a main motif engraved on the surface instead of a left-facing animal. There are 74 seals having a right-facing animal.

As is discussed in this chapter, it is noteworthy that Harappan seals having a right-facing animal have some different features from Type A seals. Those differences are confirmed on the basis of some aspects such as motifs, Harappan scripts, type of boss and distribution pattern. As far as distribution pattern is concerned, it is clear from the present analysis that the seals having a right-facing animal are concentrated in the
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Ghaggar Basin. In connection with this point, it can be pointed out that the majority of the seals having a right-facing animal are characterized by Pattern II and high percentage of sharing common Harappan script characters. Furthermore, as mentioned above, it is also emphasized that these seals have a Type II boss mainly, not a Type I boss.

The results of this chapter lead to an important conclusion that the seals having a right-facing animal are very likely to show regional variation or diversity among Harappan seals, which has not been pointed out so far. Concerning the high percentage of common script characters within the seals having a right-facing animal, which are discovered in the Ghaggar Basin, it is important to note that these seals had functioned on a different rule of design in comparison to Type A seals, and will henceforth be designated as ‘Type B seal’ for the purpose of this study.

Chapter 6 - Comparative analysis of the seals in the Pre-/Early Harappan period and Harappan Seals through SEM and 3D images:

In chapter 6, manufacture techniques of the seals are analysed with the help of SEM and 3D images, in order to understand the differences and sequence of carving techniques of the Pre-/Early Harappan and Harappan seals, and differences of carving techniques among the Harappan seals (i.e Type A and Type B seals).

SEM and 3D images show various evidences of manufacture techniques of the seals. As is indicated by the analysis in this chapter, it can be pointed out that a part of carving techniques of the Pre-/Early Harappan seals were passed on to those of Mature Harappan seals and almost the same carving techniques are observed between the convex type seal and the typical Harappan seals.

It is also clear that the shape of the section (i.e. concave section, squarish section or concave-squarish section) and the carving technique of the body part of animal motifs which are depicted on the seals give an important clue to understanding the regional variations of carving techniques among Harappan seals. As a conclusion, it is
worthwhile to note that the animal motifs of Type A seals (which are characterized by a left-facing animal) basically have concave sections on the animal’s body. On the other hand, the bodies of animal motifs in Type B seals (which are characterized by a right-facing animal) basically have a squarish or concave-squarish section.

In connection with this point, observations through SEM and 3D images show that concave sections, squarish sections and concave-squarish sections of the animal motif are based on the different manufacture techniques and tools. It may also be possible that the different manufacture techniques and tools of those types are understood as indicators in order to understand different manufacturing areas of each type of seal.

The results of this chapter also lead to an important conclusion- that the seals having a right-facing animal, namely Type B seals, are very likely to show regional variation or diversity of Harappan seals, that has been hitherto unobserved.

**Chapter 7 - Discussions and Conclusions:**

In the last chapter, the diversity of the Harappan Civilization based on the various discussions of Harappan seals in this dissertation are discussed, and conclusions drawn as to the results of this study.

As is indicated by analyses in the course of this study, Harappan seals can be divided into two types based on their design, namely Type A seal and Type B seal. Type A seals are characterized by left-facing animal motif, arrangement Pattern I and Type I boss. On the other hand, Type B seals are characterized by right-facing animal motif, arrangement Pattern II or III and type II boss.

As far as distribution pattern is concerned, although some Type B seals are reported from other regions such as Sindh (e.g. Mohenjodaro), Punjab (e.g. Harappa) and Gujarat (e.g. Dholavira), etc., it is clear from above analysis that Type B seals are mainly concentrated in the Ghaggar Basin.

Additionally, as per the results of SEM and 3D imaging, the section of the
animal’s body depicted on both seal types have different shapes, namely Type A seals have concave section, on the other hand, Type B seals have squarish section or concave-squarish section. Likewise, it can be pointed out here that both section types of the body are caused by the different manufacture techniques and tools.

It can be presumed that Type B seals which are reported from Sindh, Punjab and Gujarat, etc. were transported from the Ghaggar basin to those regions, while on the other hand, Type A seals reported from the Ghaggar basin came from Sindh (Mohenjodaro) and Punjab (Harappa).

The results of this study show that the seals having a right-facing animal, namely Type B seals, are very likely representatives of a regional variation or diversity in the typical Harappan seals that is seen in the Ghaggar Basin.

According to the special functions and significance of Harappan seals, it can be pointed out that the Harappan seal is the most important indicator of its respective Civilization. For this reason, as an important conclusion to this study, it is emphasized that this regional variation or diversity of Harappan seals, as well as regional differences in the ceramic assemblages of the Harappan sites (such as continuity of the Sothi-Siswal ceramic tradition even in the Harappan phase along with the Harappan pottery), reflects a part of diversity of Harappan Civilization, especially in the Ghaggar Basin.

As is indicated by the conclusion in this study, it is most likely that the structure of the Harappan Civilization involves social/cultural diversity.
Note

1) The steatite is understood as the sedimentary rock, which is made up in the neritic sediment unit, especially the limestone unit, of the period ranging from the end of Mesozoic era (i.e. Cretaceous period) to the old Tertiary period in the geological timeline. The steatite can be acquired in the area ranging from the Kirtar Range to the Sulaiman Range on the right bank of lower Indus river and the area alongside the Salt Range. On the other hand, in the area south of the Salt Range on the left bank of Indus river, it is difficult to acquire the steatite at the area excluding the regions ranging from the Rohri hills to the hills in Thar. According to R.W. Law’s study (Law 2008), the steatite discovered at the site of Harappa were not carried from various regions at random, it is pointed out that they are limited to the steatite which is yielded from the Hazara region or the Khyber Agency.