Chapter 3

Seals in the Pre-/Early Harappan Period in light of the Seals in the Ghaggar Basin
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Chapter introduction

Harappan seals are understood as a special item, within a functioning system that controlled the flow of merchants, goods, and much information within urban centres in the urbanized society of Harappan Civilization (c. 2600-1900 BCE). The study of Harappan seals has occupied an important position in the archaeological study of Harappan Civilization that has been discussed from various points of view since the discovery of this Civilization in the 1920’s (discussed in Chapter 2).

In the meanwhile, the kind of seals used in the Pre-/Early Harappan period (c. 3000-2600 BCE), before the invention of Harappan seals proper, is not very clear. This chapter will discuss the seals of the Pre-/Early Harappan period in light of the Seals in the Ghaggar Basin in order to understand the seals of Pre-/Early Harappan period and their significance.

1. Background and aims

The chronology discussed in this chapter is restricted in the Pre-/Early Harappan period. Although it is necessary to subdivide this period (c. four hundred years) into some phases for the more detailed archaeological discussions, chronology has not been established so far. But as is indicated by the aspect of pottery, we understand that this period (c. 2700-2600 BCE) was a transitional phase from the Pre-/Early Harappan period to the Mature Harappan period, and can adapt the terminology ‘transitional phase’ for suitably referring to this period (Possehl 1990; Uesugi 2008; Uesugi and Konasukawa 2008, etc.). The present work restricts its study area to the region of
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present North-western India and Pakistan, excluding other regions (i.e. Afghanistan and Iran, etc.), because the main subject of this chapter is to understand various aspects of the seals in those regions which comprised the core of the Harappan Civilization.

Needless to say, there are no Harappan seals in the Pre-/Early Harappan period. As mentioned in Chapter 1, the majority of Harrapan seals are square in shape, made of fired steatite (rarely copper or silver) and having a boss on the reverse side. Various motifs of animals (including imaginary animals such as ‘unicorns’ and horned elephants or tigers, etc.) are engraved on the lower portion of the obverse side, along with an average of five Indus characters inscribed on upper portion (Figures 1.1 to 6). Some of the motifs consist of geometric designs such as concentric circles, cross and swastika etc. (Figures 1.3-7). It can be presumed that they had been used as stamp-like object because there are many sealings with one or more impressions derived from the Harappan seal itself (Figures 1.7 to 1.10). In comparison with the seals of the Pre-/Early Harappan period, various main motifs such as unicorn etc. -excluding geometrical ones and Indus letters - are an accurate criterion to distinguish Harappan seals from the seals of the Pre-/Early Harappan period. For this reason, it is most likely that Harappan seals were invented with an entirely new design in the formative period of Harappan Civilization (c. 2700-2600 BCE). In addition, there are different types of seal from Harrapan sites in the Pre-/Early Harappan period.

As confirmed in Chapter 2, although there are many previous studies about Harappan seals, the study of seals of Pre-/Early Harappan period is scant up to now. However, as described in the results of recent excavations, it has gradually become clear that the seals having a different design from typical Harappan seals had been used at the present North-western India and Pakistan in the Pre-/early Harappan period (Achaya 2008; Durrani 1994-95; Joshi & Parpola 1987; Kenoyer 2009; Kenoyer & Meadow; Parpola et al. 2010; Shah & Parpola 1991; Sant et al. 2005, etc.). However, there are no detailed studies of these seals since only the basic data of excavated seals was reported
without any detailed analysis in each excavation report. The majority of reports just pointed out the differences between those seals and Harappan seals on the basis of comparative study of motifs engraved on the surface.

In this situation, A. Uesugi pointed out that the seal having the motif based on group of concentric circles is a very distinctive feature and characterizes the seals from this period. He presumed that there was a specific inter-regional relation among the regional cultures of that time based on the discussion on different distribution pattern of some pottery types and seals (Uesugi 2008, 2010, etc.). However, his conjectures are not based on the comprehensive study. Furthermore, some scholars pointed out that it is important to discuss the seals discovered from the sites of Afghanistan and Iran, etc. in the course of studies on the seals in Pre-/Harappan period (Goto 1999; Uesugi 2010, etc.). It can be mentioned, however, that studies concerning relationships between the seals of the Pre-/Early Harappan period and those discovered from outlying areas such as Afghanistan and Iran should be done after basic studies and analyses of the Pre-/Early Harappan seals have been completed, as in the present study. For this reason, as mentioned earlier, the possibility of relationships between the seals of the Pre-/Early Harappan period and those discovered from the sites of Afghanistan and Iran, etc. will not be discussed in this study.

In this chapter, the kind of the seals used in the region of present North-western India and Pakistan, which comprised the core ‘heartland’ of the Harappan Civilization, in the Pre-/Early Harappan period (i.e. before the emergence of Harappan seals) and their significance in the detailed study of the seals in the Ghaggar Basin, especially the site of Kunal, will be appraised. It is also important to analyse the relationship between the seals of Pre-/Early Harappan period and Harappan seals.

2. Seals and sealings in the Pre-/Early Harappan period

The present discussion must be preceded by a description of the classification of
seals in the Pre-/Early Harappan period, in order to avoid complicated descriptions in
the course of the discussion and analysis.

There are two types of seal in this period, namely stamp type seal having a boss
on reverse side (Figures 3.1-2 to 7, 3.2, 3.3, 3.4-1 to 4, 3.5, 3.6, 6.12 and 16) and button
type seal having one or a few perforations on the surface instead of boss (Figures 3.1-
1, 6.4 and 5). In this study, the former type is called as ‘stamp type seal’ and the latter
type is called as ‘button type seal’. Where button type seals are concerned, it is difficult
to accurately pinpoint the function of these objects, even whether they are truly seals or
not, due to the shapes. However, the present study assumes the normal convention that
button type seals are indeed seals, since there is no evidence for the contrary either.

As far as the shape of the seals is concerned, there are various shapes which
comprise the following- ‘square shape’, ‘round shape’, ‘indefinite shape’ and ‘animal-
like shape’. Various shapes except for ‘square shape’, ‘round shape’ and ‘animal-like
shape’ are surmised as ‘indefinite shape’. Furthermore ‘round shape’ includes the oval-
shape.

In the course of this study, individual objects will be referred to both by shape
and type, such as ‘square stamp type seal’, ‘indefinite-shaped stamp type seal’, ‘animal-
shaped stamp type seal’, ‘square button type seal’ and ‘round button type seal’, etc. in
the course of the analysis of the Pre-/Early Harappan seals in this chapter.

The motifs engraved on the surface of the seals are suitably described because
the majority of the motifs consist of geometrical motifs or groups of concentric
circles. Though there are various geometrical motifs constituting straight lines, they
are summarized as a group of geometrical motifs because of their subdivision is
not important from the viewpoint of this study. The raw material and manufacture
technique are also suitably described.

2-I. Seals and a sealing excavated from the site of Kunal

The cultural deposit of the Pre-/Early Harappan period was confirmed in
Figure 3.1: Fired steatite seals discovered from the period IC(i) at Kunal (see also Figures 3.2 and 3.3, photographs and PEAKIT images in Figure 6.4, 5, 6, 12 and 16)
Figure 3.2: Fired steatite seals discovered from the period IC(i) at Kunal (see also Figure 3.1)
Figure 3.3: Fired steatite seals discovered from the period IC(i) at Kunal (see also Figure 3.1)
Figure 3.4: Seals and a sealing discovered from the period IC(i) at Kunal (see also Figures 3.5 to and 3.7)
Figure 3.5: Seals discovered from the period IC(i) at Kunal (see also Figure 3.4)
Figure 3.6: Seals discovered from the period IC(i) at Kunal (see also Figure 3.4)
Figure 3.7: A Sealing discovered from the period IC(i) at Kunal (see also Figure 3.4)
Table 3.1: Catalogue of basic data of the seals and a sealing discovered from the period IC(i) at Kunal

<table>
<thead>
<tr>
<th>Figure no</th>
<th>Register no</th>
<th>Period</th>
<th>Motif(s)</th>
<th>Crosswise (mm)</th>
<th>Lengthwise (mm)</th>
<th>Thickness excluding boss (mm)</th>
<th>Thickness including boss (mm)</th>
<th>Weight (g)</th>
<th>Material</th>
<th>Remarks</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1-1</td>
<td>KNL-1,438</td>
<td>IC(i)</td>
<td>Two deers (or ibexes) / Group of concentric circles</td>
<td>maximum diameter = 28.5</td>
<td>3.9</td>
<td>-</td>
<td>4.31</td>
<td>Fired steatite</td>
<td>Acharya 2008, 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figure 2.1-2</td>
<td>KNL-1,118</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>20.5</td>
<td>20.3</td>
<td>3.0</td>
<td>6.1</td>
<td>3.28</td>
<td>Fired steatite</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.1-3</td>
<td>KNL-1,415</td>
<td>IC(i)</td>
<td>Group of concentric circles and cross</td>
<td>21.0</td>
<td>21.0</td>
<td>3.0</td>
<td>5.1</td>
<td>1.02</td>
<td>Fired steatite</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.1-4</td>
<td>KNL-1,616</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>16.0</td>
<td>16.0</td>
<td>2.4</td>
<td>4.9</td>
<td>1.30</td>
<td>Fired steatite</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.1-5</td>
<td>KNL-1,29</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>14.0</td>
<td>15.1</td>
<td>2.4</td>
<td>6.0</td>
<td>0.82</td>
<td>Fired steatite</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.1-6</td>
<td>KNL-1,??</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>13.0</td>
<td>13.9</td>
<td>2.3</td>
<td>5.0</td>
<td>0.93</td>
<td>Fired steatite</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.1-7</td>
<td>KNL-1,??</td>
<td>IC(i)</td>
<td>Group of concentric circles and geometric motif</td>
<td>13.3</td>
<td>13.0</td>
<td>2.0</td>
<td>4.0</td>
<td>0.85</td>
<td>Fired steatite</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.1-8</td>
<td>KNL-1,153</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>14.5</td>
<td>14.8</td>
<td>-</td>
<td>9.1</td>
<td>2.42</td>
<td>Jasper</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.2-1</td>
<td>KNL-1,??</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>12.2</td>
<td>13.5</td>
<td>-</td>
<td>8.0</td>
<td>1.67</td>
<td>Jasper</td>
<td>Acharya 2008, 15</td>
<td></td>
</tr>
<tr>
<td>Figure 2.2-2</td>
<td>KNL-1,35</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>maximum diameter = 17.0</td>
<td>-</td>
<td>18.5</td>
<td>4.56</td>
<td>Terracotta</td>
<td>Acharya 2008, 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figure 2.2-3</td>
<td>KNL-1,??</td>
<td>IC(i)</td>
<td>Geometric motif</td>
<td>maximum diameter = 28.1</td>
<td>-</td>
<td>30.5</td>
<td>18.48</td>
<td>Terracotta</td>
<td>Acharya 2008, 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figure 2.2-4</td>
<td>KNL-1,372</td>
<td>IC(i)</td>
<td>Geometric motif (as an impression)</td>
<td>25.0</td>
<td>24.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Terracotta</td>
<td>Crosswise and lengthwise are restored from an impression.</td>
<td>Acharya 2008, 15</td>
</tr>
</tbody>
</table>

* "??" - unknown number.
excavations at the small site of Kunal which spreads over ca. 1.2 ha (Acharya 2008; Khatri and Acharya 1995). Though Period I of the Pre-/Early Harappan phase at Kunal is subdivided into three sub periods, namely periods IA, IB and IC, almost all aspects of Kunal after Period I are not clearly discernible because the upper part of the site is destroyed by modern agricultural activities.

The period IA is characterized by Pottery called Hakra Pottery, and large-sized pits which are assumed to be the dwelling pits (c. 2m in diameter and c. 1m in depth). Although the use of such pits continued into period II, some new aspects such as laying sun-dried bricks to construct the walls are confirmed in this period. Concerning the Pottery of this period, the majority of Pottery comprises the bichrome painted pottery, which are painted with black and white pigments. Some scholars pointed out that the pottery has a lot in common with the pottery excavated from Period I of Kalibangan which belongs to the later part of the Pre-/Early Harappan period. Period IC is further subdivided into IC(i) and IC(ii) phases, and this period is understood as the transitional phase from the Pre-/Early Harappan period to Mature Harappan period. The dwelling architecture changes from the large-sized pits to the rectangular architecture constructed by sun-dried bricks. In addition, fired steatite seals which are discussed in greater detail later and large amounts of ornaments made of gold, silver and bronze (or copper) found as a hoard are reported from this period.

Eleven seals and one sealing are excavated from the IC(i) phase of Kunal (Figures 3.1 to 3.7, 6.4, 5, 6, 12 and 16; Table 3.1). The raw materials of seals comprise steatite, jasper, shell and terracotta. The seals and one sealing that are discovered from Kunal will be discussed more comprehensively in the following part. The basic data about the size and weight, etc. of the seals and sealing are mentioned in the Table 3.1.

Fired steatite seals comprise of the square stamp type seals and a round button type seal. It is clearly that the former seals share common designs such as a simple cylinder shaped boss on reverse side. The majority of the motifs engraved on the surface are
geometrical motifs comprised of straight lines or concentric circles (Figures 3.1-2 to 7, 3.2, 3.3, 6.5, 12 and 16). On the other hand, it is not clear that the latter seal has a specific function as seal because the seal has motifs on the both sides without any boss. However, as mentioned earlier, the present study follows the convention established by the excavator (Acharya 2008). The engraved motifs of this seal constitute of two deer or ibexes on one side and of concentric circles on the other side respectively (Figures 3.1-1 and 6.7).

A seal made of jasper (Figures 3.4-1 and 3.5-1) and another made of shell (Figures 3.4-2 and 3.5-2) are of the square stamp seal type with triangular shaped cross section. Engraved geometrical motif comprised of straight lines is also common in both seals.

A seal with perforated boss (Figures 3.4-3 and 3.6-1) and another with non-perforated boss (Figures 3.2-4 and 3.6-2), both made of terracotta have been found from the site. They can be classified as the stamp seal based on the shape. With regard to the engraved motifs on the surface, it is difficult to interpret what motifs are exactly depicted.

A terracotta sealing with an impression originating from a square stamp seal was also found (Figures 3.4-5 and 3.7). The motif on the sealing is a geometrical motif composed of straight lines.

2-II. Seals and sealing excavated from other sites

In this part, the seals and sealings discovered from other sites excluding Kunal are analysed in detail (Table 3.2). They will be discussed respectively for each site and the site distribution with the representations of the seals and a sealing from each site will be shown below (Figure 3.8). The following is a list of examples from various sites in the Ghaggar Basin apart from Kunal. Detailed descriptions of the sites have not been given, since the focus of the study is on the seals themselves.

i) Baror (Figure 3.8-8)

Six indefinite-shaped button type seals made of fired steatite (Figure 3.8-1, 2;
Table 3.2: Catalogue of basic data of the seals and the sealings in the Pre-/Early Harappan period

<table>
<thead>
<tr>
<th>Figure no.</th>
<th>CSI no.</th>
<th>Site</th>
<th>Period</th>
<th>Motif</th>
<th>Type of seal</th>
<th>Direction of head of main animal motif</th>
<th>Crossness (W:cm)</th>
<th>Lengthwise (L:cm)</th>
<th>Thickness excluding base (mm)</th>
<th>Thickness including base (mm)</th>
<th>Type of base</th>
<th>Material</th>
<th>Remarks</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>H-1521</td>
<td>Harappa</td>
<td>Pre-/Early Harappan</td>
<td>Geometrical motif</td>
<td>Button type seal</td>
<td>-</td>
<td>18.0</td>
<td>19.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>CBE Vol. 2</td>
</tr>
<tr>
<td>-</td>
<td>H-1533</td>
<td>Harappa</td>
<td>Pre-/Early Harappan</td>
<td>Elephant</td>
<td>Stump type seal</td>
<td>Left</td>
<td>28.5</td>
<td>30.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>CBE Vol. 2</td>
</tr>
<tr>
<td>-</td>
<td>H-1534</td>
<td>Harappa</td>
<td>Pre-/Early Harappan</td>
<td>Geometrical motif</td>
<td>Stump type seal</td>
<td>-</td>
<td>13.5</td>
<td>13.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>CBE Vol. 2</td>
</tr>
<tr>
<td>-</td>
<td>H-1535</td>
<td>Harappa</td>
<td>Pre-/Early Harappan</td>
<td>Geometrical motif</td>
<td>Stump type seal</td>
<td>-</td>
<td>22.0</td>
<td>22.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>CBE Vol. 2</td>
</tr>
<tr>
<td>-</td>
<td>H-1536</td>
<td>Harappa</td>
<td>Pre-/Early Harappan</td>
<td>Geometrical motif</td>
<td>Stump type seal</td>
<td>-</td>
<td>22.5</td>
<td>22.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>CBE Vol. 2</td>
</tr>
<tr>
<td>-</td>
<td>Tarnabwarki Dera</td>
<td>Pre-/Early Harappan</td>
<td>Geometrical motif</td>
<td>Unidentified motif</td>
<td>Button type seal</td>
<td>-</td>
<td>18.0</td>
<td>19.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>CBE Vol. 1</td>
</tr>
<tr>
<td>-</td>
<td>Baror</td>
<td>Group of concentric circles</td>
<td>Pre-/Early Harappan</td>
<td>Two designs (or boxes)</td>
<td>Button type seal</td>
<td>-</td>
<td>18.0</td>
<td>19.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>Sant et al. 2005, pl. 20</td>
</tr>
<tr>
<td>-</td>
<td>Baror</td>
<td>Group of concentric circles</td>
<td>Pre-/Early Harappan</td>
<td>Group of concentric circles</td>
<td>Button type seal</td>
<td>-</td>
<td>18.0</td>
<td>19.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>Sant et al. 2005, pl. 20</td>
</tr>
<tr>
<td>-</td>
<td>Baror</td>
<td>Group of concentric circles</td>
<td>Pre-/Early Harappan</td>
<td>Group of concentric circles</td>
<td>Button type seal</td>
<td>-</td>
<td>18.0</td>
<td>19.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>Sant et al. 2005, pl. 20</td>
</tr>
<tr>
<td>-</td>
<td>Baror</td>
<td>Group of concentric circles</td>
<td>Pre-/Early Harappan</td>
<td>Group of concentric circles</td>
<td>Button type seal</td>
<td>-</td>
<td>18.0</td>
<td>19.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Bone</td>
<td>Seal9</td>
<td>Sant et al. 2005, pl. 20</td>
</tr>
</tbody>
</table>

Note 1: *" marks in column of crosswise and lengthwise mean ‘restored diameter’ because the shape of seals is indefinite.

Note 2: CBE = Corpus of Indus Seals and Inscriptions.
Figure 3.8: Distribution pattern of the seals and the representative pottery types in the Pre-/Early Harappan period (Drawings of the seals in Figure 3.8 are not to scale and each number means each site)
Sant et al. 2005, Pl. 20) are discovered from the period II which belongs to the Pre-/Early Harappan period of Baror. Only concentric circle motifs have been found on the seals from this site.

**ii) Tarkhanewala Dera** (Figure 3.8- ⑦ )

A broken piece of round button type seal made of fired steatite (Figure 3-8; Joshi and Parpola 1987, 363, Tkwd-1), which has something in common with a round button type seal discovered from Kunal (Figure 3.1-1), is excavated from this site. Although the detailed motif is unknown because of the breakage, a deer or ibex and a motif based on concentric circles are engraved on either surface of the seal, respectively. Their motifs are also very similar to the example found at Kunal.

**iii) Harappa** (Figure 3.8- ⑥ )

Five square stump seals made of fired steatite (Figure 3.8-4; Parpola et al. 2010, 211, H-1533-1537) and one terracotta sealing (Parpola et al. 2010, 212, H-1538) are discovered from the period 2 of Harappa, which belong to the transitional phase between the Pre-/Early Harappan period to Mature Harappan period.

The seals have a lot of similarities with the seals from Kunal with regard to the shape, motif and raw material. Although there is a seal having an elephant motif on the surface (Parpola et al. 2010, 211, H-1533), other examples have a geometrical motif consisting of straight lines, concentric circles and their combination. The terracotta sealing has an impression which could have originated from a square stump seal, but the details of its motif are not discernible.

**iv) Rehman Dheri** (Figure 3.8- ⑤ )

A round button type seal made of ivory (Figure 3.9; Shah and Parpola 1991, 352, Rhd-1) is discovered from the period IA (c. 3300-3000 BCE). Two scorpions, a frog and a T-shaped motif are engraved on the one side, two deer or ibexes and a T-shaped motif are engraved on the other side. In continuous periods II and III, many seals, which are made of fired steatite or shell, are reported.

Although a bird-shaped button
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type seal is reported (Durrani 1994-95, 205, 2), the majority of the seals comprise of stamp type seals, indefinite-shaped stamp type seal and indefinite-shaped button type seal that are characterized by a geometrical motif constituting straight lines and concentric circles (Figure 3.8-5 to 8; Durrani 1994-95, 202-205, 207).

v) Tarakai Qila (Figure 3.8-❸)

Four seals made of fired steatite are reported from this site belonging to the Pre-/Early Harappan period. There is one square stamp type seal (Figure 3.8-9, 10 and 12; Shah and Parpola 1991, 414, Trq2-4), two indefinite-shaped stamp type seals (Figure 3.9-9, 10 and 12; Shah and Parpola 1991, 414, Trq2-4) and a round button type seal (Figure 3.8-11; Shah and Parpola 1991, 414, Trq1). Concerning the square stamp type seal and the indefinite-shaped stamp type seals, the motifs consist of a geometrical motif, which comprise straight lines and concentric circles. On the other hand, it can be presumed that the motifs of the round button type seal constitute of two deer or ibexes. Although this round button type seal is similar to the examples discovered from Kunal (Figure 3.1-1) and Tarkhanewala Dera (Figure 3.8-3; Joshi and Parpola 1987, 363, Tkwd-1), a seal from this site (Figure 3.8-11; Shah and Parpola 1991, 414, Trq1) has the same motif on the both sides, without a motif based on concentric circles seen on any side.
vi) Lewan (Figure 3.8-4)

There is no report of any seal found at this site, but one terracotta sealing is reported, which has a few impressions originating from a same square stump type seal (Shah and Parpola 1991, 400, Lwn-1). It is presumed that the motif of this seal is a geometrical motif consisting of straight lines.

vii) Nausharo (Figure 3.8-2)

An animal-shaped stump type seal made of bronze is reported from the period IB which belongs to the Pre-/early Harappan period of this site. It can be presumed that this seal was made in the shape of a humped bull (Figure 3.8-13; Shah and Parpola 1991, 407, Ns-1).

viii) Mehrgharh (Figure 3.8-1)

The first report of a round button type seal (Shah and Parpola 1991, 402, Mr-5) goes back to the period IV (c. 3300-3000 BCE) of this site. In the continuous periods V to VII, some square, round and indefinite-shaped button type seals (Figure 3.8-14 to 20; Shah and Parpola 1991, 402-405, Mr-8-15) are reported, but there is no stump type seal. As for the raw material of the Mehrgharh seals, the majority of them comprise terracotta and there are some seals made of stone, shell and ivory. However, there is no example made of fired steatite, which is a common raw material in the other sites. In the period VII, the round stump type seals (Figure 3.8-21 to 23; Shah and Parpola 1991, 405, Mr-16, 17) are confirmed. The motifs of the seals consist of deer and geometric one.

3. Discussion

3-I. Distribution pattern

The details of the seals in the Pre-/Early Harappan period were confirmed in the previous part of this chapter. As is indicated by the observations, it is clear that the seals that are similar to the Kunal seals had been used in this vast area before the invention of Harappan seals (Figure 3.8).
The seals of the Pre-/Early Harappan period comprise the stump type seal and button type seal, that have square, round, indefinite-shaped and animal-shaped surface respectively. They are not as stylized as the Harappan seals. In terms of raw material, there are seals made of terracotta, jasper and shell, in addition to the more common fired steatite. Although there are some examples which are characterized by animal motifs such as elephant and deer or ibex, the majority of the motifs are geometrical, consisting of straight lines and concentric circles.

The distribution pattern of the seals in the Pre-/Early Harappan period is shown in Figure 3.8. All sites with seals or sealings are plotted in the same (Figure 3.8). On the other hand, there is no report of the seal and sealing in the rest of the area depicted in this map. For instance, there is no report of the seal from the Sindh region.

A round button type seals having two deer or ibex motif on the surface are reported from Tarakai Qila, Tarkhanewala Dera and Kunal respectively. Two examples from Tarkhanewala Dera and Kunal are different from a Tarakai Qila seal, because they have a motif based on concentric circles on one side. It is very interesting to note that these types of seal, which have a similar design, were distributed in the vast area. All of this type of seals are made of fired steatite.

Two animal-shaped stump type seals are reported from Nausharo and Rehman Dheri respectively. This type seal is not a common type in the Pre-/Early Harappan period because there are no similar examples.

The majority of square or indefinite-shaped stump and button type seals are distributed in the northern area which comprise of Gomal, Punjab and Haryana regions, including the Ghaggar Basin (circled area by broad line in Figure 3.8). These seals are mostly decorated with geometrical motifs consisting of straight lines and concentric circles. It is noteworthy that the motif based on group of concentric circles is a very distinctive feature and characterizes the seals from this period (Uesugi 2010). The most common form of raw material is fired steatite.
Three sealings with an impression from a square stump type seal are also discovered in the northern area (i.e. Lewan, Harappa and Kunal).

As is indicated by this analysis, it is most likely that the stump and button type seals, made of fired steatite and typified by similar motifs had been used in the northern area at the same time. Although understanding the meaning of different seal types is a difficult proposition, it is worth mentioning here that the seals characterized by common motifs had been used in specific areas during the Pre-/Early Harappan period.

Vis-à-vis the relationship of the seals in the Pre-/Early Harappan period and Harappan seals, it should be noted that both the seals that were square in shape, made of fired steatite with a boss on reverse side, and the typical Harappan seals, were distributed in the northern area. It can be presumed, therefore, that the manufacture technique is also common, because the motifs of the seals are expressed by the carving technique (this issue will be further elaborated upon through SEM and 3D analyses in Chapter 6). It can also be noted that these features give us important clues for considering the origin of Harappan seals.

3-II. Size of the seals in the Pre-/Early Harappan period

The graph in Figure 3.10 shows scatter plot of measurements of the seals of the Pre-/Early Harappan period (i.e. square stump seal and round button seal in fired steatite). The size measurements (lengthwise and crosswise or maximum diameter in round button seal) are simply taken by measuring drawings or photographs of each seal published in excavation reports. Measurements were recorded in millimeters, rounded to the nearest tenths.

Although data for this analysis is not sufficient, the seals were classified into two size categories based on scatter plot of these measurements (Figures. 3.10), namely large-size category (32.5 to 28.0 mm) and small-size category (22.0 to 12.5 mm). All of round button seals are classified into the large-size category and both categories are confirmed through all of sites examined.
Although size categories in the seals of the Pre-/Early Harappan period are not as clear when compared with the size category of Harappan seals (discussed in next Chapter), we can confirm two size categories in the seals.

3-III. Historical significance of the distribution pattern of the seals in the Pre-/Early Harappan period

In this part, the historical meaning of the distribution pattern of the seals in the Pre-/Early Harappan period, on the basis of a relationship with the distribution pattern of representative Pottery types, will be discussed.

The Harappan seals were part of a functioning system that controlled the flow of merchants, goods, and much information within urbanized centers along with the weights and measures system within the society of Harappan Civilization (Kenoyer 1991b, 1995, 2000; Koiso and Konasukawa 2009; Konasukawa 2007, 2011a, 2011b,

Figure 3.10: Scatter plot of the measurement of seals in the Pre-/Early Harappan period

Although size categories in the seals of the Pre-/Early Harappan period are not as clear when compared with the size category of Harappan seals (discussed in next Chapter), we can confirm two size categories in the seals.
etc.). In other words, it can be pointed out that the existence of the seals (typified by common design), and sealings having the impression(s) of the seal, reflects the flow of merchants, goods, and much information in the distribution area of the seals or between the sites having them.

In the period IC(i) of Kunal, total of eleven seals and one sealing are excavated along with a hoard consisting of 3,370 carnelian beads, 2,806 fired steatite beads, 5,690 lapis lazuli beads, 487 shell beads and 92 agate beads (Acharya 2008). Similar archaeological evidence which shows a relation in the seals and manufacture of beads is also reported from Rehman Dheri (Durrani 1988, 1994-95; Durrani et al. 1991, etc.). As indicated by this evidence, it can be pointed out that the seals of the Pre-/Early Harappan period had some relation to the flow of goods such as beads, which was given considerable importance in the Indus region. Although a hoard such as at Kunal is exceptional evidence in this period, the evidence above shows a relationship between the flow of goods and the usage of seals.

As this analysis describes, it is assumed that the seals of the Pre-/Early Harappan period were an important part of the functioning system that controlled the flow of merchants, goods, and much information in the area where the seals were used as well as Harappan seals.

Next, the meaning of the relationship of specific distribution patterns of the seals and the representative Pottery types in the Pre-/Early Harappan period can be explored.

The distribution patterns of the representative Pottery types in the Pre-/Early Harappan period could be summarized as follows.

Quetta Pottery, which is characterized by various animal, naturalistic and geometrical motifs, was distributed in Balochistan to the west of the Indus plain, especially the Quetta region in central Balochistan (Fairservis 1956, 1959, 1967, 1975; Franke-Vogt 2008a; Jarrige 1986, 1988, 1989, 1990 1997, Jarrige et al. 1995; Konasukawa 2010; Konasukawa et al. 2011; Quivron 1994; Samzun 1992, etc.).
Kot Diji Pottery, which is characterized by the black colored banded paintings on the short neck, was distributed in the Bannu, Punjab and Sindh regions (Allchin et al. 1986; Dani 1970-71; Durrani 1988; Durrani et al. 1991; Halim 1972a, 1972b; Jenkins 1994; Khan 1965; Konasukawa 2006, 2008c; Mughal 1970, etc.).

Soti-Siswal Pottery, which is characterized by different shapes and paintings in comparison with Kot Diji Pottery, was distributed in the northern Rajasthan and Haryana regions (Acharya 2008; Dalal 1980, 1981, 1987; Dikshit 1984; Frenchman 1972; Lal et al. 2003; Nath 1998, 1999; Nigam 1996; Suraj Bhan 1971-72, 1975; Thapar 1969; Uesugi 2011b, etc).

As Figure 3.8 describes, although each Pottery type maintains loose relationships between them respectively, they were basically distributed independently in each specific region (Uesugi 2008; Uesugi and Konasukawa 2008; Konasukawa 2008a, 2008b, etc.).

On the other hand, it is clear that the distribution of seals from the Pre-/Early Harappan period operated over a wider area than regions united by a specific pottery type (circled area by broad line in Figure 3.3).

This study concludes that it is likely that before the Harappan seal was invented in the northern area, where seals typified by same motifs were used, there was a functioning system that controlled the flow of merchants, goods, and much information, a cultural exchange that operated over a wider area than regions united by a specific pottery type.

4. Chapter conclusion

In summary, this chapter examined the seals of the Pre-/Early Harappan period in light of the seals in the Ghaggar Basin, especially the seals from Kunal, and their significance.

Through the analysis of this chapter, it has become evident that Pre-/Early
Harappan seals consist of stamp type seals and button type seals typified by common motifs such as geometric designs or concentric circles, and that among these, steatite seals are concentrated specifically in the northern area which comprise of the Gomal, Punjab, and Haryana regions including the Ghaggar Basin. Three sealings having the impression(s) of a square-stump type seal are also reported from this area. Furthermore, in order to consider the significance of these seals, their distribution patterns are compared with that of specific pottery types and that of Harappan seals.

As mentioned above, the present study concludes that it is likely that before the invention of Harappan seal in the northern area (including the Ghaggar Basin) seals typified by similar motifs were used, within functioning trade network that controlled the flow of merchants, goods, and information in the area, resulting in a cultural exchange that operated over a much wider area than regions united by a specific pottery type.

Although the data for this analysis is scarce, and there are some examples which should be carefully taken into consideration on account of their chronological position, it may be mentioned that this conclusion shows an aspect of accuracy as far as the seals of the Pre-/Early Harappan period and their significance are concerned.
Notes

1) It is important on this point to discuss the seals discovered from Mundigak (Casal 1961) and Shahr-i Sokhta (Ferioli et al. 1979; Fiandra and Ferioli 1984; Lamberg-Karlovsky and Tosi 1973), etc.

2) Though the final report of the excavations at Kunal have not been published yet, a preliminary report (Acharya 2008) is already published. In the report, C14 dating has assigned a date of 2577 BC to the period IC, but there is no mention of whether the C14 date belongs to Phase IC(i) or IC(ii). However, from the style of the Pottery excavated at Kunal, it is possible to place IC(i) phase to the Pre-/Early Harappan period or transitional phase from the Pre-/Early Harappan period to Mature Harappan period. As far as the context of the fired steatite seals excavated from Kunal is concerned, there is only one description in the report that the seals were excavated from the IC(i) phase.

3) Although this seal is reported as being made of shell in the report (Acharya 2008, 14), it is more likely that the raw material is actually jasper by the observations made in the course of the present study.

4) One seal made of bone (Parpola et al. 2010, 207, H-1521) is reported from the period 1 (c. 3300-2800 BCE). But the seal is excluded in this study because of breakage, and lack of detailed information. Although a broken example (Parpola et al. 2010, 211, H-1537) is also excavated from the period 3C, the excavators understand that this seal can actually be placed in the period 2 based on the typology of its motif (Kenoyer and Meadow 2010).

5) The accurate number of the seals cannot be counted based on the photographs in the excavation reports (Durrani 1994-95), because the seals displayed in the reports comprise many broken pieces or individual pieces from the same seal, making it difficult to identify individual seals. Furthermore, concerning the raw material of the seals, it is also difficult to classify them based on the descriptions in the reports, because it is possible that the excavators confused the seals made of fired steatite with the seals made of shell etc.

6) I interpreted the examples (Figure 3.8-9, 10 and 12; Shah and Parpola 1991, 414, Trq3, 4) as the stump type seal based on the photographs, because the seals have no perforations on the surface.

7) An example (Shah and Parpola 1991, 402, Mr-6, 7) is not included in the analytical data of this study because this seal could not be classified as button type seal from the shape of seal. According to the motifs and shapes of the seals discovered from Mehrgarh, it can be said that they are similar to the seals discovered from Mundigak in Afghanistan (Casal 1961) and Shahr-i Sokhta in Iran (Lamberg-Karlovsky and Tosi 1973) rather than the seals discovered from the sites in the Indus region (Goto 1999; Uesugi 2008, etc.). Furthermore based on the manufacture technique, there are some examples which have motifs created by the drilling technique, not by engraving (or carving). The drilling technique is basically recognized in the seals excavated from Mundigak and Shahr-i Sokhta. This technique has not been confirmed in the sites mentioned above (i.e. Figure 3.3- ❸ to ❾) so far. It is necessary to discuss this issue in future studies.

8) One indefinite-shaped button type seal typified by a group of concentric circles is reported from the site of Sarai Khola (Halim 1972a, 1972b) and two button type seals (one is round-shaped and the other is indefinite-shaped) typified by geometrical motifs are reported from Damb Sadaat (Fairservis 1956, 1959, 1967, 1975). These seals should also be taken into consideration, but unfortunately, precise data is not yet sufficiently available.

9) The site of Mehrgarh is not included in the northern area in this study, because the Mehrgarh seals have some different features, such as the aspects mentioned in note 7 and in the selection of raw material (i.e. terracotta, not fired steatite), in comparison with the seals from the northern area.

10) In the course of this study, it was possible to check all of beads as a hoard at the Department of Archaeology
and Museums, Haryana. As is indicated by the report (Acharya 2008), it can be interpreted that all of beads had been stored in a ceramic pot or jar.

11) Some views and subjects for further analysis are outlined and described here. The stamp type and button type seals as typified by common motifs such as geometric designs or concentric circles continued into the Mature Harappan period, too (Joshi and Parpola 1987; Parpola et al. 2010; Shah and Parpola 1991, etc.). In the site of Baror, six indefinite-shaped button-type seals made of fired steatite (Figure 3.8-1, 2; Sant et al. 2005, Pl. 20) are discovered from period II which belongs to the Pre-/Early Harappan period and some square/indefinite-shaped stamp type seals typified by common motifs such as geometric designs or concentric circles, are reported along with the Harappan seals in the period III, which belongs to the Mature Harappan period (Sant et al. 2005, Pl. 21,22). On the other hand, the majority of the seals reported from period 2 of Harappa and period IC(i) of Kunal (that belong to the transition period from the Pre-/Early Harappan period to Mature Harappan period c. 2700-2600 BCE), comprises of the square stamp type seal having a boss on the reverse side. Furthermore, it is interesting that the raw material of the seals basically comprises of fired steatite because the emergence of the square stamp type seals having a boss on reverse side, made of fired steatite, yield some important clues for discussing the origin of Harappan seals. A further investigation of typological change of the seals in the period ranging from the Pre-/Early Harappan period to Mature Harappan period must be carried out after the accumulation of reliable data with proper context. When discussing the origins of the Harappan seal, A comparison of the production technique of the square stamp type seals of the Pre-/Early Harappan period with that of Harappan seals may yield important clues for the analysis (This issue will be discussed in a full sense through SEM and 3D analyses in Chapter 6).