



Continuity and Change in Glyptic Art in Light of Ancient Mesopotamian Cylinder Seals from the Yale Babylonian Collection

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ABSTRACT

The advent of cuneiform writing in ancient Mesopotamia facilitated the reconstruction of the region's political history, contributing to a profound understanding of societal lifestyles and perceptions. Among extant archaeological artefacts, seals, distinguished as exemplary small artworks, have garnered research attention comparable to cuneiform documents. These artefacts, adorned with diverse themes and styles, offer a narrative richness not fully captured by the written records of the ancient world. Over the past two decades, expanded archaeological excavations in the ancient Near East have significantly augmented our knowledge of glyptic art, yielding well-stratified and securely dated examples from various settlements. This study meticulously examines a collection of cylinder seals of ancient Mesopotamian origin, generously donated to the Yale Babylonian Collection in 2016, belonging to the antiquities trader E.S. David. The primary aim of this study is to analyse the scenes engraved on seals iconographically and stylistically. Concurrently, it delves into technical aspects, such as the variety of raw materials in seal production, production technology, seal size, and form, and queries the existence of chronological developments and changes in seal styles. This multifaceted approach unveils insights into the worldview, culture, artistic style, mythology, technology, and everyday life of the societies associated with seals. In addition, this study investigates similarities and innovations in the technology and style of seal engraving within a chronological framework. Furthermore, this study focuses on the examination of similarities and innovations observed in both the technology and style of seal engraving within a chronological context. This study contributes to a deeper understanding of the intricate interplay between technological advancements, artistic expression, and cultural evolution within ancient Mesopotamia.

Keywords: Continuity and Change, Glyphic Art, Jemdet Nasr and Early Dynastic periods



Introduction

Cylinder seals, as defined in archaeological literature, are cylindrical, thread-passed artefacts featuring diverse depictions and occasional inscriptions on the impression surface, utilised by ancient societies. In the ancient Near East, engraving motifs or scenes on seals involved crafting designs through carving. Consequently, when pressed onto a soft surface, the patterns on the seal appeared in relief. The historical use of cylinder seals in the ancient Near East traces back to approximately 3500 BC in the southern Mesopotamian steppe and Susa in Iran. This practise is credited to the Sumerians, the earliest civilization in the region, who pioneered the system of writing on moist clay (Nissen, 1977, 15-16; Collon, 1987, 5; Collon 1995).

The most fundamental reasons for the transition from stamp seals to cylinder seals in ancient Mesopotamian societies can be explained as follows:

1. The stamp seal, which has a more restricted impression surface than a cylinder seal, limits its capacity to present detailed narratives or communicate substantial messages to society (Moortgat, 1969, 9; Nissen, 1977; Collon, 1987, 5).

2. The change in the society's economic system and the inability of both types of seals (stamp and cylinder) to be functional simultaneously played a role. To express this more clearly, stamp seals, with their relatively small and limited impression areas, could only partially secure the objects they intended to protect. On the other hand, using cylinder seals allowed the entire surface of an object to be sealed, providing a more comprehensive safeguard. In this way, materials transported from one region to another or stored could be protected against fraud or theft. In conclusion, cylinder seals perfectly meet both fundamental needs, providing better control and a broader space for expression (Nissen, 1977, 15-16; 2004, 87-89; Porada, 1993).

Seals, not only enduring in circulation for centuries post-creation, serve as enduring references, reflecting formal, stylistic, and iconographic evolution, but also emerge as crucial sources, imparting intricate details on Mesopotamian history, social life, culture, art, belief systems, and technology, paralleling cuneiform documents. Foremost in facilitating the chronological classification of Mesopotamian glyptic art are cylinder seal inscriptions featuring the names of historical figures, seal impressions on cuneiform tablets, and evidence gleaned from excavations in ancient sites.

The archaeological artefacts that form the starting point of the study consist of a group of seals of Near Eastern origin belonging to the antiquities trader E.S. David. The collection was donated to the Yale Babylonian Collection for scientific study in 2016 by his son, E.S. David after his death (Lassen, 2019, 7). The collection consists of 360 pieces of cylinder seals dating from the 4th millennium BC to the Sassanid Period.

The study covers a total of 25 cylinder seals with subjects such as various animal rows, working women, hero-animal combats, lion-goat combats, banquets, and various geometric motifs. The earliest examples of the seals in this study are dated to around 3100 BC according to the Middle Chronology, whereas the latest examples can be dated to around 2350 BC. This historical interval aligns with the Jemdet Nasr (hereafter JN) and Early Dynastic (hereafter ED) periods in Mesopotamian chronology (Table 1).

The seals that constitute the subject of this study have been analysed not only for their iconography and stylistic features but also for their technical characteristics, such as the variety of raw materials, production technology, size, and form. This study unveils, for the first time, the temporal and cultural context reflected in the artistic and iconographic features of seals within the Yale Babylonian Collection, drawing comparisons with other Mesopotamian seals. This approach facilitates an understanding of the cultural and artistic traits of the societies using these seals during their respective periods, while also providing insight into the inferred social lives and technological advancements achieved in their artistic endeavours. Thus, the cultural or artistic similarities or differences between societies living in different geographies and periods are emphasised considering the cylinder seals constituting the focus of this research.

Table 1: South Mesopotamia chronology from the 4th to the end of the 3rd Millennium BC (Lebeau, 2011, 12, Table 1; Sallaberger and Schrakamp, 2015) and scenes of cylinder seals.

Approximate Dates BC (Middle Chronology ca.)	Historical Period Mesopotamia (south)	Cylinder Seal Scenes
4000-3100	Uruk	
3100-2900	Late Uruk/JN	rows of horned animals; rows of fish and spider; working women; geometric patterns
2900-2700	ED I	rows of horned animals
2700-2600	ED II	contest between nude heroes and animals
2600-2500	ED IIIa	Banquet scene, contest between nude heroes and animals or bull-men and animals; lion and goat
2500-2350	ED IIIb	contest; geometric patterns
2350-2112	Akkadian and Post-Akkadian	



Figure 1: Map of the sites frequently referenced in the text (created by using the ArcGIS/ArcMap software).

Chronology, Materials, and Techniques of Cylinder Seals

1-Late Uruk/JN (Proto-Literate) Period (circa 3100-2900 BC)

The Uruk period characterised the majority of the 4th millennium BC in southern Mesopotamia. Throughout much of this period, archaeological remains serve as primary sources, as written records only emerge for the Late Uruk period (Uruk IVa-b) and the subsequent “transitional” period (Uruk III/JN) (Selz, 2020, 164). The earliest examples from the second half of the 4th millennium BC align chronologically with the late Uruk period. Seals from this period are predominantly carved from soft limestone, with the largest seals (at least in diameter) utilised by Near Eastern societies carved during this period (Collon, 1987, 14; Collon, 2003, 3-4.). Towards the end of the 4th millennium BC, as urbanisation reached its peak and the widespread use of writing paralleled this development, there was an explosion in the use of cylinder seals. Seals were no longer limited to elite administration but were also used to stamp goods traded over long distances, such as baskets, containers, and bags. These seals belong to the period known as JN but extend as far as the ED I period. The name JN period is derived from the mound of Jemdet Nasr, located near the city of Kish,

south of Baghdad, where the remains of this period were first discovered. In Mesopotamian chronology, this cultural phase has been classified within the phase initially defined by Delougaz as the Proto-literate period¹ (Delougaz, 1942, 8, foot note. 10).



Figure 2: JN period cylinder seals. Rows of horned animal scenes (photos and modern impressions by author).

- a.** Cylinder seal. Yellow marble. Two antelopes are standing facing left with a plant in between and a shrine in front.
Height 2.3 cm. Diameter 8.1 cm. Yale Babylonian Collection, D002.
- b.** Cylinder seal. Black serpentine. Two antelopes stand with their backs to each other, with two spouted vases and stars, and a shrine in front.
Height 2.7 cm. Diameter 6.3 cm. Yale Babylonian Collection, D-005.
- c.** Cylinder seal. Green jasper. An antelope is standing facing left, with a star in front and a shrine.
Height 1.6 cm. Diameter 3.1 cm. Yale Babylonian Collection, D-007.
- d.** Cylinder seal. White marble. Three antelopes are depicted standing, and there are two drill hole patterns in the gap.
Height 2.5 cm. Diameter 6.4 cm. Yale Babylonian Collection, D-008.

¹ From a stratigraphic perspective, this term encompasses the cultural phases from the Late Uruk period to the end of ED I, which marks the period in Mesopotamia when writing first emerged and phonetic principles began to be utilised. See also Frankfort, 1955, 12-24.

The increasing number of excavations in the Near East has not only expanded our knowledge of the period's seal art but also revealed that the cylinder seals of this period are more widely distributed than those of the Uruk period. All JN seals have holes, and there is no evidence of any handle attachments on the upper part of these seals. The cylinders from this period are small and stout. Nevertheless, the seal engraving technique of this period exhibits a more rudimentary, schematised, and less meticulous craftsmanship compared with that of the preceding period. It can be noted that the subject repertoire was much more limited compared to the Uruk period.



Figure 3: Transition phase cylinder seals. (photos and modern impressions by author)

- a. Cylinder seal. White marble. Rows of horned animal scenes. Two antelopes are standing. Height 1.6 cm. Diameter: 3 cm. Yale Babylonian Collection, D-015.
- b. Cylinder seal. Grey-brown stone. A goat is standing facing left, with a star and plant motif in front and two other stars on top. Height 2.7 cm. Diameter 3.2 cm. Yale Babylonian Collection, D-016.

Until the early 1990s, it was generally accepted that JN period seals were shaped using a cutting wheel (Nissen, 1977; Collon, 1986; 1987; Gorelick & Gwinnett, 1992). However, Margaret Sax's recent studies have conclusively proven that the cutting wheel was not invented before the Old Babylonian period, more precisely, between the late 1700s and 1600s BC (Sax & Meeks 1994; 1995; Sax et al. 1998). Thus, it is understood that seal manufacturers of this period used the technique of drilling and filing extensively while creating the depictions on the cylinders (Pittman & Aruz, 1987, 14-16).

Fourteen of the seals examined for the first time in this study carry the characteristics of the JN period glyptic art. These seals share similarities in form and material with the wide and stout Uruk period seals. Furthermore, they exhibit distinct features, being crafted in thin, long, concave shapes and fashioned from either white or pink marble or glazed steatite stones.



Figure 4: ED I period cylinder seals. Horned animal scenes (photos and modern impressions by author).

- a. Cylinder seal. Pink marble. Two antelopes are standing. Height 3.8 cm. Diameter 4.8 cm. Yale Babylonian Collection, D-014.
 b. Cylinder seal. Serpentine. An ibex is standing facing right with plants. Height 2.5 cm. Diameter 4.3 cm. Yale Babylonian Collection, D-018.

2-ED I/Post-JN Period (circa 2900-2700 BC)

Texts in southern Mesopotamia shed light on the period known as the Early Dynastic (ED) period in Mesopotamian chronology, extending from the early 3rd millennium BC until the political unification of the Akkadians under Sargon. Based on archaeological data from the excavations at Tell Asmar (ancient Eshnunna), Tell Agrab, and Khafajah (ancient Tutub) in the northeastern Diyala region of Baghdad, this period is traditionally divided into three main phases: ED I, ED II, and the final phase, ED III, according to Frankfort (Frankfort, 1955, 2; Collon, 1987, 20; Amiet, 1980). Moortgat, on the other hand, proposed a different chronological distinction

for the cultural phases established by Frankfort and made the following classification²: ED I = Transitional phase; ED II = Mesilim period; ED IIIa=Fara period (Moortgat, 1967).

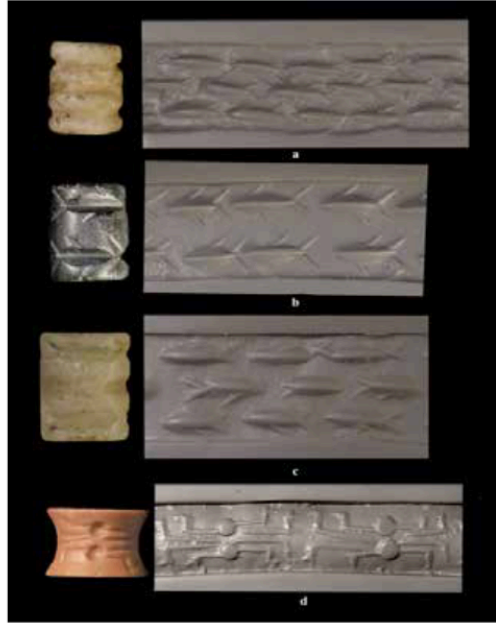


Figure 5: JN period cylinder seals. Rows of fish and spider scenes (photos and modern impressions by author).

- a. Cylinder seal. Quartz. Three rows of fish.
Height 1.7 cm. Diameter 4.2 cm. Yale Babylonian Collection, D-030.
- b. Cylinder seal. Black serpentine. Two rows of fish scenes.
Height 2 cm. Diameter 4.6 cm. Yale Babylonian Collection, D-031.
- c. Cylinder seal. Onyx marble. Three rows of fish scenes.
Height 2.5 cm. Diameter 5.7 cm. Yale Babylonian Collection, D-032.
- d. Cylinder seal. Concave sites. Red jasper. Rows of two spider scenes.
Height 2.5 cm. Diameter 5.8 cm. Yale Babylonian Collection, D-027.

² Another widely accepted designation for the ED period in Mesopotamian chronology is the "Pre-Sargonic Period". See de Genouillac, 1934, 70. Other scholars prefer to divide the ED period into only two stylistic phases: earlier ED and later ED. See Orthmann, 1975, 30.

When evaluated in terms of the subject repertoire and characteristic artistic features, the distinction between ED I and ED II period cylinders can be easily and clearly made. However, distinguishing between ED II and ED III period cylinders is often more challenging. However, as Frankfort noted, determining exactly when a new style emerged in the historical timeline of illustrated artworks or tracking the transition phase from one style to another may not always be possible. This is because changes typically occur gradually, and it is difficult to decide when we are still within the realm of the old tradition and when new trends are being expressed. Therefore, in Mesopotamian glyptic art, the Early Dynastic I period is initiated with the emergence of features termed “brocade style” entirely unique to this period.

The cylinders of the ED I period retain their formal, slender, and long shape. The heavy use of drills, prevalent in the early periods, was almost entirely abandoned in the glyptic art of the ED I period. Both principal motifs and filling motifs have been reduced to groups of incised lines created by the engraving technique.

This study includes two examples illustrating the seal style and technique of the ED I period among the examined cylinder seals. The subjects are almost invariably composed of horned animal rows or geometric patterns, which are the simplest and most traditional composition schemes.

3-ED II (Old Sumerian) Period (circa 2700-2600 BC)

The ED period marked a profound transformation in Mesopotamian glyptic, witnessing the introduction of novel subjects and forms of expression. Towards the period’s conclusion, foundational elements were established, shaping subsequent developments in art. Conversely, the growing abundance of Sumerian texts, particularly from the ED II period onward, offers insights into the culture of the ED II and subsequent ED III periods. Serving as the earliest records of Sumerian history, these written sources designate the ED period as the Old Sumerian period in Mesopotamian chronology.

Formally, compared to the preceding phase, cylinders from the ED II period exhibit differences in size. These seals typically maintain the slender and elongated form observed in ED I seal. Materials used for these seals include limestone, marble, calcite, onyx marble, alabaster, and lapis lazuli (Porada, 1948, 9).

ED II seals predominantly depict scenes of contests and banquets. In contrast to the ED I period, the seal style of this period features figurative decorations executed with deep incisions, replacing shallow and flat cuts. Three of the cylinder seals scrutinised in this study exemplify the seal style prevalent during ED II.

4-ED III (Old Sumerian) Period (circa 2600-2350 BC)

The ED III period is further divided into two subphases, denoted as IIIa and IIIb, based on evidence obtained from excavation sites such as Khafajah, Kish, and Ur (Frankfort, 1955, 2; Porada, 1948, 8; Collon, 1987, 20). The division of the period in this manner is also consistent with the stylistic differences in the cylinders featuring contest friezes. The first group, dated to the ED IIIa period, exhibits less modelling compared to the later examples from the ED IIIb period. However, such a definitive classification cannot be made for friezes in which the central figure is an eagle. The craftsmanship is rough, and the common practise is to divide the composition area into two friezes.

Differences in the dimensions of the cylinders were observed in the ED III period. In comparison to previous periods, numerically smaller cylinders are more favoured during this period. The types of stones preferred as seal materials in the ED II period continued to be used in this period. The six-cylinder seals (Figs. 8-9 and 11) that constitute the subject of this study reflect the stylistic and typological traditions of ED III period glyptic art.

Composition, Scene, and Style of Cylinder Seals

1-Miscellaneous Animal Row Scenes

Themes within JN period glyptic art often depict animal processions with a structure resembling a barn or temple, as shown in Figs. 2a-c. Occasionally, these scenes portray solitary animals (Figs. 2d; 3a-b). Although the seals in this category lack commonalities, they consistently draw inspiration from the temple herd theme prevalent in Uruk period cylinder seals. In contrast to Uruk seals, which intricately depict animal bodies and limbs, the JN period employs larger and smaller drills in a distinctive manner, as showcased prominently in Figs. 2a-b and 2d. These techniques are predominantly observed on compact seals crafted from coloured limestone or marble.

From a technical standpoint, the main figures or motifs are affixed to the seal composition area using a drill. It is evident that even the later use of a file fails to completely erase the drill traces. The animals in these seals are dynamically portrayed, with crossed front legs and bent hind legs, imparting movement and preventing a static expression.

Empty spaces within the seal composition, marked by one large and one small hole, likely represent containers in which animals drink water. These spaces are often filled with various plants, ceramic, or astral motifs. Conversely, the depiction of animal bodies in Figs. 3a and 3b, featuring three large shallow ovals created with a wide-tipped drill, and the shallow carving of other patterns with a file signify the emergence of the glyptic art style of the ED I period. These advancements in seal engraving allow us to consider that the examples in Fig. 3 may belong to a slightly later phase, possibly the transition phase (from JN to ED I), compared with those in Fig. 2.

The rows of animals engraved on JN period seals not only indicate which types of animals were part of the economy in Sumerian society, where agriculture and livestock were fundamental livelihoods (and thus the fauna of the period), but also provide data on the dietary diversity of the society. In studies focussing on the regional variations of animal species represented in stamp and cylinder seal iconography, the accurate identification of species relies on the small details incorporated by the seal artist. Portable Light Dome (PLD) technology has facilitated a comprehensive reassessment of faunal assemblages on seals. Pioneering studies successfully conducting such research have revealed that, in most cases, apart from the lions depicted almost everywhere, other species correspond to the local fauna community (Speleers, 1917, 113). On the other hand, it has been determined that the horned animals commonly engraved on cylinder seals since the Uruk period and the following JN and ED I periods are Arabian antelope (*Oryx leucorix*). This animal was observed in large herds throughout the Arabian Peninsula and its northern regions until the 20th century, but its population rapidly declined and eventually extinction in the wild (Boschloos et al., 2012, 34).

The seals with the theme of horned animal rows examined in this study, along with ancient Near Eastern examples from collections such as the Ashmolean Museum (Buchanan, 1966, pl. 3. 23-25, 28-29, pl. 4.30-32.), British Museum (Wiseman, 1962, pl. 6b-d, g-h), Yale Babylonian (Buchanan, 1981, 63-64, nos. 176, 178-180), Pierpont Morgan (Porada, 1948, pls. V.22-25, VI. 26a), Kist (Collon, 2003, 35, nos. 029-031 and 48, no. 064), and Newell Collections (von der Osten 1934, pls. III. 24, IV. 27-28), as well as cylinder seals unearthed in the Khafajah excavations in the Diyala region (Frankfort, 1955, pls. 4.15, 5.22-30, 6.31, 7.37-43, 9.61-63, 9.66-67, 9.71-75, 19.202-206, 20.207-208), represent parallel examples in terms of composition, iconography, technique, and style.

In ED I seals, subjects mainly consist of the simplest and most traditional composition schemes, such as rows of antelope and wild goat or geometric and plant patterns. The composition and drawing style reflect characteristics similar to the brocade style. The use of drills for the eyes, heads, noses, and hooves was uncommon during the ED period (Fig. 4).

Thick horizontal or diagonal lines created using a file in JN cylinder seals often result in a distinct “circle” motif, typically representing the drill hole. The drill hole, used to depict the body part of stylised human or animal motifs, is combined with straight or diagonal lines created using a file. This is how limbs, such as arms and legs, are formed. One example of scenes created using these techniques is the friezes depicting rows of fish or spiders (Fig. 5). Stylised spider depictions are associated with Uttu. This is because, in many mythologies, including Sumerian mythology, Uttu is associated with a spider and weaving (Collon, 1987, 16). The theme is also known from parallel examples where similar stylistic features are exhibited, such as the Pierpont Morgan (Porada, 1948, pl. 6.29), Kist Collection (Collon 2003, 34, no. 026), and Khafajah (Frankfort, 1955, pl. 9.64).

The theme of rows of fish, first seen in Mesopotamia around 3100 BC, is known from the Khafajah and Ur (Frankfort, 1955, pls. 4.11, 18.180, 183, 32. 329; Legrain, 1951, pl. 3. 38-41). Interestingly, the Mitanni civilization in the 14th century BC exhibited a preference for these themes, notably in significant Syrian cities like Qatna (Al-Maqdissi, 2008, 217, cat. no.128a).

These themes not only offer insights into the periods and regions where they were prevalent in seal art but also illuminate the underlying motivations for different societies engraving the same compositions on seals across diverse periods and locations. Furthermore, they facilitate the comprehension of the origins and trajectories of regional interactions during various historical periods and across different geographical areas.

2-Working Women Scenes

One of the main subjects of seals during the early JN period is the frieze of “working women” seated on mats or stools, engaged in activities such as pottery or textile production (Fig. 6). This scene, also called ‘women with pig tails’ in glyptic art, is a different seal type encountered for the first time in the art of this period. This composition consists of two or more figures, each with a pigtail, sitting with arms extended forward and raised upwards, and regularly placed spherical hollows or vertically striped objects among them. Some of these spherical images on the seals are thought to represent vessels used by agricultural and animal husbandry in Sumerian society for the preparation of churns or dairy products (Porada, 1948, no. 7; Collon, 1987, 16). The two vertical lines seen in front of some figures represent a weaving loom. Dumbrill argued that scenes with compositions, as seen in Fig. 6b, reflect a musical scene. Dumbrill interprets the consistent positioning of the arms of the seated figures in these types of scenes as an attempt to depict movement integrity, perhaps even rhythmic consistency (Dumbrill, 2015, 19-20). He points out that the large spherical objects in front of the figures likely represent a drum, and the smaller spheres around the larger ones could indicate different musical pitches. The lines below or above the large “drums” are placed to indicate emphasis. However, due to the lack of written sources on Sumerian religious hymns from the JN period, we cannot be certain of the accuracy of this hypothesis.

When examining cylinder seals of Mesopotamian origin, it is noteworthy that there exists a substantial concentration of seals of equal or lesser quality portraying identical subjects as those under investigation in this study. Examples found in collections such as Kist (Collon, 2003, 30, cat. nos. 015-017), Yale Babylonian (Buchanan, 1981, cat. nos. 145, 147), J. Pierpont Morgan (Porada, 1948, pl. 3.12, 16E), Newell (von der Osten, 1934, pl. IV.29-30) or Danish Collection (Møller, 1992, 85, pls. 30-31), Ashmolean Museum (Buchanan, 1966, pl. 2.17-19), and the British Museum (Wiseman, 1962, pl. 3c-e), as well as those recovered from Khafajah (Frankfort, 1955, pl. 45.480), are some of the examples that exhibit characteristics parallel to this seal type in terms of composition, iconography, and style.



Figure 6: JN period cylinder seals. Working women scenes (photos and modern impressions by author).

- a.** Cylinder seal. Coral stone. Three squatting “pig-tailed” women facing left with their arms extended, two more pots before a woman. The other two have a loom (?) in front of them. Height 1.8 cm. Diameter 5 cm. Yale Babylonian Collection, D-025.
- b.** Cylinder seal. Red jasper. Three squatting “pig-tailed” women, each seated on benches or mats at work on one of the two pots before her. Height 1.8 cm. Diameter 4.9 cm. Yale Babylonian Collection, D-024.

3-Contest Scenes

During the early phase of the ED II period, two recurrent themes surfaced in glyptic art, enduring through subsequent periods and frequently amalgamating within a single seal. The first theme encompasses the struggle between animals, while the second revolves around the contest between nude heroes and animals. In ED II seals, the contest scene was depicted in two ways:

1. The first group is characterised by a continuous frieze with interconnected figures (see Figure 7a and 7b). The seals of this group have a naked hero or a bull-man in the centre of the compositional area, depicted symmetrically and centred, holding a goat or a lion on both sides. The composition continues symmetrically with heroes added on either side of the horned animals, grasping the attacking lions by their tails. (Fig. 7a). The division of scenes into panels or friezes by horizontal lines to create composition areas is a feature commonly encountered in cylinder seals of this period and later cylinder seals that continued to evolve.

On another seal from the ED II period, the bull-man in the centre of the composition restrains the lions on either side by holding them by the throat. On either side of the lions, a composition consisting of a second bull man holding a horned animal with the other hand while lunging at the head of the lions with a dagger is connected to the stage to form an indivisible frieze. The depiction of lions from the profile in friezes with a theme of struggle is a characteristic feature of glyptic art of this period. However, showing the heads of lions from above, as seen in Fig. 7b, is a significant indication that the glyptic art of the ED III period was beginning to form (See Wiseman, 1962, pl. 20). Therefore, comparing this seal to Fig. 7a suggests that it could be dated to the transition from ED II to ED III. Furthermore, we can see evidence of a gradual development in glyptic art, with animal bodies depicted highly stylised and lacking detail on ED II seals, as in the detailed depiction of the neck hairs of lions in late ED II and the transition to ED III. Among the examples recovered from Farah in the Diyala region, we can see cylinder seals similar in scene, composition, and style to the seal evaluated in this study (Frankfort, 1955, Fig. 4)

In the contest theme scenes of the ED II period, heroes often wear headgear with a flat top and protrusions on both sides. The protrusions on both sides of the headdress model are a characteristic feature of ED II art. The bull-man is a creature combined with the human face, arms, trunk, and posture of the horns, tail, and hind legs of a bull. In the cylinder seals of this period, the bodies of the bullmen are always depicted as naked, but with a two-tiered belt around their waists. The upper part of their body is consistently shown from the front, head, and the lower part, including the tail, is depicted in the profile.

Cylinder seals depicting contest scenes with composition, iconography, and style similar to the seals classified under the first group in this study are found in various collections, such as the Ashmolean Museum (Buchanan, 1966, pl. 13.153), British Museum (Wiseman, 1962, pl. 15c), Pierpont Morgan Collection (Porada, 1948, pl. 10.55), and Kist Collection (Collon, 2003, 55, no. 079; 58, no. 086).

2. On the seals in this group, we see the scene of a contest between the hero and antelope or the bullman and lion. The most specific feature that distinguishes this group from the first one is the carving of the three-figure contest scenes in two pairs (Fig. 7c). In these pairs, the hero is depicted either naked or, as a characteristic feature of ED II art, sometimes with a short skirt. We typically observe a hero with a short skirt among mountain goats and a naked hero among lions. In ED II- period contest scenes, heroes frequently wear short skirts in the front and long skirts in the back to allow freedom of movement. The closest parallel example in terms of scene, composition, and iconography to this seal, evaluated under the second group in this study, was recovered from Tell Asmar (see Frankfort, 1955, pl. 46.489) in northern Mesopotamia.



Figure 7: ED II period cylinder seals. Contest scenes (photos and modern impressions by author).

a. Cylinder seal. Haematite. In the centre, a nude hero wearing a two-horned headdress, holding goats on either side of his. A lion attacks the goats from behind, and behind the lions are two nude heroes with two-horned head-dresses holding the lions by their tails. The end of the composition is panelised with two horizontal lines. A scorpion is in the lower panel.

Height 2.4 cm. Diameter 8.3 cm. Yale Babylonian Collection, D-041.

b. Cylinder seal. Quartz or Selenite. At the centre of the composition is a scene of a triple struggle between a bullman and lions on either side of his. Behind both lions, another bullman plunges a dagger into the lions' heads, while with his other hand, he holds a horned animal (goat or antelope) by the throat and restrains it. Another bullman stands on the left. There are two daggers in the spaces between the bullman and the legs of the lions.

Height 3.4 cm. Diameter 8.6 cm. Yale Babylonian Collection, D-039.

c. Cylinder seal. Quartz. In a two-group composition. Left: A hero, wearing a skirt with a short front and a long back, with a two-horned headdress, who also holds the reversed ibexes by the head. Right: A nude hero between two lions holding them by the necks. A motif of daggers between the hero and the animals.

Height 2.6 cm. Diameter 6.5 cm. Yale Babylonian Collection, D-042.



Figure 8: ED III period cylinder seals. Contest scenes (photos and modern impressions by author).

a. Cylinder seal. Yellow marble. Contest scene.

Height 4.3 cm. Diameter 4.5 cm. Yale Babylonian Collection, D-048.

b. Cylinder seal. Serpentine. Animal contest scene. Two crossed lions are attacking a rampant goat with its head thrown back.

Height 2.4 cm. Diameter 4.1 cm. Yale Babylonian Collection, D-091M.

In ED III period seals portraying the hero-animal contest theme, despite the uniformity of the scene, the seal composition area was divided into friezes by two horizontal lines, contributing to formal richness (Fig. 8a). Conversely, diversity within this group of seals is achieved through heroes and animals depicted in closer proximity, in a more upright manner, and some presented in a distinct fashion compared to the art of the preceding period. Particular attention is drawn to the innovation presented by the glyptic art of the period, especially the alignment of all heads at the same level, regardless of the posture of the figures (Fig. 8a). As a result, the animals and heroes stand more upright, and the friezes are woven more tightly. The hero figure wearing the headdress with a flat top and protrusions on both sides disappears during the ED III period, and instead, the hero with hair often featuring stiff upright curls emerges as a characteristic feature of glyptic art in this period (see for parallel examples: Wiseman, 1962, pl. 16a, 18a; Frankfort, 1955, pl. 27.273; pl. 52. 550). Another distinctive feature of seals belonging to this group is the depiction of lions with their heads seen from above, giving them a larger and more majestic appearance. In conclusion, while the theme remains consistent, execution varies almost uniquely in each example.

In seals of the ED III period, the contest between animals is one of the most popular scenes. The theme of the contest between lions and mountain goats is characteristic for the bodies of animals in attacking positions to be mostly crossed (Fig. 8b). In the centre of the seal composition area, a pair of crossed lions are seen attacking goats by their necks, depicted with their heads turned backwards. Similar scenes and iconography to those belonging to this group can be observed in seals of ancient Near Eastern origin in private collections, such as the Kist Collection (Collon, 2003, 62-63, nos. 094-097), British Museum Collection (Wiseman 1962, pl. 5k), and Khafajah (Frankfort, 1955, pl. 24.247).

4-Banquet Scenes

From prehistoric periods, banquets have served as pivotal social activities, revealing and influencing social complexity, power dynamics, economic disparities, and cultural transformations (Suter, 2018, 141). In this study, two examined cylinder seals are dated to the ED III period, identified through the portrayal of banquet scenes and the stylistic attributes of the figures (Fig. 9). The banquet theme stands as a fundamental subject in both ED II and III.

Seals portraying banquet and drikng scenes feature a composition area divided into two registers, one at the bottom and one at the lower, demarcated by two horizontal lines. In Fig. 9a, the upper frieze of the banquet scene depicts two figures seated on stools, facing each other, drikng beer from a vat placed in the middle through straws. A standing figure behind them is interpreted as a representation of members of their entourage of lower rank than the seated banqueters. One of the most characteristic scenes common to the ED II and ED III periods; The theme illustrates an eagle with extended wings grasping two antilops on the

lower register of this seal. This theme is sometimes engraved on cylinder seals and other depicted artefacts of the ED II and III period with similar compositional and iconographic characteristics, sometimes alone as the main scene of the seal, and sometimes in one of the two friezes together with seals with banquet scenes or contest scenes (see for parallel examples: Buchanan, 1979, fig. 327; Wiseman, 1962, pl. 24-26; Collon, 2003, 65, no. 100; 66, nos. 102-103; 67, nos. 104-105).

In Mesopotamian glyptic art, an eagle holding two horned animals with its talons is often associated with the god Ninurta. Ninurta was a prominent deity in Mesopotamian mythology, particularly in the Sumerian and Akkadian traditions. The eagle, a symbol of power and dominance, is found holding horned animals and may represent Ninurta's prowess in warfare and his role as a protector of the gods. The second important feature of Ninurta is its association with agriculture and fertility. Complementary motifs linked to the feast, such as the eagle clutching horned animals and plants consumed by these creatures, offer crucial insights into interpreting the scene depicted on this seal. When the scene on this seal is examined alongside depictions on ED votive plates, these images collectively references to New Year festivals and the celebration of the agricultural cycle.

In some seals dated to the ED III period, banquet scenes are depicted with a male and a female figure. However, it is not possible to determine the gender of the figures that make up the scene on the seal evaluated in this study. This is because the heads of the figures are all depicted in a simple and cursory manner, and they all wear a similar skirt, usually ending in fringes. The figures with skirts that end with fringes, as depicted on the seals of this period, can also be observed on relief plates and statuettes dating back to the ED period (see for parallel examples: Hansen, 2003, 59-64, cat. nos. 24a-d-26; Moortgat, 1969, cat. nos. 70-75 and 122).

In the two-frieze seals dated to the ED III period, examples can be observed where this scene sequence is reversed, meaning that the composition area is divided as in the upper scene of the seal with the eagle frieze (see Wiseman 1962, pl. 26e). It cannot be definitively stated whether these seals belong to the early or late phases of the ED III period because the depiction of figures in these friezes has remained almost the same throughout the entire period. The second seal featuring banquet theme differs from the initial example (Fig. 9b). In both friezes of the two-frieze composition area (bottom and lower), the primary banquet scene is intentionally repetitive. Each frieze depicts two figures seated opposite each other, engaged in drinking beer from a large vase on a pedestal via tubes. In contrast to the attendant positioned behind the seated figures in Fig. 9a, this seal portrays the attendant in a seated position. In addition, the filled vessel, unlike Fig. 9a, where it aligns with the figures' knees, is at the level of their torsos. The narrower width of this seal indicates that the engraver adapted the scene to the composition area, arranging the figures more closely together in a

compact layout. Despite these variations, the stylistic and technical features of the figures in this seal mirror those in Fig. 9a. Analysing the Mesopotamian glyptic corpus, we can say that the seals with the banquet scene evaluated within the scope of this study predominantly reflect the southern Mesopotamian glyptic principles in terms of iconography and stylistics.



Figure 9: ED III period cylinder seals. Banquet scene with seated figures drinking beer through straws. (photos and modern impressions by author).

a. Cylinder seal. Pink marble. Two registers divided by two horizontal lines. Bottom register: Banquet scene with seated figures drinking beer from a large vessel through straws. Behind the figure on the right is a standing figure. Lower register: A spread eagle looking left grabs the hindquarters of two antelopes sitting on their haunches; a plant is placed between the heads of the antelopes.

Height 3.1 cm. Diameter: 4 cm. Yale Babylonian Collection, D-058.

b. Cylinder seal. Grey stone. Two registers divided by two horizontal lines. On both registers: Banquet scene with seated figures drinking beer from a large vessel through straws; behind the figure on the left is another seated figure.

Height 3.5 cm. Diameter 4.6 cm. Yale Babylonian Collection, D-060.

The ceremonial character of the banquet scenes depicted on the seals of the ED II and III periods, in which two figures sitting opposite each other are shown drinking beer from a vessel in the centre, is corroborated by the depiction of similar scenes on votive plaques found in the temples of this period. Banquets held to celebrate military victories, hunting, or agricultural festivals (see Strommenger 1964) lack clear participant identities. In the Sumerian social structure, rulers held the title of priest-king, and perhaps for this reason, gods are identifiable in only a few ED III seals. Based on a comparison of votive plaque imagery with textual data (Beld, 2002), J. Asher-Greve posited that the banqueters depicted on votive plaques most likely represented the king and queen of the respective city-state (Asher-Greve, 1985, 97-108). Regardless of the purpose for which they are organised, banquet scenes can be said to reinforce the acceptance of authority figures in leadership positions and the hierarchy within society (Michalowski, 1994; Suter, 2018, 142).

5-Geometric Pattern

As Frankfort noted, the most striking innovation of JN seals is a series of geometric designs often found on long, slender cylinders made of glazed steatite (Frankfort, 1955, 17). While similar seals with such designs are known from other settlements, none have been discovered in as abundant quantities and precisely dated contexts as those in Khafajah (Frankfort, 1955, 17-18). A common practise involved using a file horizontally and diagonally to create open-ended incisions on the curved edges of the cylinder seal, resulting in the characteristic geometric patterns typically obtained on the seal (Collon, 2003, 4).

The lattice pattern identified on the two elongated seals examined in this study appears to have been engraved using this particular technique (Fig. 10a-b). Cylinder seals with such designs are also known from the Kist Collection (Collon, 2003, 41, no. 046) or Danish Collection (Møller, 1992, 86, pl. 41), the Ashmolean Museum (Buchanan 1966, pl. 5.69-70), and excavations in the Diyala region (Frankfort, 1955, pls. 8.57, 72.788, 89.946) and Ur (Legrain, 1951, pl. 5.69-70).

Within the cylinders of the ED III period, the tradition of incorporating geometric and abstract designs from the JN period persists. These designs adorn slender, elongated seals within this category, showcasing intricate visual details and exemplifying high-quality craftsmanship. They serve as compelling evidence of the decorative creativity achieved in glyptic art during this period. Typically, the composition area of these seals is segmented into friezes by two parallel horizontal lines. Seal decoration often includes bands featuring a woven pattern and a thematic arrangement of “eye” shaped circles positioned in a *tête-bêche* configuration (Fig. 11a-b). The motifs on the seal are typically fashioned using a finely tipped file, frequently marked with diagonal lines, and tube-shaped drills. Tools like drills and files, prevalent since the JD period, have persisted in use for engraving scenes on ED III

seals. Consequently, a trend emerged to adhere to geometric and other designs reminiscent of those observed in ED I seal. The composition, scene, and style of these cylinder seals can be paralleled in the seals from the Diyala Region excavations and the Kist and Yale Babylonian Collections (see Frankfort, 1955; Buchanan 1979, fig. 354; Collon, 2003, 52-53, cat. nos. 072, 074).



Figure 10: JN period cylinder seals. Geometric pattern (photos and modern impressions by author).

a. Cylinder seal. Haematite. A diagonal grid between the line borders.

Height 2.6. Diameter 3.5 cm. Yale Babylonian Collection, D-033.

b. Cylinder seal. Yellow stone. Three registers are divided by a horizontal line. The bottom and lower registers have zigzag lines and the centre register has a diagonal grid motif.

Height 2.8 cm. Diameter 3.4 cm. Yale Babylonian Collection, D-034.

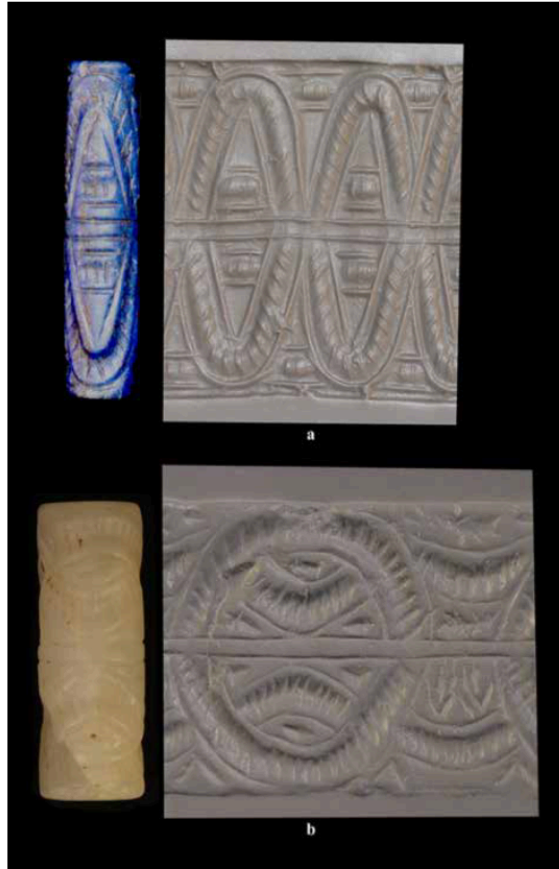


Figure 11. ED III period cylinder seals. Geometric pattern (photos and modern impressions by author).

- a.** Cylinder seal. Lapis lazuli. Two registers divided by two parallel lines, with outlined ladder pattern arches in one register and a similar pattern in the other. Ladder patterns across the bases of the arches. Between the arches are thick horizontal lines intersecting thin lines. Height 3.7 cm. Diameter 2.6 cm. Yale Babylonian Collection, D-036.
- b.** Cylinder seal. Alabaster. Two registers divided by two horizontal lines. Mirror images with two ladder-pattern arches in each register, double-outlined at the top of the arch; each arch encloses a hatched eye shape. Horizontal lines between the arches. Height 4.3 cm. Diameter 4.8 cm. Yale Babylonian Collection, D-038.

These abundant cylinder seals of the ED III period, with their rich geometric designs, are clear evidence that seal cutters had reached an extraordinary creative level in art and technique. Although it is difficult to define the designs on the cylinder seals of this group, most of them with geometric designs, it would be misleading to think that seals with such designs were of lesser importance than others or that they were simply intended to fill the surface of the seal. Based on the quality of the craftsmanship and the preference rates of abstract and concrete seals, Nissen pointed out that these two seal groups were favoured by different social segments, sharing the same purpose but serving distinct functions. Geometric patterned seals, characterised by quick preparation and near-repetitive designs, symbolise “legal person or institutions” in Nissen’s theory. These were preferred in situations where representing a specific individual was unnecessary, signifying instances when administration or a specific administrative faction assumed complete responsibility. In contrast, concrete seals would be employed in scenarios where trade and security responsibilities rest with a specific individual seal owner (Nissen, 1977, 20; Nissen, 2004, 90-91). Nissen’s hypothesis gains support when considering depictions of sealed clay lumps (*bullae*) in the Mesopotamian glyptic corpus, where concrete depictions predominate, whereas geometric depictions are typically associated with “legal person” seals.

Conclusions

Cylinder seals, among the earliest tools employed for economic control, provide assurance of the “inviolability” of transported raw materials. Additionally, these depictions aid in discerning the identity of the users, highlighting not only chronological or social disparities but also a socially and economically stratified society with varying levels of responsibility or decision-making. Initially used in southern Mesopotamian cities and the Susa region, the earliest cylinder seals predominantly featured compositions depicting diverse activities involving human and animal figures.

In this study, from the Yale Babylonian Collection, a total of 25 cylinder seals were analysed in the light of their stylistic, iconographic and technical characteristics. It was concluded that the earliest one dates to the JN period and the latest one to the ED III period. Examination of the subject repertoire of the seals clearly shows that those dating to the JN period are much more limited than the Uruk seals. Furthermore, the Late Uruk seals present complex and vital designs, whereas the seals of the JN period show a preference for more abstract designs in composition and technique. The most common scenes seen on seals of this period consist of various animal rows, women working in textiles or pottery, and miscellaneous abstract designs created with a combination of different geometric motifs. An additional change in the JN seals, which have fewer details and a lower quality of craftsmanship compared to the Uruk period, is the connexion between the design and the shape of the seal. Namely, thick and blunt shaped seals were preferred for figurative scenes; thin and long cylinders were

preferred for geometric designs. Moreover, the tradition of cylinder seals with geometric designs, widely used in JN period seals, was revived in the ED III period, displaying advanced techniques and a wide repertoire of motifs, and has an important place in terms of demonstrating continuity in the sealing tradition of the 3rd millennium BC Sumerian society. Excavations in the Near Eastern sites have revealed that abstract cylinder seals of the JN and ED periods were preferred in a wide geographical area from the Diyala region on the main trade routes of southern Mesopotamia to Syria-Palestine and Anatolia in the north³. Although cylinder seals with these designs do not serve the purpose of identifying their owners, they shed light on the extent and direction of interregional trade relations between Near Eastern sites in the 3rd millennium BC.

In ED I period glyptic art, human depictions are rarely used, but geometric designs continue to be used as an element transferred from the art of the previous period. Although the two cylinder seals analysed in this study continue the glyptic principles of the JN period in terms of shape and the scenes engraved on them, the style of the subject matter is fundamentally different; therefore, these seals should be dated to the “transitional phase”. The changes seen on the seals can be explained by the predominance of straight lines created by the engraving technique on the animal figures rather than the intensive use of the drill, and by the transformation of the figures from a static to a mobile design. The distinctive artistic style of this period is the carving of human and animal heads in an unnaturalistic “bird-head” shape. This style continues on seals and other depicted artefacts through the beginning of the ED IIIb period.

Although the main themes of the glyptic art of the ED II and III periods were dominated by contest and banquet scenes, the glyptic art of the ED III period changed. In addition to these themes, chariot scenes, libation scenes, and mythological scenes appeared more frequently than before. The composition of the rows of animals, the characteristic seal theme of the previous period, is abandoned in ED II and III seals. Instead, the animal contest, or the contest between the animal and the naked hero or bull-man, becomes a characteristic theme in glyptic art. The most significant result of the seals with contest scenes analysed in this study reveals that the craftsmanship of the ED III period began to render the figures in a more erect posture and in a more compact composition area compared to the ED II period. Furthermore, designs with no organic connexion to the scene in the field of seal composition, and therefore often interpreted as filling motifs by scholars, were rarely used in this period. With regard to the changes in the technique of seal engraving, the use of drills gradually decreased considerably in the ED III period compared to the previous periods. The scene on

3 Cylinder seals in this group are found not only in the periphery of Mesopotamia and Syria, such as Samsat, Zincirli, Tel el Cüdeyde, Norşuntepe, and Hassek, but also in Central and Western Anatolian settlements, such as Alisar (von der Osten, 1937, fig. 186), Gordion (Dusinberre, 2005, 33, fig.11a-b) and Troya (Schlieman, 1881, nos. 500-503).

the two cylinder seals analysed in this study sheds light on a continuity in glyptic art and the re-emergence of abstract designs, first seen on the thin, elongated cylinder seals of the JN period during the ED III period. On the other hand, the distinction observed in the forms of JN seals with abstract and concrete designs virtually disappeared in the ED III period. This demonstrates that in the second half of the 3rd millennium BC, seal craftsmen reached a standardised level of seal type, regardless of the subject matter of the scene to be engraved on the seal.

The cylinder seals with banquet scenes from the ED III period evaluated in this study are iconographically and stylistically representative of southern Mesopotamian seal art; therefore, it is possible to say that these artefacts donated in the Yale Babylonian Collection are of southern Mesopotamian origin. In light of other contemporary visual artworks, we can say that these scenes carved on cylinder seals of this period represent celebrations organised for specific purposes (military victory, hunting, new year celebrations, etc.) led and attended by high-ranking individuals in the Mesopotamian and Sumerian social structure. Such banquet scenes begin to appear in ED II and continue in ED III. However, in the last phase of this period, namely ED IIIb, there is a change in glyptic art and the focus of the banquet scenes evolves to libation scenes in which liquid offerings are poured to the gods with the appearance of anthropomorphically depicted gods. In addition to the change in the seal scene and composition, the style of the figures shows another change in the glyptic art of this period. This change in the ED IIIb period is characterised by a more naturalistic detailing of the faces and bodies of animal and human figures and by showing figures in relief.

In conclusion, textual and archaeological evidence shows that the first urban social system in Mesopotamia, the foundations of in the Uruk period, evolved into city states with the ED period, and that the developments emerging as a result of this new order can be traced through the existence of glyptic principles that continue and change in visual artworks. The seals examined in this study reveal the gradual replacement of the seal style seen in Mesopotamia at the end of the 4th and the beginning of the 3rd millennium BC, characterised by circular designs created mostly using drills, with a linear style in the ED I period. This linear style gave way to a plastic style that emerged in the ED IIIb period and reached its zenith during the Akkadian period.

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References

- Al-Maqdissi, M. (2008). "Archaeological Excavations at Qatna". In J. Aruz, K. Benzel, & J.M. Evans (Eds.), *Beyond Babylon: Art, Trade and Diplomacy in the Second Millennium B.C.*, (pp. 214–219), New York: The Metropolitan Museum of Art Publication.
- Amiet, P. (1980). *La glyptique Mésopotamienne Archaïque*. (2nd ed). Paris.
- Asher-Greve J.M. (1985). *Frauen in altsumerischer Zeit*. Malibu: Undena Publications
- Beld S.G. (2002). *The Queen of Lagash: Ritual Economy in a Sumerian State*. Unpublished PhD dissertation, University of Michigan. Ann Arbor.
- Boschloos, V. Devillers, A. Gubel, E. Hameeuw, H. Jean, J. Van Goethem, L. Van Overmeire, S. & Overlaet, B. (2012). The Ancient Near Eastern Glyptic Collections of the Royal Museums of Art and History Reconsidered, *BULLETIN* 83, (pp. 23–44).
- Buchanan, B. (1966). *Catalogue of Ancient Near Eastern Seals in the Ashmolean Museum I: Cylinder Seals*. London: Oxford University Press.
- Buchanan, B. (1981). *Early Near Eastern Seals in the Yale Babylonian Collection*. New Haven and London: Yale University Press.
- Collon, D. (1986). *Catalogue of the Western Asiatic Seals in the British Museum, Cylinder Seals III, Isin Larsa and Old Babylonian Periods*. London: The British Museum Publications.
- Collon, D. (1987). *First Impressions: Cylinder Seals in the Ancient Near East*. London: The British Museum Publications.
- Collon, D. (1995). *Ancient Near Eastern Art*. London: University of California Press.
- Collon, D. (2003). Ancient Near Eastern Seals from the Kist Collection: Three Millennia of Miniature Reliefs. In J. Kist, D. Collon, F. Winggermann & G. E. Turner (Eds.), *Culture and History of the Ancient Near East 18*, (pp. 3–14), Leiden: Brill.
- de Genouillac, H. (1934). *Fouilles de Telloh*. Paris
- Delougaz, P. & Lloyd, S. (1942). *Pre-Sargonid Temples in the Diyala Region*. Chicago.
- Dumbrill, R. (2015). *Musical Scenes and Instruments on Cylinder Seals, Sealings and Impressions from the Ancient Near East in the Collections of the British Museum*. London: Icone Publications.
- Dusinberre, E. R. M. (2005). *Gordion Seals and Sealings: Individuals and Society*, University Museum Monography 124. Philadelphia.

- Frankfort, H. (1939). *Cylinder Seals. A Documentary Essay on the Art and Religion of the Ancient Near East*. London.
- Frankfort, H. (1955). *Stratified Cylinder Seals from the Diyala Region*. Chicago: University of Chicago Press.
- Gorelick, L., & Gwinnett, A. J. (1992). Minoan versus Mesopotamian seals: comparative methods of manufacture, *Iraq*, 54, pp. 51–64.
- Hansen, D.P. (2003). Art of the Early City-States. In J. Aruz & R. Wallenfels (Eds.), *Art of the First Cities: The Third Millennium B.B. from the Mediterranean to the Indus* (pp. 21–92). New Haven and London: Yale University Press.
- Lassen, A. W. (2019). The Yale Babylonian Collection. In A.W. Lassen, E. Frahm & K. Wagensohnner (Eds.), *Ancient Mesopotamia Speaks: Highlights of the Yale Babylonian Collection*, (pp. 3–11). New Haven: Yale University Press.
- Lebeau, M. (Ed.). (2011). *Associated Regional Chronologies for the Ancient Near East and the Eastern Mediterranean, Arcane I*. Turnhout.
- Legrain, L. (1951). *Ur Excavations Volume X: Seal Cylinders*. Oxford: Great Britain at the University Press.
- Michalowski P. (1994). The Drinking Gods: Alcohol in Mesopotamian Ritual and Mythology. In L. Milano (ed.), *Drinking in Ancient Societies: History and Culture of Drinks in the Ancient Near East*, (pp. 27–44), Padova.
- Moller, E. (1992). *Ancient Near Eastern Seals in a Danish Collection*. Copenhagen.
- Moortgat, A. (1967). *Die Kunst des alten Mesopotamien*. Köln.
- Moortgat, A. (1969). *The Art of Ancient Mesopotamia: The Classical Art of the Near East*. London and New York.
- Nissen, H. J. (1977). Aspects of The Development of Early Cylinder Seals. In M. Gibson & R.D. Biggs (Eds.), *Seals and Sealing in the Ancient Near East*. (pp. 15–24). Malibu.
- Nissen, H. J. (2004). *Ana Hatlarıyla Mezopotamya: Yakın Doğu Arkeolojisi'nin İlk Dönemleri (İÖ. 9000-2000)*. Çev. Z. Z. İlkgelen. İstanbul: Arkeoloji ve Sanat Yayınları.
- Orthmann, W. (1975). *Der Alte Orient 14*. Berlin: Propyläen Verlag.
- Pittman, H. & Aruz, J. (1987). *Ancient Art In Miniature: Near Eastern Seals From The Collection Of Martin And Sarah Cherkasky*. Metropolitan Museum of Art, New York.
- Porada, E. (1948). *The Collection of The Pierpont Morgan Library: Corpus of Ancient Near Eastern Seals in North American Collections I*. Washington, D.C.
- Porada, E. (1993). Why Cylinder Seals? Engraved Cylindrical Seal Stones of The Ancient Near East, Fourth to First Millennium BC. *The Art Bulletin*, 75 (4), pp. 563–582.
- Sallaberger, W. & Schrakamp, I. (2015). Philological Data for A Historical Chronology of Mesopotamia in the 3rd Millennium. In W. Sallaberger & I. Schrakamp (Eds.), *History and Philology, Arcane III*. (pp. 1–136). Turnhout.
- Sax, M. & Meeks, N. D. (1994). The Introduction of Wheel Cutting as a Technique for Engraving Cylinder Seals: Its Distinction from Filing. *Iraq* 56, pp. 153–166.
- Sax, M. & Meeks, N. D. (1995). Methods of engraving Mesopotamian Quartz Cylinder Seals. *Archaeometry*, 37, pp.25–36.

- Sax, M., McNabb, J. & Meeks, N.D. (1998). Methods of Engraving Mesopotamian Cylinder Seals: Experimental Confirmation. *Archaeometry* 40, pp. 1–21.
- Schliemann, H. (1881). *Ilios. Stadt und Land der Trojaner. Forschungen und Entdeckungen in der Troas und besonders auf der Baustelle von Troja*. Leipzig.
- Selz, G.J. (2020). The Uruk Phenomenon. In K. Radner, N. Moeller & D. T. Potts (Eds.). *The Oxford History of the Ancient Near East: From the Beginnings to Old Kingdom Egypt and the Dynasty of Akkad, Volume 1*. (pp. 163–245). New York: Oxford University Press.
- Speleers L., (1917). *Catalogue des intailles et empreintes orientales des Musées royaux du Cinquantenaire*. Bruxelles.
- Strommenger, E. (1964). *The Art of Mesopotamia*. London: Thames and Hudson.
- Suter, C. E. (2018). Feasting and Elite Women in Early Mesopotamia: A Contribution from the Visual Record. *KASKAL* 15, pp. 139–154.
- von der Osten, H. H. (1934). *Ancient Oriental Seals in the Collection of Mr. Edward T. Newell*. Chicago, Illinois: University of Chicago Press.
- von der Osten, H. H. (1937). *The Alishar Hüyük. Seasons of 1930-32, Part I*. Chicago, Illinois: The University of Chicago Press.
- Wiseman, D.J. (1962). *Catalogue of the Western Asiatic Seals in the British Museum I: Cylinder Seals Uruk-Early Dynastic Periods*. London.