

# **The Meanings of late Neolithic Stamp Seals in North Mesopotamia**

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Simon Denham

School of Arts, Languages and Cultures, the University of Manchester

and

The British Museum

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# Abstract

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The late Neolithic of North Mesopotamia has long been held up as the first example of a 'global' culture with aspects of shared material culture, most notably pottery styles and subsistence strategies, spread across North Mesopotamia, the Northern Levant, and parts of south-east Anatolia. Increasing research in the past twenty years has illustrated that the material similarities visible in the late Neolithic do not represent a closed cultural community, but instead reflect a network of loosely connected groups who were members of imagined communities that linked people within shared cosmologies.

Since their discovery in the early decades of the twentieth century stamp seals have been treated as a type artefact of the late Neolithic (particularly one of its constituent parts the Halaf) where they have been used to argue for the presence of sealing systems based around administrative storage of personal or communal property and possibly trade relations. However, except for a thesis published in 1990, late Neolithic stamp seals have never been comprehensively studied or interpreted primarily within their own context. Instead previous studies of stamp seals have tied stamp seals into a modernist narrative of progression that implicitly culminates in modern, Western, Nation States.

This research challenges and deconstructs this narrative to demonstrate there is little evidence that seals in the late Neolithic were used for administrative purposes. To this end it gathered and re-classified the available data on provenanced stamp seals using a classificatory ontology called prototype theory that allows for more reflexive classification than the existing Aristotelian classifications. The thesis argues that stamp seals were indexical symbols with their symbolism being used to link members of imagined communities within real communities across the late Neolithic 'world'. These people were members of a perceived descent group originating in shifting relationships to place during the change from sedentary farming communities in the eighth millennium BC to more mobile communities in the seventh millennium BC. At the same time as negotiating these supra-community identities seals were also used indexically in a variety of sub-community ways being used for a variety of magical (primarily apotropaic and talismanic) uses. As part of this I argue sealing practices in the late Neolithic relate to specific events of efficacious sealing using the power in the seal's design.

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# Declaration

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No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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# Chapter 1: Introduction

---

This thesis is the result of an AHRC funded collaborative doctoral award (CDA) conducted between the University of Manchester and the British Museum. It resulted from my supervisors Stuart Campbell's and Alexandra Fletcher's concern with how stamp-seals from the late Neolithic have been interpreted. They suggested that the possibility for late Neolithic stamp-seals to be used for anything except administration has not been considered in academic literature and that administrative sealing was likely to represent only one aspect of their meaning in the late Neolithic.

Terminologically, while they are normally called stamp-seals I refer to them just as 'seals' since I draw a morphological distinction between 'stamp' and 'pendant' seals.

	Culture-Historic Period	Chronological Years
Early Neolithic	Pre-Pottery Neolithic B	8500 – 7000 cal. BC
Late Neolithic	Pottery Neolithic	7000 – 6000 cal. BC
	Halaf	6000 – 5400 cal. BC
	Halaf-Ubaid Transitional	5500 – 5200 cal. BC
	Early Northern Ubaid	5200 – 4500 cal. BC
Early Chalcolithic	Late Northern Ubaid	4500 – 4000 cal. BC

**Table 1-1: Chronological Periods of the thesis**

The late Neolithic as a blanket term that covers much of the seventh and sixth millenniums BC (chronology summarised in Table 1-1) is a relatively new concept that covers a range of traditionally separate archaeological cultures. These include the Pottery Neolithic cultures (such as the Hassuna), the Halaf, the Halaf-Ubaid Transitional, and the early Northern Ubaid. I will discuss previous concepts of the period in chapter 2. The period is traditionally seen as a transitional phase between the sedentism and agriculture of the Early or Pre-Pottery Neolithic (c. 10000 to 7000 BC) and the rise of early 'state' societies in the Chalcolithic (c. 5000 – 3300 BC). This concept is closely related to a narrative of progression (in the modernist/processualist sense of increasing complexity) in Middle Eastern prehistory. This narrative has led to the marginalisation of periods and societies at the expense of perceived transitions. Hence the 'neolithic revolution' and the 'urban revolution' which precede and succeed the late Neolithic have been widely studied at the expense of the late Neolithic where work has proceeded haphazardly (Campbell 1992: 1; Akkermans and Schwartz 2003: 99; Nieuwenhuyse 2007: 10).

There has been more recent recognition that the late Neolithic is important in its own right with increasing amounts of fieldwork conducted at sites such as Tell Sabi Abyad, Tell el-Kerkh, and Domuztepe. Similarly the theoretical work of scholars such as Nieuwenhuyse (2007), Bernbeck (2008a), Pollock (2011) and Özbal (2012) are changing ideas of the period. However, despite increased study, much remains to be done to enhance our understanding of what sorts of communities were actually present in the late Neolithic, how they interacted, what they may have believed, and their general social identities.

Seals as an object type lend themselves well to beginning to answer some of these questions because they are wide-spread throughout the entirety of the late Neolithic 'world' allowing the theorisation of tangible mechanisms that united persons and groups within late Neolithic society. Seals are small, normally stone, objects with incised geometric decoration. Their interpretation as administrative objects is ubiquitous in the academic literature with little consideration of other potential functions or roles ever since Mallowan interpreted the pendants from Tell Arpachiyah as 'seal pendants' in 1935 stating:

"It seems probable that these seal pendants, all of which have different markings, must have been used as identification signs indicating individual ownership, and that these vague scratchings were the nearest approach to writing made by the primitive inhabitants of Arpachiyah."

(Mallowan and Rose 1935: 91)

Since then little has changed in the interpretation of seals with little attention paid to the theoretical developments made in archaeology during this time. The literature on seals will be discussed in chapter 3. The central aim of this thesis is to re-assess this position and offer a new interpretation of seals that is based on their context and material evidence. This will be conducted by a thorough re-analysis of the available data on seals and their contexts which will demonstrate that there is little archaeological evidence of administration. Instead I argue seals were objects that united people within the late Neolithic 'world' and were used for efficacious purposes on a sub-community level. The mechanisms of the relationship between these dualistic meanings is supported by the concept of 'indexical symbols' deriving from the semiotical theory of Tambiah (1984).

The project's origin in an AHRC award laid out certain focuses and expectations. The original proposal anticipated using the collections of the British Museum and from the site of Domuztepe to investigate late Neolithic seals. This framed the study closely on objects that have been called stamp seals and excluded the wider material culture of the late Neolithic. This has both helped the study, by making the focus reasonable, and hindered it, by possibly missing relationships between seals and other objects. Although as will be shown later there is very little archaeological evidence to suggest relationships between seals and other objects in the late Neolithic.

The secondary aim of the study has been stimulated by the greatly increased evidence available. Since the only book written on late Neolithic seals was written over 20 years ago (von Wickede (1990)) hundreds more seals have been discovered from a wide range of sites greatly increasing the size of the corpus. This provides an excellent opportunity to reset the analytical base of late Neolithic sphragistics. Previous analyses of seals were largely inadequate as they were primarily typological and based on seal morphology to the exclusion of other attributes, including design. As such, the secondary aim of this thesis is to create a new classificatory framework for the study of late Neolithic seals to enable wider analysis of all attributes of seals. The framework is based on the concept of 'prototype theory' deriving from the work of cognitive linguists including Rosch (1978) which allows the creation of a more nuanced classificatory system that moves away from the problematic nature of traditional Aristotelian classification.

The new evidence derives most importantly from the sites of Tell el-Kerkh (94 objects, 13.91% of the total), and Domuztepe (130 objects, 19.23% of the total) both excavated in the past fifteen years. Together with Tell Arpachiyah (141 objects, 20.86% of the total) they account for 54% of all provenanced seals and impressions from the late Neolithic. These three sites form the core sample of the study but a range of other sites are also used, see Table 1-2 below (letters in brackets after the name of the site are site codes used in the database).

Tell Arpachiyah (AP) is a small site of less than two hectares. Located in the suburbs of Mosul, Iraq it was excavated in 1933 by Max Mallowan under the auspices of the British School of Archaeology in Iraq and in 1976 by the Iraqi archaeologist Ismail Hijara. The site is fundamental to modern understandings of the Halaf and the later late Neolithic more generally as the site has discontinuous Halaf and Ubaid occupations. Mallowan had planned to conduct further seasons at the site but due to disagreements



with the Iraqi government over the distribution of finds never returned. The finds were split between the Iraq Museum (76 objects), the British Museum (57 objects), and the Institute of Archaeology, University College London (33 objects). I have examined the objects in the British Museum and the Institute of Archaeology but no access was available to the objects in the Iraq Museum and I have had to rely on Mallowan's sparse notes, stored in the British Museum, and the site report published in the journal *Iraq* (Mallowan and Rose 1935). It is most famous for the 'burnt house' which came from level TT6 which is the last, full, Halaf occupation at the site after which it is seemingly abandoned. The burnt house contained an array of rich material culture and has been variously interpreted. Mallowan's original interpretation that it was both a potter's and a stone-worker's workshop (Mallowan and Rose 1935: 16–17) remains widely accepted and it has also been interpreted as a chiefly dwelling (Watson and LeBlanc 1973; Roaf 1990). The most compelling suggestion is from Oates (1978: 119), Munchaev (reported in Mallowan 1977: 96), and Campbell (2000) who interpret the burnt house at Arpachiyah as representing a deliberate ritual burning, essentially a 'funerary' action, which involved burning and the breaking of valuable objects (Campbell 2000: 23).

Domuztepe (DZ) is a very large mound of at least 20 hectares in area and up to twelve metres deep. It is located in south-east Turkey between Kahramanmaraş and Gaziantep (see Appendix 2 for grid-references and maps showing site locations) and was been excavated between 1995 and 2006 as a joint project between the University of Manchester and the University of California, Los Angeles. Since then it has been excavated by the University of Manchester and the British Museum. One of the largest late Neolithic sites it appears to have been occupied for almost the entirety of the late Neolithic except for the Halaf-Ubaid transitional period and I was able to examine the majority of the objects in their storage location in the museum of Kahramanmaraş. Until the excavations at Domuztepe and Tell el-Kerkh the seals from Tell Arpachiyah provided almost half of all Halaf period seals leading it to dominate most discussions and suggest that seals were much more prevalent in Iraq. This is now shown to be untrue.

Tell el-Kerkh (EK) is a collection of three mounds in the Rouj basin, west of Idlib, Syria; Tell el-Kerkh 1, Tell el-Kerkh 2, and Tell Ain el-Kerkh which cover a combined area of about 30 hectares with late Neolithic material spread across around 20 hectares. Excavations directed by the University of Tsukuba, Japan, since 1997 have been focused on Tell Ain el-Kerkh where there is a large early late Neolithic settlement. The site is at

present only published through preliminary reports and the director of the excavations, Akira Tsuneki, kindly provided access to his pre-publication catalogue of the seals and sealings from the site. Tell el-Kerkh is particularly important in that it provides clear evidence of Pottery Neolithic seals and accounts for 57.23% (84 out of 146 objects) of all the Pottery Neolithic seals in my sample.

There is a fourth site which has stimulated this research which is Tell Sabi Abyad. The discovery at Tell Sabi Abyad of over 200 impressed sealings has been interpreted as the ‘proof’ of administrative sealing in the seventh millennium BC. Tell Sabi Abyad is a complex of four Tell sites in the Balikh valley of Northern Syria with the late Neolithic mound occupied between c. 6500 and 5800 cal. BC (Akkermans and Duistermaat 1996: 17). It has been excavated since 1986 by Leiden University and the Dutch National Museum of Antiquities with a team lead by Peter Akkermans. However, the designs on the impressions at Tell Sabi Abyad appear unrelated to the seal designs from the rest of the late Neolithic and no objects with such designs were found in the levels with sealings. As I discuss in chapter 6 they may be impressions made by a different type of object and while I analyse and interpret the evidence at the site I have not included the impressions in my sample. Those seals there are from the site have been included in my analysis.

Other than these main sites I gathered the published data on provenanced late Neolithic seals from all the sites where data was available. The collection methodology is discussed in chapter 4 (section 4.4) and I make no claims that this is *every* published provenanced late Neolithic seal, but it is the majority of them. These additional sites were used to widen the sample to provide a more complete picture of the use of seals in the late Neolithic. The sites included in the database (though not all are analysed) were:

Atchana (AT)	Kurdu (KU)	Tell Ramad (RD)
Banahilk (BH)	Qminas (QS)	Tell Sabi Abyad (SA)
Boztepe (BZ)	Ras Shamra (RS)	Tell Tawila (TW)
Çavi Tarlası (CV)	Sakce Gözü (SG)	Telloh (TH)
Chagar Bazar (CB)	Ta'yinat (TT)	Telul eth-Thalathat (TU)
Chatal Huyuk (CH)	Tell Ahmar (TA)	Tepe Gawra (GW)
Dhahab (DB)	Tell Aqab (AQ)	Umm Qseir (UQ)
Fistiklı Höyük (FK)	Tell Barri (BR)	Unknown (UK)
Germayir (GR)	Tell Brak (BK)	Ur (UR)
Girikihaciyan (CH)	Tell Chenchi (CI)	Wadi Hamman (WH)
Gogjeli (GJ)	Tell Halaf (HF)	Yarim Tepe I-III (YT)
Judaïdah (JD)	Tell Hassuna (HS)	Yumuktepe (YK).
Kazane Höyük (KZ)	Tell Maghzaliyah (MY)	
Kurban Höyük (KK)	Tell Matarrah (MT)	

Table 1-2: Sites

The thesis is structured into six main chapters, an introduction, a conclusion, and two appendixes. Chapter 1 forms the introduction. Chapter 2 provides the 'background' which discusses theorisations of the late Neolithic and the ways in which seals and sealing practices have been used globally. Chapter 3 reviews previous archaeological literature. Chapter 4, 'classification and methodology', analyses how seals have been classified, classification theory, and my approaches to it, as well as the methodology of the thesis.

Chapters 5-7 provide the analytical and interpretative chapters of this thesis. They are arranged following a pseudo-analogy for the archaeological process. Chapter 5 'death' covers what deposited evidence is available and the analysis of the material data on the seals. Chapter 6 'Life' analyses the evidence for how seals were used, interpreting the available data on context, condition, and relationships with other objects as well as discussing and interpreting late Neolithic sealing practices. Chapter 7 'Birth' discusses why seals were made and is the primary interpretative chapter of this thesis. This tripartite division follows the archaeological process from the exposure and interpretation of the physical attributes in excavation (death) through their utilisation in site reports as a class of objects (life) culminating in their being used to justify high level interpretations of society (birth). Each chapter builds on the previous one as they shift from analysis to interpretation; as such 'Death' is a primarily analytical chapter while 'Birth' is predominantly interpretative. It provides a useful way of dividing the attributes of seals into different foci of analysis without relying on chronological or thematic separation thus allowing the object class to retain its central position.

Chapter 8 presents conclusions summarising my findings and draws together the themes of the previous chapters. It also broadens the frame to consider seals as part of the wider elaboration of material culture in the late Neolithic and discusses how the paradigm of administrative sealing has helped scholars of the late Neolithic by seemingly providing evidence for social complexity.

Appendix 1 details the fields in the database that accompanies this thesis. Appendix 2 is the site gazetteer providing coordinates and published sources for utilised sites. The database of seals evaluated for this thesis is entitled 'Aktanak' (from a Neo-Assyrian term for a seal) and is available on an accompanying cd in a variety of formats.

All dates within the thesis are in calibrated years BC.

# Chapter 2: Background

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The purpose of this chapter is twofold. The first section (2.1) reviews previous approaches to and the chronological divisions of the late Neolithic. The purpose of this is to outline how the late Neolithic has been studied but also to illustrate how despite recent improvements, our understanding of the specificities of late Neolithic society is limited. The second section (2.2) frames the concept of a seal because, as is discussed in detail in the next chapter, the definition of a late Neolithic seal remains essentially untheorised. The ubiquity of the administrative argument has masked any discussion of other uses of seals that are widely recognised outside of the late Neolithic of North Mesopotamia. This analysis will allow for the construction of a more complete image of what a seal can be used for.

## 2.1 The Late Neolithic of the Middle East

This section will 'set' the scene of this thesis by investigating what previous interpretations have shaped existing views of the late Neolithic and the present state of research in the period and region.

As mentioned in the introduction, the late Neolithic is a period in the history of the Middle East which lies between the Pre-Pottery Neolithic (c. 10000 BC) containing the origins of settled agriculture and the Late Chalcolithic (c. 4000 BC) which contains the rise of early states. The chronological table (Table 2-1) shows the chronological phasing and culture-historical groupings I am using within this thesis. It should be noted that the early Northern Ubaid is not normally included in the late Neolithic as it is assumed the transition from the Halaf to Ubaid pottery tradition "is generally thought to have encompassed much more profound cultural change than just pottery classification" (Bernbeck and Nieuwenhuys forthcoming: 4). This is not reflected in the seal glyptic which remains predominantly unchanged well into the late fifth millennium BC (von Wickede 1990: 126) and as such I have included the early Northern Ubaid as part of the late Neolithic seal tradition within this thesis.

	Culture-Historic Period	Chronological Years
Early Neolithic	Pre-Pottery Neolithic B	8500 – 7000 cal. BC
Late Neolithic	Pottery Neolithic	7000 – 6000 cal. BC
	Halaf	6000 – 5400 cal. BC
	Halaf-Ubaid Transitional	5500 – 5200 cal. BC
	Early Northern Ubaid	5200 – 4500 cal. BC
Early Chalcolithic	Late Northern Ubaid	4500 – 4000 cal. BC

**Table 2-1: Chronological Periods of the thesis**

The Pottery Neolithic begins around 7000 - 6800 BC. This initial transition to the late Neolithic is poorly understood and might have been caused by environmental or climatic elements (Akkermans 1993: 168–172; Simmons 2000; Bar-Yosef and Bar-Yosef Mayer 2002). Sites become smaller and fewer, and the explicit types of symbolism visible in the Pre-Pottery Neolithic, e.g. plastered skulls, are no longer as common. Around this time pottery becomes increasingly common, the relation with these changes is largely unexplored but is unlikely to be directly related.

Between the Pottery Neolithic and the Halaf there is a transitional phase of two hundred years, from around 6200 – 6000 BC which is best published at Tell Sabi Abyad (cf. Nieuwenhuyse 2007) before the Halaf period begins in earnest. The Halaf lasts around 500 years from 6000 – 5400 BC and Halaf style pottery is spread across a vast region from the Levantine coast to Baghdad (Nieuwenhuyse 2007: 9). This is followed by the Halaf-Ubaid transitional period which probably lasts between 5500 – 5400 BC and 5200 – 5000 BC (Davidson 1977; though see Campbell and Fletcher 2010 for a discussion of the problems with dating the Halaf-Ubaid Transitional) which leads into the early Northern Ubaid. As mentioned above while the early Northern Ubaid is not normally considered part of the late Neolithic it is included within this thesis and covers a period from around 5200 – 4500 BC. These different culture-historical periods are all technically polythetic, and as such are defined by a range of characteristics, but in all of them pottery dominates. The Halaf in particular is traditionally defined as having a range of common features such as “a particular subsistence, a distinct settlement system, a unique type of round building, and specific types of human figurines and stamp seals” (Nieuwenhuyse 2007: 9) but “with the exception of pottery, all the constituent elements of the ‘Halaf package’ were firmly established before the Transitional period began” (Nieuwenhuyse 2007: 213). This is problematic, as the Halaf is generally seen as “the first occurrence in Southwest Asia of a widespread cultural horizon” (LeBlanc and Watson 1973: 117). Much previous work on the late Neolithic has been based around explaining the origin and end

of the Halaf phenomenon, with very little appreciation that the Halaf is essentially a way of making and decorating pottery, and by extension is therefore primarily related to consumption practices (cf. Campbell 2007).

The earliest interpretations of the late Neolithic come from the early 20<sup>th</sup> century and fit within culture-historical models that equated material culture with chronologically arranged groups of people. Culture-historical models under-pin almost all archaeological geographical and chronological models and while they have been strongly criticised throughout the discipline (cf. Thomas 2004: 66) their influence remains pervasive. The ontological foundation of culture-historical models largely equated ethnicity or groups of people with certain assemblages of objects. It made no attempt to explain why or how a culture came to be. When cultures changed this was largely seen as coming about through migration or diffusion. For example Mallowan explains the change from the Halaf to the Ubaid levels at Tell Arpachiyah as an invasion:

It is more than probable that the Tall Halaf peoples abandoned the site on the arrival of the new-comers from Babylonia; and with the disappearance of the old element the prosperity of the site rapidly declined; for, although the new-comers were apparently strong enough to eject the older inhabitants, yet they appear to have been a poor community, already degenerate: their houses were poorly built and meanly planned, their streets no longer cobbled as in the Tall Halaf period, and the general appearance of their settlement dirty and poverty stricken in comparison with the cleaner buildings of the healthier northern peoples who were their predecessors.

(Mallowan and Rose 1935: 14)

This quotation illustrates how the ideological underpinning of culture-historical perspectives is based on a different understanding of the relationship between material culture and social groupings than is found today. In part this was because at Arpachiyah, the de facto type site for the Halaf until more recent excavations (Campbell 2000: 1), there is no evidence of the Halaf-Ubaid transitional, and so it appeared to be a clean break between the two periods. Evidence for transitions in the late Neolithic remains very rare, and the Halaf “until very recently appeared on the scene from nowhere, full-blown and without any convincing antecedents” (Nieuwenhuyse 2007: 24). The Halaf-Ubaid

transitional remains archaeologically almost unknown (Campbell 2007: 22) with very limited evidence, with poorly published sequences from Tell Aqab and Tepe Gawra providing the main evidence (Campbell and Fletcher 2010: 76–77). It is therefore no surprise if archaeological cultures appeared to be replaced by other cultures without transition and that this was interpreted in terms of population change or movement.

Culture-historic analyses that ‘explained’ the reason for the Halaf’s existence through migratory and diffusionist theories are one of the most common interpretations of the late Neolithic. There is a wide range of literature that postulates a variety of cultural origins, including from the Khabur (Amiet 1980a: 50; Davidson and Watkins 1981: 11), the Mosul region (Perkins 1949; Dabagh 1966), or the Anatolian plateau (Mellaart 1965: 119; Bogoslavskaja 1972). There are a couple of more complex interpretations such as Kirkbridge’s (1972) who suggests that the ‘Halafians’ are the result of people who were pushed out of the Anatolian foothills to the area around Umm Dabaghiyah, and who were in turn succeeded by the people who had pushed them out of Anatolia and who eventually “swamped and absorbed them” (Kirkbride 1972: 15), forming first the ‘Hassunans’ and then the ‘Halafians’. Kirkbride’s idea is the most subtle in that it acknowledges links between Hassuna pottery and Halaf pottery and thereby links between peoples across time and geography. The majority of the interpretations treat the Hassunans, and by extension the people of the Pottery Neolithic generally, as people who are pushed out of their land, and disappear without a trace in surrounding areas. Forest (1996: 36, 39) has them retreat to the Deh Luran in Iran where they quickly lost all cultural identity. The problem with these analyses is that they are only justifiable when transitions appear to be discontinuous. In the late Neolithic of north Mesopotamia, where there is clear, if rare, evidence of continuous transition, they are not sustainable.

From the 1960s onwards new theoretical models began to develop which remain some of the most common interpretations of the late Neolithic. These are social evolutionary ones which argue that culture is progressive and, in varying ways, culture can be grouped in stages which societies rise through. It is from these theories that the idea that the late Neolithic is a transitional period between agriculture and sedentism and state societies derives from. Based on the work of, most famously, Freid (1967) and Service (1962) evolutionary ladders were created with different rungs, such as tribes or chiefdoms, reflecting the different levels of social complexity that ultimately culminate in modern nation states. Through social evolutionary approaches, the achievements of the

past can be framed in relation to us. Hence, Mesopotamia is the 'cradle of civilisation'. Late Neolithic social evolutionary approaches never moved beyond the existing culture-historical units, and were largely concerned with defining the social complexity of the Halaf. The first, and most influential attempt, was that of Watson and LeBlanc (1973). They argued that the Halaf was a ranked or chiefly society with close knit unity, based on high quality pottery which was used as a tool of elite legitimisation. Breniquet (1996) and Forest (1996) rejected this, and argued that the Halaf was a tribal system with unintegrated institutions which dealt with societal problems by fissioning. When the tribes ran out of space to expand, the tribal system began to collapse, and they copied the Ubaidian chiefdom system (Breniquet 1996: 118–119; Forest 1996: 55). Social evolutionary approaches have been very heavily criticised for wide-ranging failures to actually define what the rankings represent, and the qualitative differences between them (cf. Feinman and Neitzel 1984).

Evolutionary approaches to the late Neolithic, and Middle Eastern Prehistory generally, have been very influential to the study of seals because of the association between administrative sealing practices and redistribution and exchange in the emergence of ranked societies. This is particularly important in the Middle Eastern sphere because interpretations of early states in the fourth Millennium BC Late Chalcolithic and Uruk are based on societies that are argued to have redistributed goods in elite contexts controlled with sealing practices (Algaze 2001; Frangipane 2001; Liverani 2006). The retro-fitting of those early state contexts has led people to search for evidence of redistribution in pre-state societies, often chiefdoms as discussed in the previous paragraph. However, as there is very little evidence of institutions in the Neolithic, sealing practices – presumed to be administrative – provided the necessary evidence. Service defined chiefdoms as “redistributational societies with a permanent central agency of coordination” (Service 1962: 144), and while this has been criticised (cf. Earle 1977) the notion of redistribution being important to the emergence of complex society has remained preeminent in the Middle East.

For those scholars who did not believe in the centrality of redistribution the association between administrative practices and exchange in the rise of complex societies remained important. For example, Wright and Johnson argued that in the absence of written or structural data “the technology of administration can provide evidence of a hierarchy of information processing which supports and enhances that of



settlement pattern” (Wright and Johnson 1975: 271). As such evidence of administration, when combined with factors such as ranked settlement hierarchies, provided evidence of increasingly complex societies. Much of the discussion of evolutionary models in the Middle East was atheoretical, being only implicitly based on the work neo-evolutionary anthropologists or archaeologists such as Renfrew (1972), or Flannery (1972) with only a few Middle Eastern archaeologists such as Adams (1966), Wright (1977), or Johnson (1973) utilising such theory. The implications of the administrative link to increased complexity for the study of stamp seals will be discussed further in chapter 8 (the conclusion).

Looking more theoretically evolutionary models are theoretically biased. Underpinning evolutionary models is the notion of progress, specifically progress towards modernity, based on ranked value judgements (Chapman 2003: 196–7). A social evolutionary approach implies, normally implicitly, that we are better, and the very notion of social complexity itself is euro centric as the “meta-narrative of simple to complex is a dominant ideology that organizes the writing of contemporary world prehistory in favour of a modernizing ethos and the primacy of the West” (Rowlands 1988: 36). The aspects that define complexity (e.g. writing, bureaucracy, stratification, cities) are important elements of modernity, and it is both unfair and unwise to impose them upon the past. Interpretations based on the notion of progress do the people of the late Neolithic a great injustice, no matter how socially complex we suggest they were. Value judgements on complexity are almost omnipresent in the general literature for late Neolithic sites. For example at Yumuktepe the seals found in the Pottery Neolithic levels are described as being “among the earliest ever found and reflect an unexpectedly complex social organisation” (Caneva and Köroğlu 2010: 23). The very framing of the late Neolithic as a transitional stage between the origins of agriculture and sedentism and early states plays into this argument, as it implies there is a single narrative that can be drawn between the Neolithic and early state societies that is justified in terms of increasing complexity.

Almost as common as social complexity approaches are typological ones which are primarily concerned with typological change over the late Neolithic. These studies focus more on elucidating what changed over the late Neolithic as opposed to explaining the change. While there are few standalone studies that deal solely with typological change, many works include discussions of typology (cf. Akkermans et al. 2006; Weeks et al. 2010)

particularly when the studies relate to chronological or pottery classifications (which in many contexts remain largely interchangeable). A good example of a study that is primarily typological is a review of new data (for 2004) in the Pottery Neolithic of Syria by Cruells and Nieuwenhuyse (2004) who intended “to give a brief, factual account of some of the ongoing fieldwork projects” (Cruells and Nieuwenhuyse 2004: 48). The article discusses the pottery data from a range of sites in Syria and then discusses a range of potential directions for further research. Studies of this type, though deliberately a-critical, provide useful synthesis data and set the framework for more analytical or theoretical research.

A less common type of approach are symbolic approaches where commonly “the iconographic symbolism of the decorated ceramics is seen as a metaphor for the expression of religious belief-systems or cognitive structures” (Nieuwenhuyse 2007: 19). Such approaches attempt to specifically interpret the geometric and figurative designs of Halaf pottery. For example, Forest (1996: 26–35) argues that designs based on rotational symmetry of stars and birds are the ‘principle deity of creation’ while goats, scorpions, and fish mark the domestic world. They generally do not attempt to explain *why* or *what* changes via the iconography, and tend to fall back on social evolutionary perspectives. The most major example is Cauvin (2000) who explains the Neolithic’s origins as a symbolic revolution based around the supreme female goddess and the bull, but justifies this change through unexplained cognitive shift (Cauvin 2000: 208–210). Various scholars have developed Cauvin’s arguments, Stordeur (2010), for example, suggests that the differences in visual symbolic material between the early Pre-Pottery Neolithic B and the middle and late Pre-Pottery Neolithic B reflects a clear, though not definitive, shift in attitudes towards animals from being seen as wild or ferocious to domestic and dominated (Stordeur 2010: 126–8). Watkins (2010) makes a similar argument to Cauvin and explains the Neolithic Revolution in the Middle East by improved cognitive capabilities of humans, though his focus is primarily on the Natufian – Pre-Pottery Neolithic transition. Another recent example that explicitly covers the late Neolithic is Costello (2011) who argues that certain symbols visible from 9000 BC until 4000 BC such as raptors and snakes have cognitive semi-universal interpretations (Costello 2011: 257) (snakes for example are frequently chthonic) meaning that despite the changes in society over time some of the visual traditions of the early Neolithic may have persisted into the late Chalcolithic (Costello 2011: 260). The issue with symbolic and cognitive arguments is

twofold, firstly for the large part they passively track changes in material culture without critical evaluation or theorisation and secondly they justify change through the *deus ex machina* of cognitive functions. The examples above provide no physiological evidence for the principle of cognitive evolutions and treat the 'mind' within the traditional Cartesian mind-body duality as if it was something separate from the physical world that has a single meaning that can be progressively unlocked through material culture studies (Thomas 2004: 180–182).

There are other approaches that I would group as structuralist and post-structuralist archaeologies (often grouped within post-processual or interpretive archaeology), though these only rarely explicitly cover the late Neolithic on a large scale. While structuralism pre-dates post-structuralism in many disciplines their impact on archaeology was largely contemporaneous with early post-processualists using a mixture of ideas from both ontologies. Within the Middle East however structuralist approaches have been considerably more influential deriving in large part from the work of Ian Hodder (1990) whose explanation of the origins of the Neolithic in Europe draws an opposition between the 'domus' (the house, the cultural, the female etc.) and the 'agrios' (the field, the natural, the male) (Hodder 1990: 85–86) with the relation between them mediated by the 'foris' (boundaries, doors, transitions) (Hodder 1990: 130). Most archaeological structuralism derives from the work of Saussure via Lévi-Strauss, who argued that dualisms (such as male:female, back:front, or death:life) could be identified that represented something of the structuring principles in society (Preucel and Bauer 2001: 86). These structuring principles are a hidden analogy that can be revealed through observing material traces of social practices. While Lévi-Strauss suggested these dualisms might be universal (Tilley 1989) most archaeological structuralism has argued meaning is contextual and mediated through social practices.

Structuralism in archaeology is limited through its reliance on the concept of oppositions. Dividing society on set oppositions that modern societies recognise, for example Hodder's (1990: 8–13) dualism between the civilised and the wild, can easily be challenged on the grounds of eurocentrism. More theoretically structuralist approaches maintain the fundamentally modernist idea that the mind gives meaning to "a Cartesian world of inert substance" (Thomas 2004: 214). Hence "material culture is distinguished as that aspect of the material world that communicates, and is meaningful" (Thomas 2004:

214). This ontological position places humanity as the only source of meaning in the world and suggests the world is merely a passive recipient of meaning.

For the late Neolithic the only major structuralist approach is that of Nieuwenhuyse (2007) who looks at what the phenomenon of painted pottery might represent, and identifies a number of oppositions including:

hierarchical designs	: non-hierarchical designs
geometrical motifs	: figurative motifs
no dots	: sometimes dots
'generalized' meaning	: 'specific' meaning
serving and consumption	: storage
'foreign'	: 'local'
exterior surfaces	: interior surfaces

**Table 2-2: Examples of oppositions from Nieuwenhuyse (adapted from Nieuwenhuyse 2007: 212).**

Nieuwenhuyse is aware of the critiques of structuralism and clearly states he does not think the oppositions he has identified are universal (Nieuwenhuyse 2007: 30) and his conclusions relate just to the late Neolithic. The work is focused on Tell Sabi Abyad and the origins of the painted pottery that is found across the late Neolithic in the Halaf and is therefore relatively limited in scope. It discusses how the pottery styles and consumption practices could have moved through a combination of subsistence mobility, exchange, and possible craft-specialisation but suggests that emulation and feasting played important roles (Nieuwenhuyse 2007: 2189). Emulation is used to suggest that much of the “ceramic innovation discussed in this book may be seen as designed to maintain a degree of exclusivity for a particular set of pottery” (Nieuwenhuyse 2007: 221). This was conducted through a process based on achieved status as people and communities respectively emulated other people or communities as the pottery and it’s styles was used “to distinguish those who used them” (Nieuwenhuyse 2007: 223). Nieuwenhuyse argues that the context this emulation was situated in was competitive feasting along with all the social practices visible in feasting which could mask inequalities and both promote the hosting group as well as enable people to develop reciprocal debts as well as more specific practices (Nieuwenhuyse 2007: 225). Nieuwenhuyse suggests feasting actions could have been the mechanism to tie all the small sites into their regional contexts (Nieuwenhuyse 2007: 225). Nieuwenhuyse’s focus on pottery limits what he can say as while he acknowledges that some of the material similarities across the late Neolithic pre-date the development of Halaf and Transitional pottery styles (Nieuwenhuyse 2007: 214–215) he does not attempt to explain it. The pre-existing

similarities within the late Neolithic cannot be explained by feasting and emulation as they pre-date its spread. As such Nieuwenhuysen's argument contains a compelling argument for the spread of pottery styles in the late Neolithic but cannot be extrapolated to the wider aspects of shared material culture in the late Neolithic.

There have been no large scale post-structuralist interpretations of the late Neolithic that have attempted to explain the variety of the late Neolithic world as a whole. However the works of scholars including Reinhard Bernbeck (2008a), Stuart Campbell (2007), Susan Pollock (2011), and David Wengrow (2008), amongst others, can be fitted into post-structuralist thought, although they do not use these labels themselves. It is a developing area within Middle Eastern archaeology and certain scholars are beginning to offer larger scale interpretations. For example Campbell and Fletcher offer an interpretation of the material similarities in the late Neolithic. They take the same starting point as Nieuwenhuysen that late Neolithic material culture "facilitated communication between groups within settlements, between settlements and within regions" (Campbell and Fletcher forthcoming). This allowed objects symbolising shared practices, particularly consumption practices, along with other objects to help integrate society through common symbols and a material lack of hierarchy (Campbell and Fletcher forthcoming). These practices operated within a world that, to some degree, had a "shared understanding of symbols, and perhaps even shared social narratives and myths across a very wide region" (Campbell and Fletcher forthcoming). More generally, they also see the late Neolithic as a period with high mobility which helped ideas and material culture move more easily (Campbell and Fletcher forthcoming). This is a powerful argument as it allows for great multiplicity and localism within the late Neolithic while also providing the setting for the similarities across the late Neolithic. There are multiple examples of material culture that appear to fit into the idea of a shared ideology with another paper by Campbell and Fletcher (in press) providing a clear example. They demonstrate how an image of a certain type of building is found on a variety of mediums at a number of sites including Domuztepe, Tell Sabi Abyad, Fıstıklı Höyük, Tell Arpachiyah, and Tell el-Kerkh (Campbell and Fletcher in press). Regardless of whether the structure is a specific building or not, the presence of this same figural element on a variety of mediums shows clear cultural continuity across the late Neolithic which might tie into wider notions of imagined communities in the late Neolithic.

Moving more generally structuralist and post-structuralist archaeologies have had important implicit effects on much Middle Eastern archaeology. The recognition that objects can have an active symbolic role is a product of the work of archaeologists such as Hodder (cf. 1982; 1992), Shanks, and Tilley (cf. 1987a; 1987b; 1991; 1991) in the 1980s and 1990s. Hodder in particular was in the forefront of this movement and argued three key points, firstly that “material culture is meaningfully constituted” (Hodder 1992: 12), secondly that “material culture had to be studied contextually” (Hodder 1992: 14) and thirdly that “material culture is active” (Hodder 1992: 15). Many scholars have developed and refined these ideas over the decades (see Tilley et al. 2006 for a range of examples) but the core formulation remains applicable. The active and symbolic roles of material culture I discuss throughout this thesis derive from the work of such archaeologists and impact greatly on general approaches to Middle Eastern archaeology, even if it is rarely explicit (though see articles in Steadman and Ross 2010 for a deliberate attempt to do so).

Despite some studies focused on a large scale no previous work on the late Neolithic has come close to explaining the diversity of the period as a whole. The period is the result of long patterns of continuity and indigenous change within a disparate world, involving different material practices and societies. Settlements range from dispersed small, often short lived settlements and camps (Akkermans and Schwartz 2003: 103) to large scale settlements, often in excess of 10 hectares but reaching over 20 hectares, which were occupied for hundreds of years (Akkermans and Schwartz 2003: 103). Whilst the culture-historical framework has largely been deconstructed, all that is really left is the recognition that there are clearly changing patterns of consumption practices (the pottery) and shared imagined communities during the late Neolithic. Almost every other element of the late Neolithic requires re-interpretation to attempt to build a picture of the late Neolithic that can accommodate both the similarities and the differences.

Having outlined the state of research on the late Neolithic the next section will look at research on seals themselves and how they have been interpreted and discussed both within the Middle East and other global contexts. In particular it discusses their multiplicity of possible uses as administrative objects, amulets, talismans, and other ideological and magical roles.

## 2.2 Seals and sealing practices

Having outlined the contextual backdrop of this study, this section is going to look at how seals have been theorised. Fundamental to the concept of Middle Eastern sealing systems is generally an essentially implicit association with personal or corporate identity and administration (cf. Collon 1997a; Frangipane and Fiandra 2007). Within this narrative there has often been a strong theme whereby seals have further purposes as magical items, religious devices, or purely aesthetic objects (cf. Collon 1997a).

However, non-administrative purposes have never been comprehensively argued for late Neolithic seals. While there has been a recognition that late Neolithic seals may have developed out of apotropaic objects, it is generally implied by the late Neolithic their only use is within administrative control systems (Fiandra 2000; Duistermaat 2010). This has led to the paradoxical position of late Neolithic seals being the only Middle Eastern seal-like objects to be purely administrative. The amuletic and talismanic use of seals, both stamps and cylinders, after the Neolithic has long been recognised (cf. Goff 1956). This means that under traditional paradigms the argument goes that seals develop out of amulets sometime in the early Neolithic, become purely administrative objects during the late Neolithic and Chalcolithic, before developing complex amuletic and talismanic uses once again during the Bronze Age. Clearly, the chances of this being true are low and as this thesis will demonstrate late Neolithic seals were not monothetic objects. This section will look at the evidence for the uses of seals in a variety of global contexts. Other seals, including historic Middle Eastern ones, provide useful analogies for the social processes involved in the use of seals and investigating the various potential meanings and uses of seals will enable me to approach the re-interpretation of late Neolithic seals with an appreciation of seals as complex multi-faceted artefacts within society.

Before outlining terminology I want to discuss the definition of a late Neolithic seal. While the idea of late Neolithic stamp or pendant seals as a type of artefact has existed since the 1920s, there is no reason to assume that it is a category that would have been recognised by the people of the late Neolithic. It was devised by archaeologists to let them sort finds into manageable categories and in truth we are unlikely to ever be sure if the category has any archaeological reality. However, the word 'seal' (and 'stamp') offer value judgements as to the use of seals and may not be appropriate terminology as sealing or stamping was only one aspect of their use. It is possible a more appropriate term could be used to better reflect the uses we theorise for late Neolithic seals. I will not

attempt to answer this now and shall return to it in the conclusion when my reinterpretation has been presented. As a working definition a late Neolithic seal is any late Neolithic object that has been published or called a seal, bead, amulet, or anything of the ilk that has attributes that relationally link it to other members of the predominantly geometrically decorated late Neolithic seal tradition.

I will begin by outlining the terminology I will use and describing the administrative use of seals and sealings, before moving onto thematically looking at examples of other uses of seals and sealing practices.

### 2.2.1 Terminology

The terminology of seals is often confused, with indiscriminate usage of 'sealing' to refer to pieces of mud or clay with or without impressions and with or without having been sealed to anything. For example Figure 2-1 shows a 'sealing' from Arpachiyah which has been impressed with a seal but not sealed to anything. By contrast Figure 2-2 shows a 'sealing' from Domuztepe which has been sealed to something but not impressed with a seal.



Figure 2-1: 'sealing' from Arpachiyah (AP-175) (© Trustees of the British Museum)



Figure 2-2: 'sealing' from Domuztepe (Courtesy of the Domuztepe project)



Indiscriminate use of the term 'sealing' has led to misconceptions about the amount of sealings, presumed to be impressed, found at sites. For example the excavators of Tell Sabi Abyad found a cache of 300 sealings (Duistermaat 1996), which have been used to demonstrate how sealing must have been widespread in the late Neolithic (cf. Campbell 2000). However, 'only' 189 (63%) of them have been impressed with a design, 111 (37%) have not been impressed. Some of these may be fragmentary examples but those pictured in the Tell Sabi Abyad report (Akkermans 1996: fig. 5.19 – 21) are complete unimpressed sealings. The terminology has made it easy for this inexactitude. Frangipane (2007a) attempted to deal with this by arguing that the term *cretulae* should be used to refer to all pieces of clay/mud that have been impressed with a seal. While a sensible idea for the late Chalcolithic, it fails for the late Neolithic to subdivide *cretulae* into helpful categories and inherently assumes that the only purpose of sealing is administrative (Fiandra and Frangipane 2007: 16). For many impressed pieces of clay, particularly what Frangipane terms *solid ovoid cretulae* (like Figure 2-1), there is nothing in their physical form inherently linked to administration. Similarly there is little recognition that impressions can be made by more than just seals, this is exemplified at Tell Sabi Abyad by the widespread use of figurines and shells (Duistermaat 1996: 355–364). Practically anything that can be used to create multiples of the same design can create impressions. Other objects in the late Neolithic except seals are clearly used to make impressions, for example shells, fingernails, and what are assumed to be stamps are frequently used in rocker designs on pottery. As such we cannot assume that all impressions on impressed sealings were created by the objects we call seals. In consequence to the above, the technical terms I will refer to throughout this thesis are:

- *Impressed sealings* and *unimpressed sealings* are objects that have been sealed to something with or without an *impression*.
- *Impression* is the imprint of an object that can be used to create multiples of the same pattern.
- *Reverse* refers to the part of the *sealing* that bears the impression of the object that the sealing was sealed to (the same as Fiandra and Frangipane 2007: 17).
- *Impressed clay disks* are objects that have been impressed but not sealed to anything.

- *Impressed strung clay* are objects that have been impressed but not sealed to anything and had strings running through them.
- *Unimpressed strung clay* refers to objects without impressions that have not been sealed to anything and had strings running through them.
- *Unimpressed clay disks* are unimpressed, artificially shaped, objects which have not been sealed to anything.
- *Sealing system* is used to refer to an organised system involving the regular use of seals to create impressed objects.
- *Sealing practices* are the specific practices involved in that context.



Figure 2-3: Unimpressed Clay Disks from Arpachiyah. (Courtesy of the Institute of Archaeology, UCL 2011)



Figure 2-4: Single Unimpressed Clay disk from Arpachiyah. (Courtesy of the Institute of Archaeology, UCL 2011)

For *unimpressed clay disks*, archaeological recovery is likely to be patchy but they are quite common. Figure 2-3 shows a bag containing about 200 unimpressed clay disks from Arpachiyah which have languished at the Institute of Archaeology UCL since Mallowan's excavation in 1933. Figure 2-4 shows a single example which is clearly artificially shaped, but methodologically these, and unrecorded similar objects from excavations across the Middle East are problematic. They presumably represent the result of a practice so archaeologically ephemeral to be, at present, impossible to interpret (though there is an on-going PhD by Lucy Benison-Chapman at Liverpool University which may elucidate elements of this situation). More general terminology for the physical *seals* themselves is discussed in chapter 4.

The following six sections will discuss the different uses of seals in a variety of global contexts, beginning in 2.2.2 with administrative uses of seals.

## 2.2.2 Administration

Sealing systems of varying forms have been found across much of the world. Socially there are vast differences between all the different cultures and their sealing systems. However, in the majority of them sealing is to some degree an administrative practice, generally relating to the use of recognisable seals to control access to places and objects or to administer the movement of goods (Fiandra and Frangipane 2007: 16). Within individual contexts administrative uses vary considerably but because it has long been assumed that the mere presence of seals and sealings denotes administration (Rothman 2007: 242) there has been only limited theorisation of how to identify administrative practices and this section will review the literature on administrative sealing practices, primarily in relation to Middle Eastern contexts where the literature is more developed, and draw out key aspects of the practices that make them administrative.

Initially however I must define what I mean by administration. While administration is normally associated with institutions and redistribution this is an incomplete definition. Administration is merely the action of managing something, traditionally for economic or 'practical' reasons, practical in this thesis being intended to reflect interpretations by scholars who argue that objects or practices are adopted because they are useful to the society, see for example the discussion in Moore (1995). This something could be a temple-based redistributive system, but could equally be a person sealing their private property to prevent tampering. As such the apparent division drawn by some scholars between their interpretation of the meaning of late Neolithic seals as being for sealing private property and the later development of administrative sealing by institutions and elites is a semantic one (cf. Duistermaat 2010: 180). There is no distinction between the practices involved in sealing to guarantee goods in a household, community, or institutional hierarchy level (Fiandra and Frangipane 2007: 16) as it is the scale that varies, not the action. As such any interpretation of sealing as an economic or practical practice is *de facto* administrative and this is the definition I use throughout this thesis.

There is considerable variation in specific sealing practices and in one of the most complete discussions of the action of administrative sealing Fiandra and Frangipane (2007: 16–22) identify the following types of administrative practice:

- Sealing to guarantee goods for internal circulation (redistribution).
- Sealing to guarantee goods for external circulation (trade).
- 'Sealing' to guarantee the accuracy of a document (contracts).
- 'Sealing' to record an administrative act (proof or receipt or transactions).
- Sealing to contain tokens containing encoded messages.

The last type is restricted to the Middle – Late Uruk and linked to the development of writing and as such is beyond the focus of this section. Of the other four types there is a functional distinction between the first two and second two. The first two are concerned with protection and control and would create impressed sealings. The latter two were not associated with protection and control and are theoretically associated with record keeping and would create impressed clay disks, strung clays, or impressed tablets. This is an important distinction as the majority of late Neolithic sealings, outside Tell Sabi Abyad, are of the latter two types. The theoretical imperative of the latter two is also different and is functionally different from protection and control. When the examples we have are investigated there is little conclusive evidence it is a primarily administrative act and I discuss such practices in section 2.2.4 as I believe they relate more to the ideological and physical uses of seals as they resemble these practices more closely than controlling or protecting goods.

As such this section is primarily concerned with administrative sealing for the purposes of protecting objects or controlling access to objects. Many specific examples of sealing practices are a mixture of both types of administrative sealing and most of the literature on administrative sealing has focused on the physical practicalities of the sealing system and its apparent complexity without really considering the social aspects of how the system functioned (Rothman 2007: 253–254). This means that the literature on seals is generally typological with little explicit consideration of the social role of sealing practices. For example, whilst it is recognised that the earliest large scale sealing practices at sites like Tepe Gawra, Arslantepe, and Değirmentepe are formalised practices (Rothman 2007: 249–250) there has been no discussion of *why* formalised administrative sealing practices were required in the social context. Essentially given its ubiquity in Middle Eastern contexts the reasons for administrative sealing are generally treated as implicit with much emphasis focused on looking at changes over pre-existing transitions or interpreting aspects of administrative sealing systems (cf. Pittman 1997). In practice

the purpose of the sealing system goes untheorised in the highly bureaucratic state societies of the Proto-Historic and Historic Middle East, this is unfortunate as it means no consideration has been taken of how, socially, sealing systems function as opposed to how, administratively, sealing systems function. One exception is Wengrow's (2008) suggestion that impressed sealings of the fourth millennium BC could represent brands and "acted as markers of quality and provenance and as a means of guaranteeing the pristine condition of perishable goods" (Wengrow 2008: 20). This is sealing as a guarantee of quality and the emphasis is different to traditional forms of administration although the specific practices are materially the same. Beyond Wengrow there seem to be few studies that attempt to explain why people had administrative sealing that move beyond value judgements of, normally increasing, administrative complexity.

What none of the studies I have encountered discuss explicitly is what I feel is actually the fundamental aspect of any administrative act – belief. If the participants do not, to varying degree, trust the system they are in, why would they participate in it without coercion. For administrative sealing to function it must embrace the entirety, or at least the key parts, of a community or society so as to render it trustworthy. A tiny lump of fragile clay placed on a person's possessions will not prevent other people tampering with it, unless the implied threat inherent in the administrative sealing is powerful enough to persuade them otherwise. In Wengrow's argument sealing was used to guarantee quality through branding, but a clay sealing is a much more fragile brand than modern packaging and the process still relies on trust that the branded goods are what they claim to be. Counterfeit branded goods are common in the past, for example Roman stamps suggesting a wine is Pompeian have been found on amphora containing non-Pompeian wine (Johnson 1989: 64–66). Practically within any society the question of where the origin of trust comes from is important. In the state societies of ancient Rome and the Uruk it could come from the fact both had powerful institutions and the ideological or hegemonic framework that entails.

Outside state based societies without powerful formal ideological institutions there would be no reason to trust that the implied threat in the sealing would deter manipulation. I would argue that to make an administrative system trustworthy, even in a state society, requires repetition and formality, essentially they must be true habitual practices to a certain degree. Sealing practices cannot be actively negotiated as if they were it is unlikely people would trust and rely on the system undermining its functionality

fundamentally. This is because in the absence of any material mechanism, like formalised practices, to ensure belief in the trustworthiness of the system it would have to rely on inter-personal relations, at which point why are these people bothering with administrative sealing practices in the first place. There is no reason to suspect people create administrative systems on a whim. While brief, this is the conclusion of my administrative sealing section, essentially I do not believe sealing systems without elements of regularity or formality can be administrative in an economic sense.

The next section will discuss magical reasons uses.

### 2.2.3 Magical and Protective Purposes

Magical uses, most commonly apotropaic ones, are the most common non-administrative function attributed to seals and sealing practices, and in some contexts are argued to be the most important purpose of seals (cf. Rome: Henig 1997: 93; or Crete: Relaki 2009: 356). Throughout this thesis magical objects are those to which super-natural properties have been attributed by the users regardless of the source of those properties. It is important to distinguish between amulets and talismans as the literature tends to use these terms interchangeably without defining or recognising the difference between them. Both amulets and talismans are magical, but an amulet is a device designed to protect by magical means, while talismans are objects that can be imbued with magical power and radiate said power (following Paine 2004: 10).

Within the Middle East the use of cylinder seals as amulets and talismans was most clearly illustrated by Goff (1956), who quotes a wide range of texts that refer to the use of cylinder seals for a variety of magical purposes. I shall outline these first and then provide other examples of the magical use of seals to illustrate the range of purposes they were used for.

One of the most common examples of the use of cylinder seals for amuletic purposes is found in healing texts. For example, a text designed to stop a pregnant woman losing her baby refers to placing a range of amulets, of many types including seals, at various points on her body (Goff 1956: 25). A similar text uses seals as amulets to aid in childbirth (Goff 1956: 25). There are also a group of seals that depict rituals related to healing sickness, though their role in the healing rituals is not established. A third text, which mostly deals with indeterminate arm trouble equates seals of various stones to particular attributes, see 2.2.6, with a variety of protective and magical properties (Goff

1956: 27). Another suggests writing the 'word' of a female sorcerer who is casting aggressive magic against one onto a 'green' (i.e. possibly new) seal will protect one from her magic (Goff 1956: 24). These examples show seals used as amulets in mundane contexts and being treated no differently from other types of amulets leading Goff (1956) to conclude that the use of seals for amuletic purposes was ubiquitous.

There are also a number of texts cited by Goff that posit the use of cylinder seals as talismanic. Two texts refer to the sealing of holes containing magical substances to guarantee the magical contents of the pits (Goff 1956: 28–29). This is comparable to the practices involved in administrative sealing as both have similar purposes to ensure the contents of the sealed space are not tampered with. However the purpose behind the sealing of a pit containing magical substances to ensure the efficacy of those substances is a substantially different purpose from sealing a jar of grain to stop someone stealing the contents. This is interesting as it suggests the possibility that the sealing of traditional media, such as containers, did not have to be done for the purpose of administration or bureaucracy, but could have had an explicitly magical function. The use of cylinder seals in projected protective magic can be inferred in a text referring to rolling a cylinder seal across a clay likeness of an enemy, to prevent the enemy saying any magical words against you (Goff 1956: 24–25). It implies the action of sealing could treat seals as inherently efficacious, and able to project power independent of the identity of their owner.

Aggressive talismans form one of the most potentially interesting uses of seals and are closely related to the concept of seals being active entities. There are several texts that mention seals being used aggressively. For example:

“If the ‘finger’ is like a crescent moon, it is an omen of King Rimuš, whom his palace officials killed with their seals.”

(Goff 1956: 36; finger in this case referring to part of the liver)

This text has been variously interpreted as suggesting he was killed by a pin to which the seal was attached, stoned to death with tablets, or by an unknown object that also translates as seal (Wiseman 1974: 254). Goff (1956: 37) suggests however that if a seal can be used protectively, it can also be used aggressively especially given the ubiquity of magic in the Bronze and Iron Age Middle East (Goff 1963: 163–4). Another text refers to the killing of a mythical monster by a god. The god holds ‘the seal of his life’ before his

face as he attacks, and kills the monster which Goff (1956: 36) suggests might have been actively achieved using the seal.

Chinese seals provide another example of the protective and magical use of seals. There, a class of seals termed 'talismanic seals', with different iconography but the same morphology as administrative seals, were used both for protective purposes and to project their power into impressions. Wagner (1997: 214) quotes an example where a large tortoise lived in a deep pond and summoned ghosts and demons which caused illness. A Dao sage dealt with it by throwing several hundred impressions of a specific talismanic seal into the pond, this made the tortoise float to the surface where it could not move for fear of touching the impressions allowing it to be killed with a pole. Wagner (1997: 213) also provides the example that by impressing a certain talismanic seal into the footprint of a tiger it will either depart immediately or return to you depending on which way you stamp it. Similarly if you wear the seal while travelling, tigers and wolves will leave you alone. The use of a specific seal with a specific design is clear evidence of non-identity based sealing practices. The seals were powerful objects with efficacy in themselves, which could grant efficacy to their impressions without diminishing their own power.

While less definitive in intention, tablets from the Indus valley have been interpreted as fulfilling similar uses due to duplicate tablets bearing a single identical seal design. Some of these were found in apparently 'ritual' contexts (Parpola 1997: 49) though there is no strong evidence to support this. Later pre-Islamic India (~500 BC to ~1100 AD) provides further examples of magical sealing as well, with commonly produced votive clay plaques, which were impressed with a specific seal and credited with magical powers (Callieri 1997: 166–167). These impressions similarly show that the seal used to make them had the power, through iconography or some other form, to transmit its power to the impression like in the Chinese example. Not enough information is available in English to look into these examples in more depth, but they all illustrate the potential for seals to transmit efficacy to their impression.

Beyond these specific examples, Ancient Egyptian (James 1997: 33), Minoan (Weingarten 1997: 65–66), Classical Greek (Boardman 1997: 80), Roman (Henig 1997: 98–99), Medieval European (Cherry 1997: 133), and Islamic (Rogers 1997: 193–194) physical seals as objects are seen as having magical properties. A popular example that covers Jewish, Christian, and Islamic legends, is the signet ring of King Solomon which was



remarked to have a wide range of magical powers, such as controlling genies (Shalev-Eyni 2006: 146) and sealing demons in containers (such as in the *Tale of the Fisherman* in Arabian Nights). Equally common is the importance of the iconography of the seal (as opposed to the seal itself) for magical purposes. For example, seals with depictions of religious or magical significance are found in the Roman world (Henig 1997: 98), the Indus Valley (Parpola 1997: 49), the Middle East (Collon 1997b: 19), the Minoan world (Weingarten 1997: 66), Byzantine seals (Cheynet 1997: 117), Medieval Europe (Cherry 1997: 133), Pre-Islamic India (Callieri 1997: 169), and the Islamic world (Rogers 1997: 194). One example is that in the Byzantine world a soldier with a military saint on his seal would have believed the image to be protective (Cheynet 1997: 117).

It is clear that the magical use of seals is prevalent in almost all the contexts where seals were used, often existing tangentially to seals used for administrative purposes. The next section will look at the possible ideological and physical functions of seals and sealing.

## 2.2.4 Ideological and Physical objects

The concept of providing an individual with a distinct identity is ubiquitous but often an under-appreciated aspect of the literature. By this, I suggest that a seal might have a person, rather than a person having a seal. An excellent example of this is the '*chuanguoci*' the seal used by heaven to transmit its mandate to the Chinese emperors. It was supposedly created for the first emperor of China (r. 221-210 BC), and despite never being used, was seen as necessary to demonstrate the ties between heaven and the dynastic family (Lai 1976: 12). The seal itself appears to be a forgery, dating to the late Han period (25-220 AD), which was repeatedly 'lost' and 'found' until the Qianlong emperor (r. 1736-95 AD) admitted it was fake (Wagner 1997: 213). Traditional definitions of seals grant seals their identity from their owner; here I wish to suggest that seals can quite easily grant their identity to their owners as well. By possessing the *chuanguoci* Chinese emperors could claim they had heaven's mandate, the seal's efficacy granted ideological legitimacy to the Chinese emperor and state as a whole.

There are similar examples from many other contexts. For example, the stamp seal of Augustus Caesar was used after his death by later emperors (Pliny, *Natural History* XXXVII 4) as a source of legitimation. Pliny wrote in the reign of Vespasian, the first emperor of the Flavian dynasty, who was unrelated to the Julio-Claudian's (Augustus and

his descendants) and therefore in need of ideological legitimisation to reinforce the military power that won them the empire. Objects being used as a source of historical legitimacy is common, but this concept has never really been considered with seals; old seals tend to be seen as dynastic heirlooms (cf. Collon 1997c) not as potential agents of institutional or ideological status (such as *imperator* or holding the mandate of heaven)

At a less august level, in the early Islamic Empire (second half of the first millennium AD) non-Muslim subjects had to pay a poll tax. In parts of the Middle East to show they had paid this tax they had to wear a seal impression on their wrist or neck (Porter 1997: 182). This practice did not originate from administrative practices but as a stigmatising device. It derived from the practice of neck-sealing on slaves in pre-Islamic Iraq and Iran with a symbolic conceptual link between tax payers and captivity (Robinson 2005: 434). Neck-sealing of slaves appears as a non-permanent alternative to branding or tattooing and was practiced throughout parts of the Middle East (as well as in the Byzantine empire) and appears to have been quite common in early Islamic states (Robinson 2005: 408–416). For a full description and discussion of the practice, see Robinson (2005). Robinson (2005: 427) summarises the purpose as:

“Once we recognise that neck-sealing was tied to conquest and captivity, and that it originally possessed its power as a symbol of defeat, humiliation and servitude, we can see that its association with the *jizya*-paying *al-dhimma* [a non-Muslim subject] was secondary. In other words, the *ahl al-dhimma* did not make the practice humiliating; the practice humiliated *them*.”

Robinson (2005: 427)

This is an interesting sealing practice as it suggests an administrative practice, by authenticating a transaction, but more importantly in the context demonstrated that the individual was a subjugated non-Muslim with limited status. The sealing bestows an identity far above the simple transaction. A later example of the same practice is found in a fourteenth century sartorial text that describes how non-Muslims should wear a metal sealing, or bell, in the bath to distinguish them from Muslims (Robinson 2005: 421). A less stigmatising example is found with sealed tokens, some of which were pierced and worn, given to the poor in Byzantium, that entitled them to food and other resources (Cheynet 1997: 117). Similar practices also occur in medieval England (cf. Courtenay 1972), again relating to poor relief.

This is the use of sealing to give identity, transforming the object from an administrative function or passive artefact to an active item of bodily adornment, directly negotiating identities and social relationships between persons. Potentially some clay disks from pre-Islamic India (Callieri 1997: 168) might have had similar purposes. These have been interpreted as representing monetary obligations, non-metallic coins, passports or letters of introduction, votive offerings, and trial sealings (Thaplyal 1972: 11–12, 335–6, 344–6). The evidence for their use as passports is quite conclusive and there is considerable literary evidence of different settlements requiring passports, i.e. impressed clay tablets, for outsiders entering their territory (Thaplyal 1972: 344–46). More generally seals seem to have been important as acting as extensions of people, there is a report in one of the *Jataka*, a collection of early Buddhist literature detailing the past lives of the Buddha, concerning the purchase of the entire cargo of a ship on credit by depositing a signet-ring as security (Thaplyal 1972: 343). While these uses are administrative in tone, they are not the dry record of events the literature on late Neolithic implies, but active objects negotiating social relationships.

There are a few cases where it appears the physical seals themselves are seen as people. One of the texts Goff (1956: 30) discusses describes a seal as coming from the inner city, during the new year festivities at Babylon, to meet a message which had arrived, which was treated as if it were a person. The text is fragmentary and the way the seal is used is lost but Goff argues that the seal too was potentially a person or at the very least displayed some form of agency. While this is inconclusive evidence, it is not dissimilar to the attributes of inalienable seals like the '*chuanguoci*' or the magical amulets referred to in the previous section. It is a telling aspect that seals could be important physical objects existing in their own right, granting a status to their possessor.

As I mentioned in section 2.2.2 there are administrative sealing practices that materially appear more primarily ideological. These are:

- 'Sealing' to guarantee the accuracy of a document (contracts).
- 'Sealing' to record an administrative act (proof or receipt or transactions).

The key distinction here is that the sealing practices do not relate to protection or control, they are instead essentially crystallised manifestations of agreements between people with less implied threat than in sealing to control or protect. There are many

various forms of this practice but practically they resemble modern signatures and theoretically speaking they do not need the same level of trust and formality to function as sealing for control and protection as they are much more explicitly the result of social interaction. In fact, within this comes sealing practices where the 'seal' used is irrelevant as compared to the *action* of sealing. Here the seal acts as an extension of the person sealing without the need for identification. As such, the impressed seal does not need to be individual as the important aspect is that the person sealing was witnessed to have been sealing. The most poignant example of this is the use of fingernails as seals in Mesopotamia where some legal documents could be sealed with a fingernail with the name of the sealer written in the text (Postgate 1976: 8–9). As the name of the person is written in the text, there was no need for an individual or recognisable seal but similarly there was no reason for the person to have sealed it at all. It is clear that the action of sealing in these cases was the important aspect; being seen to impress your fingernails, or seal, into the document by the witnesses must have helped provide a legal force to the document. Similar examples can be found in tablets that have been sealed with a traditional seal. For example a Neo-Assyrian tablet in the British Museum's collection (K. 295) describes a marriage contract. The text states that three people sealed the tablet, a man called Nabti-rehtu-usur, his son Kannunaya, and another son Silim-Adad (Kwasman 1988: 254). The tablet was only sealed twice with the same seal. Presumably therefore it may have been a family seal, but in this context it is again clear that the action of sealing was the important aspect. Tablet K. 295 was witnessed by fourteen people which clearly indicates that the authenticity of the contract did not come from the mere contract itself. Fourteen people is a lot to witness anything and illustrates that the contract alone would not have been trustworthy without witness to vouch for either party having signed the contract. As such, this is not sealing as a sign of personal identification but sealing as an extension of the person using the efficacy of the person sealing, not the efficacy of the seal itself.

Even in contexts where identification via the seal was used sealing to guarantee a contract is primarily an ideological use of seals. But instead of the ideological use of specific seals or specific imagery it is the ideological use of the practice of sealing itself. In essence it is an efficacious extension of the self and hence primarily would function in contexts where sealing was used at a personal level without the necessity of the formal rigmarole identified in 2.2.2 (although presumably a certain sense of law is required for

written contracts to function). As a practice it clearly, along with some of the examples of section 2.2.3, illustrates the importance of the action of sealing itself, above and beyond its outcomes. In many ways sealing to guarantee a contract is just a more physical way of swearing an oath. Receipts in theory are a little different as they are more explicitly administrative but in practice function much the same way as contracts in Middle Eastern examples. For example K. 295 is strictly speaking a receipt as the money for the bride has already been paid and the text is aimed at ensuring no-one challenges this fact. Plain receipts without witnesses or explicit contractual elements are really quite uncommon in Middle Eastern contexts but this likely relates more to the nature of tablets in the historic Middle East as opposed to the practice not existing. A receipt however remains a manifestation of a social interaction whether a person buys a wife or collects trade goods and once again it is the ideological action of sealing that creates the value without the formal recourse of administrative sealing practices discussed in 2.2.2.

This section has illustrated that the action of sealing itself can be a powerful act and that specific seals can be ideologically charged and used for institutional legitimation, or other forms of ideological construct. Such practices are visible in a wide variety of contexts and are probably present in a number of other contexts, such as the seals perceived to be 'heirlooms' in the Middle East, that presently remain untheorised. The next section will discuss the 'aesthetic' uses of seals.

## 2.2.5 Aesthetic purposes

While objects are rarely treated as if they were 'just' jewellery in modern reflexive approaches to archaeology, the role of seals as aesthetically pleasant objects is commonly accepted. The best example of this is found with Roman seals, which were used interchangeably as dress-jewellery. Pliny (*Natural History* XXXVII, 4) reports that Augustus had a pair of identical stamp seals with Sphinx designs which he used during the civil war and were earrings he had found amongst his mother's jewellery. These aesthetic values can be found in other contexts such as in Mycenae, where seals were adopted from the Minoans. Here, while seals were used administratively, it was never their prime function, and they were used preferentially as items of ostentatious display (Weingarten 1997: 67). Similarly, the Etruscans produced high quality scarab-shaped seals that had similar forms to the Minoan examples, but appear to have been purely aesthetic objects within Etruria (Boardman 1997: 80). Even in contexts where the primary use of seals was administrative,

a strong visual element remained with people wearing cylinder seals on strings of beads, necklaces, or as part of fibula in the Middle East (Collon 1997b: 20).

While it is clear that seals had a plethora of potential uses, their aesthetic potential cannot be ignored, as this provides an insight into the potential importance of visual body ornamentation and iconography in different cultures. The creation of the seals in Etruria, for example, demonstrates the importance of the replication of imagery as imagery without necessarily attaching ideology to it. This is a topic discussed at length by Wengrow (2011), who provides a range of examples including how snake headed lions and griffins on cylinder seals which originate in Mesopotamia begin to be found in Egypt where they became part of an emerging ideology of sacred kingship (Wengrow 2011: 137).

The next section will discuss the importance of the materials seals were made from as well as their use as containers of powerful substances.

## 2.2.6 Powerful Substances

While not necessarily a purpose in itself, the potential importance of the actual material from which a seal was made has been largely ignored in the analysis of late Neolithic seals. Von Wickedede (1990: 7), for example, suggests the only use for the object's material lies in illustrating trade relations. However in the historic Middle East, the literary record provides widespread evidence of specific stone materials being associated with magical properties. For example a text that deals with arm trouble (Ebeling 1923: 185) (discussed in 2.2.3) ends with the description of six different seal materials and their effects:

- “10. ... a seal of hematite (portends) that that man shall lose what he has acquired.
11. .... a seal of lapis lazuli (portends) that he shall have power; his god shall rejoice over him.
12. ... a seal of crystal (portends) that he shall enlarge profits; his name shall be good.
13. ... a seal of ZA.TU.UD.AŠ (portends) that he shall walk in joy of heart.
14. ... a seal of green marble (portends) that (until he comes) to the grave, favour upon favour shall be bestowed upon him.
15. ... a seal of GUG (portends) that the "persecutor" shall not be released from the body of the man.”

(Goff 1956: 27)

No mention of the iconography of the seal is given and the efficacy comes from the stone itself. Goff (1956) lists a large number of other examples with the necessity of specific stones for specific rituals.

Other contexts and societies where the material itself is important are the Hellenistic and Islamic periods, where stones and metals had “at least residually astrological significance” (Rogers 1997: 194), European Medieval and Post-Medieval seals (Henig 1997: 133), Pre-Islamic India (Callieri 1997: 169–170), and Roman seals (Henig 1997: 98–99) where colour was paramount (Boardman 1991: 29–31). Seals associated with Demeter, goddess of the harvest, for example, were often made from green stone (Henig 1997: 98). The importance of seal material separate from the motif incised on the seal is potentially significant as it emphasises the use of seals as objects of personal adornment, and offers another potential aspect to their function by providing a medium for potential magical or ideological properties.

Seals have also been used as containers of powerful materials as illustrated by a tale recounted in the Roman Josephus’ *Antiquities* (8.42-8.49), written in the first century AD, in which one Eleazar comes to the court of Vespasian and using a seal with a specific root under the sealing face drew out a demonic possession through the nose and then made the demon knock over a bowl of water to demonstrate it had left the body (Duling 1985). The root here is the powerful substance, but it is interesting how it was included inside a seal. There are parallels with some Indus valley seals which are hollow with a lid (Parpola 1997: 49) and designed to contain something, though no contents have survived to illustrate what. Byzantine seal-rings are also known to have contained relics, granting them religious significance (Cheynet 1997: 117).

## 2.2.7 Summary

The different uses and purposes of seals and sealing illustrated above demonstrates just how varied seal uses can be. To suggest a primacy to administrative use is to ignore both the multiplicity of meaning and the role of identity in their interpretation. None of the contexts discussed had purely administrative seals or sealing practices. This implies that the interpretation of late Neolithic sealing practices as purely administrative is likely to be incorrect. The majority of the examples I have discussed in this section come from sources much later than the late Neolithic and I draw no direct

analogies between those practices and those visible in the late Neolithic. Instead I use them to illustrate how objects called seals have been used.

I summarise the different purposes of seals or sealing practices as:

- Non-trade related identification (as in the Indian passports or Islamic poll tax)
- Institutional legitimation (as in the '*chuanguoci*' or seal of Augustus)
- Amulets (as in the text protecting pregnant mothers)
- Talismanic (as in the killing of Rimuš)
- Containers of powerful substances (as with the exorcist's ring)
- Embodiments of powerful materials (as with the Middle Eastern texts)
- Aesthetic (as with Etruscan seals)
- Replicating ideological imagery (as with the snake-headed lion)
- The visible action of sealing itself, as extension of the person sealing (as with using fingernails to be seen sealing a tablet)
- Sealing as a crystallised agreement (as with the marriage tablet)
- Guarantee of quality (as in Wengrow's argument)
- Guaranteeing goods for internal or external circulation (traditional administrative)
- Records of an administrative act (traditional administrative)

These purposes are not mutually exclusive, and many of them relate to different aspects of identity in some form or other. It is therefore likely that the meanings of late Neolithic seals would be multi-faceted, depending on who is interpreting them and in what context. This multiplicity of meanings makes it clear that administrative uses are closely entangled with magical and ideological purposes, within a rich milieu of social practices and beliefs. Any individual seal or sealing might have represented a diverse range of possible meanings. For example, Augustus' seal when used by the Flavian emperors as a sign of imperial legitimacy was used for both ideological and administrative purposes, unlike the *chuanguoci* which was not physically used.

In particular, the role of magic is pervasive throughout many of these different possible purposes and it suggests to me that the ubiquity of magical uses, as in objects that have been attributed super-natural properties, has to suggest that in many contexts the more amuletic or talismanic properties of seals or impressed sealings has at least an equal role to that of administration. If you seal a jar containing a genie, or the mouth of a



figurine, you are controlling access but through preventing something from getting out. By covering the opening of an object containing powerful substances you are sealing it to prevent tampering not because the goods are necessarily of material value, but because they need to magically fester in a quantum state. There is no material difference between creating impressions and sealing for administrative purposes or magical purposes except for scale and formality. The magical property of seals themselves is also ubiquitous in many of the contexts discussed above and even the more ideological roles retain a magical element. For example, the *chuanguoci* seal was used by Chinese emperors to claim they had heaven's mandate, in essence that the gods approved of them marrying the magical and ideological.

The possibility for the sealings themselves to be powerful has also not been appreciated. The use of impressed clay disks or strung clay as markers of identity, as with the non-Muslim poll tax or pre-Islamic Indian passports, illustrates how sealings themselves do more than prevent access or authenticate a transaction; they could authenticate and provide an identity by their own merits. The impressions produced to defeat the giant tortoise are similar, in that they are powerful objects in their own right that have inherited the efficacy of the seal used to make the impressions iconography.

This multiplicity of possibilities conclusively demonstrates that the act of sealing is not inherently administrative, but revolves around a number of similar material practices. There is no physical distinction between sealing a container to ensure the efficacy of the contents, and sealing a container to stop people stealing it. This raises one final issue; how would one differentiate between administrative sealing practices and any other form of sealing? The simplest answer is scale; administrative sealing practices are repetitive and formal. Administrative sealing is based on trust or legal recourse. When one gets clear evidence of administrative sealing, in the fourth and third millennium BC you find thousands of sealings, archived or dumped in stages, in a process that was regularly repeated (cf. Frangipane 2007a). The trust in administrative sealing must be sufficient to mediate relationships between people who don't know each other but have faith in legal recourse or some other threat to protect their interests. By contrast the majority of the examples above are isolated practices, conducted individually or for singular events done for specific efficacious purposes. Ultimately it becomes an issue of terminology again, sealing is generally perceived as representing an administrative act when, as the above sections show, this is untrue. Sealings can be amuletic or talismanic, administrative,

ideological, and potentially almost anything else depending on the *why* of the sealing. Similarly the objects themselves are not just personalised or corporate markers of identity, but can equally be amuletic or talismanic, administrative, or ideological, through their material and their iconography.

## 2.3 Conclusion

This first part of this chapter (2.1) outlined the chronological periods of the late Neolithic and discussed previous interpretations of the period. This argued that while many of the older interpretations, such as culture-historic approaches, have been challenged newer approaches have not replaced the completeness of these models focusing instead on specific aspects of late Neolithic identity.

The second part of this chapter analysed the way seals and impressed sealings have been used in a range of global contexts. This illustrated that magical (apotropaic or talismanic), ideological, aesthetic, and material uses of seals are common in a wide range of contexts. These share similarity in practice with administrative sealing practices but were not formal or repetitive, instead they were specific, isolated events carried out as necessary. Such practices are not derivatives of administrative sealing practice but another angle of the same practice, carried out for similar purposes but different reasons.

The definition of a seal in any given context should not be assumed to be tacit. The above analysis has illustrated that seals are not only used for creating impressions, and can also be amulets, talismans, or manifestations of ideology. These other uses may or may not be secondary to administrative uses but are not separate. As such, it is not that seals can be used as amulets, they can *be* amulets. This potential multiplicity of meanings and the combinatory aspect of meaning many of the examples above illustrate has largely gone unappreciated. The analysis in this section has usefully widened my perspective on the potentials of seals and sealing practices and the next chapter will analyse how late Neolithic seals have been interpreted through reviewing the specific literature.

# Chapter 3: What has come before

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The previous chapter outlined the contextual background to the late prehistory of the Middle East and discussed the uses of seals in a variety of contexts. This chapter will look at the literature of late Neolithic seals and how they have been previously studied and interpreted. This is in order to show that most commentators have been working within the same paradigmatic interpretation. It is important to note that my own ontological position is different both theoretically and methodologically to that of many of the previous commentators.

Section 3.1 will discuss literature up to the publication of von Wickede's doctoral thesis in 1990, while section 3.2 discusses literature since then. This division is artificial but does divide traditional interpretations that culminate in von Wickede from more recent interpretations that were impacted by developments in archaeology during the 1990s and 2000s.

## 3.1 Historical Perspectives

The first text on early seals was Hogarth's (1920) *Hittite Seals* which, despite the name, is a catalogue of the Ashmolean museum's collection of stamp and cylinder seals in 1920. It was published before prehistoric periods such as the Halaf were widely recognised. As such while Hogarth (1920: 1) is aware of the Bronze Age occupation at Tell Halaf (von Oppenheim 1933) he seems unaware of the Neolithic occupation and shows no knowledge of the existence of seals from any period before the Hittites. This is because earlier seals were not widely known and, except for Tell Halaf, most late Neolithic sites in this thesis were yet to be excavated. Despite this Hogarth's work has been of fundamental importance to the classification of stamp seals, as Buchanan (1984) based his classification on Hogarth's. Buchanan's work subsequently became the model for all modern classifications (see Nunn 1999). Beyond its influence on the classification, Hogarth's work is essentially a discussion of Hittite glyptic and has largely been superseded by Buchanan's 1984 catalogue of the prehistoric seals of the Ashmolean museum. Buchanan's Ashmolean catalogue will be discussed later in this chapter.

Following Hogarth's there was no published work on late Neolithic seals until the 1930s. The first of these was a synthesis publication by Herzfeld (1933). It is focused on

stamp and cylinder seals and discusses how early seals could develop out of garment buttons (Herzfeld 1933: 49; 53). It also provides one of the earliest descriptions of the Tepe Giyan stamp seals (Herzfeld 1933: 80–103) and Iranian stamp seals more generally. The interpretation of early stamp seals as buttons was not unusual at the time, Schmidt (1937) at Tepe Hissar argues the same. There is no evidence of late Neolithic clothing, and no evidence of the use of buttons. While the possibility could exist for seals to be used as toggles or buttons there is no evidence for the use of button shaped objects except for decorative purposes until the first millennium AD.

Von der Osten's catalogue of stamp and cylinder seals in the private collection of Mr Edward T. Newell was published in 1934. Newell donated his collection to Yale University, and Buchanan's (1981) publication of the Yale collection has rendered von der Osten's earlier catalogue obsolete. There is very little discussion of the corpus and the foreword states that the collection "should be primarily considered as a collection of source materials" (von der Osten 1934: vii). None of the seals conclusively date to before the fourth millennium BC, and all lack provenance. What discussion there is, is focused on stylistic elements of the representational seals (cf. von der Osten 1934: 86–160). The work is of value in providing examples of the difficulty involved in dating seals, giving examples of Kassite seals excavated at Nippur "apparently assembled for recutting about a thousand years later" (von der Osten 1934: 1). Von der Osten (1936) also published the collection of Mrs Agnes Baldwin Brett. This collection added no further discussion than that of Newell's, and similarly contains no seals earlier than the fourth millennium BC. Both works are prime examples of the lack of discussion and synthesis of context found in many earlier texts which were products of culture-historic approaches.

Mallowan and Rose published the results of their excavation of Tell Arpachiyah in 1935. Tell Arpachiyah has functioned as the *de facto* type site for the Halaf since its excavation and it is here that the first noticeable collection of early seals, and impressed sealings, was discovered. It also provided the earliest explicit interpretation of early seals with Mallowan and Rose formulating the opinion that the seals "must have been used as identification signs indicating individual ownership" and "could be used as indications of private ownership and identification" (Mallowan and Rose 1935: 91). They also refer to the objects functioning primarily as amulets (Mallowan and Rose 1935: 91) which were subsequently used as seals. Mallowan and Rose also published a seal-pendant classification which informed von Wickede's (1990: 103–113) seal pendant classification,

discussed later. Mallowan and Rose's interpretation has been most widely used by academics discussing seals in relation to their own sites, but has hardly developed beyond that. It is also used as evidence that some seals were used as amulets (i.e. Tomas 2011: 87) although Mallowan and Rose argued they are amulets that were used as seals, not vice versa. Mallowan and Rose use the term amulet uncritically to refer to any type of pendant and while it is to be assumed they meant it apotropaically there is nothing in the text to imply this and it appears to be based purely on the morphology of the objects. However, given the factors discussed in section 2.2.3 the interpretation of early seals as amulets is by no means impossible.

Following four publications there was a gap in research until the 1960s when three studies explicitly on early stamp seals, Amiet's (1961), Buchanan's (1967) and Porada's (1965) were published. A revised version of Amiet's work was published in 1980 and is used here as the main reference to his work.

Porada's study is a brief classification of the changing nature of stamp seals from the Pre-Pottery Neolithic to the Babylonian period. There is limited discussion of seals, with the study evaluating the shifts in the classification of the glyptic. Porada suggests Halaf period seals developed from pre-Halaf seals (Porada 1965: 141) but no reason for the origins of seals is given. Buchanan's study focuses on Mesopotamia, and covers seals from the Amuq A-B until the third millennium BC. The discussion of Halaf seals covers slightly less than half a page (Buchanan 1967: 266) and excludes pendants focusing on the stamp seals from Arpachiyah though it acknowledges that "similar designs appear on pendants, ..., of which numerous impressions have been found" (Buchanan 1967: 266). There is a discussion of the classificatory changes of the Tepe Gawra seals over time and their stylistical relations with impressed sealings from Arpachiyah (Buchanan 1967: 268–271). There is little wider discussion and the work is primarily concerned with the stylistic characteristics of representational seals found from the fourth millennium BC onwards. Neither Porada nor Buchanan discusses the function of a seal or the purpose of sealing, but they are primarily focused on late fourth millennium BC stamp seals where there is evidence for administrative sealing systems. The presence of administrative sealing systems from the middle of the fourth millennium BC onwards is relatively clear but Buchanan and Porada have uncritically pushed this interpretation back with no consideration for the difference in context within the corpus they discuss.

Amiet's study is a stylistic analysis of the iconography and symbolism apparent on stamp and cylinder seals. It concentrates on the period from the middle fourth millennium BC onwards, but does briefly consider what Amiet believes to be the origins of seals in the Halaf and early Ubaid. He considers that the development of seals demonstrates an advanced level of civilisation, and relates it to the growth of painted pottery, architecture, and early metal working (Amiet 1980b: 15). Like Buchanan and Porada, there is no discussion of the purpose of seals, they are again assumed to be administrative. While he recognises that many of the earliest seals are pendants Amiet believes it is difficult to imagine them being used widely (Amiet 1980b: 15). Amiet's most trenchant point, based on findings at Tepe Gawra, is that there is a clear shift in the iconography of the designs of seals from the middle of the fifth millennium BC onwards, with a move from abstract geometric iconography to representational iconography (Amiet 1980b: 16–17, 69). This transition is important as it only after this point that clear evidence of administrative sealing practices are found. There is no development of the implications of this observation.

It should be mentioned that in 1957 von der Osten published the seal collection of Hans Silviu von Aulock. This was in a similar vein to his 1934 and 1936 catalogues and contains no seals clearly predating the fourth millennium BC. A few may be late Neolithic but as they have no provenance cannot be reliably dated. There is considerably more discussion of the seals in this catalogue than in his previous catalogues, focusing on classificatory shifts in design and shape (von Der Osten 1957: 17-81).

Goff's (1963) work on symbolism, as it related to her opinions on religion, looks at different imagery from the Hassuna period (Pottery Neolithic) until the end of the Uruk. As a synthesis it compares all the known seals at that time and is highly comprehensive in its discussion of the range and potential interpretations of the glyptic styles. Unfortunately it treats the administrative definition of seals as tacit (cf. Goff 1963: 20) and repeats Mallowan's claim that early seals were amulets used as seals (Goff 1963: 51), but again treats amulets as a known category. This is unfortunate as her work on the use of second and first millennium BC cylinder seals as amulets and for magical purposes (Goff 1956) was more nuanced, discussed in the previous chapter, and the application of some of the possible interpretations expounded there, would have greatly enhanced the discussion of early symbolism both for seals and wider late Neolithic material culture.

Homés-Fredericq wrote her doctoral thesis in 1962 and it was published in 1970 as *Les cachets mésopotamiens protohistoriques*. It looks at the change in the form and styles of the seal glyptic from the Pottery Neolithic until the late Uruk outlining, for each period, the main sites, the forms, the materials, and the design groups she devises. The work focuses on seals from selected sites, centring on Arpachiyah and Tepe Gawra for the Halaf and Ubaid periods, but her thesis is ultimately descriptive without much interpretation or analysis. The narrative of administration is maintained, but she does suggest that the designs of geometric seals might reference daily life with the cross-hatching potentially representing nets for fishing or hunting (Homés-Fredericq 1970: 87–88), or possibly as early ideograms, again with cross-hatching potentially representing pasture (Homés-Fredericq 1970: 102). Her work is useful for the way in which she classifies the designs on the seals and will be evaluated in the next chapter, but is otherwise largely out of date. Her fundamental conclusions maintain that the seal was a Halaf invention and that pendant seals pre-date stamp seals. This suggestion was inaccurate even at the time of publication, as the discoveries in the Amuq and at Tell Hassuna demonstrate. Her most interesting claim is that many of the stamps, particularly the Jemdet-Nasr animal shaped ones, would have been amuletic (Homés-Fredericq 1970: 10). While this again assumes amulet is a tacit definition she does argue quite strongly that there is no dichotomy between ‘practical’ seal and ‘magical’ amulet suggesting a more plural interpretation of seals.

In 1975 Jakob-Rost published a catalogue of the seal collection of the East Berlin Museum. Jakob-Rost had no technical knowledge of the collection (Jakob-Rost 1975: 7) and as such there is no classification or interpretation of the seals. Again the catalogue covers seals from the fourth millennium BC onwards with no convincingly earlier seals.

The next major event in the study of early seals was Buchanan’s death in 1976. As a result of this his work on the Yale Babylonian collection and the Ashmolean’s collection were posthumously published in 1981 and 1984. Both volumes consist of seal descriptions, written and arranged in classificatory groupings by Buchanan, but with the descriptions of the groups and any other synthesis written by the editors of the volume.

The Yale Babylonian collection contains very little analysis or interpretation with little discussion of each individual period. The introduction was written by Hallo (1981), who also wrote a section on the seal inscriptions, and who considered seals to be primarily aesthetic objects and secondarily administrative (Hallo 1981: ix). Of the 1300

seals described, less than 100 are likely to be of early date and the emphasis of the text is on the later contexts. The Ashmolean's collection volume was edited by Moorey, who wrote all the analysis and discussion. Moorey's introduction offers more discussion of the seals than the Yale Babylonian collection, and has an overview of previous literature (Moorey 1984: viii–ix) but does not provide any critical opinion. Most importantly, the publication contains a classification designed by Buchanan (1984: xi–xvii) which formed the basis of a number of later classifications, as will be discussed in the next chapter.

In 1976 Caldwell published an article looking at long distance trade between Iraq and Iran, focusing on potential relations between regions by analysing the form of stamp seals from the middle fourth millennium BC onwards. Caldwell suggested that Halaf and earlier seals might not have been used for sealing practices; this is because he considers there to be no evidence of impressions (Caldwell 1976: 230). He is apparently unaware of evidence to the contrary at Arpachiyah. Caldwell also created a classification for fourth millennium BC seals which will be discussed in the next chapter.

Until von Wickede's (1990) thesis was published there was nothing, subsequent to Mallowan and Rose (1935), whose primary concern was interpreting late Neolithic seals. Late Neolithic seals were included in studies primarily as illustrations of the apparent origins of later representational seal glyptic, in which the authors were interested and which the majority of seal collections represent. Von Wickede's (1990) doctoral thesis *Prähistorische Stempelsiegel in Vorderasien* has since its publication been the key text in the study of seals (cf. Nunn 1999; Tomas 2011). It covers seals from the Pre-Pottery Neolithic until the Late Uruk. With the exception of Homés-Fredericq, it is about the only work to comprehensively study late Neolithic seals from more than one site, covering in great deal all seals and impressions from stratified deposits. The work includes a more comprehensive classification than had previously been written. The work is primarily typological, and looks at the development of forms and sealing practices over the periods and is largely unconcerned with the role of artefacts within their contexts. As with the works of Buchanan, Porada, Homés-Fredericq, Caldwell, and the other authors above, there is little discussion of the purpose of a seal. They are treated as primarily administrative with only a few sentences suggesting other uses of seals. Von Wickede does mention how historic period seals in the Middle East were versatile and used as amulets, votive offerings, and signatures (von Wickede 1990: 29), but suggests this was not the case with late Neolithic seals stating "[t]he use of prehistoric *Stempelglyptik*



[Stamp-glyptic] was mainly directed to the sealing of containers, showing property/ownership and to protect the goods against unauthorized use” (von Wickede 1990: 29 my translation). While this allowed him to construct a single narrative of stamp seal development from the late Pre-Pottery Neolithic until the Early Bronze Age, he provides no evidence in support of this opinion.

Aside from the lack of analysis, the text remains useful and von Wickede’s breadth of data and classification is the most complete example available. Von Wickede’s concluding analysis is limited, but his synthesis of classification remains useful. He posits that it is impossible to have a temporal or regional classification as the seal glyptic across North Mesopotamia throughout late prehistory remains too consistent (von Wickede 1990: 124–125). He goes on to suggest that it is only towards the end of the fifth millennium BC that there is a change in the seal glyptic (von Wickede, 1990: 126) from primarily geometric seal designs to primarily representative seal designs. This is the same transition as recognised by Amiet, but unfortunately neither author dealt with this transition. It may be a key change in the purpose of seals as following the transition in design, the administrative use of seals becomes clear whereas before then evidence of administration, and use, is much more elusive. Furthermore subsequent to publication hundreds more seals and impressions have been excavated. These have greatly increased the size of the corpus of late Neolithic seals and impressions from the 130 discussed by von Wickede (1990: 93) to the 669 included in this thesis.

The above discussion highlights two points. Firstly, that almost all the early literature focused on later stamp seals. The majority of catalogues covered little or nothing from before the fourth millennium BC. Secondly, all syntheses within the literature have been concerned with the development of typologies. Since these later periods largely have developed administrative sealing systems this is understandable. However, the fact that there is administrative sealing after 4000 BC is no reason to assume that 2000 years earlier it is also administrative. The scholars in this section have not interpreted late Neolithic seals within their own context, with the objects exclusively inheriting their meaning from later uses of seals. I will now discuss literature post-von Wickede and argue that while there has been little evaluative change, there has been an increasing recognition that interpretations of late Neolithic seals have been oversimplified.

## 3.2 Recent Perspectives

Much recent work has been on fitting new evidence into existing paradigms of seal interpretation. An exception to this is the earliest paper in this section, the publication of a conference paper given in 1991 by Charvát (1994) looking at the impressions from Arpachiyah and Nineveh. Charvát interprets the difference in sealing practice between the Halaf and Ubaid in terms of Sahlins' interpretation of Melanesia (Charvát 1994: 13):

“The Arpachiyah and Nineveh 2-3 sealings thus visualize, I believe, a transition from personalized gift-giving (conceived of as conveying parts of the donors' personalities to members of exclusive social centres in the Halaf period) towards a wider and perhaps less individual circulation of goods bearing clearer "signatures" among the more or less equivalent component segments of Ubaid-culture society.”

(Charvát 1994: 14)

This is an interesting argument, and one of the few interpretations that makes any attempt to draw on anthropology. Charvát suggests that as seals have designs that are hard to distinguish and, he assumes, were worn close to the body for extended periods of time they became imbued with the users personality with the seal being capable of extending the persons personhood to other objects (Charvát 1994: 13). This point is important, as it recognises that even objects with generic designs can be inalienable and this efficacy transferred into impressed objects (Charvát 1994: 13). This capability was enacted in an elite reciprocal exchange network. Similar points were made in Charvát (1992: 280–281) and Charvát (2002: 72–3, 86–87- new edition of a 1993 publication) but without expansion. Charvát's work is interesting, but problematic. He summarises the theoretical basis of his argument as

“The fact that most typical Halaf-period amulet seals were obviously worn in necklaces points to the conclusion that they might have conferred the impressions of their bearers' personalities onto the conveyed goods and that they may thus fall within the Maussian category of gifts conveying parts of the donors' personalities to the recipients.”

(Charvát 1992: 280)

There is no evidence late Neolithic seals were worn as necklaces, see discussion in section 5.1, and Charvát does not attempt to explain how this gift-giving could have functioned in the late Neolithic. His analogy is direct and takes no account of the late Neolithic context, the argument that seals could extend the person is an interesting, and plausible, one but requires more evidence than the assumption they were worn. A further limitation of Charvát's argument is he assumes, again due to his use of a direct analogy, the existence of an elite exchange network in the Halaf. The late Neolithic is notable for its absence of trappings of inequality and there is little evidence for elites. Overall however, the recognition that efficacy can be transmitted into a sealing based on the person sealing is an important one is an important point I will return to later.

Extending Charvát is Wengrow's (2008) paper on commodity branding, discussed in Chapter 2. Wengrow takes Charvát's point that seals could have been amulets used to extend the self and changes it to emphasise how sealing practices are transformative and change the "temporality of exchange" (Wengrow 2008: 15). Wengrow in particular draws on the practices at Tell Sabi Abyad to argue that sealing practices allowed Neolithic communities to manipulate the timing of exchange and consumption allowing them to control the "strategic dispensation of resources" (Wengrow 2008: 15). This is an important point as sealing an object places it in a liminal state and removes the sealed item from day to day circulation. It marries a number of the types of sealing practice discussed in Chapter 2 and offers an interesting explanation. However, sealing practices in the late Neolithic, except at Tell Sabi Abyad, are rare and it is not possible to extrapolate from a case study, which as is discussed in chapter 6 appear to be sealings made with different type of object, to the entirety of the late Neolithic. Wengrow's point regarding the transformative nature of sealing practices is important however and I return to it in section 7.3.2.

The most important example of new studies on late Neolithic sealing practices is the site of Tell Sabi Abyad, where a group of 301 sealings on clay were discovered in 'the burnt village' (level VI) (Akkermans and Duistermaat 1996: 18). They will be discussed in chapter 6. They were interpreted by Akkermans and Duistermaat (1996) as being concerned with the administration and control of goods. Tell Sabi Abyad, and its interpretation, has been utilised as conclusive evidence for administration facilitated by the use of late Neolithic seals. For example, Fiandra (2000) in an article concerned with the development of the seal glyptic, argued that as the fourth millennium BC sealing

system at Arslantepe is well developed, it must have had earlier precedents. She traced these precedents as far back as Tell Sabi Abyad and used it as her evidence of a less developed administrative system. Fiandra was also concerned with the earliest development of seals, and suggested that there was a transition in purpose from originally indicating group or individual identity, into an administrative role (Fiandra 2000: 441). This change is argued to have happened before the seventh millennium BC, because of the administration at Tell Sabi Abyad and seals at Bouqras (Fiandra 2000: 438). Fiandra also draws similarities between the glyptic of Tell Sabi Abyad and Bouqras and that of the late Chalcolithic (Fiandra 2000: 438). While parallels in designs are noticeable, these similarities lie in that both depict animals, the article ignores intervening periods, and all other Pottery Neolithic sites, where seals are almost exclusively geometric. While the acknowledgement that seals might have changed in purpose is valuable, the glossing over of millennia of variation in seals critically weakens the argument.

Duistermaat's (2010) re-evaluation of the sealings from Sabi Abyad in light of new evidence since Akkermans and Duistermaat (1996) is more nuanced, and recognises that there is no evidence of institutional administration or elite control in the Pottery Neolithic. Instead she interprets the sealing system as representing the need for a mobile population to administer and secure their private possessions in a communal setting (Duistermaat 2010: 181–2). The paper does have flaws, its attempt to argue for a widespread sealing system in Syria is based on only six sealings from Tell Ain el-Kerkh, which stylistically do not match the Tell Sabi Abyad sealings (Duistermaat 2010: 175). Duistermaat recognises the designs from Tell Ain el-Kerkh do not match those from Tell Sabi Abyad (Duistermaat 2010: 173–176) but ignores the issue claiming it “falls outside the scope of this paper” (Duistermaat 2010: 174). It is important, however, that Duistermaat recognises that elite or institutional administration is an over-simplification of late Neolithic sealing practices, and, while she retains a primarily administrative interpretation, she does suggest that the seals meaning was probably nuanced in the context.

Nunn (1999) published a catalogue of the Aleppo museum's collection of stamp seals including a number of early seals. The seals, with the exception of those from Tell Brak, are published typologically. The classification is based on Buchanan (1984) and von Wickede (1990). The seals from Tell Brak were analysed in detail, comparing Mallowan's (1947) site report with the seals in Aleppo, and tying in that of Matthews (1997) to

achieve tighter chronological positioning and contexts to a number of the Tell Brak seals. No attempt is made to give a detailed account of the character of the Syrian glyptic (Nunn 1999: 17) nor to interpret it. Interestingly though, Nunn appears to believe that “often their [seals] main purpose seems to have been protective” (Nunn 1999: 22). In the discussion of the Tell Brak glyptic Nunn states:

“In addition to the seals, whose faces are engraved and which are therefore called “seals” although they may never have been used to seal anything, there is another large group, whose faces are not engraved but whose backs have the same shape as the first group, They were obviously amulets like the “stamps” of the first group. But as their faces are not engraved I have not included them in this catalogue.”

(Nunn 1999: V)

This is a particularly interesting statement as it displays the artificial, modern, distinction between different groups of material culture.

The strongest attack on late Neolithic seals as administrative comes in Susan Pollock’s discussion of seals from Fıstıklı Höyük where she suggests that “[t]here are several indications that the seals at Fıstıklı Höyük did not have great value as items for controlling access to economically valuable goods” (Bernbeck et al. 2003: 56). To justify this, three points are raised: Firstly there are more seals than sealings; secondly that the designs are “so similar as to be virtually indistinguishable” (Bernbeck et al. 2003: 56); and thirdly that one seal was broken and re-drilled through the centre obscuring the motif (Bernbeck et al. 2003: 56). Pollock’s alternative interpretation suggests instead that “the shape of the seal itself may have been more important than the motif carved on the stamping surface, suggesting a symbolic (apotropaic?) or at least decorative value more than an economic one” (Bernbeck et al. 2003: 57). This is an important commentary as it analyses late Neolithic seals in their own context instead of attempting to fit them into a narrative of administration. When considered on their own merits, as Pollock illustrates, there are strong reasons to question the administration and control of the traditional definition.

Carter (2010) has published the seals excavated between 1997 and 2000 at Domuztepe. The excavations are of considerable relevance to the role of late Neolithic seals and Carter concludes that the seals represent a form of accountability, but that as seals are common, they were not linked to an elite group. She also suggests more work is

required to work out how seals functioned (Carter 2010: 165–6). Carter also discusses how the geometric decoration of Halaf seals, while not individual, may tie into an unidentified social or religious meaning (Carter 2010: 164–5). Since 2000 significantly more stamps seals have been excavated at Domuztepe, but Carter’s recognition that the design of the seals are not necessarily individual or elite remains an important point that, while not widely developed in her article, challenges an administrative interpretation.

Tomas (2011) discusses the design and possible function of Halaf seals, and argues that they may have been used “to keep track of certain records or numbers, or to store updateable information” (Tomas 2011: 87). This is an intriguing idea and worthy of further investigation, especially the idea that the faces of seals could have been adapted over their use-life with elements being added to the face to represent information (Tomas 2011: 90). Though Tomas accepts that many seals might have been used for the purpose of sealing, he does question that this was the implicit purpose of a seal, and suggests that different types of seal may have had different functions.

Similar points are raised by Costello (2011) who also argues that seals are mnemonic devices and were used to store ‘information’. In a paper discussing seals and related imagery from 9000 BC until 4000 BC she argues the symbolism on seals has religious significance and may be associated with a “struggle for increased human control over natural resources” (Costello 2011: 257). The figurative designs on seals, particularly the palettes from Jerf al-Ahmar, provide image of a “three-tiered cosmos represented symbolically in the recurring motifs of bird-quadruped-snake” (Costello 2011: 257). She suggests the geometric designs may be symbols visible in hallucinations or else have some other cosmological/religious significance (Costello 2011: 258–259). The argument that the imagery on seals may be associated with cosmological aspects of society is interesting, but the evidential basis of her argument is insufficient.



Figure 3-1: zigzag and s-shaped designs from Tell Sabi Abyad (Adapted from Duistermaat 1996: Figure 5.3).

Her central argument for seals having religious significance is based on the constant presence of certain figural elements, particularly the raptor-quadruped-snake, from the ninth millennium BC until the fourth millennium BC. This is untrue, after her earliest evidence, the palettes from Jerf el Ahmar and Mureybet (c. 10,000 – 8700 BC), there is 2000 year gap in

appropriate figural representations until the burnt village at Tell Sabi Abyad (c. 6,400 –

6,200 BC) and then almost another 2000 years until the sealings from Değirmentepe (c. 5400-5000 BC). The sealings from Tell Sabi Abyad only figurally depict quadrupeds although Costello suggests that of the designs in Figure 3-1 “the zigzag resembles the form of a raptor, and the ‘S’-shaped motif resembles a snake” (Costello 2011: 252). Essentially Costello has two examples of figural designs four thousand years apart with little comparative figural material in the middle. This, along with Costello’s use of mild cultural universals (Costello 2011: 257), invalidates the specific thrust of her argument. However the over-arching point that the designs on seals represented a shared symbolic language is important and has not been made in such explicit terms by any other author. She also suggests, like Tomas, that it is unlikely seals were used for one purpose and might have been used for different purposes in different contexts (Costello 2011: 248).

These four studies raise crucial interpretative points; both Pollock and Carter make the observation that the designs on late Neolithic seals are not individual. Therefore their ability to represent individuals is limited. Costello’s point that the designs could represent a shared symbolic language, along with Tomas’ and Costello’s contention that not all seals need have had the same purpose or function are equally important. They suggest late Neolithic seals should be considered in context to identify the actual practices involved. It should be noticed here that critiques such as those above have only begun to be argued in the last decade. Separately Charvát emphasises the potential for seals to have been inalienable and capable of projecting efficacy while Wengrow has discussed how sealing is a transformative practices. While neither authors work has been widely adopted their suggestions are important, not least through their recognition that exchange is not purely an economic act but is tied into a wide range of social practices.

Literature discussing post-late Neolithic stamp seals has been extensive in the past twenty years with re-assessments of the Tepe Gawra sealings (cf. Hallaq 1994; Rothman 1994; Rothman 2002), the publication of thousands of sealings from Arslantepe (Frangipane 2007a), a study on the early glyptic of Tell Brak (Matthews 1997), and the publication of the sealings from Değirmentepe (Esin 1994), amongst others. All of this work has been firmly placed in contexts where there is good evidence of an administrative system. Değirmentepe and Arslantepe will be briefly discussed in chapter 6, as the evidence for administrative sealing found at these sites occurs at the end of the period studied in this thesis.

Before concluding I wish to emphasise that the interpretation of early stamp seals as demonstrating a heritage for later sealing practices is very common throughout literature on seals, and Middle Eastern archaeology generally. These ideas are typical of books and articles concerned with later seals, for example Collon (1997) in her overview of ancient Middle Eastern seals uses Arpachiyah and Tell Sabi Abyad in the addendum to demonstrate the earliest evidence of administration, without discussion of what social processes were functioning at the time. Even in literature which only briefly discusses sealing practices an administrative narrative is present. For example Akkermans' and Schwartz's (2003) overview of Syrian archaeology states that from the second half of the seventh millennium BC people started using seals "to define individual property and secure the containers against unauthorized opening, a useful tool in the organization of storage and in the control of exchange networks" (Akkermans and Schwartz 2003: 139–140). While there is a brief discussion as to whether early sealing represents administrative control, the narrative indicates that the implicit understanding that seals only reflect administrative control is dominant.



### 3.3 Conclusion

Tomas' (2011) and Costello's (2011) contention that not all seals may have had the same purpose or function is key, previous classifications have essentially suggested a single universal meaning. The definition of a seal in essentially all of the publications above has been treated as self-evident, and by extension has never been discussed. A seal has been interpreted as the same if it dates to the Pre-Pottery Neolithic or the Iron Age regardless of the differences in society, iconography, and context. This deterministic interpretation has its origins in the study of late Chalcolithic stamp seals onwards which has been applied backwards without evaluation of how appropriate the interpretation is for the radically different societies of the late Neolithic. Furthermore, while it is widely recognised that later seals had important ritual and magical roles (cf. Collon 1997a), this aspect has been ignored for late Neolithic seals, rendering the definition of seals in the late Neolithic more deterministic than in the periods their definition derives from.

The overall issue is that existing studies have rarely considered early seals in their own right. Fiandra (2000) and Charvát (1994) both briefly argue for a transition from impressions marking identity to marking administration/trade, but neither look at the early seals in their own context and, as with most studies, just discuss early seals as part of a dominant narrative of developing administration. I think there are two reasons why this narrative has been so rarely questioned. The first is the impact of modernist progression in Middle Eastern archaeology, outlined in evolutionary terms in section 2.1, which I shall return to in the conclusion (chapter 8) and the second is the way seals have been classified. Existing classifications have homogenised what variation there is within seals, rendering the classifications anodyne. The next chapter will discuss these classifications and demonstrate how they have limited the study and understanding of late Neolithic seals, before offering my own classification.

# Chapter 4: Classification and Methodology.

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The previous chapter argued that how seals have been classified has affected their interpretation. This chapter will analyse this and suggest an alternative methodology of classification based on the concept of 'prototype theory' before discussing wider methodological decisions in the thesis. It has six sections. The first section (4.1) outlines the methodological importance of 'style' in archaeology. The second (4.2) looks at how seals have been classified and the problems this has caused, the third (4.3) looks at wider archaeological trends of classification, the fourth (4.4) discusses 'prototype theory' and the fifth (4.5) describes how I classify seals as well as discussing other methodological issues. The final section (4.6) concludes the chapter.

## 4.1 The role of style in archaeology

Style has been a defining aspect of archaeology throughout the 20<sup>th</sup> and 21<sup>st</sup> centuries AD. The culture-historical groupings discussed in chapter 2 were based on artefact styles that defined cultural groups. Much of the analysis in the later parts of this thesis relates to analysing the morphology and designs of seals, this is part of their style, and before moving onto discussing classification I shall briefly outline the role style plays in archaeology.

Most modern conceptions of style derive from work in the 1970s and 1980s. In particular Wobst (1977), in the information-exchange theory, who argued that style was "the formal variability that is related to the participation of artifacts in the processes of information exchange" (Wobst 1977: 321). Within this conception object style is a source of information for the observer and allows affiliations and identities to be symbolised before personal interaction is required. It makes style an active phenomena. Wobst's argument has been widely extended (see, for example, many of the articles in Conkey and Hastorf 1990) and relates primarily to how style is used, not produced or continued (Hegmon 1992: 521) but the central point that style conveys information is essential to modern understandings of the role of style within archaeology. In particular the semiotical theory I draw on later in the theory would not be applicable without the recognition that style in objects is a means of transmitting information.

## 4.2 Existing classifications

Previous studies of seals, such as von Wickede (1990) or Buchanan (1967), were limited by a lack of discussion as to the uses of seal. The same applies to the classification of seals. All classifications derive from Hogarth (1920) who classified seals solely by body morphology. Hogarth's classification formed the basis of Buchanan's (1984) which in turn was the base of von Wickede's (1990) and Nunn's (1999) classification. While Homés-Fredericq's (1970) classification makes no reference to Hogarth's work she uses many of the same types. Caldwell's (1976) classification may be original as it introduces types such as 'rosette bead' not mentioned otherwise but has not been widely used.

Only von Wickede (1990) sub-classifies pendant seals and, except for Tomas (2011), is the only text to refer to Mallowan and Rose's (1935) pendant seal classification. No classification evaluates more than one element of a seal's morphology. Only von Wickede (1990) and Homés-Fredericq (1970) suggest tentative classifications of face design. Face design will be discussed in 4.2.2 following the discussion of the morphological classifications in 4.2.1.

### 4.2.1 Morphology classifications

Hogarth (1920) does not justify his classification and as later authors accept his classification none of the authorities have provided a methodology as to how they chose to classify seals. Buchanan (1984: xi) does provide a technical definition of the morphology of stamp seals:

“[A]n object with a back, by means of which it can be handled, and a face, engraved with a design that will make an impression. If a face is not flat, its profiles should be described. Hogarth divided the backs into two main classes: handleless, the back of which consists of a single mass, usually perforated; and handled, the back of which has a base from which rises a projection, the handle, which is usually perforated. Elaborate handles will often have a distinct stem and top (see knob-topped seal and stud).

The back of a stamp seal may have one or more distinct sides, which are called side faces if they bear a design. The junction between the face and the back of a seal is referred to as its edge' it may be sharp, rounded, notched, etc.

The ends of a seal will generally be regarded as the area adjacent to the outlets of perforation. However, when a seal is distinctively longer than it is wide,

the term will apply to the points of greatest separation without regard to the position of the perforation.

Any part of the back of a seal that slants outwards towards the face is referred to as sloping, an inward slant is called cut-in.”

Buchanan (1984: xi)

However, as Buchanan’s catalogue of the Ashmolean stamp seals was published posthumously his work was incomplete and the detailed definition quoted above is used in neither catalogue nor classification. Buchanan’s classification essentially expands Hogarth’s classification by elaborate sub division. Table 4-1 shows the number of morphological forms, the number of seals the classification encompasses, and the number of morphological forms per seal in the catalogues of classifications of Hogarth, Buchanan and von Wickede.

	<i>Number of Forms</i>	<i>No of seals</i>	<i>Average number of forms per Seal</i>
Hogarth	20	216 (+ 120 cylinders)	10.8
Buchanan	66	246	3.7
von Wickede	60	~600	10

Table 4-1: Number of types of form and number of seals from Hogarth, Buchanan, and von Wickede (adapted from Hogarth (1920), Buchanan (1984), and von Wickede (1990)).

<b>Hemispheroid</b>	<b>Collared Ovoid</b>	<b>Gable</b>
<i>High</i>	<b>Grooved Hemispheroid</b>	<b>Half-cylinder</b>
<i>Low</i>	<b>Dome</b>	<i>Sloping Half-cylinder</i>
<i>Flattened</i>	<i>Ring-seals</i>	<i>Mounted Half-cylinder</i>
<b>Oval Hemispheroid</b>	<b>Conoid</b>	<b>Flattened Cylinder</b>
<b>Carinated Hemispheroid</b>	<i>Cone</i>	<b>Scaraboid</b>
<b>Gabled Hemispheroid</b>	<i>Truncated</i>	<b>Circular scaraboid</b>
<b>Lentoid</b>	<i>Octagonal Pyramid</i>	<b>Plaque</b>
<b>Ovoid</b>	<b>Pyramid</b>	<b>Tabloid</b>
<i>Loaf-shaped</i>	<i>Triangular Pyramid</i>	<b>Disk</b>
<i>Half-barrel</i>	<b>Rectangular Seal</b>	<i>Oval Disk</i>
<i>Sliced barrel</i>	<i>Sloping</i>	<i>Double-Convex Disk</i>
<i>Almond-shaped</i>	<i>Cut-in</i>	<b>Reel-shaped Seal</b>
<i>Half-almonds</i>	<b>Prism</b>	<b>Grooved Disk</b>
<i>Amygdaloid</i>	<i>Four-Sided Prism</i>	

Table 4-2: Handleless form types of stamp seal from Buchanan (Adapted from Buchanan (1984))

Each of these classifications has a low number of forms per seal; Buchanan’s in particular splits the number of seal forms into so many sub-divisions that each category would contain on average only four objects. Hogarth’s and von Wickede’s offer greater flexibility but they still only allow for some ten or eleven stamps per category. All three are rigid and while the large number of forms is not in itself a problem, the relationship of

form to object is hard to understand and inflexible to variation. Table 4-2 shows extracts from the classification of Buchanan which illustrates that it is so refined as to become unworkable e.g. the sub-group of the handleless form of stamp seal 'Ovoid' seal is subdivided into 'Loaf-Shaped', 'Half-Barrel', 'Sliced-Barrel', 'Almond-Shaped', 'Half-Almonds', and 'Amygdaloid'. The quotation below provides the differences between these forms:

"Ovoid – a hemispheroid type named for its irregularly oval face. ... Loaf-shaped – a blunt-ended ovoid with sides not very convex; Half-barrel – an ovoid with sides more convex than the loaf-shaped; Sliced-barrel – when the ends are cut back to a pronounced degree. Perhaps the most common of these ovoids is the Almond-shaped – with rather narrow ends. Those with flat faces may be called Half-almonds, reserving the term Amygdaloid for convex-faced examples."

Buchanan (1984: xiii–xiv)

Buchanan provides no illustration of the differences between forms and the descriptions are ambiguous. In practice (i.e. in relation to an actual seal) in spite of the innumerable categories remains uncertain. If an almond-shaped ovoid is an irregular oval with narrow ends, and with a flat face it is a half-almond, or with a convex face it is an amygdaloid, what is the face of the normal almond-shaped seal? Beyond that what shape is the face of the other forms of Ovoid seal? Despite the number of sub-divisions for some forms there is no sub-division for other forms, which in the case of Bossed seals would cover the majority of late Neolithic seals. Fitting variable ambiguous seals into this classification is confusing and ambiguous. This is apparent from the catalogue entries in Buchanan (1984) where many seals are given form types that do not appear in the classification e.g. 'Blunt-ended ovoid' (Buchanan 1984: no. 200–2) or a 'thin, carinated rhomboid with convex face' (Buchanan 1984: no. 139). Buchanan's classification appears all-inclusive, but by having so many divisions is merely descriptive and of little use for analytical purposes.

1. Stamp seal with small eyelet and rectangular seal face
2. Stamp seal with small eyelet and circular seal face
3. Stamp seal with small off-centre eyelet and irregular formed seal face
4. Stamp seal with loop-shaped eyelet
5. Stamp seal with roll-like eyelet
6. Stamp seal with triangular strip/bar or hanger handle
7. Stamp seal with convex arched/curved seal surface
8. Stamp seal with convex arched/curved seal surface
9. Stamp seal with stem
10. Stamp seal with grip

**Table 4-3: Handled forms of stamp seal classification from von Wickede, own translation (adapted from von Wickede (1990: 14)).**

Von Wickede's (1990) research is more comprehensive as it is based on a larger number of seals, but the differences between his form types can be equally hard to distinguish as Table 4-3 illustrates. While form type 1 and type 2 are rigorously defined type 3 is only loosely defined and covers almost anything as long as it is not the ambiguous term 'regular'. It is unclear where a rectangular seal with an off-centre eyelet would be classified. As with Buchanan the forms are exclusive in that a seal can only be described as such if it fits one of the described classificatory categories. Again when looking through the catalogue many of the forms are not found in the classification, e.g. 'stamp seal with eyelet' (von Wickede 1990: no. 177–8) or 'conical stamp seal with eyelet' (von Wickede 1990: no. 197–200). As with Buchanan, despite providing so many forms, those forms do not necessarily fit the physical characteristics of actual seals.

Beyond the ambiguity of the definition of forms, the morphological classifications are further flawed in that they fail to take into account other variation in the morphology. For example if the following stamp seals are examined:

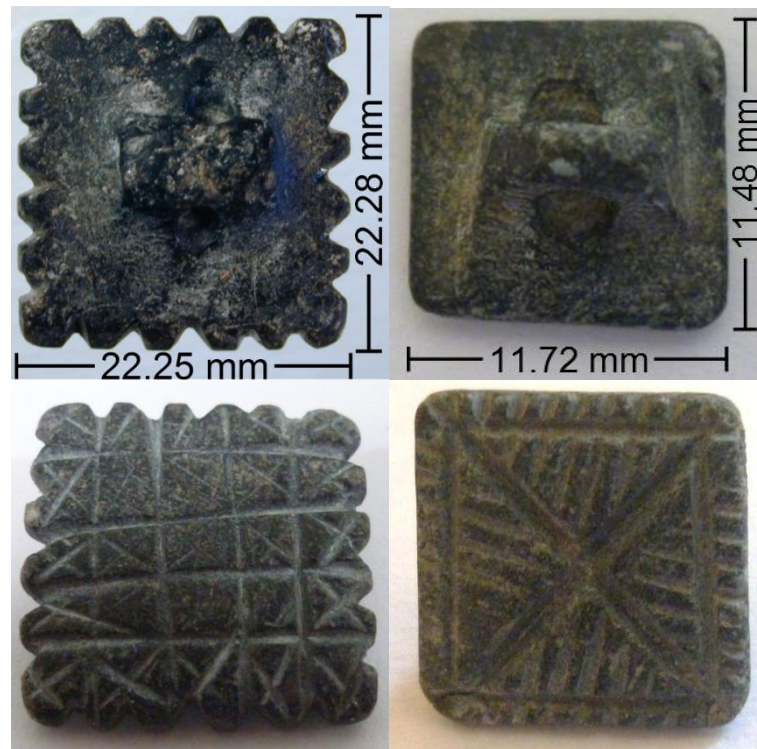


Figure 4-1: Two square stamp seals from Domuztepe (Left: DZ-036. Right: DZ-063)  
(Courtesy of the Domuztepe project)

Code	Length	Width	Height (with Handles)	Height (without handles)	Weight
DZ-036	22.28 mm	22.25 mm	7.63 mm	4.62 mm	5 g
DZ-063	11.48 mm	11.72 mm	5.68 mm	1.03 mm	0.9 g

Table 4-4: Measurements of the seals in Figure 4-1

In von Wickede's classification these would both be in the category of 'Stamp seal with small eyelet and rectangular seal face' and probably 'loop-handled seal' or 'bossed seal' in Buchanan's. While both are accurate in that the sealing face is square and the eyelet is fairly small, other similarities are limited. That on the left (DZ-036) is almost twice the size and five times the weight of that on the right (DZ-063) with very different designs. The basic flaw in the existing morphological classifications is that they prioritise a single aspect of seal morphology at the expense of all other variation in size, weight, colour, design, origin, period, etc. Non-morphological attributes are treated as irrelevant or unimportant to the classification of the seals. It would be as if for pottery classifications all circular bowls were classed 'circular bowls' irrespective of any other design factor, period, or origin.

The next section will discuss existing classifications of seal designs.

## 4.2.2 Design classifications

Only Homés-Fredericq (1970) and von Wickede (1990) attempted an evaluation of the designs on seals. Homés-Fredericq's (1970) design classification is based on similarity in visual design and identifies seven groups:

1. Network of squares or lozenges.
2. Division into quarters.
3. Dispersed lines or divided by a central line.
4. Motif of rosettes.
5. Circled points.
6. Isolated quadrupeds.
7. Overlapping quadrupeds.

(Homés-Fredericq 1970: 25–7, own translation)

These are broad groups with no sub-division. The classification only uses evidence from four sites with a sample size of only 35 seals (Homés-Fredericq 1970: 25–27). Categories four to seven on the list derive from only one or two examples (Homés-Fredericq 1970: 26–7). Categories one to three are interesting as they almost correspond with my design classification, which was conceived before I translated Homés-Fredericq. This is valuable by providing independent verification that the groups I recognised among seals are something tangible in seal designs.

Von Wickede (1990: 22) classifies seal designs by planar symmetry groups. Von Wickede (1986) also classified pottery designs by planar symmetry. Three forms of symmetry, rotational (Figure 4-2), reflectional (Figure 4-3), and translational (Figure 4-4) were considered appropriate to this classification. Reflectional symmetry i.e. mirror symmetry, rotational symmetry, i.e. how many times the object can be rotated to produce the same image, and translational symmetry, i.e. how many times an image can be divided by notional lines into a sequence of identical elements. These three types of symmetry are illustrated below:



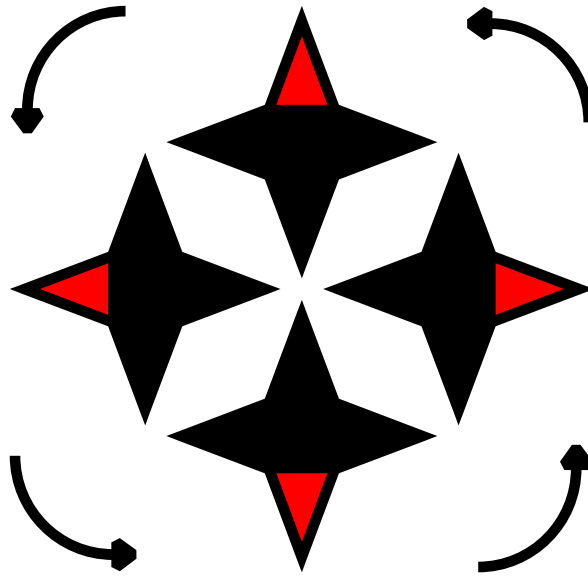


Figure 4-2: Rotational symmetry (Author's copyright).

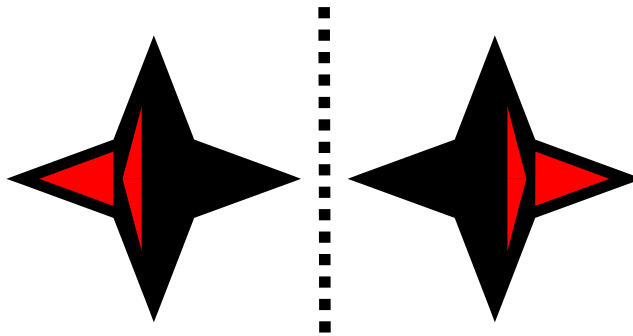


Figure 4-3: Reflectional symmetry (Author's copyright).

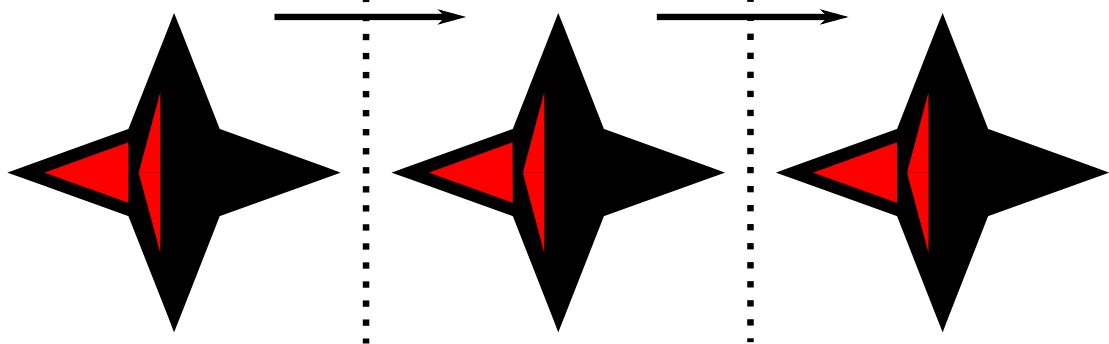


Figure 4-4: Translational symmetry (Author's copyright).

Planar symmetry analysis treats symmetry as an absolute, natural, category (Washburn and Crowe 1988: 15). This allows for the absolute comparison of similarity and difference between objects of the same and different types as patterns can be 'measured' mathematically (Washburn and Crowe 1988: 17). Symmetry analysis is unusual in the study of seal designs but has been widely used elsewhere (cf. Naumov 2010; or Winter-Livneh et al. 2013). Through using symmetry analysis von Wickedendeavours to provide a universal means of classifying seal design's, however by using symmetry analysis alone

he ignores the variety and nuance of the different designs on seals. While recognising the importance of symmetry analysis he ignores the fact that “the method addresses only the structure of the pattern, not its particular motif shapes, textures or other aspects” (Washburn 1988: 43). I acknowledge symmetry as potentially important in seal design, but as there has been no comprehensive study of the design motifs I feel it is more important at this stage to accurately identify the nature of the designs instead of over-emphasising their structure.

### 4.2.3 The problems of previous classificatory systems

4.2.1 and 4.2.2 have outlined how early seals have been classified and while accepting the limitations described above, it could be argued that they usefully elucidate the corpus. However, the classifications exist only in their original publications or in studies focused solely on seals. Excavators, with the exception of Mallowan and Rose (1935) who created their own classification, do not use existing classifications to discuss seals found at their sites. It is this issue that has created one of the key problems for the study of early seals, namely that there is no way to easily understand existing seals. Excavators while frequently referencing von Wickede or Buchanan when discussing seals, do not sub-divide into their classifications. For the excavator an object is either a seal or it is not. Other classifications, such as Caldwell’s or Homés-Fredericq’s, do not appear to have been used.

There are no dedicated late Neolithic seal specialists and those archaeologists running excavations will have limited opportunity to read and study von Wickede whose doctorate is written in German and held by only six libraries in the UK (according to COPAC: 4th December 2012). Even if they did they are unlikely to question his methodology, assuming he had done an adequate job. Basing a classification on a single attribute of a seal’s morphology fails to recognise the variety of differences and similarities between seals and without a classification system that reflects the totality of the parameters seals can have, it is unlikely the study of late Neolithic seals will develop. However, simply replacing existing classifications with a more modern equivalent of the same paradigm will not in itself change things, it is necessary to re-assess the theoretical underpinnings of classification. As such I will look at existing arguments about classification in archaeology and suggest an ontological basis for classification that reflects the plurality of archaeological data.

## 4.3 General Classification

Classifications are ubiquitous and implicated in every aspect of our modern world, being central to our lives even if we are largely unaware of their existence (Bowker and Star 2000: 3). This ubiquity applies equally to archaeology where everything is placed in a classification system, be they typologies, chronologies, or characteristics of archaeological theories. Formal classifications, such as those critiqued in section 4.2, are the most transparent but informal classifications are equally omnipresent. Recognition of the unresolved problems of classification in archaeology is common, as shown by Thomas:

“Artefact classification, seriation, numerical taxonomy, the establishment of chronological sequences, the definition of ‘culture groups’, and the plotting of spatial distribution of artefact types are all practices that would be unthinking without the abstract notion of a methodology that fragments the world into discrete entities in order to render it malleable ... Obviously, these have all proved to be useful tools in making sense of the past, but it is undeniably disturbing that the means through which we address alien cultural contexts are ones that are so intimately tied to our own historical conditions. Indeed, we might go as far as to say that these are procedures that are meaningless outside of a modern context.”

(Thomas 2004: 62)

I argue this is the generally accepted view of classification in archaeology. Within this view classification is seen as the result of a modernist ordering of the world, and reflects only ourselves. Classification is also widely seen (c.f. Jones 1997: 130) as hiding differences in the archaeological record through emphasising similarities. This is notable in relation to seals, where the classification systems discussed above have hidden considerable difference within the corpus. Ultimately this type of classification derives from the Aristotelian tradition which holds that:

“the categories we use in everyday life are ‘hard’, i.e. have clear boundaries, and that the elements that populate those categories have unambiguously been assigned to those categories, and to no other. ... Aristotle stresses the importance of distinguishing between defining properties and accidental properties in assigning elements to categories: in defining the notion of ‘man’, his being two-footed and an animal are essential attributes; his being white is not.”

(Aarts et al. 2004: 2–3)

Within this view the reason classifications only define by one attribute is explained. Within the Aristotelian tradition an artificial choice is made to prioritise certain aspects as the 'essential attributes' at the expense of all other attributes. Classifications constructed under Aristotelian principles fall into the trap identified by Thomas in the quote above; they attempt to divide their objects, chronologies, or worlds into discrete entities based on modern value judgements.

While these problems have long been recognised, how to replace the existing paradigms remains elusive (cf. Campbell 2007: 22–23; Martin 2011). What attempts have been made tend to maintain the pre-existing framework of Aristotelian classification arguing the world is divisible into discrete categories. An example which discusses the late Neolithic is that of Pollock and Bernbeck (2010) who discuss the problems of categories in archaeology generally and illustrate them by using cases studies from Fıstıklı Höyük. Their primary observation is that pre-formed archaeological categories, such as stamp seal, impose our order on the data and may not reflect past categories. They discuss the re-use of objects where 'one' object's purpose changes over time, for example "pots are not always only containers; their broken pieces might be turned into jetons, scrapers with chipped edges, spindle whorls or pendants" (Pollock and Bernbeck 2010: 43). They go on to state that "static archaeological categories (e.g., pottery vessel, jeton, door socket) fail to capture the 'biographies' of these objects" (Pollock and Bernbeck 2010: 43). This is valuable and accurate for much classification in archaeology, but there is no recognition that the problem they observe derives not from pre-assumed categories by themselves, though they are problematic, but from the very ontological purpose of classifying. Their suggestion to resolve the issue is hyper-local classification "investigating locally specific processes of subjectivation" (Pollock and Bernbeck 2010: 45) which only serves to change the 'essential' attributes from attributes aimed at extra-site analysis to 'essential' attributes of intra-site analysis retaining the Aristotelian principle that different aspects of classification are more important than other aspects.

This illustrates what I think is the main problem with classification in archaeology. The wide-spread disenchantment with classification is because many archaeologists have equated the *act* of classification with Aristotelian classification without the recognition that ultimately "[t]o classify is human and all cultures at all times have produced classification systems" (Bowker and Star 2000: 131). The majority of classification systems do not subscribe to Aristotelian principles and outside of archaeology there is wide-

spread discussion on the nature of classification itself. In particular, the idea of prototype theory provides a potent device for the discussion of the nature of classification.

## 4.4 Prototype Theory

Prototype theory is a post-structuralist methodology that argues that simply we have a broad ‘picture’ (the prototype) in our minds of what constitutes a specific thing, e.g. a chair. We then extend by metaphor and analogy when deciding if any given thing that we are sitting on is also a chair by seeing if there is a reasonably direct or metaphorical thread that takes us from the prototype to the object under consideration (Bowker and Star 2000: 62).

The definition above is simplistic, but illustrates the principle of prototype theory. An example of how this ‘works’ in practice was shown by a series of experiments conducted by Rosch (1973, 1975). Rosch gave a group composed of 200 American college students lists of objects of a variety of categories e.g. items of furniture, toys, animals or clothing, and asked them to rank from one (best) to seven (worst) how ‘good’ an example they felt a specific object in the category was. An example of Rosch’s findings is found in Table 4-5 which tabulates the findings regarding the idea of ‘birdness’.

Member	Rank	Score	Member	Rank	Score	Member	Rank	Score
robin	1	1.02	hummingbird	19	1.76	owl	37	2.96
sparrow	2	1.18	seagull	20	1.77	pelican	38	2.98
bluejay	3	1.29	woodpecker	21	1.78	geese	39	3.03
bluebird	4	1.31	pigeon	22	1.81	vulture	40	3.06
canary	5	1.42	thrush	23	1.89	stork	41	3.1
blackbird	6	1.43	falcon	24	1.96	buzzard	42	3.14
dove	7	1.46	crow	25	1.97	swan	43	3.16
lark	8	1.47	hawk	26	1.99	flamingo	44	3.17
swallow	9	1.52	raven	27	2.01	duck	45	3.24
parakeet	10	1.53	goldfinch	28	2.06	peacock	46	3.31
oriole	11	1.61	parrot	29	2.07	egret	47	3.39
mockingbird	12	1.62	sandpiper	30	2.4	chicken	48	4.02
redbird	13.5	1.64	pheasant	31	2.69	turkey	49	4.09
wren	13.5	1.64	catbird	32	2.72	ostrich	50	4.12
finch	15	1.66	crane	33	2.77	titmouse	51	4.35
starling	16	1.72	albatross	34	2.8	emu	52	4.38
cardinal	17.5	1.75	condor	35	2.83	penguin	53	4.53
eagle	17.5	1.75	toucan	36	2.95	bat	54	6.15

Table 4-5: Table of birds (adapted from Rosch (1975: 232, Table A1)).

According to the table the 'best' example of a bird is a robin, while the 'worst' is a bat. Birds are a 'natural' category and we would assume they represent a phenomenon in the world (Taylor 1995: 45) that exists regardless of our classification. If humans classified by Aristotelian principles all 53 birds on the list should get a 1, and the bat should be a 7 – it is not a bird. There are no degrees of 'birdness', all birds are birds. But the results show that in people's conception of a category there are degrees of membership within that category (Taylor 1995: 43), regardless of whether the category is considered to be absolute or not. Within a prototypical classification this reveals that the robin provides a better 'prototype' of a bird to the people questioned than a penguin or an emu. It also illustrates the wider concept of imperfect knowledge that is inherent within prototype theory, i.e. the low ranking of the titmouse could be explained by the students not knowing what one was. It is important to note that the 'prototype' is not the category, it is a personal, mental representation of that category (Taylor 1995: 63) as derived from wider social practices and context.

The initial concept for prototype theory (c.f. Rosch 1978: 36) derives from Wittgenstein's idea of 'family resemblances' who in the *Philosophical Investigations* stated:

"Consider for example the proceedings that we call "games". I mean board-games, card-games, ball-games, Olympic games, and so on. What is common to them all?—Don't say: "There *must* be something common, or they would not be called 'games' "—but *look and see* whether there is anything common to all.—For if you look at them you will not see something that is common to *all*, but similarities, relationships, and a whole series of them at that. To repeat: don't think, but look!—Look for example at board-games, with their multifarious relationships. Now pass to card-games; here you find many correspondences with the first group, but many common features drop out, and others appear. When we pass next to ballgames, much that is common is retained, but much is lost.—Are they all 'amusing'? Compare chess with noughts and crosses. Or is there always winning and losing, or competition between players? Think of patience. In ball games there is winning and losing; but when a child throws his ball at the wall and catches it again, this feature has disappeared. Look at the parts played by skill and luck; and at the difference between skill in chess and skill in tennis. Think now of games like ring-a-ring-a-roses; here is the element of amusement, but how many other characteristic features have disappeared! And we can go through the many, many other groups of games in the same way; can see how similarities crop up and disappear."

(Wittgenstein 1958: 66)

The use of Wittgenstein's concept of family resemblances as a way to circumvent the problem of universals and Aristotelian classification has been explored in a range of areas including taxonomy (cf. Needham 1975) and art (cf. Kaufman 2007). It is however its use in cognitive linguistics as prototype theory that is most developed and most relevant to my discussion, particularly as found in the works of Rosch (1978), Taylor (1995), and Lakoff (1987). The seminal work in the development of the theory is Rosch's (1978) *Principles of Categorization* (but see also Rosch 1973; Rosch 1975). Taylor and Lakoff both develop the implications of Rosch's ideas. Lakoff (1987) in particular discusses the history and theorisation of the concept in great detail.

All three authors divide their classification into vertical and horizontal dimensions with three levels of vertical category identified:

- **Superordinate** (i.e. Furniture) with the least shared attributes (Rosch 1978: 31).
- **Basic level** (i.e. Chair or Sofa) is "the most inclusive level at which there are attributes common to all or most members of the category" (Rosch 1978: 31).
- **Subordinate** (i.e. Kitchen Chair) share most of their attributes with the basic level category but have other aspects of attribute or function (Rosch 1978: 31).

The structure has parallels with other forms of classification e.g. biological taxonomy. The vertical dimensions provide the basic structure of the theory with basic level categories as the key as "basic objects are categories at the level of abstraction that maximizes cue validity and maximises category resemblance is another way of asserting that basic objects are the categories that best mirror the correlational structure of the environment" (Rosch 1978: 31). This indicates that 'chair' is a basic level category because its members share more attributes than they individually share with another basic level category (e.g. 'sofa') in the superordinate category of 'furniture'. Lakoff (1987: 43) notes that this represents the commonest level of knowledge, and that one generalises up to the super-ordinate and specialises down to the sub-ordinate.

The horizontal dimension of prototype theory focuses on how to identify the prototypes of categories on the same level. For Rosch, explicitly following Wittgenstein, it is not the edges of categories that matter, it is the relation of the thing to the 'prototype' of the category in the view of the person categorising (Rosch 1978: 36). That is not to say

the prototype exists as “[t]o speak of a *prototype* at all is simply a convenient grammatical fiction; what is really referred to are judgements of degree of prototypicality. Only in some artificial categories is there ‘by definition a literal single prototype’” (Rosch 1978: 36). Artificial categories, like the triangle, can therefore also be defined in the prototypical sense (cf. Reed 1972). Members within horizontal categories display centrality and gradience, a more central member of a category shares more attributes with the prototype and less attributes with the prototypes of other categories (Rosch 1978: 36–37). This is an important concept, and was illustrated in Table 4-5, as unlike in Aristotelian classification members of prototypical classifications have quality, gradience, and more or less centrality without being considered lesser members of that category. Therefore a category can appear to be defined loosely and the attributes that constitute a category do not have to be shared by all members of that category (Taylor 1995: 51).

This is emphasised by the idea that the prototype of a category entails “the clearest cases of category membership defined operationally by people’s judgements of goodness of membership in the category” (Rosch 1978: 36). This is an important caveat as the prototype only exists in the mind of the person defining that prototype. An example of this is given by Taylor (1995: 68–74) who developed a study by Armstrong *et al* (1983) in a discussion of imperfect knowledge and ‘folk’ versus ‘expert’ categories. Armstrong *et al* (1983) carried out a study looking at the prototypicality of odd/even numbers. Armstrong’s study demonstrated that some numbers, e.g. 3, were considered better examples of odd/even numbers than others, e.g. 471. Odd and even numbers are an artificial category, but people demonstrate imperfect knowledge of this which suggests that alongside formal definitions of a category are ‘recognition procedures’ that people use to define things based on their understanding of the category (Taylor 1995: 72–74). For archaeology this is important because it illuminates that different members of a past society are unlikely to have had the same knowledge and we must recognise that different members of the society will have understood the classifications surrounding them differently. As such, in the classifications we impose on the past even if we assume they reflect something real, not every member of that past would have necessarily understood them in the same way. This concept is developed in section 4.4.1.

Rosch provides the concept of ‘substitutability into sentences’ which infers that “[t]he meaning of words is intimately linked to their use in sentences” (Rosch 1978: 39). The example Rosch gives is that if the word ‘sparrow’ is substituted for ‘birds’ in the



sentence “twenty or so birds often perch on the telephone wires outside my window and twitter in the morning,” (Rosch 1978: 39) it remains intelligible, but if one substituted turkey it would not. Archaeologically this reinforces how important it is to look at the context different objects we place in the same over-arching category actually come from (a commonly recognised point, cf. Martin 2011). A common archaeological example of this is with pottery. where it is widely recognised that different types of pottery may be appropriate in certain contexts but not in others (cf. Jones 1999). Rosch also observes, and this point is particularly emphasised by Lakoff (1987), that categories are culturally constituted and these categories do not have universal application. This point is particularly important in regard to seals where the classificatory systems have defined all seals as the same regardless of context.

A flaw with the theory of Rosch and Lakoff is that they seemingly treat the boundaries within members of a basic level category as fluid but between different basic level categories as rigid. The problems with this approach were already revealed in a study published in 1973 by Labov (2004 - reprint of 1973 version) who looked at the linguistic classification of household receptacles. He discovered that there was no clear line between different basic level categories and that boundaries were fuzzy, e.g. when the depth of an object the participants regarded as a cup was increased but not the width it began to be classified as a vase, whereas if the width was increased instead of depth the object was classified as a bowl (Labov 2004: 76–79). The ratio of width-to-depth is a continuous variable, and while there was a certain optimal value associated with each type of receptacle there was no one point when something was clearly defined by the participants as one or the other (Labov 2004: 80). As such the boundaries between basic level categories should be seen as equally fluid as those within the categories theoretically allowing things to be members of more than one basic level category.

Interestingly, though it does not seem to have been discussed, prototype theory shares parallels with Plato’s concept of the ‘Idea’ or ‘Form’. This argued that for every object or quality, i.e. cats or fear, there was a real ‘Form’ and all material phenomena represent portrayals of, or approximations to, that ‘Form’ under different circumstances (cf. Plato *The Republic*: 595a – 596b). While Plato is suggesting the existence of universal prototypes, prototype theory holds that the prototype only exists within people’s heads and is both a product of and a distorted prism of cultural understandings which do not

exist outside of a person but they share a fundamental point – that one classifies via the centre of the category as opposed to the edges.

None of the authors argue that prototype theory is a theory of representation, though Lakoff (1987: 95) does argue it is a cognitive process affected by culture and no claims are made for universal classifications. It is a way of explaining the inadequacies of the Aristotelian model within a more flexible, nuanced framework than is traditionally possible whilst acknowledging classification is an aspect of human behaviour. As Rosch claims:

“[I]t should be noted that the issues in categorization with which we are primarily concerned have to do with explaining the categories found in a culture and coded by the language of that culture at a particular point in time. When we speak of the formation of categories, we mean their formation in the culture.”

(Rosch 1978: 28)

In conclusion the key aspects of prototype theory relevant to my thesis are:

- Categories are defined by their centre, not their boundaries.
- The vertical distribution of categories is unequal, basic level categories share the most attributes and one generalises upwards to arrive at superordinate categories and specialise downwards to arrive at subordinate ones.
- The prototype of a category does not exist but is a mental construct of the categoriser.
- Members of a category display centrality and gradience. A member of a category may be more central than another or be a better/worse example.

This translates for archaeology into the following:

- The centre of a category is more important than the periphery and no single object is the category.
- Categories are not mutually exclusive; therefore one object can be in multiple categories with varying degrees of centrality and gradience.

- Categories do not have to be based on a small number of attributes to make them workable. Instead all the attributes of an object can be used relationally to build categories.
- Different categories in the same classification system do not need to be based upon the same attributes.

Prototype theory encourages classification in an inclusive manner rather than the exclusive manner of traditional classification. If classification is accepted as the mental constructs of elucidation then many of the problems with traditional classification may be discounted. I shall now provide an example of how prototype theory is used in anthropological practice to illustrate how the vertical and horizontal categories function and their wider archaeological implications.

#### 4.4.1 A prototype theory case study

Dixon (1972) studied the language of the Dyirbal, an aboriginal Australian people from north-east Australia. Lakoff (1987) analysed Dixon's findings. Dixon suggested that the Dyirbal have four major categories (adapted from Dixon 1972: 307):

- 1) **Bayi**: men, kangaroos, most snakes, the moon, storms, rainbows, boomerangs, some spears, etc.
- 2) **Balan**: women, bandicoots, dogs, some fish, most birds, hairy mary grub, anything connected with water or fire, sun and stars, some spears, etc.
- 3) **Balam**: edible fruit and plants, honey, wine, cigarettes, etc. (Dixon 1972: 312)
- 4) **Bala**: parts of the body, meat, bees, wind, yamsticks, some spears, trees, etc.

This organisation was argued by Dixon (1972: 308) to constitute four categories:

- 1) **Bayi**: (human) males; animateness.
- 2) **Balan**: (human) females; water; fire; fighting.
- 3) **Balam**: edible vegetables and fruit.
- 4) **Bala**: everything else.

This schema is influenced by societal constructs and as such matches and pipes are in class 2 with fire but cigarettes are in class 3 as tobacco leaves are consumed,

despite the use of fire (Dixon 1972: 312). The hairy mary grub is in class 2 (Dixon 1972: 310) because its sting feels like sunburn and the sun is like fire (Dixon 1972: 305). Hence to the Dyirbal it is more important that the hairy mary grub's sting is like fire, than it is that it is animated (category 1).

In relation to the relative positions of the categories in terms discussed in section 4.4 (super-ordinate, basic level, and sub-ordinate) the four categories are super-ordinate for, as with 'furniture', all members of this category share key attributes which contain basic level categories such as 'fire' and sub-ordinate categories such as 'sun'. This eloquently shows that a prototypical classification, while not based on absolutes, allows for degrees of centrality to a category.

The inclusiveness of Dixon's classification of the Dyirbal language is not threatened by this fluidity and demonstrates that there is no binary opposition between different categories. For example, a stonefish can be animate, a defining attribute of class 1, but because it is dangerous it is in class 2. This does not threaten the validity of class 1, instead it is the relative importance of the attribute to the object within the cultural system of the Dyirbal that defines its group, not the abstract classificatory system.

Archaeologically it would be desirable, but probably impossible, to reconstruct this type of classification because the links between objects and the classificatory system are not deterministic. The plurality of this system illustrates that the foundation of classificatory systems is not set within absolute or natural bounded categories but is relational and negotiated through cultural practice. In particular it illustrates the importance of association. By this I mean that while the links between the different artefacts, living beings, and concepts in the classification of the Dyirbal language are not deterministic they are equally not arbitrary and are based on directly traceable reasoning according to a cultural understanding of the world. The associations between things, places, and concepts could be, to some degree, archaeologically visible and therefore, theoretically, should allow the development of classificatory systems that reflect the worldview of past peoples.

If we return to the ambiguities of pre-assigned categories shown by the re-use of pots as jetons, scrapers, spindle whorls, or pendants in Pollock and Bernbeck (2010: 43) then the problem of prioritising single object types that disappears. As illustrated by the case study of the Dyirbal, it is the relative attributes that needs to affect our classification. A spindle-whorl made from a pot-sherd can have multiple pre-assumed categories (at

least some sort of container, a pot sherd, a spindle-whorl, and, presumably, trash) with no need to archaeologically prioritise one over the other as prototype theory does not imply that 'essential' attributes exist. Thus through analysing associations, with context in particular, the relative attributes that we interpret as most important to the depositors at the level of analysis can be analysed, i.e. a pot sherd that has become a spindle-whorl would have been recognised as a pot sherd but those attributes would have been of lesser importance to past people than its present biographical life as a spindle-whorl.

At a more theoretical level it is important to recognise that the inadequacy of classificatory systems does not arise from the act of classification, but from the inadequacies of specific classifications and their prioritisation of perceived 'essential' primary attributes. The theoretical and analytical implications of prototype theory allow the creation of nuanced classificatory frameworks which acknowledge the multiplicity of objects without prioritising attributes. Attributes should be analysed comparatively without emphasis to evaluate the relationships, similarities, and differences that emerge. This is an area I will develop after my PhD as many specific questions remain, not least the recording of attributes, which were beyond the scope of my PhD as I feel the development of theories such as prototype theory offer exciting new possibilities for the theorisation of methodological data gathering and analysis within archaeology.

## 4.5 Methodology

This section of the chapter will outline the classification system I devised and discuss methodological issues within the classification as well as any methodological issues that arose more generally. Before going into the details of my classification, I acknowledge that I do not believe it relates to any classification system that might have been used by people living in the late Neolithic of the Middle East. The purpose of archaeology and of the system I have devised is to look at the material traces available and then use these to suggest social processes that may have been involved.

A wide variety of attributes were recorded. These were based on the published data for most objects, see Appendix 2 for sites assessed and references, or the examination of objects from Domuztepe and objects stored at the British Museum and Institute of Archaeology, UCL. The attributes recorded were based on information in the British Museum's 'Merlin' database and the Domuztepe small finds catalogue supplemented by self-designed attributes that record elements of classification not included in those databases, e.g. the morphology and design classification.

The attributes and their potential properties are described in Appendix 1. The database, called Aktanak, was constructed in both a relational database (using Microsoft Access) and an online semantically enhanced wiki (cf. Krabina 2010). The initial plan, and still an aim, had been to construct an online database to present all of the data on late Neolithic seals in a widely accessible form for a global audience. Unfortunately copyright law has limited the opportunity to do this. As this was always a risk the Microsoft Access database was constructed at the same time. The relationality was kept at a simple level to allow the dissemination of the database in comma separated value (CSV) format. The database is available in a variety of formats on a CD attached to the back of this work. The included tables are:

Objects:	Contains data on all objects within Aktanak except for sealings.
Sealings:	Contains data on sealings (both impressed and unimpressed).
Sites:	Contains data on sites and geographical information.
Phases:	Contains data on chronological phases.
References (objects):	References referring to the objects.
References (sites):	References referring to the sites.

Table 4-6: Tables in the Aktanak database

Sealings were separated from Objects due to the different attributes that respectively needed to be recorded for each type of object and to allow the objects table to include 'impressions', my term for the seal impressions on sealings. Initial recording of the data from the Merlin and the Domuztepe database, as well as photography, was conducted before the design and morphology classification was carried out by printing images without description and arranging them by eye. This was then entered into Aktanak and refined over time based on closer analysis of the designs and as new data was introduced.

Section 4.5 is divided into three areas, section 4.5.1 discusses the classificatory model, section 4.5.2 the scope and definition of the corpus, and section 4.5.3 discusses the geographical and chronological distribution and limits of the thesis.

### 4.5.1 Classification

There are 82 attributes in Aktanak's tables, 57 of which are found in the objects or sealings table with some overlap between tables (hence objects, sealings, and sites all contain a 'site' attribute). The different attributes in each table are summarised in Table 4-7 and Table 4-8 (the 'A' numbers refer to their location in the Appendix). Technical details on the scope of the attributes and possible properties are given in Appendix 1. Few objects have all attributes due to gaps in the data and most attributes are self-explanatory, e.g. weight. This section discusses those attributes that are of my own creation and therefore require further methodological debate. The geographical and chronological attributes are discussed independently in section 4.5.3. No attribute has precedence over another and while their utility varies the classification rejects the primacy of specific attributes. As such the database is open recording all, published, data. This frees classification as it is not based on a small number of attributes but allows all attributes to be used relationally during analysis.

Practically, relationality was limited by the inadequacies of published data and existing methodologies of data recording leaving some attributes of less use than hoped. Specifically material (section 5.8), colour (section 5.9), and weight (section 5.3.4) did not lend themselves to analysis. This was unfortunate, but unavoidable as access was not available to the majority of seals within my sample.

<b>A1.1 Seal and Sealings Tables</b>	
<b>A1.1.1 Item Code</b> <i>A1.1.1.1 Item Code</i>	<b>A1.1.10 Measurements</b> <i>A1.1.10.1 Length</i>
<b>A1.1.2 Site</b> <i>A1.1.2.1 Site</i>	<i>A1.1.10.2 Length Unit</i> <i>A1.1.10.3 Length Comment</i>
<b>A1.1.3 Material</b> <i>A1.1.3.1 Basic Material</i> <i>A1.1.3.2 Specific Material</i> <i>A1.1.3.3 Material comment</i>	<i>A1.1.10.4 Width</i> <i>A1.1.10.5 Width Unit</i> <i>A1.1.10.6 Width Comment</i> <i>A1.1.10.7 Height (full)</i>
<b>A1.1.4 Morphology</b> <i>A1.1.4.1 Body Type</i> <i>A1.1.4.2 Body Face</i> <i>A1.1.4.3 Body Profile</i> <i>A1.1.4.4 Body Piercing</i> <i>A1.1.4.5 Piercing Summary</i> <i>A1.1.4.6 Body Elements</i> <i>A1.1.4.7 Body Comments</i>	<i>A1.1.10.8 Height (full) Unit</i> <i>A1.1.10.9 Height (full) Comment</i> <i>A1.1.10.10 Height (minus handle)</i> <i>A1.1.10.11 Height (minus handle) Unit</i> <i>A1.1.10.12 Height (minus handle) Comment</i> <i>A1.1.10.13 Weight</i> <i>A1.1.10.14 Weight Unit</i> <i>A1.1.10.15 Weight Comment</i> <i>A1.1.10.16 Measurement Comment</i>
<b>A1.1.5 Design Classification</b> <i>A1.1.5.1 Super-Design Group</i> <i>A1.1.5.2 Design Group</i> <i>A1.1.5.3 Sub-Design Group</i> <i>A1.1.5.4 Design Elements</i> <i>A1.1.5.5 Design Comments</i>	<b>A1.1.11 Context (specific)</b> <i>A1.1.11.1 Depth</i> <i>A1.1.11.2 Site Area</i> <i>A1.1.11.3 Site Lot</i>
<b>A1.1.6 Sealings group</b> <i>A1.1.6.1 Sealing type</i> <i>A1.1.6.2 Number of Impressions</i> <i>A1.1.6.3 Sealing Comment</i>	<b>A1.1.12 Phasing</b> <i>A1.1.12.1 Phase</i> <i>A1.1.12.2 Phase and Context Comment</i> <i>A1.1.12.3 Sub-Period</i>
<b>A1.1.7 Condition</b> <i>A1.1.7.1 Condition</i> <i>A1.1.7.2 FaceCondition</i> <i>A1.1.7.3 SuspensionCondition</i> <i>A1.1.7.4 ConditionWear</i> <i>A1.1.7.5 ConditionComment.</i>	<b>A1.1.13 Modern contextual information</b> <i>A1.1.13.1 Location</i> <i>A1.1.13.2 Excavator</i> <i>A1.1.13.3 Excavator Type</i> <i>A1.1.13.4 Excavator Number</i> <i>A1.1.13.5 Depot Number</i>
<b>A1.1.8 Context (type)</b> <i>A1.1.8.1 Context</i>	<b>A1.1.14 Contained in Sealing</b> <i>A1.1.14.1 Contained in Sealing</i>
<b>A1.1.9 Colour</b> <i>A1.1.9.1 Basic Colour</i> <i>A1.1.9.2 Specific Colour</i>	<b>A1.1.15 Artefact description</b> <i>A1.1.15.1 Artefact Description</i>

Table 4-7: Seals and Sealings table attribute groups and attributes



<b>A1.2 Sites Table</b>	
<i>A1.2.1.1 Code</i>	<i>A1.2.1.6 Eastings</i>
<i>A1.2.1.2 Site</i>	<i>A1.2.1.7 Latitude</i>
<i>A1.2.1.3 Region</i>	<i>A1.2.1.8 Longitude</i>
<i>A1.2.1.4 Country</i>	<i>A1.2.1.9 Comments</i>
<i>A1.2.1.5 Northings</i>	<i>A1.2.1.10 East/West</i>

<b>A1.3 Phases Table</b>	
<i>A1.3.1.1 Phase</i>	<i>A1.3.1.5 Period</i>
<i>A1.3.1.2 Earliest Date</i>	<i>A1.3.1.6 Phase Comment</i>
<i>A1.3.1.3 Latest Date</i>	<i>A1.3.1.7 InTime</i>
<i>A1.3.1.4 UpperPhase</i>	

<b>A1.4 References (objs) table</b>	<b>A1.5 References (sites) table</b>
<i>A1.4.1.1 Refers to Object</i>	<i>A1.5.1.1 Refers to Site</i>
<i>A1.4.1.2 Publication</i>	<i>A1.5.1.2 Publication</i>
<i>A1.4.1.3 Reference</i>	

**Table 4-8: Sites, phases, and references (objects/sites) attributes**

The first created attribute is ‘Item Code’ (A1.1.1.1). This is the unique identifier for each object composed of a two letter site code followed by consecutive numbers based on the arbitrary order in which they were entered into my database. For example ‘DZ-001’ is the first object from Domuztepe while FK-020 is the 20<sup>th</sup> object from Fıstıklı Höyük, a full list of site codes is available in the Introduction (Table 1-2) and in Appendix 2. The item code for an impression on a sealing is based on the sealings item code with an ‘a’ or ‘b’ after it depending on how many (different) seals were impressed on the sealing. For example AP-129 is a sealing in the sealings table that was impressed by one seal, the impression’s data is recorded in the objects table under the item code AP-129a.

The attribute groups that require explanation, and are the most complex theoretically, are the morphology (A1.1.4) and design (A1.1.5) classifications. Both of these are original concepts, though inspired by previous classifications. The specific properties of these two groups are discussed during analysis in chapter five (and defined in Appendix 1) but their methodological basis is outlined here as both groups are based on prototype theory and the methods of classification it suggests.

The morphology group contains seven attributes of which five are widely used in analysis (A1.1.4.1-A1.1.4.5). The remaining two ‘body elements’ and ‘body comments’ contain data relating to ambiguities that arose in the assignation of properties to the other five attributes. I discussed above that the limitations of previous classificatory schemes for the morphology arose from their being based on a single attribute of the seal

(cf. Buchanan 1984) which created groupings so specific as to make comparison between groupings impossible. This single attribute attempted to describe the shape of the seal face, the shape of the profile, and the character of the piercing.

To allow for relational analysis I divided the morphological classification into three separate attribute areas which record the shape of the sealing face (body face), the shape of the profile (body profile), and the method of suspension (body piercing). This tri-partite classification both better reflects the variation of morphology and allows for any combination of properties functioning as basic level attributes. The other two morphology attributes, body type and piercing summary, are super-ordinate categories whose main function is disambiguation. Body type is a combination of the three basic-level attributes that primarily indicates the way the object hangs when suspended (as well as covering the basic morphological 'type' of objects that do not fit my definition of seal). Piercing summary is a super-ordinate category of body suspension and records the type of suspension (e.g. internal piercing) that is specified in body suspension. The relationship between these attributes is visualised in Figure 4-5. By dividing the morphology into these attributes any theoretical shape of object can be accommodated and by extension analysis of the relationships between attributes can be carried out at a finer level than a single attribute.

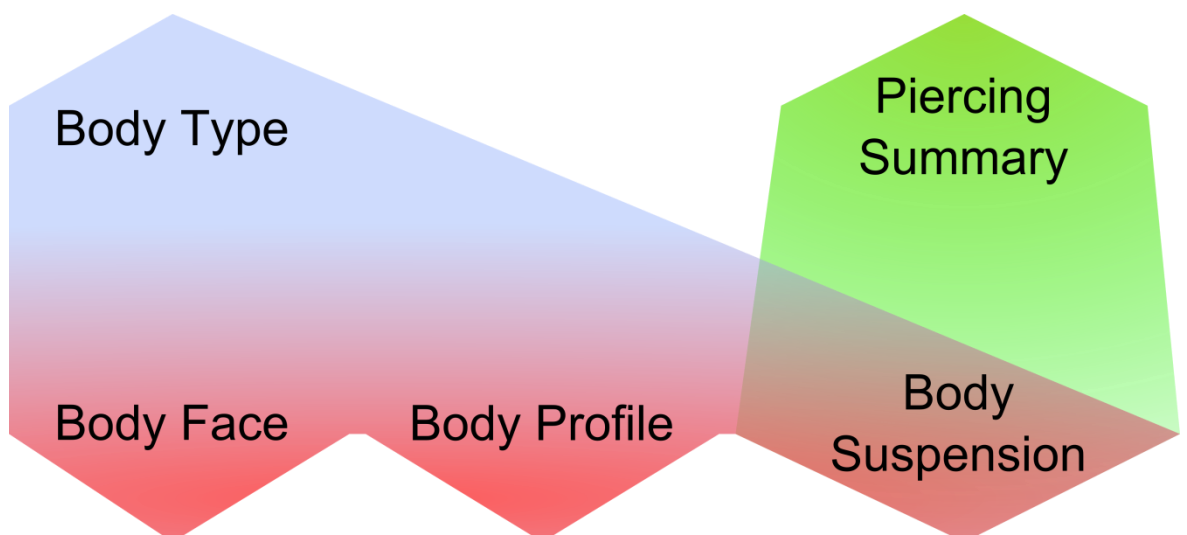


Figure 4-5: Levels of the morphology attributes (Author's copyright.)

To illustrate how the morphology classification works Figure 4-6 is a drawing of a stamp seal from Domuztepe, DZ-011, and Table 4-8 shows the morphological classification of the object. As can be seen the system is simple. However, it is by no means a perfect system and with retrospect the addition of a sub-ordinate level of classificatory types below face, profile, and piercing would have allowed a more closely tuned classification which better accounted for the irregularities that are glossed over in the properties assigned to the basic level categories. While the irregularities are recorded informally in the body elements attribute it lacks formal position within the classification system limiting its wider comparative analysis. However, even in its present state the system does offers flexibility and potential for analysis.

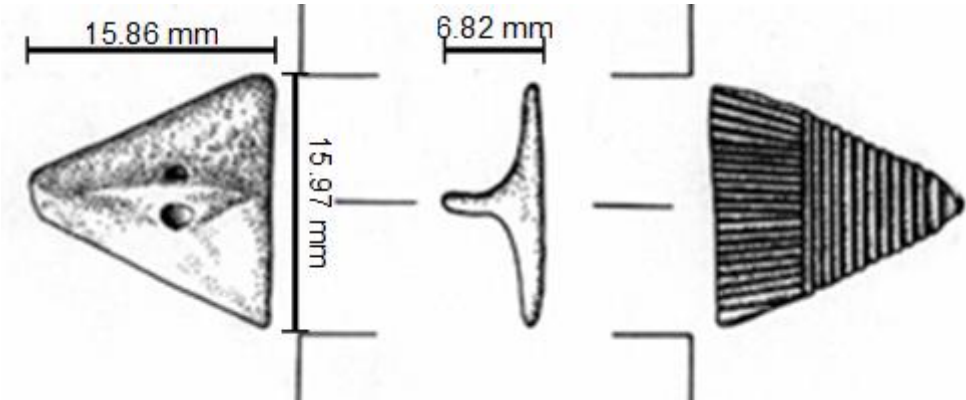


Figure 4-6: DZ-011 drawing (Courtesy of the Domuztepe project).

<b>Body Type:</b> Stamp	<b>Body Piercing:</b> Central Eyelet
<b>Body Face:</b> Triangular	<b>Piercing Summary:</b> Eyelet
<b>Body Profile:</b> Flat	

Table 4-9: DZ-011 Morphology

The design classification group includes five attributes of which the first three (super-design, design, and sub-design group) are used in the analysis in this thesis. The others, design elements and design comments, record ambiguities in the published data or motif elements that do not entirely fit the assigned type, it is important to remember that this is not an issue for a prototypical category where categories are defined by their centre not their edges. While for the morphology analysis I was able to, at least, partially base the properties of the attributes on existing morphological classifications, the absence of classifications of design led to the creation of an entirely original classification system explicitly based on the vertical dimension of prototype theory with three levels of design type.

The highest, i.e. most general, level is the 'super-design group'. This is a super-ordinate category and records the overarching classification category (of which there are only three in common usage). 'Design group' is the sub-ordinate of the 'super-design group' and functions as the basic level attribute, that level where the members of the group share the most common properties with other members of the group. 'Sub-design group' is the lowest, i.e. most specific, and is a sub-ordinate category of 'design group' where the members of a 'sub-design group' will share very similar motifs. Figure 4-7 visualises this relationship. Each seal being given three levels of design types allows for both specificity and generality in analysis depending on the scale of analysis wanted.

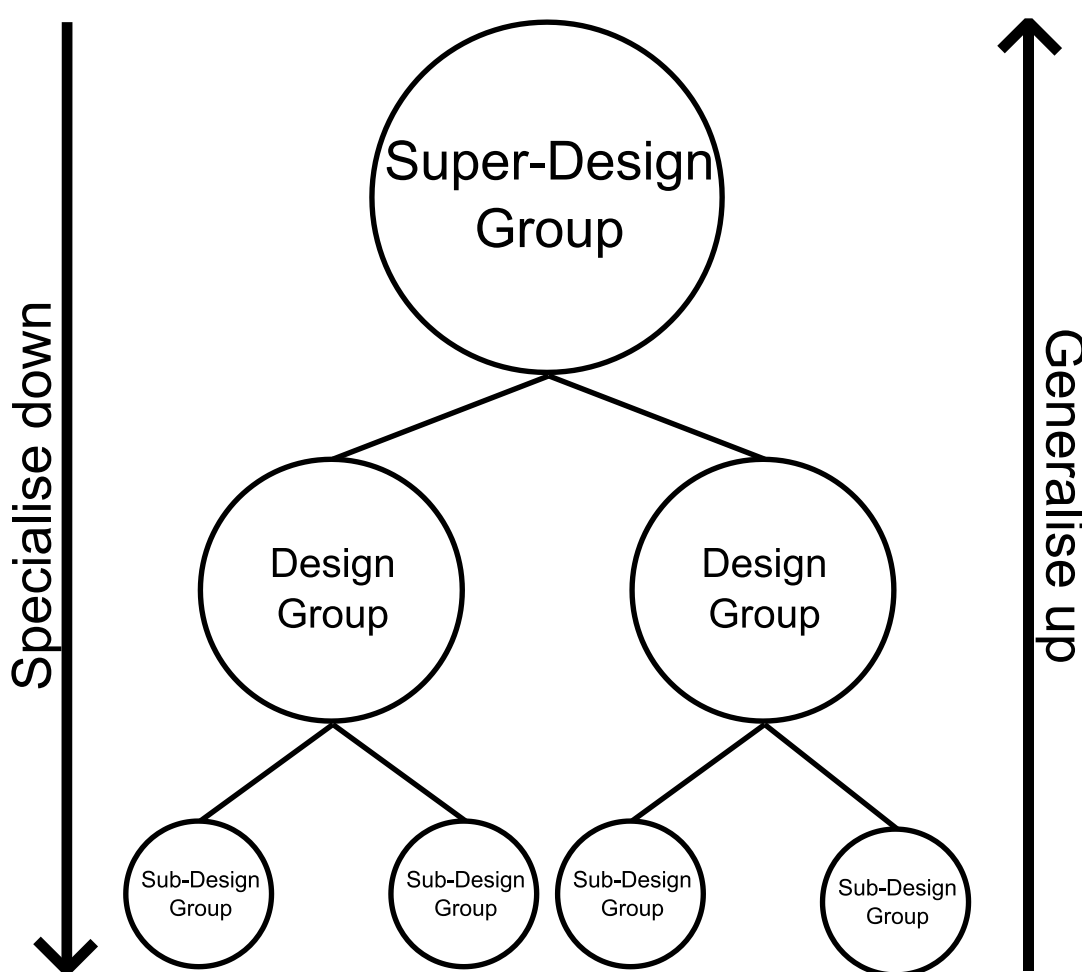
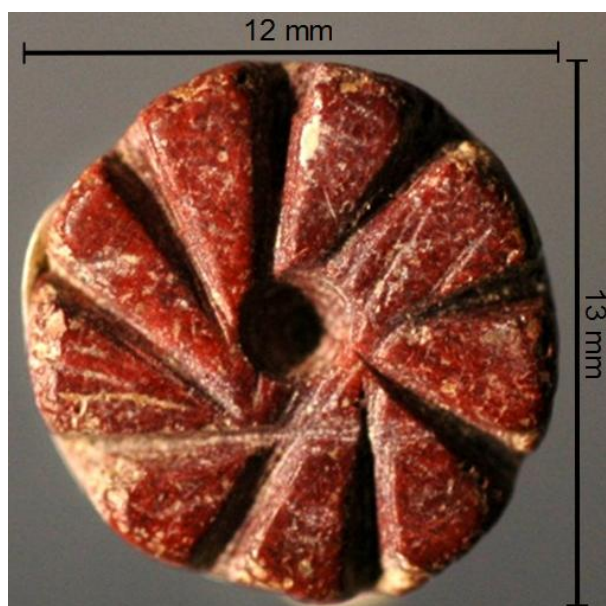


Figure 4-7: Visual representation of Design classification (Author's copyright).

Table 4-10 shows the classification of a stamp seal from Tell el-Kerkh, EK-014 pictured in Figure 4-8. The super-design group is 'aligned centre' and covers objects where the design of the object aligns with the centre of the object, its design group is 'lines' as the dominant motifs are single lines and the sub-design group is centripetal as

the lines rotate around a central 'dot'. The different classification types are discussed in Appendix 1 and in the analysis of the design data (section 5.4 of the next chapter).



<b>Super-Design Group:</b>	Aligned Centre
<b>Design Group:</b>	Lines
<b>Sub-Design Group:</b>	Centripetal

Figure 4-8: EK-014 face (Courtesy of The Rouj Basin Project 2011). Table 4-10: EK-014 Design

My design classification is more complicated than previous attempts at classifying seal designs and reflects my belief that the design is at least as important in the definition of seals as the morphology. With the exception of von Wickedde (1990), who classified by planar symmetry, existing design classifications loosely correspond with the super-design group. I believe my classificatory system provides great flexibility which, while they may not reflect late Neolithic classifications directly, do allow multiple scales of analysis. Most indicative of this is that there are only three common types of 'super-design group' (cross-hatching, aligned centre, and central focus) into which most seals fit (analysed in chapter 5) in a framework that records both the high-level general characteristics of all seals as well as the low-level specificities. As an analytical tool I have found this design classification to be valuable, although in some cases there are not enough examples of a 'sub-design group' to allow for adequate analysis.

A possible way to develop the design group classification would be with the addition of a sub-ordinate category of sub-design group (or the re-purposing of design elements) to record the varied individual motifs on each seal. I explicitly chose not to do this because I believe that the design language of the late Neolithic was based on complete objects – not on additive motifs. It is the flexibility inherent in a prototypical classification where the focus is on groups whose members display centrality and

gradience without threatening the use of the classification for analysis that allows for such possibility.

The other attributes are self-apparent and do not require explicit discussion. A thorough explanation of all attributes is in Appendix 1 which discusses the specific scope notes and properties that different attributes can have.

Before discussing the scope and definition of the objects included in this thesis I want to briefly discuss the methodology of data collection. Previous studies of seals focused primarily on typological change by prioritising singular attributes of seals and as I reject that approach the total range of attributes in this thesis is much wider than that of previous studies. I have based my specific and general data collection upon the contention that it is necessary to collect all available information as only by including all data can one begin to build relations between attributes that *may* lead to the creation of classificatory types.

However, it is important to note that the resolution of the data has often frustrated this aim as apart from those objects that I have physically examined, and even there specific contextual attributes have frequently been lacking, there is such variety and ambiguity in the presentation of data in the published literature as to frustrate attempts to complete data collection. For example, I have no weight data on any seal I did not weigh myself as no published sources covered weight. This is the result of relying on published sources and the more complete information provided for morphology and design remains very useful but entails the potential for the overweighing of those parameters.

#### 4.5.2 Scope and definition

As I discussed in the introduction this thesis is the result of an AHRC award which placed some initial constraints. In particular the focus only on seals, a modern categorical construct, and impressed sealings runs contrary to the classificatory methodology discussed in the previous section. This is unfortunate as a more inclusive thesis might have elucidated wider relationships between what we call seals and other objects within the late Neolithic. What evidence there is for such relationships will be discussed in chapter 6 but it will be assumed throughout the thesis that the objects recognised as seals are a discrete category. This is unavoidable in the context as to have included all possibly related objects would have been too much for a single PhD and I hope that the

research I present here can be used as a foundation to begin to investigate wider relationships between and within our archaeological categories.

The emphasis on seals as a discrete category is unlikely to be accurate and they probably functioned as composite objects (e.g. as necklaces or on clothing) which are common culturally but archaeologically often invisible. For example, a rosary is ‘just’ a string of beads with a pendant. While the pendant may have iconic significance the individual elements gain their significance from their approved sacramental form. If a rosary was made of wood with a stone pendant, in an archaeological excavation only the cross would be recovered and its role as a more complex whole would not be apparent. Most seals are found by themselves, but except for other stone objects many materials such as wood or cloth would have been perishable. The potential for and character of composite objects remains relatively untheorised in archaeology and in the absence of evidence to the contrary I will assume they are discrete objects with the presumption that future work will investigate composite possibilities.

The scope of the thesis as laid out in the AHRC award was to look at the seals from the British Museum’s collections and those from Domuztepe. However, it became apparent that except for a few major sites, like Arpachiyah or Chagar Bazar, the Museum’s collections as a whole were not well provenanced enough or too late to offer a comprehensive comparative data set for those of Domuztepe. Typologically classifying late Neolithic seals is problematic, geometric designs can be found throughout antiquity. Indeed in the Bronze and Iron Age certain geometric designs go through something of a revival. For example, Figure 4-9 is of an Iron Age seal from Khan Sheikhun which is almost identical to various Neolithic examples, as illustrated by a seal from Yumuktepe in Figure 4-10. Both the design and form are present from the Neolithic onwards (Nunn 1999: 98) and as such it cannot be dated typologically.

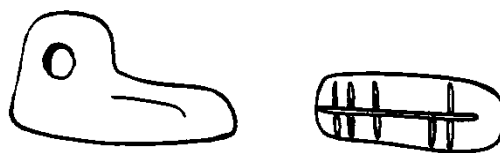


Figure 4-9: Iron aged seal that looks prehistoric from the Aleppo Museum (Reproduced from Nunn (1999: no. 370)).



Figure 4-10: Neolithic seal from Yumuktepe (YK-007) (Reproduced from Caneva and Köroğlu (2010: Fig. 38)).

As discussed in the introduction, I therefore widened the scope to include as many provenanced late Neolithic seals as I became aware of. This was predominantly based on published site reports, but also the pre-publication seals from the excavations at Tell el-Kerkh where Akira Tsuneki, the director, kindly provided access to his data. This was particularly important as this site accounts for almost 60% of all known Pottery Neolithic seals. As a whole the methodology behind the study of the seals attempted to include every published seal known from a provenanced collection that was unambiguously late Neolithic. At some sites, such as Yumuktepe or Tell Sabi Abyad, this was not possible as the sites have yet to be completely published.

I did not include any seals from unprovenanced collections. There are two reasons for this, firstly as mentioned above it is difficult to chronologically typologically phase seals and secondly because of issues of authenticity and provenance. An exception was made for 21 seals in the British Museum's collections where it was possible to physically examine the objects. Ten of these were bought by Mallowan during his Khabur survey and one was bought by Woolley while he was excavating Carchemish. This left ten objects with no provenance. The British Museum's collections have gone through due-diligence and been demonstrably legally exported but many private collections do not provide any information on where or how their objects were obtained.

The database Aktanak also includes a number of objects from later periods which are not included in the analysis but came from contexts directly overlying late Neolithic levels leading to potential intermixing, particularly at Judaidah and Tell Arpachiyah, or illustrate the re-use and changes in the glyptic style in late periods. Similarly it includes some non-seals which are not in the analysis but were included due to the possible relationships between seals and other objects in the late Neolithic.



### 4.5.3 Distribution and Chronology

Having set out the methodology of data collection and this section will outline specifically what was included and where the geographical and chronological limits were drawn as deciding where to place boundaries of the thesis in time and space was relatively problematic methodologically.

#### 4.5.3.1 Northern and Southern boundaries

The northern boundary was easiest to define as the northern regions of Turkey and beyond provide no seals. The area is beyond North Mesopotamia and although it is possible there may be late Neolithic seals without further archaeological work there is no evidence to assume there are any.

The situation is similar for the southern edge. During the Pottery Neolithic and Halaf there are no seals in South Mesopotamia and when seals are found during the Ubaid it is difficult to know their exact chronological position, although they are probably Ubaid 4. They are found in small numbers at some southern sites such as Ur or Telloh (two examples from Ur are pictured in Figure 4-11). They appear morphologically and stylistically similar to North Mesopotamian examples but the designs are slightly different. There is not enough data to know if they were produced in the south or were imports. More generally the absence of seals in Southern Mesopotamia during the late Neolithic is unsurprising given the wider archaeo-cultural differences between north and south Mesopotamia at the time.



Figure 4-11: Stamp Seals from Ur (left: BM 122838, right: BM 124416) (© Trustees of the British Museum)

The situation is harder in the southern Levant where some late Neolithic stone stamp seals are found. Specifically they are known from the sites of Tell Ramad and Byblos, neither site is contiguous with other late Neolithic seals and it is over 160km from Byblos, and 250 km from Tell Ramad, to the next site in the study (Ras Shamra). However the Tell Ramad examples are predominantly Pre-Pottery Neolithic and have been included for that reason as they represent one third of all evidence for seals in the PPN. They as such may usefully represent the earliest phases of the late Neolithic seal glyptic and chronological usefulness trumps distance in this case.

Byblos presents a greater problem. It is the only site where stone stamp seals exist apparently in parallel to clay stamps of the type commonly found in Anatolia and the Balkans (see discussion in 4.5.3.3). Von Wickede partially included the former but excluded the latter on material grounds. This association in itself would be interesting but there are serious problems dating objects from Byblos. Levels were based on absolute elevation and every 20 cm was declared a new layer (Garfinkel 2004: 175). No consideration was taken of stratigraphy such as pits or other features leading Garfinkel (2004: 182) to interpret the Ancien level as Pre-Pottery Neolithic buildings with Pottery Neolithic pits cut into it and he concluded that “the stratigraphy of Byblos is seriously mixed, and in each so-called settlement phase one can find items from different periods placed together” (Garfinkel 2004: 175). Four Neolithic levels were labelled:

Period	Layers	Periods
Néolithique Ancien (early)	53-46 (160cm of deposits)	PPNB, PPNC, (~8800-6400 cal. BC)
Néolithique Ancien (late)	53-46 (160cm of deposits)	Pottery Neolithic (~6400-5800 cal. BC)
Néolithique Moyen	45-44 ( 40 cm of deposits)	Early Chalcolithic (~5800-5300 cal. BC)
Néolithique Recent	43-40 ( 80 cm of deposits)	Middle Chalcolithic (~5300-4500 cal. BC)
Énéolithique Ancien	39-38 ( 40 cm of deposits)	Late Chalcolithic (~4500-3600 cal. BC)

**Table 4-11: Pre-Bronze age periods at Byblos (adapted from Garfinkel (2004: Table 14.2)).**

The periods are rigid, ‘Néolithique Moyen’ covers up to 500 years with only 40 cm of deposits. This seems reasonable compared to ‘Eneolithique Ancien’ which while also including only 40 cm of deposits lasted up to 900 years and contained 1675 jar burials. As no appreciation was taken of negative features there is no way to know if an object comes from the level to which it is assigned to or one higher up. There is no clear evidence that any of the objects come from the chronological period they are assigned in

publication. Consequently I excluded all seals from Byblos because of the geographical remoteness and chronological difficulties.

It is likely however that there are seals in areas of the southern Levant where the late Neolithic is ephemerally represented archaeologically and new research will likely find late Neolithic seals in the areas where there are presently none. Similarly future research in North-East Turkey may well identify late Neolithic type seals. Archaeologically, at present, they are essentially absent from the southern Levant, Southern Mesopotamia, or North to North-East Turkey.

#### 4.5.3.2 Eastern boundaries

The eastern boundary is loosely speaking the modern border between Iraq and Iran. There are fifth millennium BC Iranian seals with similar designs to those of sixth millennium BC North Mesopotamia. These seals were largely excavated in the early 20<sup>th</sup> century, with large amounts coming from Tepe Giyan and the excavations of Auriel Stein. They have a mixture of very similar shapes and designs as well as very different shapes and designs. Figure 4-13 shows three seals from Tepe Giyan. The designs of 128668 and 128665 are like North Mesopotamian examples but 128669 has no parallels. The morphology of all three have parallels, but the ‘bowled’ face of 128668 and 128669 are rare in Mesopotamia.



Figure 4-13: Seals from Tepe Giyan (left to right: BM 128668, BM 128665, BM 128669) (© Trustees of the British Museum).

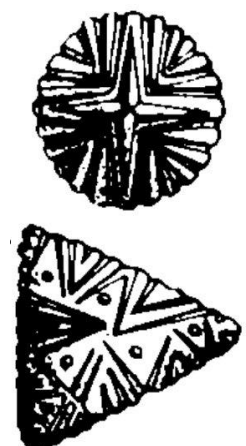


Figure 4-12: Tall-e Bakun seals (Adapted from Alizadeh 1994: Table 5).

It is very hard to know what to make of these similarities and whether they are related or inspired by North Mesopotamian examples. They do appear to have been used in administrative contexts. Tall-e Bakun A, for example, has around 140 impressed

sealings, 104 of which were door sealings (Alizadeh 1994: 43) using primarily geometric seals (Figure 4-12).

It is unlikely that these seals, despite the visual similarities, are formally related to late Neolithic ones. By the time we have evidence for stamp seals in Iran they have predominantly stopped using seals like this in North Mesopotamia. They instead use seals with animal or human designs more like 128669. It is possible that we are missing earlier data and the Iranian glyptic started at a similar time but this is unlikely as late Neolithic Mesopotamian seals seem so closely integrated into a specific lifeworld which was not present at an equivalent time in Iran. Instead they may represent the transmission of iconography without its attached meanings (cf. Wengrow 2011). The absence of chronological overlap, their use in an administrative system, and the absence of the Halaf in Iran suggests they are not the same objects, although they may have been inspired by earlier Mesopotamian designs. As such, I have not included the fifth millennium BC Iranian seals within my thesis but acknowledge future work may elucidate a relationship between them and late Neolithic Mesopotamian seals.

#### 4.5.3.3 *Western boundaries*

The western edge of the thesis proved most difficult to define. For the large part there are no late Neolithic seals in central or western Turkey but the evidence is problematic. Late Neolithic seals are found in both Niğde and Nevşehir provinces of Turkey but, with the exception of Tepecik-Çiftlik, near Niğde, appear unprovenanced in museums (Stuart Campbell pers. comm. 20 Dec. 12). Tepecik-Çiftlik does appear to have late Neolithic stamp seals dating to around 6300 BC (Biçakçı et al. 2011) and is located about 250 km west of Domuztepe. Three late Neolithic seals are published (Biçakçı et al. 2011: 102–3) which have parallels with seals from Kazane Höyük, Yumuktepe and Tell Sabi Abyad but are not included because I did not want to extend the study that far west. Beyond the Anti-Taurus mountains the settlements found are not strictly part of the late Neolithic ‘world’, painted pottery of the Halaf style is very rare and the area shares more associations with the Konya plain than North Mesopotamia. As such I have set the western boundary at the Taurus and Anti-Taurus mountains but more excavation is required to link these westerly regions to the wider late Neolithic and ascertain their chronological and cultural relationships with the better studied areas of the late Neolithic. I know of no provenanced late Neolithic geometric seals found on the Anatolian plateau

or Konya plain. The presence of a few late Neolithic seals in these areas is not surprising given the strong trade links between North Mesopotamia and the obsidian sources in central Anatolia, even if for practical purposes archaeo-culturally the Konya plain and Anatolian plateau are comfortably outside the late Neolithic 'world' with only limited shared material culture. Within these areas, particularly in the Konya plain, clay stamps are found instead at sites like Çatalhöyük. These seals are interpreted as not being used to create impressions and instead being used for the stamping of textiles or skin (Makkay 1984; Türkcan 2005: 175–186; Hodder 2006: 50). The evidence of use for the Central Europe and Anatolia examples derives almost entirely from the absence of evidence for sealing practices, and because there is no link between the existence and distribution of the stamps as social structures change (Türkcan 2005: 182–183). There is no extant evidence for their use, though this is unsurprising given the perishable nature of dyes and involved media (Türkcan 2005: 180). Their presumed purpose, the stamping of textiles or skin, is by no means implausible as a number of Central European examples preserve traces of coloured dyes (Naumov 2008: 186). It is most probable that these stamps are an indigenous development with no archaeological relation links to Levantine and Mesopotamian traditions (Makkay 1984: 75; von Wickedede 1990: 51–68).

#### 4.5.3.4 *Boundaries within North Mesopotamia*

There were limited methodological issues that arose in the collection of data from North Mesopotamia and the majority of seals included fit their context or else are late Neolithic seals found in later contexts. There are however two seals that have been published as from the late Neolithic which are of later date. One is a supposedly pre-Hassuna (c. 6500 BC) seal, TU-001 (Figure 4-14), from level XVb at Telul eth-Thalathat. It is a seal with a drilled animal design made from veined marble. The use of the drill and the veined marble is unique in pre-Ubaid contexts and I follow the argument of von Wickedede (1990: 89–90) that as the overlying level (XVI) is late Ubaid and there are no structural remains in level XV TU-001 it is most likely to be a late Ubaid seal. The second object, CB-001 (Figure 4-15), is a cylinder seal from Chagar Bazar which comes from 16.5 metres down in the 'Prehistoric Pit' (Mallowan 1936: 11, 29). It would be the only example of a cylinder seal, and a humanoid seal, before the late Ubaid. Contextually it is also found about half a metre below a third millennium BC cemetery and as such, given the form,

design, and provenance it is likely an erratic that worked its way down through post-depositional events. This was suggested as early as 1962 by Wiseman (1962: 33).



Figure 4-14: Irregular seal from Telul eth-Thalathat (TU-001) (Reproduced from Fukai and Matsutani 1981: pl. 23.10a).

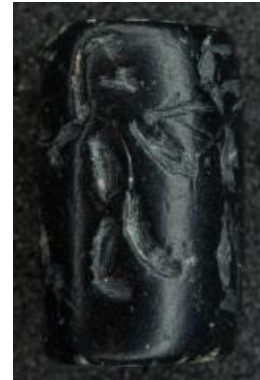


Figure 4-15: Irregular seal from Chagar Bazar (CB-001) (© Trustees of the British Museum)

The other objects with methodological problems were those from sites which are hard to date back to the late Neolithic. The most important of these is Tell Brak, with ten objects, from Mallowan's excavations. While these predominantly come from the Akkadian settlement they stylistically could be earlier and may represent the excavation and re-deposition of late Neolithic cultural material. This practice is found at Tell Sabi Abyad and Fıstıklı Höyük but while both of these sites have strong evidence of late Neolithic deposits, Tell Brak has nothing earlier than Late Ubaid, though theoretically there are late Neolithic levels lower down than excavations have yet reached. As such they are not included in the analysis.

All other seals were found in relatively definite chronological phases (though these phases can be millennia long). Von Wickede (1990: 88–89) excluded six Pottery Neolithic stamps because he felt they were not Neolithic 'enough' (three from Byblos, one from Judaidah, one from Hassuna, and one from Sakce Gözü). I have chosen to treat them as being from the Pottery Neolithic with the expectation of the three from Byblos (excluded for reasons discussed above). The others are included because, while their forms are unusual, there is no strong contextual, typological, or stylistic reason to move their period to a later date, unlike with TU-001 and CB-001 discussed above.

Having set out the limits of my thesis the next section outlines the geographical and chronological attributes used.

#### 4.5.3.5 Geographical Attributes

To aid in comparison at a supra-site level there are three different geographical attributes. The first of these is 'country' which records the modern country (Iraq, Syria, or Turkey). Second is 'region' which is with three exceptions based on modern administrative districts in Iraq, Syria, and Turkey. Sinjar and Ninawa split the modern province of Ninawa to distinguish between the sites around Tal' Afar (Sinjar) and those around Mosul (Ninawa). The third is Amuq which follows the traditional English nomenclature for the Amik plain in the Hatay province of Turkey. The third attribute is 'site' with each site located in a region which is located in a county. The purpose of using these regions and countries is not to imply cultural continuity but to locate relatively the different areas that have been excavated. They should not be considered proof of association between sites in the respective regions as they are primarily used for ease of discussion and relative location. Figure 4-16 shows the different regions and their division by modern country (see Appendix 2 for maps of site location and site coordinates). The regions reflect those areas from which seals in my sample came and the gaps are not meaningful but represent regions without provenanced or chronologically fixed seals.

These regions cover a large area and while the amount of seals by country, Table 4-12, is similar, there is great variation within individual regions. Table 4-13 shows the regional distribution of seals illustrating Kahramanmaraş in Turkey takes 57% of the total, Idlib in Syria takes 47.5%, and Ninawa, even after artificially separating Sinjar, in Iraq takes 85.6%. These correspond to the three main sites in the study, Domuztepe in Kahramanmaraş, Tell el-Kerkh in Idlib, and Arpachiyah in Ninawa. It is important to emphasise this bias does not reflect the prehistoric distribution of objects, but reflects which sites have been excavated and how they were excavated. Domuztepe, Tell el-Kerkh, and Arpachiyah, are or were all large scale excavations. Most other excavations are or were on a smaller scale; Kazane Höyük, for example, a site with 20 hectare of potential late Neolithic occupation provides only 10 objects to this study because of the small scale of the excavations. None of the sites are fully excavated making it likely more seals could be found at each site.

In practice this entails certain sites being given a probably undue prominence in terms of the relative frequency of seals at different sites. Since von Wickede (1990) carried out his study the number of seals known from Turkey and Syria has more than doubled radically changing any analysis. There is no way to avoid this issue without more

excavation and as such this thesis will work under the assumption that the frequency of seals is reasonably representative. This is done under the proviso that with the advent of new data from new or old excavations the arguments presented will require modification.

Table 4-14 shows the countries, regions, sites, and numbers of objects from each site. It further illustrates the disparity between individual sites. All care was taken to ensure objects were from the site they were supposed to originate from. Where there is ambiguity over origin objects were assigned to 'Unknown'. Ten objects from Max Mallowan's Khabur study have been assigned as Unknown as it is unclear whether he excavated or bought them and in consequence their provenance is unknown.

Full descriptions of every site and the references utilised are given in Appendix 2.

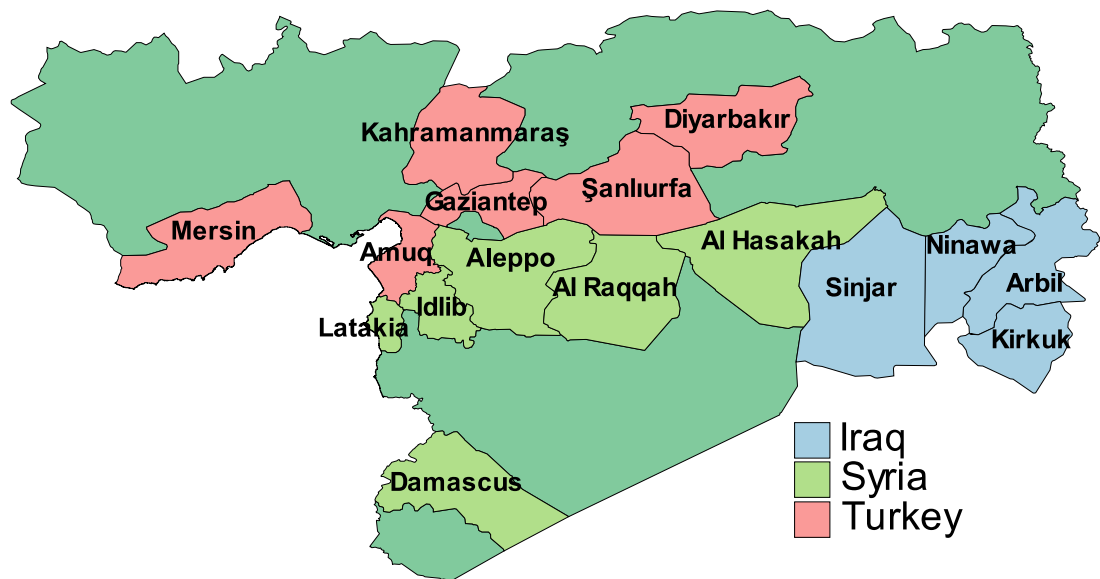


Figure 4-16: Map of regions (Author's copyright)

Countries	Count	Total%
Iraq	264	35.8%
Turkey	251	34.0%
Syria	202	27.4%
Unknown	21	2.8%
Total	738	100%

Table 4-12: Countries numbers.

Countries and regions		Count	Total%
Iraq	Ninawa	226	85.6%
	Sinjar	34	12.9%
	Arbil	3	1.1%
	Kirkuk	1	0.4%
Turkey	Kahramanmaraş	143	57.0%
	Amuq	55	21.9%
	Şanlıurfa	36	14.3%
	Mersin	10	4.0%
	Diyarbakır	6	2.4%
	Gaziantep	1	0.4%
	Idlib	96	47.5%
Syria	Al Hasakah	56	27.7%
	Latakia	24	11.9%
	Al Raqqah	22	10.9%
	Damascus	4	2.0%
Unknown	Unknown	21	100%

Table 4-13: Regions and countries



Countries, regions, and sites			Count
Iraq	Ninawa	Arpachiyah	168
		Tepe Gawra	53
		Tell Hassuna	2
		Tell Chenchi	2
		Gogjeli	1
	Sinjar	Yarim Tepe II	21
		Yarim Tepe I	7
		Yarim Tepe III	5
		Tell Maghzaliyah	1
	Arbil	Banahilk	3
Turkey	Kirkuk	Tell Matarrah	1
	Kahramanmaraş	Domuztepe	143
		Amuq	23
	Şanlıurfa	Judaidah	20
		Atchana	4
		Wadi Hamman	2
		Ta'ynat	2
		Chatal Huyuk	2
		Dhahab	1
		Boztepe	1
		Fıstıklı Höyük	17
		Kazane Höyük	10
		Çavi Tarlası	8
		Kurban Höyük	1
	Mersin	Yumuktepe	10
	Diyarbakır	Girikihacıyan	6
	Gaziantep	Sakce Gözü	1
Syria	Idlib	Tell el-Kerkh	94
		Qminas	2
	Al Hasakah	Chagar Bazar	28
		Tell Halaf	14
		Umm Qseir	7
		Tell Aqab	6
		Tell Barri	1
	Latakia	Ras Shamra	24
	Al Raqqah	Tell Sabi Abyad	19
		Tell Tawila	3
	Damascus	Tell Ramad	4
Unknown	Unknown	Unknown	21

**Table 4-14: Regions, sites and numbers**

#### 4.5.3.6 *Chronological attributes*

Much has been written about chronologies in Middle Eastern archaeology (Campbell 2007; Nieuwenhuyse 2007; cf. Bernbeck 2008b; Carter and Philip 2010) with wide recognition of the inadequacies of existing chronological frameworks but little consensus on what alternative framework to use. It is beyond the scope of this thesis to discuss the problems of various chronological periods within the late Neolithic and consequently while I acknowledge the limitations of over-arching chronological frameworks I will use traditional archaeological cultural categories. However, I frame this with the caveat that I believe these archaeological cultures represent amorphous categories of material culture that on the large scale, i.e. supra-regional, appear to have common attributes but without any necessity of direct social collaboration.

The chronological attributes are based on a site specific 'phase', derived from publication, and every object is assigned a phase from the chronology of its site. Phases are not directly comparable between sites. There are 71 phases in Akatanak (see A1.3 for details) which are grouped into the attribute 'upperphase'. There are sixteen 'upperphase' which group the 'phase' into the lowest level of comparability, i.e. early Halaf (see A1.3.1.4). The 'upperphase' are grouped into the attribute 'periods' (see A.1.3.1.5). There are seven 'periods', six of which cover the chronological range of this thesis (Table 4-15) with the remaining period ('late') covering objects that were initially included within the database but were found to be too late.

The resolution of phasing varies massively between sites and while every attempt has been made to associate like with like through the use of the upperphase attribute this has not always been successful and as such I have not included exact chronological dates for the 'upperphase'. Table 4-15 shows the number of artefacts from the different 'periods' within the time frame covered by this thesis and Table 4-16 shows the 'upperphase' that come within each 'period' illustrating gaps in the data. In particular there is little data available for the early Halaf, the early Pottery Neolithic, and the Halaf-Ubaid Transitional. This relates to where excavations have been carried out and means evidence is limited for any transition between the Pottery Neolithic and the Halaf or between the Halaf and the Ubaid.

Periods	Count	Total%
Pre-Pottery Neolithic	6	0.8%
Pottery Neolithic/Halaf	10	1.4%
Pottery Neolithic	147	19.9%
Halaf	489	66.3%
Halaf-Ubaid Transitional	5	0.7%
Ubaid	81	11.0%

**Table 4-15: Periods**

Periods		Count
Pre-Pottery Neolithic	PPN	6
Pottery Neolithic	Early PN	17
	Whole PN	20
	Late PN	110
Pottery Neolithic/Halaf	Late PN/Early Halaf	5
	Late PN/Whole Halaf	1
	Whole PN/Whole Halaf	4
Halaf	Early Halaf	75
	Whole Halaf	91
	Late Halaf	323
Halaf-Ubaid Transitional	HUT	5
Ubaid	Early Ubaid	81

**Table 4-16: Period, upper phase, and number**

It is important to re-emphasise that this is not because of past reality but because of what sites have been excavated. For example, 71.8% of Late Pottery Neolithic artefacts come from Tell el-Kerkh but this is also one of the only large scale Pottery Neolithic excavations. As with geographical distribution, there are fundamental biases within the chronological range of this thesis. As there is no way to overcome this issue I will therefore assume the distribution is representative. Since many of the sites I use were excavated and published there have been considerable technological changes in archaeology. In particular sites excavated before carbon dating often lack reliable absolute dates and are dated typologically. Where possible absolute dates have been used, these absolute dates loosely covering from c. 7500 – 4500 BC. This covers the entirety of the late Neolithic, the end of the early Neolithic, and start of late Ubaid, as discussed in section 2.1.

## 4.6 Conclusion

In conclusion this chapter has analysed existing classifications of seals and found them wanting. Their inadequacy arose from the classifications prioritisation of a single aspect of seals, their overall morphology, at the expense of all others. This led to seals being treated as essentially the same object regardless of differences in context, design, period, region, etc. I argued that the inadequacies of this approach arise from the utilisation of Aristotelian classification, which in archaeology has largely been equated with the act of classification itself to widespread displeasure. I offered an alternative theorisation of classification deriving from the theory of prototype theory, a post-structuralist theory deriving from cognitive linguistics via the work of Wittgenstein. Prototype theory counters many of the flaws of Aristotelian classification by acknowledging classification is a social act with negotiated, fluid, multiple categories without any necessity for artificial prioritisation of single aspects. Taking the principles of prototype theory I outlined my data collection methodology and discussed a number of the attributes I had created for analysis. This done I set the thesis within definite geographical and chronological limits and highlighted the unequal distribution of data over time and space as well as addressing any other specific methodological issues.

I hope that this new classificatory framework will allow new outlooks for our understanding of seals and I will utilise it throughout my analysis in the coming chapters. As a more theoretical point prototype theory offers great potential for a wider re-assessing of the character of classification and the further development of the theory may pay dividends to an archaeological understanding of the act of classification.

# Chapter 5: Death

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There are three analysis and interpretive chapters which follow a metaphor for the archaeological process. This chapter is entitled 'Death' and looks at the deposited evidence of seals. 'Life' looks at how seals were used before and leading up to deposition. 'Birth' is a theoretical chapter and discusses *why* seals were made, reviewing the analyses given in Death and Life. This division analogises the archaeological process from exposure and interpretation of physical attributes in excavation (death) through utilisation in site reports (life) culminating in their being used to justify high level interpretations of society (birth). It is inspired by discussions of object biographies. Object biographies refer to the idea that objects can have life histories and that objects can exist in active relationships with persons instead of having meaning passively imposed upon them (Kopytoff 1986; Gosden and Marshall 1999). This is an important realisation in studies of stamp seals as many existing interpretations treat seals as passive reflectors of their individual or corporate owners without recognition that seals can be active objects. This is illustrated by examples in chapter 2. By framing my analytical and interpretative chapters within these terms the importance of the seals themselves in negotiating relationships with and between persons is reinforced.

'Death' focuses on physical data from excavated evidence. It analyses the morphology, design, dimensions, chronology, and geographic location of seals and the relationships between these attributes. The context and condition of deposition are discussed in chapter 6 (life) as these attributes better reflect how seals were lost and deposited in use.

Statistical analysis was conducted in SPSS 20. Given the low levels of preservation and excavation it is difficult for data to be statistically normally distributed, however, for the purpose of this analysis I assume it to be so. By extension, my analysis is representative only until new theory and data makes it obsolete.

Geographical regions and chronological periods were discussed in sections 4.5.3 and 4.5.4 of chapter 4 but will be discussed here in relation to the analysis of the other attributes. Chapter 5 is divided into ten sections, 5.1 discusses seal morphological types, 5.2 relates this morphology to space and time, 5.3 discusses the dimensional data and relates it to morphology. 5.4 evaluates design, 5.5 discusses designs over space and time while 5.6 concludes the design analysis. 5.7 analyses relationships between morphological

types and design groups, 5.8 analyses the material from which the seals were made and 5.9 analyses colour before 5.10 offers provides general conclusions.

## 5.1 Morphology

The morphology of the seals was recorded using seven attributes:

- Body Type (this section)
- Body Face (5.1.1)
- Body Profile (5.1.2)
- Body Piercing (5.1.3)
- Piercing Summary (5.1.3)
- Body Elements
- Body Comments

Each attribute and property is defined in A1.1.4 and explained in section 4.5.1. *Body type* is the super-ordinate category of *body face*, *body profile*, and *body piercing* and records the general morphological form of the object by its relative method of suspension. *Body face* is the shape of the sealing face (or largest side for objects that are not seals). *Body profile* is the shape of the profile relative to the objects longest side. *Body piercing* records the specific type of piercing while it's super-ordinate *piercing summary* summarises the generic 'type' of piercing. *Body elements* records any morphological aspects not covered by the other attributes and *body comments* records comments on the accuracy of the properties. These two attributes are not used in this chapter.

Table 5-1 shows the types of all the objects stored in Aktanak of which the most relevant are *stamp*, *pendant seal*, *impression* and *plaque*. These four groups all have geometric designs while the other groups consist of objects found in context with seals or have shapes of similar form and are only included for cross-referencing purposes and were not systematically studied. Impressions are problematic in that even when the shape of the seal on the sealing is clearly visible it is too much supposition to extrapolate the form of the seal itself. The analysis focuses on stamp and pendant seals as there are too few plaques (17) to analyse morphologically.

The distinction between stamp and pendant seal is more than semantics as it relates to how the object could have been suspended. There is scant evidence of how seals were suspended except for two examples (Figure 5-1, EK-082, and BZ-001) which were found near the neck in burials. The example from Boztepe (BZ-001) has been reported as being found at the wrist (cf. Campbell 2012: 314) but the report is unequivocal in that it was found between the right humerus and the clavicle with the arm outstretched across the chest (Parker and Creekmore 2002: 30). The example from Tell el-Kerkh was found near the neck with four beads (Tsuneki and Hydar 2011: 8), but it is unclear if it was next to, or strung with, the beads. It is notable that in both cases these are stamp type seals (Figure 5-1, EK-082 and BZ-001) and if worn at the neck the design would not have been visible. This contrasts with pendant seal types (Figure 5-1, GW-036) which may have been intended to clearly display the design. However, the stamp types could have been visible if they were attached as a brooch or button. It suggests that there were multiple practices relating to the display of seals and that different wearers of seals chose to display, or not to display in different ways. The potential significance of this will be discussed in the next chapter.

Body type is a useful category and, as is demonstrated in section 5.2, corresponds to archaeologically visible trends. As the super-ordinate attribute of body face, body profile and body piercing it closely affects these categories revealing that between pendant seals and stamp seals objects of the same shape are not directly comparable. It is also worth noting that the sample size of pendant seals (148) is much smaller than that of stamps (422).

The following three sections will discuss the individual morphological characteristics and their properties.

Body Types	Count	Total%
Stamp	422	57.2%
Pendant Seal	148	20.1%
Impression	82	11.1%
Bead	21	2.8%
Pendant	20	2.7%
Plaque	17	2.3%
Unknown	11	1.5%
Irregular	7	0.9%
Bead Seal	7	0.9%
Whorl	3	0.4%
Total	738	100.0%

Table 5-1: Body types

Body Types	Count	Total%
Stamp	422	74.0%
Pendant Seal	148	26.0%
Total	570	100.0%

Table 5-2: Body type, stamps and pendant seals

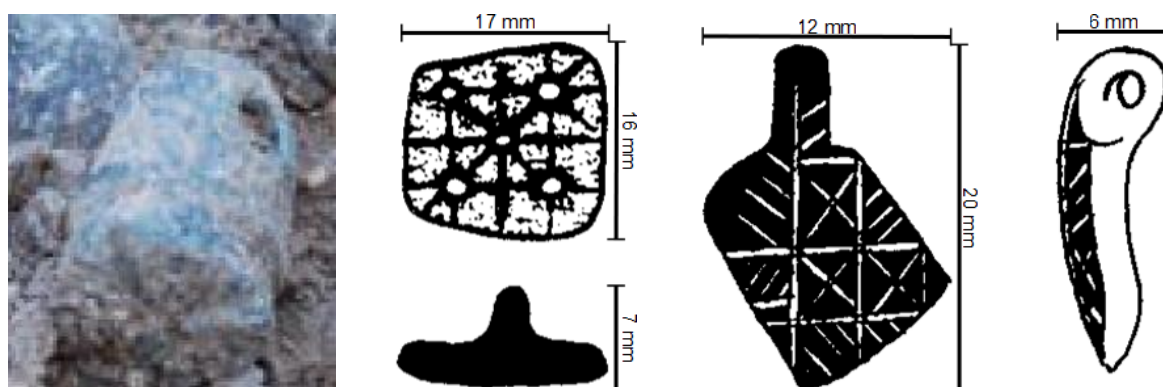


Figure 5-1: Three seals. Left: Tell el-Kerkh EK-082 –scale unknown, middle: Boztepe (BZ-001), right: Tepe Gawra (GW-036). (L: reproduced from Tsuneki and Hydar 2011: pg. 23, M: Adapted from Parker and Creekmore 2002: Fig. 24.A, R: Adapted from Tobler 1950: Pl. CLXXII. 18).

<b>Stamp:</b>	Objects with appropriate design where the design hangs horizontally when held vertically.
<b>Pendant Seal:</b>	Objects with appropriate design where the design hangs vertically when held vertically.
<b>Impression:</b>	An impression of an object with an appropriate design.
<b>Plaque:</b>	Objects with an incised design and no suspension.
<b>Bead and Bead Seal:</b>	Longitudinally pierced objects without appropriate design.
<b>Pendant:</b>	Vertically hanging object without appropriate design.
<b>Unknown</b>	Objects without parallel or an unknown form.
<b>Irregular:</b>	
<b>Whorl:</b>	Spindle whorl with interesting design.

Table 5-3: Definitions of body type



### 5.1.1 Face












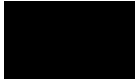








				
Circular	Clover	Diamond	Double-Axe	Drop
				
N/A	Figurative	Oval	Oxhide	Pear
				
Pentagonal	Rectangular	Screw	Sickle	Square
				
Trapezoid	Triangular	Unknown	V-Shaped	Winged

Table 5-4: Images of the different face shapes objects can have.

The body face category describes the shape of the side of the object exhibiting the design. If an object has no design it describes the ‘largest’ side. Table 5-4 illustrates the different shapes objects can have. Table 5-5 shows the counts and percentages for the face shape of stamps and pendant seals, this excludes “Unknown” which accounts for 19 (4.5%) stamps and 6 (4.1%) pendant seals. There is some overlap between pendant seals and stamps but they predominantly have different dominant face shapes.

Stamp has 14 types of face with 87.6% being circular, oval, square or rectangular. All other types are rare, as such stamp faces vary morphologically between quadrilaterals and circles/ovals with variation in the degree of elongation.

Pendant seals exhibit 16 types. The pear type is most common and is similar to oval, drop, and circular which cumulatively constitute 47.1% of all pendant seals but otherwise there is larger variation in face shape than there is with stamps.

Neither pendant seals nor stamps show great variation and the analysis shows that the shape of the incised face while not rigorously defined but involved only a limited range of face shapes. This reinforces the validity of examining the relative method of suspension as the lack of variation in the face of stamps suggests they were not on display

whereas the shape of a pendant seal face would have been visible and is consequently more varied.

Stamp				Pendant Seal			
Body Type and Face		Count	Total%	Body Type and Face		Count	Total%
Stamp	Circular	121	30.0%	Pendant Seal	Pear	31	21.8%
	Rectangular	97	24.1%		Triangular	28	19.7%
	Oval	80	19.9%		Oval	23	16.2%
	Square	55	13.6%		Diamond	10	7.0%
	Clover	15	3.7%		Shield	8	5.6%
	Triangular	12	3.0%		Drop	7	4.9%
	Diamond	6	1.5%		Circular	6	4.2%
	Irregular	5	1.2%		Sickle	6	4.2%
	Trapezoid	5	1.2%		Rectangular	5	3.5%
	Figurative	2	0.5%		Figurative	4	2.8%
	Winged	2	0.5%		V-shaped	4	2.8%
	Oxhide	1	0.2%		Irregular	3	2.1%
	Sickle	1	0.2%		Trapezoid	2	1.4%
	Pear	1	0.2%		Winged	2	1.4%
					Screw	2	1.4%
					Square	1	0.7%

**Table 5-5: Faces by body types**

## 5.1.2 Profile




















						
Blunt Cone	Boot-shaped	Bowled	Cone	Cylinder	Dome	Domed Cylinder
		N/A				
Flat	Gable	Irregular	Lens	Lentoid	Figurative	Pear
					N/A	
Pyramid	Raised	Ridged	Right-Angled Triangle	Twin	Unknown	Wedge

Table 5-6: Images of the different profile shapes objects can have.

Body profile records the profile of the seal in relation to the position of the incised design. Table 5-6 illustrates the different shapes the objects can take. Table 5-7 shows the counts and percentages for the profiles of stamps and pendant seals excluding “Unknown” which accounts for 36.5% (54) of pendant seals and 11.9% (50) of stamps. This is considerably more than were classified as Unknown for body face and is because while an image of the face is frequently published the profile is not. This exacerbates the small sample of pendant seals as there are only 94 pendant seals where data is available on the profile.

The profile shape shows a clear correlation with body type as except with ‘flat’, a common attribute for both, very few stamps or pendant seals share a profile type (figurative and irregular being catch-all categories with no internal consistency). There are eight types of pendant seal profile with only two common types, ‘wedge’ at 51.1% and ‘flat’ at 27.7% which together account for 74 of 94 (78.8%) pendant seal profiles. There is very little variety in profile shape for pendant seals. By contrast there are 18 stamp profile types with ‘flat’ as the most common (54.6%).

This mirrors the relationship between body type and body face supporting the suggestion that the distinction between pendant seals and stamps is meaningful. If the pendant seals are designed to be worn while the face is visible the shape of the profile is not, whereas most ways of suspending stamp types would obscure the face leaving the

profile visible. This could explain why there is greater variety in body face for pendant seals and in body profile for stamps as the owners of the seal may have been ‘personalising’ the visible parts of the object. Interestingly there is little statistically significant variation between body type and the design attributes, which, given the information available, appear to be largely independent of shape (see 5.7 below). This suggests that there are at least two choices behind the creation of seals, one relating to the shape, and one relating to the design. The interpretation of these phenomena will be discussed later in this chapter and more widely in chapter 7.

Body Type and Profile		Count	Total%
Stamp	Flat	203	54.6%
	Ridged	32	8.6%
	Dome	22	5.9%
	Blunt Cone	19	5.1%
	Cone	17	4.6%
	Boot-Shaped	12	3.2%
	Bowled	10	2.7%
	Right-Angled Triangle	9	2.4%
	Figurative	5	1.3%
	Irregular	5	1.3%
	Pyramid	7	1.9%
	Lentoid	7	1.9%
	Domed Cylinder	7	1.9%
	Twin	6	1.6%
	Gable	4	1.1%
	Cylinder	4	1.1%
	Raised	3	0.8%
Pendant Seal	Wedge	48	51.1%
	Flat	26	27.7%
	Pear	6	6.4%
	Lens	6	6.4%
	Figurative	3	3.2%
	Irregular	3	3.2%
	Blunt Cone	1	1.1%
	Cone	1	1.1%

**Table 5-7: Body profile by stamp and pendant seal. Excluding unknown.**

### 5.1.3 Piercing

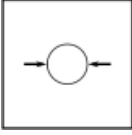
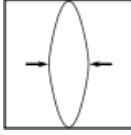
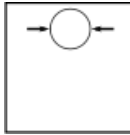
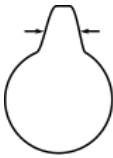
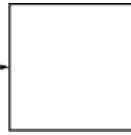

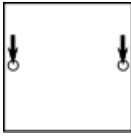
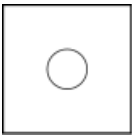

				
Central Eyelet	Covering Eyelet	Off-Centre Eyelet	Vertical Eyelet	Pierced through Body
		N/A		
Pierced through Face	Double pierced through Face	Unknown Piercing	Handled	Un-Pierced

Table 5-8: Images of the different types of suspension objects can have.

Body piercing describes the manner in which an object is suspended. Table 5-8 shows the various piercings that objects can have. Table 5-9 contains data on the piercings of stamps and pendant seals. This excludes 8.1% (12) of pendant seals and 8.6% (36) of stamps for which there is no data. Body piercing is closely related to body type with a number of the piercings being type exclusive. *Covering eyelet*, *central eyelet*, and *off-centre eyelet* (with one exception (KH-008 is a pendant seal with a central eyelet)) refer only to stamps whereas *vertical eyelet* refers only to pendant seals. As body piercing records the suspension and body type records the relative position of suspension this is unsurprising. However both stamp eyelets and pendant seal eyelets are similar because they are suspension loops that rise from the body of the seal largely independent of shape, see Figure 5-2. *Pierced through body* and *pierced through face* are types associated with both stamps and pendant seals and from the common types of internal piercing.

Table 5-10 shows the piercing summary for stamps and pendant seals and reveals that eyelets are much more common for stamps relative to internal piercings than they are for pendant seals where eyelets and internal piercings have similar percentages. The reasons for this probably relate to the preferred shape of the profile of the objects which correlates closely with body piercing as Figure 5-3 illustrates. The first (flat) and second (ridged) most common category of profile have predominantly eyelet type piercings while the third (blunt cone) most common has predominantly internal piercings.

This is unsurprising as the average thickness of the flat profile is between 3 and 4 mm making it difficult to have an internal piercing whereas cone shaped objects being thicker would be technologically simpler to pierce internally. This suggests that the shape of the profile and the piercing were unlikely to independently chosen and may represent a single design choice.

Body Type and Piercing		Count	Total%
Stamp	Central Eyelet	168	43.5%
	Pierced through Body	116	30.1%
	Covering Eyelet	49	12.7%
	Un-pierced	25	6.5%
	Off-Centre Eyelet	15	3.9%
	Pierced through Face	10	2.6%
	Handled	2	0.5%
	Double Pierced through Face	1	0.3%
Pendant Seal	Vertical Eyelet	69	50.7%
	Pierced through Body	42	30.9%
	Pierced through Face	21	15.4%
	Un-pierced	3	2.2%
	Central Eyelet	1	0.7%

Table 5-9: Body piercing by body type.

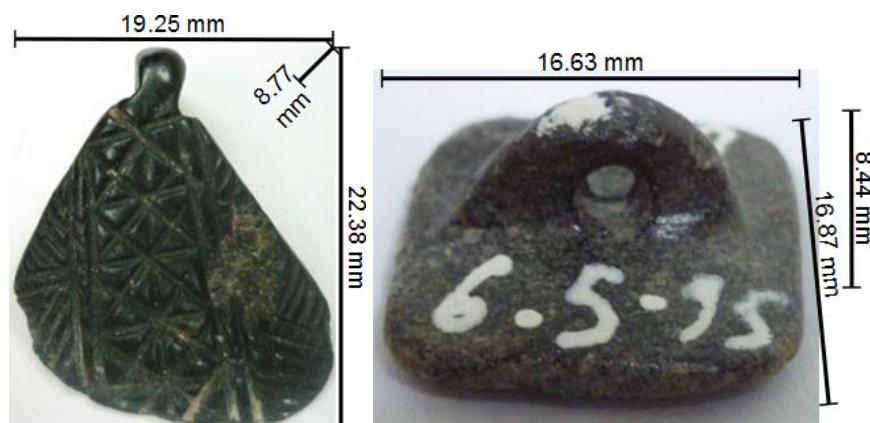


Figure 5-2: Two seals showing different types of eyelet. Left: Vertical Eyelet (Arpachiyah, AP-003) and Right: Central Eyelet (Domuztepe, DZ-001) (L: © Trustees of the British Museum, R: Courtesy of the Domuztepe project).

Body Type and Piercing Summary		Count	Total%
Stamp	Eyelet	231	59.8%
	Internal Piercing	128	33.2%
	No Piercing	27	7.0%
Pendant Seal	Eyelet	70	51.5%
	Internal Piercing	63	46.3%
	No Piercing	3	2.2%

Table 5-10: Piercing summary by body type

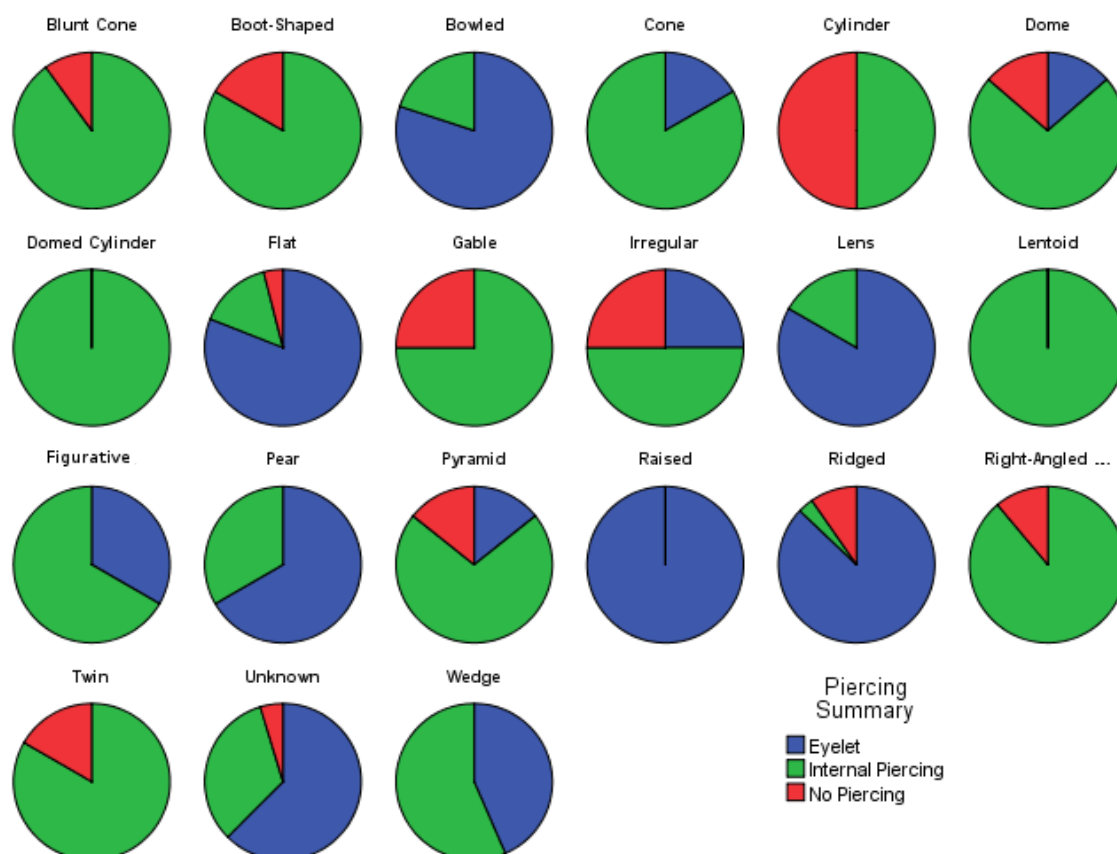


Figure 5-3: Pie charts of body profile separated by body piercing

#### 5.1.4 Conclusion

The analysis in this section has illustrated that there appears to be a clear morphological distinction between pendant seals and stamps that goes beyond the method of suspension. The data illustrates that both types may have been suspended vertically with pendant seal faces and stamp profiles having more variation because those facets were visible. The non-visible aspect of pendant seals, the profile, and of stamps, the face, varied less as they were not visible.

The next section evaluates changes in object morphology across periods and regions.

## 5.2 Morphology analysed over time and space

This section looks at the morphological attributes over time and space. Geographical distribution is discussed before chronological period. Chronological periods and geographical regions were discussed in depth in Chapter 4 but are summarised here in Figure 5-4 and Table 5-11. As in the previous section the analysis will focus exclusively on stamps and pendant seals.

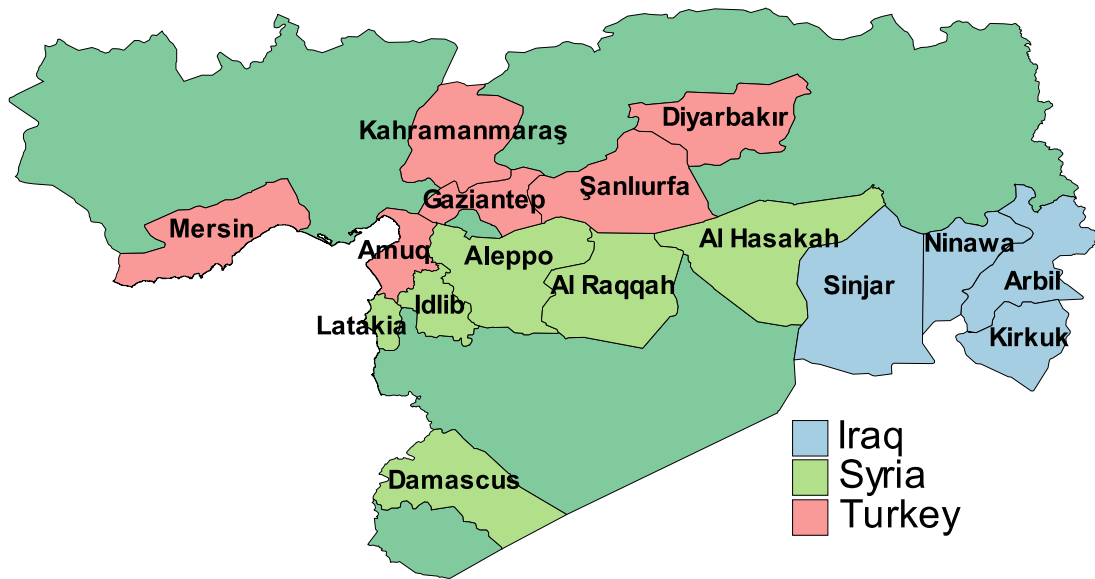


Figure 5-4: Map of regions (Author's copyright)

Periods and Upperphases		Count	Total%
Pre-Pottery Neolithic	PPN	4	100.0%
Pottery Neolithic	Late PN	102	73.4%
	Whole PN	20	14.4%
	Early PN	17	12.2%
Pottery Neolithic/Halaf	Late PN/Early Halaf	5	55.6%
	Late PN/Whole Halaf	1	11.1%
	Whole PN/Whole Halaf	3	33.3%
Halaf	Early Halaf	66	18.6%
	Whole Halaf	76	21.5%
	Late Halaf	212	59.9%
Halaf-Ubaid Transitional	HUT	5	100.0%
Ubaid	Early Ubaid	59	100.0%

Table 5-11: Period, upper phase, count and percentage



Type by Country	Iraq		Syria		Turkey	
	Count	Total%	Count	Total%	Count	Total%
Pendant Seal	93	55.4%	21	12.0%	29	14.0%
Stamp	75	44.6%	154	88.0%	178	86.0%

**Table 5-12: Body types by country**

Iraqi Regions and Sites		Pendant Seal		Stamp	
		Count	Row%	Count	Row%
Ninawa	Arpachiyah	55	60.4%	36	39.6%
	Tepe Gawra	21	56.8%	16	43.2%
	Tell Hassuna			2	100.0%
	Tell Chench	2	100.0%		
	Gogjeli	1	100.0%		
Sinjar	Yarim Tepe II	10	55.6%	8	44.4%
	Yarim Tepe I			7	100.0%
	Yarim Tepe III	2	40.0%	3	60.0%
	Tell Maghzaliyah			1	100.0%
Arbil	Banahilk	2	66.7%	1	33.3%
Kirkuk	Tell Matarrah			1	100.0%

**Table 5-13: Iraq sites and number of stamps and pendant seals**

Turkish and Syrian Regions		Pendant Seal		Stamp	
		Count	Row%	Count	Row%
Turkey	Kahramanmaraş	17	15.9%	90	84.1%
	Amuq	4	7.7%	48	92.3%
	Şanlıurfa	5	15.6%	27	84.4%
	Mersin			10	100.0%
	Diyarbakır	3	60.0%	2	40.0%
	Gaziantep			1	100.0%
Syria	Idlib	1	1.1%	87	98.9%
	Al Hasakah	18	43.9%	23	56.1%
	Latakia			23	100.0%
	Al Raqqah	2	10.0%	18	90.0%
	Damascus			3	100.0%

**Table 5-14: Syria and Turkey Regions**

Table 5-12 shows the different counts and percentages of stamps and pendant seals found in each modern country. Modern country boundaries have no late Neolithic reality but clearly illustrate regional divides. In Syria and Turkey stamps are much more common than pendant seals whereas in Iraq there is a roughly equal share of stamps and pendant seals. This distinction is replicated on the regional level. Table 5-13 shows the number of pendant seals and stamps from sites in Iraq where it is clear that all the sites with more than two seals except Yarimtepe I have more pendant seals then stamps.

Table 5-14 shows the number of stamps and pendant seals found in Turkey and Syria. Except for in Al Hasakah and Diyarbakır (respectively the easternmost regions of Syria and Turkey) stamps are predominant. This suggests Al Hasakah and Diyarbakır are part of the eastern regions. This is visualised in Figure 5-5 and Figure 5-6 clearly showing how stamps are dominant in western regions, while eastern regions have a more equal mix of stamps and pendant seals. A chi-square test of goodness-of-fit as to whether there was a difference in the amount of stamps versus pendant seals in the eastern regions and the western regions showed a statistically significant ( $\chi^2 = 141.647$ ,  $df = 1$ ,  $p = >0.000001$ ) difference between the distribution of stamps and pendant seals in western and eastern regions.

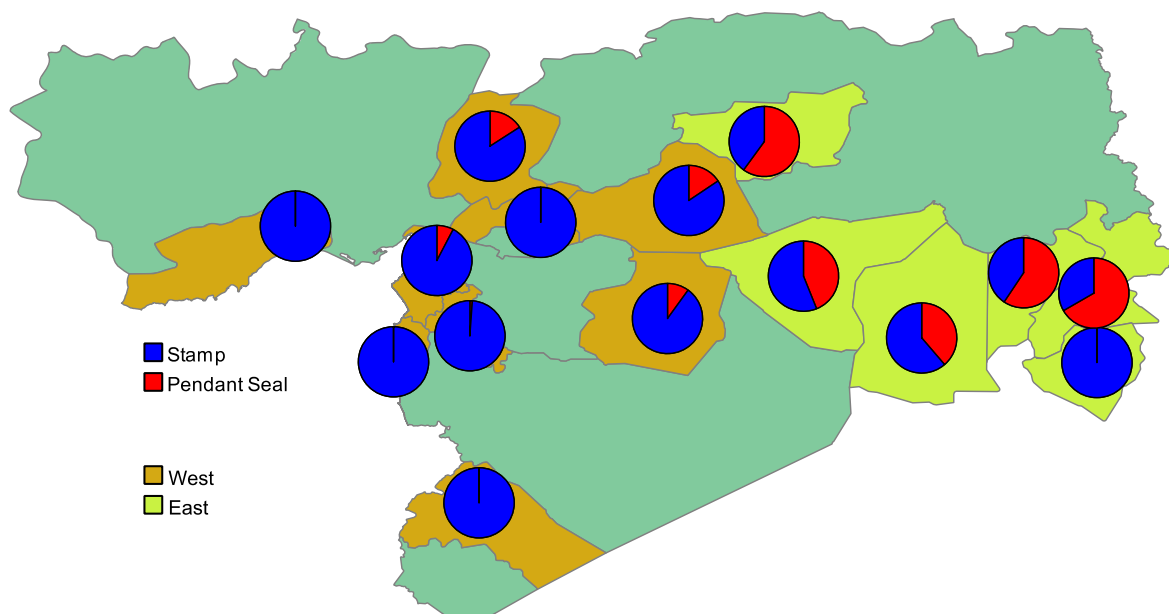


Figure 5-5: Pie charts on geographical regions showing percentages of stamps and pendant seals (author's copyright).

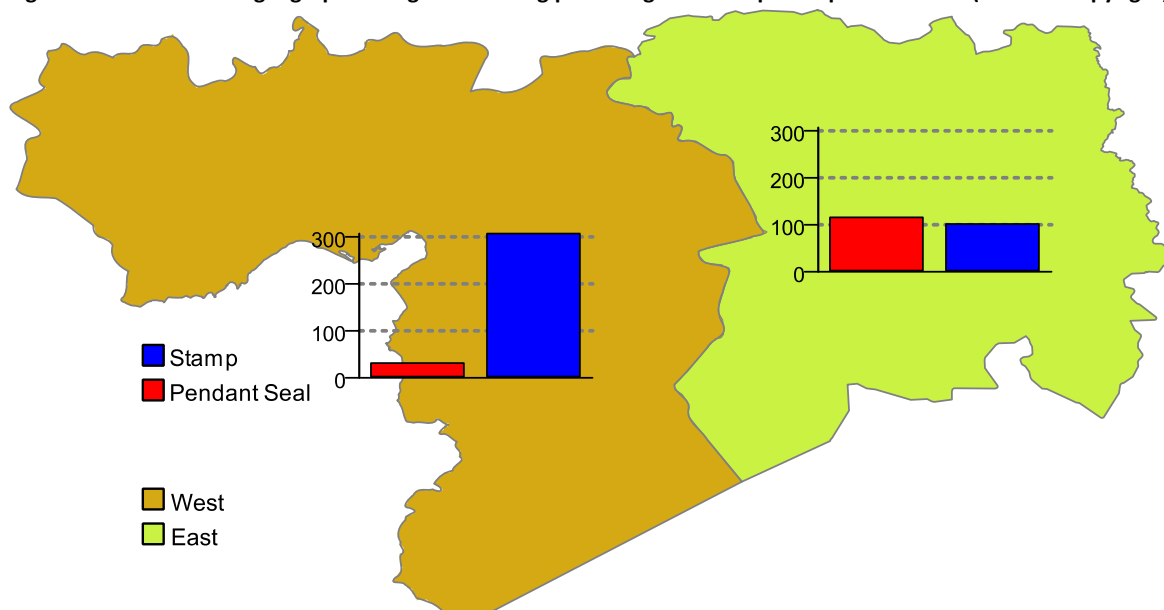


Figure 5-6: Pendants seals compared to stamps in eastern and western regions (author's copyright).

Table 5-15 shows the different chronological periods of eastern and western sites as divided by pendant seals and stamps. The east-west division is visible chronologically and reveals that the pendant seal is primarily a Halaf (84.6% of pendant seals) phenomenon and is very uncommon in the Pottery Neolithic (1.4% of pendant seals). The chronological evidence and regional location of pendant seals provides what appears to be evidence of a localised tradition within an overarching symbolic system because, as will be demonstrated in section 5.5, there is no geographical or chronological distinction in the designs.

The next section will look at how the numbers of face shapes of stamps and pendant seals vary over time and space respectively.

	West				East			
	Pendant Seal		Stamp		Pendant Seal		Stamp	
	Count	Total%	Count	Total%	Count	Total%	Count	Total%
Pre-Pottery Neolithic			4	1.3%				
Pottery Neolithic	2	6.9%	126	41.0%			11	11.0%
Pottery Neolithic/Halaf			9	2.9%				
Halaf	26	89.7%	150	48.9%	95	83.3%	63	63.0%
Halaf-Ubaid Transitional					2	1.8%	3	3.0%
Ubaid	1	3.4%	18	5.9%	17	14.9%	23	23.0%

**Table 5-15: Division of pendant seals by period in western regions (left) and eastern regions (right).**

## 5.2.1 Face

Before analysing the different face shapes of stamps and pendant seals it is important to note that it is difficult to analyse pendant seals in the western regions as there are only 29 examples against 114 in eastern regions. Stamps are more comparable but there are only 100 stamps in eastern regions compared to 307 stamps in western regions. Geographical analysis of both is therefore likely to give a distorted picture.

Table 5-16 shows the different face shapes of stamps in the eastern and western regions excluding the category unknown. It illustrates that in both eastern and western region the most common four face shapes are the same, representing 90% of stamp faces in eastern regions and 86.2% of stamps in western regions. There is more variety in the faces of western region stamps with five groups that are only found there. This may be due to the larger sample size. Statistically there is no significant difference between the stamp faces in eastern and western regions passing a chi-square test of goodness-of-fit at

0.05 significance value (Eastern:  $\chi^2 = 4.209$ ,  $df = 3$ ,  $p = 0.240$ , Western:  $\chi^2 = 2.336$ ,  $df = 3$ ,  $p = 0.506$ ). There is no clear regional differences in the face shape of stamps suggesting in both areas stamps represented a known continuum.

Table 5-17 shows the face shapes of pendant seals in eastern and western regions. The most common pendant seal face, 'pear', is not present in western regions. Otherwise the shapes are relatively similar in both areas although the order of the second and third most common ('triangular' and 'oval' in eastern regions and 'oval' and 'triangular' in western regions) is reversed. This suggests that the development of pendant seals in eastern regions was more than increased production, though it was partly that, but involved the creation of a particular type of pendant seal with a pear shaped face.

Stamp Face by East/West	East		West	
	Count	Total%	Count	Total%
Circular	33	33.0%	81	26.4%
Rectangular	28	28.0%	67	21.8%
Oval	20	20.0%	55	17.9%
Square	7	7.0%	48	15.6%
Unknown	3	3.0%	16	5.2%
Clover	2	2.0%	13	4.2%
Triangular			12	3.9%
Diamond	4	4.0%	2	0.7%
Irregular			5	1.6%
Trapezoid	1	1.0%	3	1.0%
Winged			2	0.7%
Figurative	1	1.0%	1	0.3%
Sickle			1	0.3%
Pear			1	0.3%
Oxhide	1	1.0%		

**Table 5-16: Stamp face divided by eastern and western regions**

Pendant Face by East/West	East		West	
	Count	Total%	Count	Total%
Pear	31	27.2%		
Triangular	23	20.2%	4	13.8%
Oval	13	11.4%	9	31.0%
Diamond	9	7.9%	1	3.4%
Shield	7	6.1%	1	3.4%
Unknown	3	2.6%	3	10.3%
Sickle	6	5.3%		
Drop	4	3.5%	2	6.9%
Circular	6	5.3%		
V-shaped	3	2.6%	1	3.4%
Rectangular	2	1.8%	2	6.9%
Figurative	2	1.8%	2	6.9%
Irregular	2	1.8%	1	3.4%
Winged			2	6.9%
Trapezoid	2	1.8%		
Screw	1	0.9%	1	3.4%

**Table 5-17: Pendant face divided by eastern and western regions**

There are not enough pendant seals from any period except the Late Halaf, as discussed above, to analyse chronologically. This is not true for stamps where there is clear change over time as illustrated in Table 5-18. Squares, rectangles, circles and ovals remain the most common shapes in all periods (87.2% of the Pottery Neolithic, 85.6% of the Halaf and 97.5% of the Ubaid) but the relative percentages of each type changes noticeably.

In the Pottery Neolithic 'square' is rare while 'rectangular' is common. In the Halaf the situation is, to some degree, reversed with more 'square' (increasing from 0.8% to 22%) than 'rectangular' (decreasing from 33.6% to 17.5%) shaped faces. A similar change is present with 'oval' which decreases in presence from 23.2% to 14.3%. 'Circular' roughly

maintains its percentage in both periods. This suggests that between the Pottery Neolithic and the Halaf there is an increase in the use of more 'regular' shapes. In the Ubaid this pattern appears to have been challenged with a resurgent use of 'rectangular' and 'oval' and decline in 'square'. Throughout the percentage of 'circular' remains similar.

	Pottery Neolithic		Halaf		Ubaid	
	Count	Total%	Count	Total%	Count	Total%
Circular	37	29.6%	71	31.8%	11	27.5%
Rectangular	42	33.6%	39	17.5%	13	32.5%
Oval	29	23.2%	32	14.3%	10	25.0%
Square	1	0.8%	49	22.0%	5	12.5%
Clover	1	0.8%	14	6.3%		
Triangular	4	3.2%	7	3.1%		
Diamond			5	2.2%	1	2.5%
Trapezoid	2	1.6%	3	1.3%		
Irregular	5	4.0%				
Winged	2	1.6%				
Naturalistic	1	0.8%	1	0.4%		
Sickle	1	0.8%				
Pear			1	0.4%		
Oxhide			1	0.4%		
Total	125	100.0%	223	100.0%	40	100.0%

Table 5-18: Stamp faces over time

When geographically cross-referenced, this change is not reflected across the whole late Neolithic. In western regions the increase in square face at the expense of oval and rectangular faces between the Pottery Neolithic and the Halaf is clear as square increases from 0.9% to 30.1%, rectangular decreases from 31.6% to 15.8% and oval decreases from 25.4% to 9.6%. This shift cannot be accurately compared with eastern regions as there are only eleven known Pottery Neolithic stamps (all of which are circular or rectangular faced), however, between the eastern region Halaf and western region Halaf while circular faces constitute 35.5% in eastern regions and 28.8% in western regions rectangular and oval faces represent 43.6% of eastern region Halaf stamps and 25.4% of western region Halaf stamps. In contrast square faces represent 8.1% of eastern region Halaf stamps and 30.1% of western region Halaf stamps.

Between the Halaf and the Ubaid in the western regions the use of square faces fall from 30.1% to 16.7%, oval faces increase from 9.6% to 27.8%, and rectangular faces increase from 15.8% to 27.8%. However as there are only 18 known stamps from the western regions Ubaid this could potentially distort the data. In the eastern regions square and oval faces remain constant slightly increasing from 8.1% to 9.1% and 21% to

22.7% respectively. The use of rectangular faces increases from 22.6% to 36.4%, although the sample is again small with only 22 eastern Ubaid stamps. Circular faced objects remain fairly constant in all periods and areas.

	Pottery Neolithic				Halaf				Ubaid			
	East		West		East		West		East		West	
Circular	5	45.5%	32	28.1%	22	35.5%	42	28.8%	6	27.3%	5	27.8%
Rectangular	6	54.5%	36	31.6%	14	22.6%	23	15.8%	8	36.4%	5	27.8%
Oval	-		29	25.4%	13	21.0%	14	9.6%	5	22.7%	5	27.8%
Square	-		1	0.9%	5	8.1%	44	30.1%	2	9.1%	3	16.7%
Other	-		16	14.0%	8	12.9%	23	15.8%	1	4.5%	-	
Total	11	100%	114	100%	62	100%	146	100%	22	100%	18	100%

Table 5-19: Counts and percentages of most common shapes of stamp face in the three main periods.

		East	West
Pottery Neolithic - Halaf	Circular	-9.97%	+0.70%
	Oval	+20.97%	-15.85%
	Square	+8.10%	+29.26%
	Rectangular	-31.96%	-15.83%
		East	West
Halaf - Ubaid	Circular	-8.21%	-0.99%
	Oval	+1.76%	+18.19%
	Square	+1.03%	-13.47%
	Rectangular	+13.78%	+12.02%

Table 5-20: Percentage change over time of circular, oval, square, and rectangular.

I believe this data illustrates a process complementary to the development of pendant seals in the eastern Halaf with the development of a particular square faced stamp in the western Halaf. The dominance of square stamps in the western Halaf was a local development that was not mirrored in eastern regions where the population continued making stamps as in the Pottery Neolithic and to which style both eastern and western regions reverted to in the Ubaid. This appears to provide further evidence of local ways of shaping seals suggesting that in the eastern region Halaf they innovated by producing pear-face pendant seals and in the western region Halaf they innovated by producing a square-faced stamp.

## 5.2.2 Profile

As before, it is important to note that it is difficult to analyse pendant seals geographically as there are only 25 pendant seals with profile data from the western regions. However, there are only 64 pendant seals with profile data from eastern regions so the contrast is less marked. There are 75 recorded stamp profiles from eastern regions and 282 from western regions. Neither distortion of analysis is avoidable.

Table 5-21 show how the profiles of stamps vary between eastern and western regions. In both regions 'flat' is most common and while there is more variety in western regions this is probably because of the much greater number of stamps known from that area. Other variation, like the relative commonness of 'ridged' in the eastern regions may result from sample bias. There does not appear to be a strong regional pattern of stamps profiles.

	East		West	
	Count	Total%	Count	Total%
Flat	34	45.3%	166	58.9%
Ridged	12	16.0%	18	6.4%
Dome	5	6.7%	17	6.0%
Blunt Cone	1	1.3%	18	6.4%
Cone	3	4.0%	13	4.6%
Boot-Shaped	3	4.0%	7	2.5%
Right-Angled Triangle	4	5.3%	5	1.8%
Bowled	2	2.7%	7	2.5%
Domed Cylinder	1	1.3%	6	2.1%
Twin			6	2.1%
Pyramid	2	2.7%	4	1.4%
Naturalistic			4	1.4%
Lentoid	3	4.0%	1	0.4%
Irregular			4	1.4%
Gable	3	4.0%	1	0.4%
Cylinder	2	2.7%	2	0.7%
Raised			3	1.1%
Total	75	100.0%	282	100.0%

**Table 5-21: Stamp profiles divided by eastern and western regions**

Table 5-22 shows the geographical divisions of pendant seal profiles. 'Wedge' and 'flat' are the most common in both regions with 'wedge' more common in eastern regions and 'flat' in western regions. While this might reinforce my idea of there being a distinct type of pendant seal in eastern regions the small sample make it difficult to ascertain as the difference between wedge and flat is based on only two seals from western regions as opposed to 21 in western regions. The overall variation in profile is generally low with

‘wedge’ and ‘flat’ accounting for 80% of profiles in western regions and 76.6% in eastern regions.

There are only 12 known non-Halaf pendant seals. Ten are from the early Ubaid, one from the Pottery Neolithic, and one from the Halaf-Ubaid transitional. Chronologically there is not enough evidence to analyse change in pendant seal profiles.

	East		West	
	Count	Total%	Count	Total%
Wedge	35	54.7%	9	36.0%
Flat	14	21.9%	11	44.0%
Pear	6	9.4%		
Lens	5	7.8%	1	4.0%
Naturalistic	3	4.7%		
Irregular	1	1.6%	2	8.0%
Cone			1	4.0%
Blunt Cone			1	4.0%
Total	64	100.0%	25	100.0%

**Table 5-22: Pendant seal profiles in eastern and western regions**

Table 5-23 shows the count and percentages of stamps in eastern and western regions through time. In all periods ‘flat’ is most common but chronologically there are clear changes. In western regions between the Pottery Neolithic and the Halaf there is a marked increase in the percentage of ‘flat’, from 37.3% in the Pottery Neolithic to 79.3% in the Halaf. For the eastern regions Halaf ‘flat’ appears to remain static with 50% in the Pottery Neolithic and 53.8% in the Halaf. As there are only four seals for the eastern regions Pottery Neolithic the sample is probably distorted but the lower percentage of ‘flat’ in the eastern region Halaf suggests a divergence in the shape of stamps between the two regions. The increase in ‘flat’ in western regions reinforces the suggestion there is a specific ‘type’ of stamp in western regions which is less relevant in the eastern regions.



		East		West	
		Count	Total%	Count	Total%
Pottery	Flat	2	50.0%	41	37.3%
Neolithic	Ridged	1	25.0%	15	13.6%
	Dome			10	9.1%
	Blunt Cone			10	9.1%
	Cone			11	10.0%
	Boot-Shaped			3	2.7%
	Bowled	1	25.0%		
	Right-Angled Triangle			3	2.7%
	Domed Cylinder			5	4.5%
	Twin			1	0.9%
	Pyramid			2	1.8%
	Irregular			4	3.6%
	Gable			1	0.9%
	Cylinder			1	0.9%
	Raised			2	1.8%
	Naturalistic			1	0.9%
	Total	4	100.0%	110	100.0%
Halaf	Flat	28	53.8%	114	79.2%
	Ridged	7	13.5%	3	2.1%
	Dome	4	7.7%	1	0.7%
	Blunt Cone			7	4.9%
	Cone	2	3.8%	2	1.4%
	Boot-Shaped	3	5.8%	2	1.4%
	Bowled	1	1.9%	4	2.8%
	Right-Angled Triangle	3	5.8%	2	1.4%
	Lentoid			1	0.7%
	Domed Cylinder			1	0.7%
	Twin			4	2.8%
	Pyramid	2	3.8%	1	0.7%
	Irregular				
	Cylinder	2	3.8%	1	0.7%
	Raised			1	0.7%
	Naturalistic				
	Total	52	100.0%	144	100.0%
Ubaid	Flat	4	21.1%	6	35.3%
	Ridged	4	21.1%		
	Dome	1	5.3%	4	23.5%
	Blunt Cone	1	5.3%	1	5.9%
	Cone	1	5.3%		
	Boot-Shaped			1	5.9%
	Bowled			3	17.6%
	Right-Angled Triangle	1	5.3%		
	Lentoid	3	15.8%		
	Domed Cylinder	1	5.3%		
	Twin			1	5.9%
	Gable	3	15.8%		
	Naturalistic			1	5.9%
	Total	19	100.0%	17	100.0%

Table 5-23: Stamp profiles over time and in eastern and western regions

### 5.2.3 Piercing

The regional division of stamp piercings by eastern and western regions is constant (Table 5-24). The most common two (central eyelet and pierced through body) comprise 73.3% in eastern regions and 73.2% in western regions. Covering eyelets and off-centre eyelets seem less popular in eastern regions accounting for only 10.3% of objects compared to 18.6% in western regions but given the much smaller sample for eastern regions this, and the rather high percentage (8%) of un-pierced in eastern regions, may be explained by the small sample size. The greater number of eyelets in western regions further reflects the commonness of 'flat' profiles in that region which is again related to the suggestion that there is a specific type of western stamp. This is reinforced by the piercing summary of stamps (Table 5-25) which illustrates the, relatively, much larger number of stamps with eyelets in western regions.

	East		West	
	Count	Total%	Count	Total%
Central Eyelet	36	41.4%	127	44.7%
Pierced through Body	28	32.2%	81	28.5%
Covering Eyelet	6	6.9%	41	14.4%
Un-pierced	7	8.0%	18	6.3%
Off-Centre Eyelet	3	3.4%	12	4.2%
Pierced through Face	5	5.7%	4	1.4%
Handled	1	1.1%	1	0.4%
Double Pierced through Face	1	1.1%		
Total	87	100.0%	284	100.0%

**Table 5-24: Piercings of stamps in eastern and western regions**

	East		West	
	Count	Total%	Count	Total%
Eyelet	45	51.7%	179	63.0%
Internal Piercing	34	39.1%	86	30.3%
No Piercing	8	9.2%	19	6.7%
Total	87	100.0%	284	100.0%

**Table 5-25: Piercing summary of stamps in eastern and western regions**

Pendant seals (Table 5-26 and Table 5-27) have a much clearer geographic division with 58.5% eyelets found in eastern regions compared to only 24% in western regions. There is a reflected preference with 38.7% internal piercings in eastern regions compared to 77.3% in western regions. This accords with the argument, advanced earlier, that the preference for pendant seals in the eastern regions reflects a specific type of pendant seal with a vertical eyelet.

	East		West	
	Count	Total%	Count	Total%
Vertical Eyelet	62	58.5%	5	20.0%
Pierced through Body	28	26.4%	12	48.0%
Pierced through Face	13	12.3%	7	28.0%
Un-pierced	3	2.8%		
Central Eyelet			1	4.0%
Total	106	100.0%	25	100.0%

**Table 5-26: Piercings and piercing summary of pendant seals in eastern and western regions**

	East		West	
	Count	Total%	Count	Total%
Eyelet	62	58.5%	6	24.0%
Internal Piercing	41	38.7%	19	76.0%
No Piercing	3	2.8%		
Total	106	100.0%	25	100.0%

**Table 5-27: Piercing summary of pendant seals in eastern and western regions**

Chronologically there are only 18 pendant seals not from the Halaf, 17 from the Ubaid and 1 from the Pottery Neolithic, therefore making the sample too small for chronological analysis. Table 5-28 shows the number of stamps with eyelets increases by 16.2% between the Pottery Neolithic and Halaf and then decrease by 32.8% in the Ubaid. This change is mirrored by a decrease in the number of internal piercings of 9.1% between the Pottery Neolithic and Halaf and an increase of 34.5% into the Ubaid. The large swings in the Ubaid may reflect the small sample but the data appears to reflect the increase in 'flat' profiled objects in the Halaf (from 38.6% to 72.4%) since that profile type is more difficult to pierce internally.

Piercing Summary	Pottery Neolithic		Halaf		Ubaid	
	Count	Total%	Count	Total%	Count	Total%
Eyelet	63	52.5%	149	68.7%	14	35.9%
Internal Piercing	43	35.8%	58	26.7%	24	61.5%
No Piercing	14	11.7%	10	4.6%	1	2.6%
Total	120	100.0%	217	100.0%	39	100.0%

**Table 5-28: Stamp piercing summary over period.**

		Pottery Neolithic		Halaf		Ubaid	
		Count	Total%	Count	Total%	Count	Total%
East	Eyelet	7	77.8%	33	57.9%	5	23.8%
	Internal Piercing	2	22.2%	17	29.8%	15	71.4%
	No Piercing			7	12.3%	1	4.8%
	Total	9	100.0%	57	100.0%	21	100.0%
West	Eyelet	56	50.5%	109	75.2%	9	50.0%
	Internal Piercing	41	36.9%	33	22.8%	9	50.0%
	No Piercing	14	12.6%	3	2.1%		
	Total	111	100.0%	145	100.0%	18	100.0%

**Table 5-29: Stamp piercing summary over time and space.**

When cross-referenced geographically (Table 5-29) the process is the same between the Halaf and Ubaid in the western regions, but in the eastern regions between the Pottery Neolithic and Halaf the percentage of eyelets actually falls. However, as there are only 9 eastern regions Pottery Neolithic stamps the supposed decrease may reflect the sample size. Even so, the smaller percentage of eyelets in the eastern regions Halaf (57.9%) compared to the western regions Halaf (75.2%) reinforces the argument that there is a specific type of stamp in the western regions with the flat profile and an eyelet.

#### 5.2.4 Conclusion

I have analysed the geographical and chronological relationships of the morphological aspects of pendant seals and stamps and will now review the data. It is most important to note that the changes in the morphology of seals between eastern and western regions and throughout the Pottery Neolithic, Halaf, and Ubaid are on a theme. There are no profound shifts in seal types that make it possible to morphologically typologise a specific late Neolithic seal style within what is essentially a homogenous group. A pendant seal with a pear shaped face and vertical eyelet is most likely to be from the eastern region Halaf but the evidence is not conclusive. Similarly a stamp with a flat profile, eyelet, and square face is likely to come from the western Halaf but again not conclusively. Pendant seals and stamps of almost all kinds are found in both eastern and western regions. The idea of a homogenous group is important, as morphologically both pendant seals and stamps would represent recognisable categories across the late Neolithic world and while there was internal variation and local tradition seals would have been readily recognisable.

A larger number of seals is required to attempt to quantify any differences. The resolution of the data is generally not high enough and data is missing for the transitional stages of the early Pottery Neolithic, the early Halaf, the Halaf-Ubaid transitional, and the Ubaid. This ultimately entails that tracing a narrative of late Neolithic seals over space and time remains difficult. In practical terms more excavation is required. Available evidence suggests that, after the presumed 'invention' of seals in the late Pre-Pottery Neolithic and early Pottery Neolithic, seals remain very similar until the Halaf, probably the Late Halaf, when in the eastern regions a certain type of pendant seal is introduced and in the western regions a certain type of stamp is introduced. The shapes of the face, the profiles, and the piercings all support this shift. As there is no quantifiable

difference in the designs on different seals (see 5.4) this would seem to provide the evidence for a 'regional' tradition within a commonly recognised group of objects.

The visibility of an east – west division in the morphology of seals in the late Neolithic is interesting as it would appear to parallel Perkins' (1949: 44–45) argument of there being an east – west divide in the Halaf based on pottery evidence. However, this is unlikely to be true; as is discussed in section 7.5 there is no chronological relationship between pottery and seals. Seals pre-date diagnostically Halaf pottery by several hundred years. Furthermore the division Perkins identified based on pottery was largely due to the smaller amounts of evidence from the 'west' available in the 1940s than any archaeological reality (LeBlanc and Watson 1973). I do not believe the differences outlined above represent different 'Halafs' but localised variation within the same type of objects.

The next section will analyse the absolute measurements of the objects and their morphological, geographical, and chronological relations.

## 5.3 Dimensions

To allow easier comparison section 5.1 and 5.2 did not include the size of seals. This section will discuss the size of the seals and how this relates to morphology. Five different measurement metrics were recorded, 'length', 'width', 'full height', 'handleless height', and 'weight'. Handleless height refers exclusively to stamps with a flat profile and measures the thickness of the sealing face. Length and width also records different measurements for stamps versus pendant seals, for a stamp length is the longest side of the face while on a pendant seal it is the side relative to the suspension at the top. Height was measured relative to the sealing face.

### 5.3.1 Length

Complete length data is held on 451 objects, 103 pendant seals and 348 stamps. Figure 5-7 shows box-plots comparing the length of seals across the main periods divided by eastern and western regions. Pendant seals and stamps are very similar in length with a mean of 21.63mm for pendant seals and 20.94mm for stamps. On average stamps get smaller between the Pottery Neolithic and the Halaf.

The interquartile range of stamps, not divided by eastern and western regions, during the pottery Neolithic is from 16 to 35mm while during the Halaf it is from 14 to 21.27mm. This is reflected in the standard deviation which from a mean of 18.92mm gives 7.23mm for the Halaf, and 12.52mm from a mean of 25.41 mm in the Pottery Neolithic. While the evidence from the Ubaid is limited it does appear that stamps are again smaller with an interquartile range of 14.6 to 21mm and a standard deviation of 6.04 from a mean of 16.47mm. Geographically the box-plots show little difference between stamps but in the Halaf and the Pottery Neolithic stamps are longer in eastern regions than in western regions. During the Halaf the interquartile range is 7 in both areas, between 15.5 and 22mm in eastern regions and 13.25 and 20mm in western regions. During the Pottery Neolithic the interquartile range is 20 in eastern regions, between 21.75 and 41.25mm, and 19 in western regions, between 15.25 and 34.25mm, but as there are only 8 stamps in western regions compared to 96 in eastern regions it is probably not significant. Overall stamps are clearly smaller in the Halaf than in the Pottery Neolithic and are smaller again in the western Halaf.

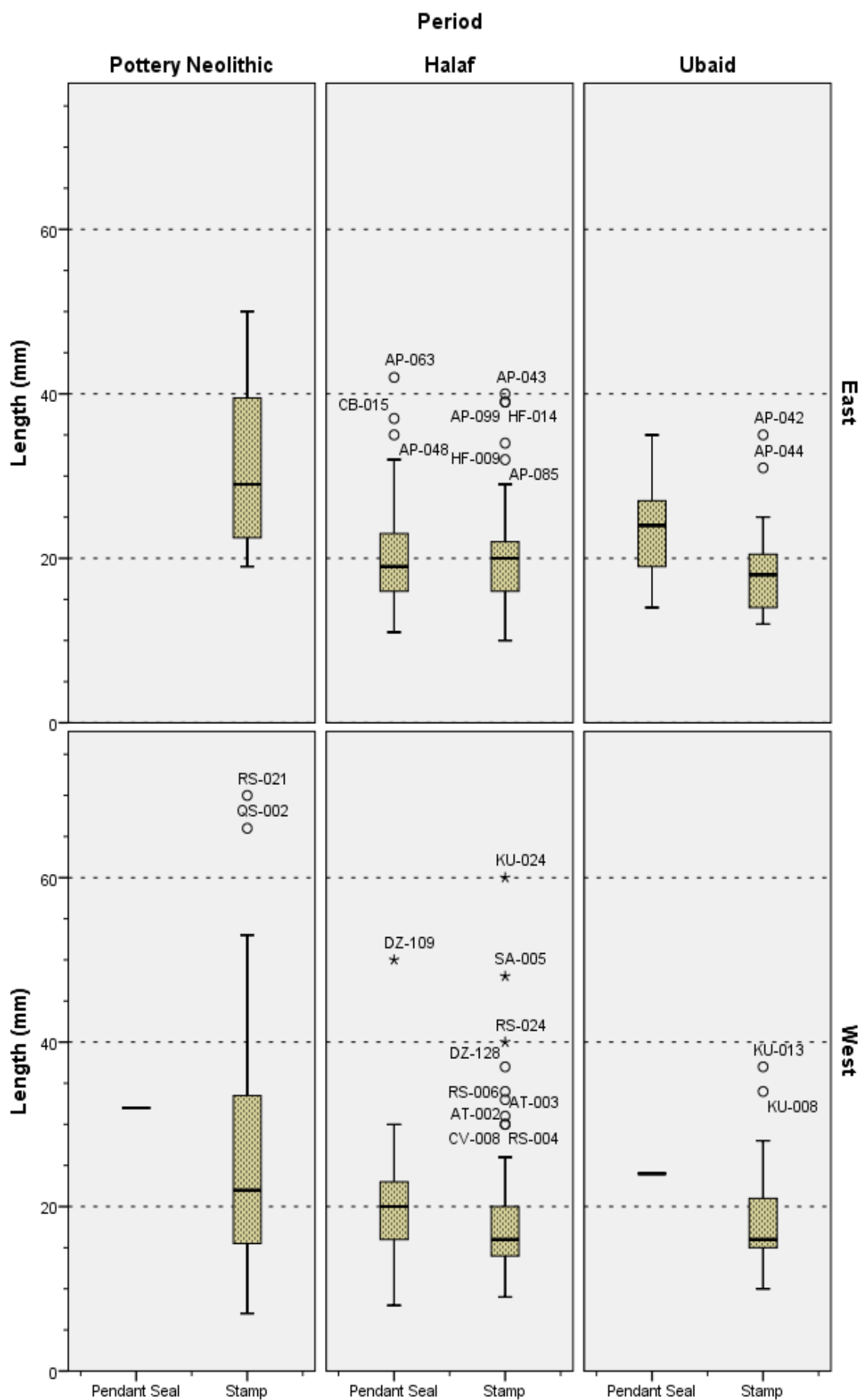


Figure 5-7: Box-plots of Length by Pendant Seal and stamp for the main three periods and eastern – western regions (Author's copyright).

The change in size of stamps between the Pottery Neolithic and Halaf supports the argument in section 5.2 that a new type of stamp developed, particularly in western regions. The decrease in oval and rectangular seal faces and the increase of square stamps appears to be matched by a decrease in the average size of stamps. More generally stamps decrease in size in both eastern and western regions between the Pottery Neolithic and Halaf and remain at a similar size during the Ubaid.

Little can be said about Pendant Seals because of the lack of evidence outside of the eastern regions Halaf (67 pendant seals, 65% of the total) but all appear to be of similar size. In the eastern regions Ubaid (there is only one western regions Ubaid pendant seal) pendant seals appear to be slightly larger with an interquartile range of 19 to 27mm as opposed to 16 to 23mm in the eastern regions Halaf. This small difference could be explained by the small number of Ubaid pendant seals. During the western regions Halaf pendant seals remain of similar size as during the eastern regions Halaf, but over a smaller size range.

### 5.3.2 Width

Complete width data is held on 464 objects, 120 pendant seals and 344 stamps. The discrepancy with length is explained by there being more broken lengths than widths. Width is the shorter dimension of the seal relative to the length. For some body faces, e.g. square or circular, it is similar to length but for some, particularly rectangular, it is different.

Figure 5-8 shows boxplots of width divided by eastern region, western region and period. Compared to Figure 5-7 it is clear width changes in much the same way as length. From the Pottery Neolithic to the Halaf stamps become narrower. The interquartile range of stamps in the Pottery Neolithic is 13 to 25.75mm while in the Halaf it is 12 to 20mm, the larger shift in the Pottery Neolithic of eastern regions is offset by the small sample. While not a large difference it does support the idea that between the pottery Neolithic and Halaf there was a decrease in stamp size. Western region stamps are smaller, ~2mm, than eastern region ones with an interquartile range of between 12 to 18mm in western regions and 13.75 to 21mm in eastern regions.



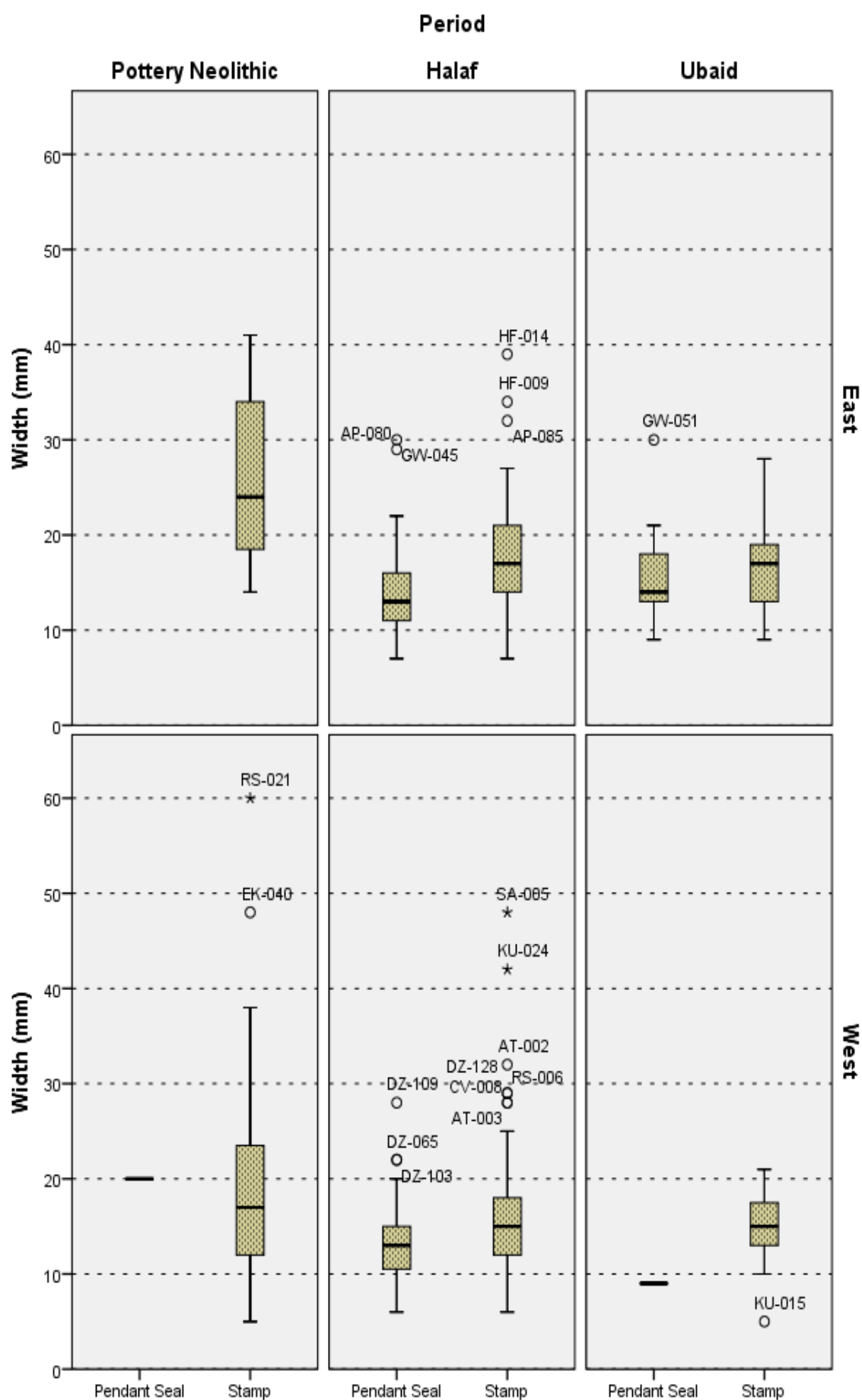


Figure 5-8: Boxplot of Width by eastern and western regions and chronological period (Author's copyright).

This support for the geographical difference reinforces that, on average, western region Halaf stamps are slightly smaller than eastern region Halaf both of which are smaller than Pottery Neolithic stamps.

As with length eastern and western region Halaf pendant seals have similar interquartile ranges although that of the western regions is wider. The greater length of Ubaid pendant seals is not visible with on average only 2mm increase in width.

### 5.3.3 Height

Complete height data is held on 366 objects, 90 pendant seals and 276 stamps. This number reflects the inadequate publishing of seal profiles. Figure 5-10 shows the box-plots, while Figure 5-9 is an extract just showing western regions Halaf. Once again it can be noted that stamps get smaller, particularly in the western regions Halaf, between the Pottery Neolithic and the Halaf. In the western regions Pottery Neolithic, there is only one known eastern region stamp, the interquartile range is 10 to 18.5mm while in the eastern Halaf it is 6 to 11.25mm and in the western Halaf only 6 to 8mm. This is a small interquartile range but as Figure 5-9 shows there are quite a few outliers (16) which at 15% of the total suggests there might be problematic aspects of the sample. Even so this implies evidence for the argument that in the western regions Halaf a different type of stamp seal is used. It also supports the evidence for stamps becoming generally smaller between the Pottery Neolithic and Halaf and supports the general theme that eastern region Halaf stamps are on average larger than western region Halaf ones.

The sample sizes for the Ubaid are small, with 17 from eastern regions and 8 from western regions, but for eastern regions there is a suggestion that stamps get thicker again while in the western regions they are unchanged from the Halaf.

For pendant seals in the Halaf and eastern regions Ubaid the widths are similar. The interquartile range of the western Halaf is 4.5 to 6.5mm and 5 to 7mm in both the eastern Halaf and eastern Ubaid. The very similar widths tells us little in itself but does reinforce the object category as a whole since it is clear that even the thickest pendant seal, at 12mm, is thin and could be suspended vertically.

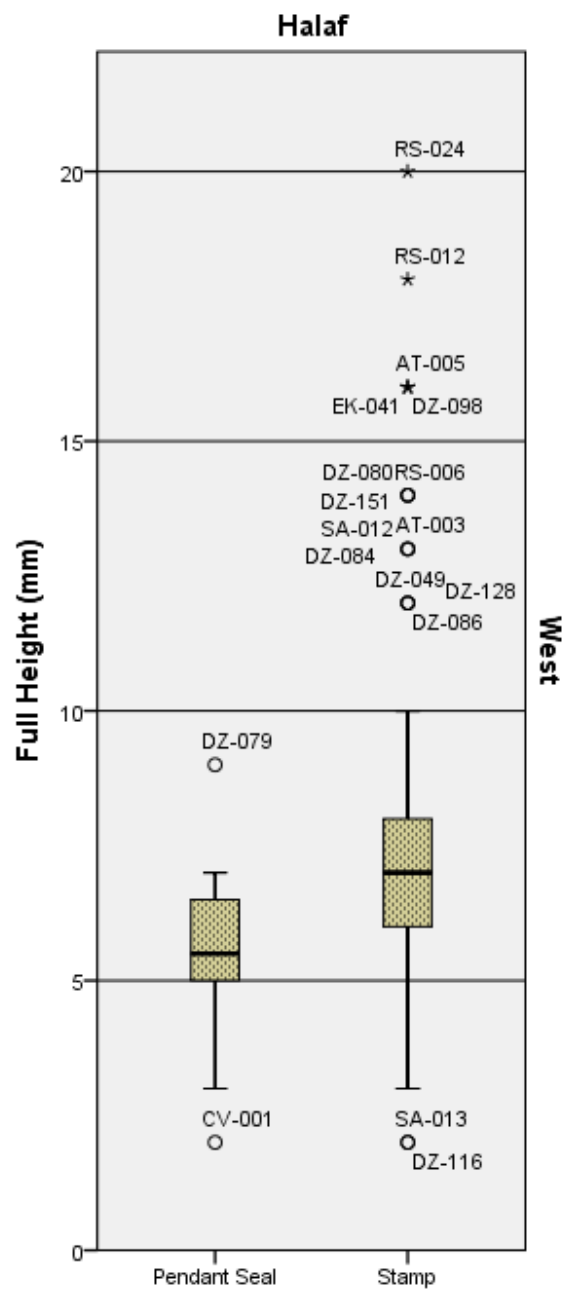


Figure 5-9: western Halaf full height (Author's copyright).

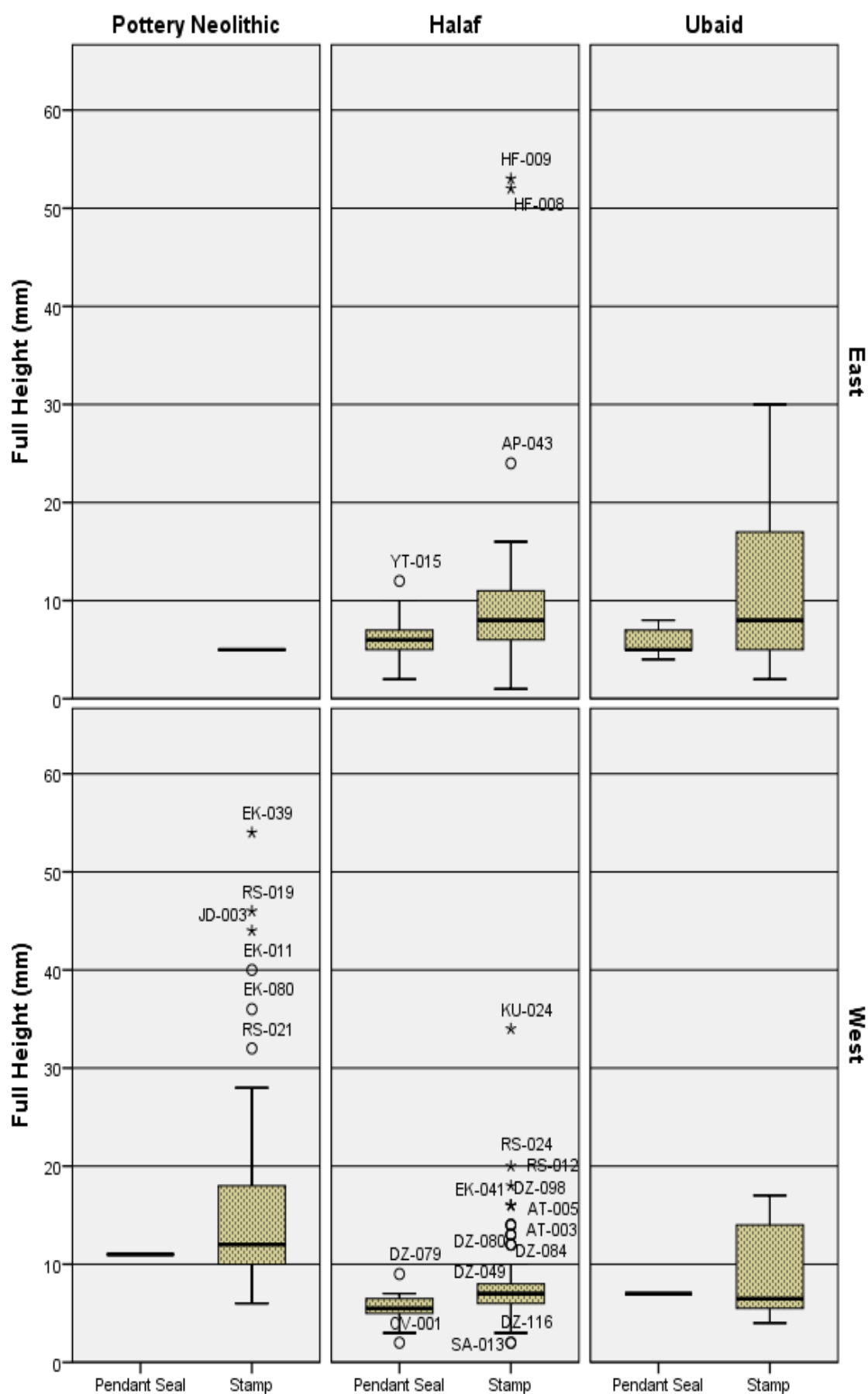


Figure 5-10: Boxplots showing Full Height by period and eastern and western region (Author's copyright).

### 5.3.4 Weight

Complete weight data (excluding 41 broken objects with weight data) is only available on 122 objects, 30 pendant seals and 92 stamps. None of the published sources used included weight and the sample is therefore restricted to objects from Domuztepe (73) and the British Museum (49). This limits the use of the data for comparative purposes. Figure 5-11 shows the weights of all objects, except three severe outliers stamps that weigh over 20g (UK-002, UK-005, UK-019). It illustrates that the variety in the weight of objects is very low. The interquartile range is almost identical (2.7 for pendant seals, and 2.8 for stamp seals) with almost identical ranges from 0 to 14g for stamps (6 objects from Domuztepe weighed less than the half gram sensitivity of the scale) and from 0.5 to 15g for pendant seals. The median is slightly lower for pendant seal at 1.5g compared to 2g for stamps but the weights of pendant seals and stamps are very similar.

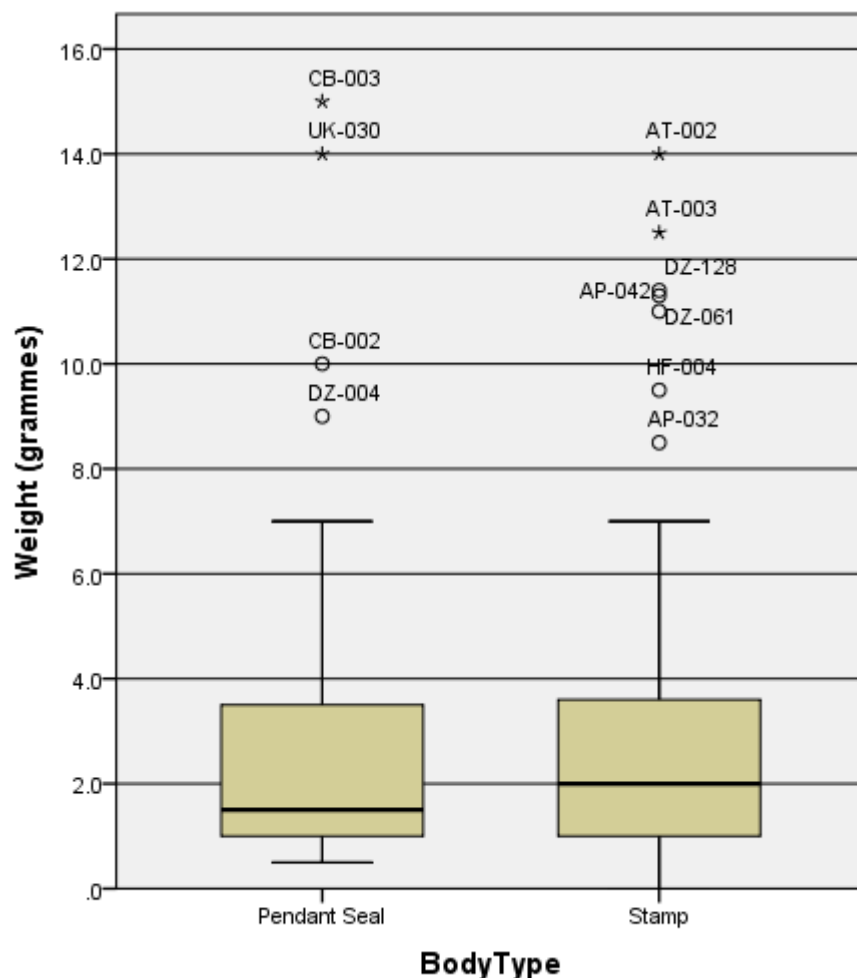


Figure 5-11: Boxplots displaying the weight of all objects (Author's copyright).

There is not enough data to compare weights chronologically as there is weight data on only two Ubaid seals and two Pottery Neolithic seals. This is unfortunate as the other measurement metrics record a fall in the size of seals, stamps in particular, between the Pottery Neolithic and Halaf and this would have been opportune to cross-reference. The data is more viable geographically with 15 stamps and 8 pendant seals from eastern regions and 66 stamps and 9 pendant seals in western regions but shows no significant difference between eastern and western regions. In consequence I have chosen to not analyse weight geographically and shall instead make general comments.

The prime factor the overall weight data suggests is that despite the differences discussed in sections 5.1 and 5.2, all late Neolithic seals are similar in weight, most seals weigh less than 7g. This suggests there is no fundamental difference between stamps and pendant seals, as far as size is concerned, and reinforces the idea that they would have been recognised as a type in the late Neolithic. The weight data further reinforces the idea that the variations above were of theme, not of kind, and the objects we call seals cannot be divided into different classes by weight.

Finally I hope in the future more published sources will include weight data to provide more complete data on the weights of late Neolithic seals, particularly during the Pottery Neolithic, to investigate if the changes in morphology and size discussed above are reflected by changing weights.

### 5.3.5 Conclusion

The measurement data overall shows stamps get smaller in length, width, and height over time. This is particularly true in western regions. This correlates with the changes in faces and profiles discussed in section 5.2. It is important to state this change is small and represents a maximum shift of a centimetre. The change is there though, and when one considers that the morphological change between the Pottery Neolithic and Halaf is of emphasis, i.e. they still make rectangular stamps as well as square ones in the Halaf, this shrinkage cannot be explained purely by morphological change and must represent an active choice towards smaller stamps. This shrinkage is emphasised in western regions thereby supporting the argument there is a distinct type of stamp in western regions, although small samples raise the risk of coincidental findings. The weight data is too circumscribed to provide significant findings, particularly chronologically, but does suggest that choices in morphology were within a narrow range of variables.

## 5.4 The Design

The design is the, arbitrary, defining feature of a seal differentiating them from other objects like pendants or beads. However the designs on them have never been comprehensively analysed, an omission this section will rectify.

This section includes data on all objects with an incised design. It does not include seal blanks or similar objects leaving 614 objects, 383 stamps, 140 pendant seals, 73 impressions, 15 plaques and 3 ‘irregular’ objects. As discussed in 4.5.2 the design classification is tripartite with a superordinate level category ‘super-design group’, a basic level category ‘design group’, and a subordinate category ‘sub-design group’. Technical definitions are in Appendix 1. Table 5-30 shows the five ‘super-design groups’. 92.7% of objects have cross-hatching, aligned centre, or central focus designs. The remainder are either without parallel (irregular) or have figurative (animal or human) designs. The analysis focuses predominantly on the three main groups using the percentages in Table 5-31 with figurative and irregular designs discussed individually. Figurative is interesting, but rare and the ambiguity of irregular seals makes them hard to relate to a wider picture.

Super-Designs	Count	Total%
Cross-hatching	273	44.5%
Aligned Centre	196	31.9%
Central Focus	100	16.3%
Naturalistic	27	4.4%
Irregular	18	2.9%
Total	614	100.0%

Table 5-30: Super-design groups

Super-Designs	Count	Total%
Cross-hatching	273	48.0%
Aligned Centre	196	34.4%
Central Focus	100	17.6%
Total	569	100.0%

Table 5-31: Main three super-design groups

The distinction between cross-hatching, aligned centre and central focus is illustrated in Figure 5-12. Cross-hatching has a predominantly hatched design, central focus is divided into two or more linear panels, and aligned centre has a design that aligns

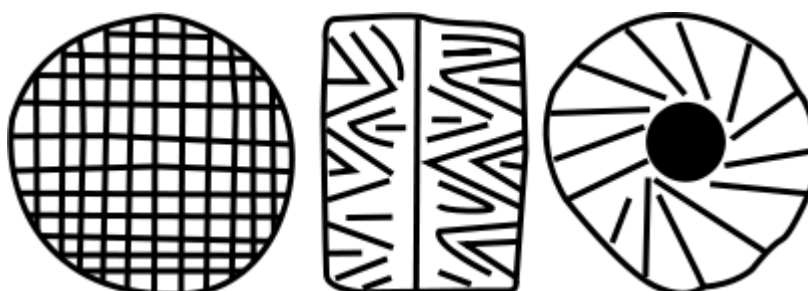


Figure 5-12: From left to right, Cross-hatching (IAP-057), Central Focus (DZ-105), Aligned Centre (EZ-002). Not to scale. (L + R: © Trustees of the British Museum, M: Courtesy of the Domuztepe project).

with the centre of the object.

This distinction is primarily a difference in layout. The designs are all geometric and built up of similar motifs. While not all the design groups and sub-design groups share respective attributes they conform to this general framework of classification and where the potential existed to place one object in multiple ‘super-design groups’ it was placed based on the dominant alignment shown. Sections 5.4.1 to 5.4.5 will discuss each of the five super-design groups.

### 5.4.1 Cross-hatching

Cross-hatching (CH) is the most common super-design group and is ubiquitous across the late Neolithic with a standardised design based on crossed lines. It has three design groups (Table 5-32).

Designs	Count	Total%
Standard (CH)	211	77.3%
Irregular (CH)	37	13.6%
Framed (CH)	25	9.2%
Total	273	100.0%

Table 5-32: Cross-hatching design groups

Standard Sub-Groups	Count	Total%
Diagonal	79	37.4%
Square	70	33.2%
Square & Diagonal	52	24.6%
Triangular	6	2.8%
Unknown	4	1.9%

Table 5-33: Standard (CH) design groups

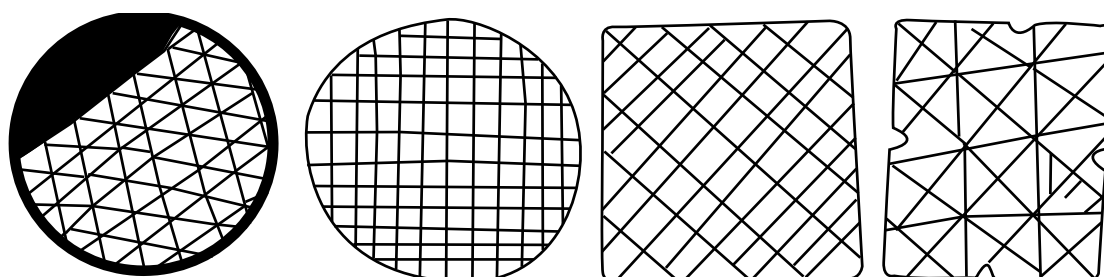


Figure 5-13: From left to right, Triangular (AP-035), Square (AP-057), Diagonal (DZ-051), and Square and Diagonal (CB-018) cross-hatching. Not to scale. (All, © Trustees of the British Museum).

Standard (CH) dominates and is sub-divided into five sub-design groups (Table 5-32). Figure 5-13 shows the variation between the sub-design groups (except unknown) illustrating while the types are technically separate the differences are minor. The most common two types are *square* or *diagonal* which accounts for just over two thirds creating quadrilateral cross-hatching (the middle two in Figure 5-13) while the other two types *triangular* and *square and diagonal* create triangular cross-hatches (left and right in Figure 5-13). True triangular (CH) is very rare with only 6 examples. Square and diagonal (CH) is a combination of square (CH) and diagonal (CH) with the under-lying quadrilaterals clearly visible. It is difficult to say if this distinction is immediately meaningful but it emphasises that there is a low level of internal variation within standard (CH) and it has to



be assumed that visually this group would likely have been recognised as a group, possible with some distinction between quadrilateral and triangular cross-hatching. As a simple point this means that one third of all seals (211 out of 612) have very similar designs.



Figure 5-14: Irregular (CH) Examples. Left DZ-080, Right: GW-002. Not to scale. (L: Courtesy of the Domuztepe project, R: Tobler 1950: Pl. CLXXII. 18).

The next largest cross-hatching design group is Irregular (CH) which has no sub-design groups. It refers to cross-hatched designs without the internal consistency of Standard (CH) or the specificities of Framed (CH) (see below). Many of them, as with the right example in Figure 5-14, are poorly published making interpreting the exact design difficult. The specificity of these designs makes it impossible to know if we are seeing personalised examples, imperfect knowledge, or some other phenomenon. At any rate they are found in such small numbers and are so similar to Standard (CH) that they offer little significant for analysis.

Framed Sub-Groups	Count	Total%
Square & Diagonal	14	56.0%
Metered	8	32.0%
Diagonal	2	8.0%
Mirrored	1	4.0%

Table 5-34: Framed (CH) design groups

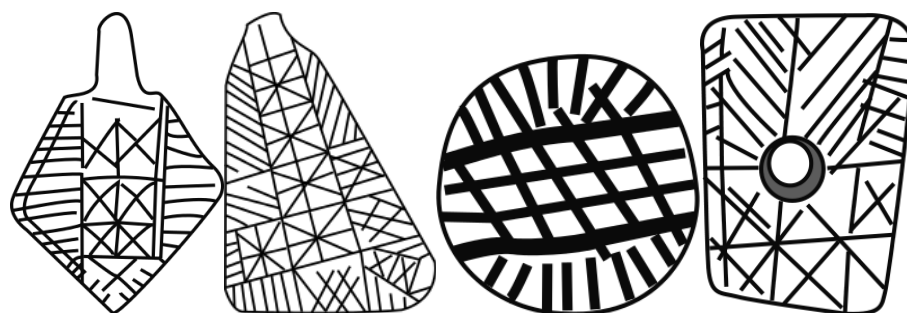


Figure 5-15: Framed (CH) examples. From left to right: Square and Diagonal (AP-061), Metered (AP-049), Diagonal (EK-047), and Mirrored (GW-062). Not to scale. (From left to right: adapted from Mallowan and Rose (1935: Fig. 50.13), © Trustees of the British Museum, courtesy of The Rouj Basin Project 2011, adapted from Tobler (1950: Pl. XCI. 3).

The third design group Framed (CH) is rare but found in small numbers at nearly every major site. It is sub-divided into four groups (Table 5-34) illustrated in Figure 5-15. The defining feature is a cross-hatched design framed or panelled with lines with the sub-design groups differentiating between the type of cross-hatching and character of the framing. They are particularly interesting as there generally appears to be a concern throughout late Neolithic seals with regular designs of single motifs whereas these designs mix motifs. They are however hard to interpret as while present in small numbers at most sites it is unclear if there is a direct link between the Framed (CH) or if they are individual versions of Standard (CH).

Almost half of seals have cross-hatched designs. These cross-hatchings are not very different, although there may have been a distinction between triangular and quadrilateral cross-hatches. All but six of the triangular cross-hatches are made from overlaid square and diagonal cross-hatching and whether this was an attempt to combine two types of design or to create a different type of design is unclear. The chronological and regional variation of cross-hatching will be discussed in section 5.5 and I shall now discuss aligned centre and its design-groups.

## 5.4.2 Aligned Centre

Aligned Centre is the second most common super-design group accounting for over one third of designs. It covers designs which primarily align with the centre of the seal. It is divided into seven design groups, Table 5-35.

Designs	Count	Total%
Lines	69	35.2%
Square and Lines	47	24.0%
Circles	28	14.3%
Quadrants	26	13.3%
Chevrons	14	7.1%
Irregular (AC)	9	4.6%
Rosette	3	1.5%
Total	196	100.0%

Table 5-35: Design groups of aligned centre

	Count	Total%
Lines and Cross	38	55.1%
Lines	9	13.0%
Single Cross	8	11.6%
Lines and Dot	6	8.7%
Centripetal	4	5.8%
Lines and Cross-Circle	2	2.9%
Lines and Circle	2	2.9%

Table 5-36: Sub-design groups of lines



Figure 5-16: Sub-design groups of lines. top: Lines and Cross (DZ-026), Lines (KU-001), Single Cross (AP-032), Lines and Dot (EK-038). bottom: Centripetal (EK-014), Lines and Cross-Circle (RS-010), Lines and Circle (GW-016). Not to scale. (From left to right: courtesy of the Domuztepe Project, reproduced from Braidwood and Braidwood 1960: Fig. 167.1, © Trustees of the British Museum, Courtesy of The Rouj Basin Project 2011, Courtesy of The Rouj Basin Project 2011, adapted from de Contenson 1992: Fig. 133.16, reproduced from Tobler 1950: Pl. LXXXVIII.a 12).

The most common design group is Lines which has seven sub-design groups (Table 5-36, Figure 5-16). It covers designs which are dominated by lines aligned with the centre of the seal with the sub-design groups recognising additional features. *Lines and cross* is the most common and includes a central cross, *lines* has nothing except lines, *single cross* has the cross without the lines, *lines and dot* has a central depression, and *centripetal* has lines rotating around a central depression. *Lines and Cross-Circle* and *Lines and Circle* are specific variations with either a cross or a double circle.

The sub-design groups are quite cohesive although there is a slight distinction between the first three types and the last four types.



Figure 5-17: Sub-design groups of Square and Lines. Clockwise from top: Square and Lines C (UK-020), Square and Lines B (AP-014), Square and Lines D (KH-001), Square and Lines A (DZ-041), Triangle and Lines (JD-017), Circle, Square and Lines (DZ-018). Not to scale. (Clockwise from top: © Trustees of the British Museum, © Trustees of the British Museum, reproduced from Tomas 2011: SpAS 39, courtesy of the Domuztepe Project, courtesy of the Domuztepe Project, reproduced from Braidwood and Braidwood 1960: Fig. 101.5).

Sub-Designs	Count	Total%
Square and Lines (C)	17	36.2%
Square and Lines (B)	13	27.7%
Square and Lines (D)	6	12.8%
Square and Lines (A)	6	12.8%
Circle, Square and Lines	3	6.4%
Triangle and Lines	2	4.3%

Table 5-37: Sub-design groups of square and lines

The second largest design group is Square and Lines. The defining feature is a square around the outside of the seal, normally with a cross and lines converging on the centre of the seal. Square and Lines (A-D) are all variations on this. *S&L C* is the most frequently occurring, *S&L B* has multiple aligned squares around the central cross and less, or no, lines, *S&L D* replaces the lines with cross-hatching, and *S&L A* is a form of C where the outer square aligns closely with the body face. The other two varieties are rare and *Circle, Square and Lines* adds a central double circle and *Triangle and Lines* has triangles instead of squares. The group is interesting as its members represent a coherent whole with considerable internal variety.





Figure 5-18: Circles sub-design groups. From left to Right : Circles with Peripheral Lines (SA-002), Radiating Circles (EK-028), Just Circles (AP-096), no picture exists of the spiral. Not to scale. (From left to right: adapted from Duistermaat 1996: Fig. 5.1.2, courtesy of The Rouj Basin Project 2011, © Trustees of the British Museum, Courtesy of the Domuztepe project).

Sub-Designs	Count	Total%
Circles with Peripheral Lines	17	60.7%
Radiating Circles	5	17.9%
Just Circles	5	17.9%
Spiral	1	3.6%

Table 5-38: Circles sub-design groups

The third group (Circles) is fairly homogenous and predominantly (60.7%) consists of single or double circle motifs surrounded by lines. Most of them have a double circle motif in some form. It is a difficult motif category to classify due to the variation in the design and the emphasis is on objects that are dominated by a circular motif, seals with designs where other motifs dominate are included in other categories.



Figure 5-19: Quadrants sub-design groups. From left to right: Reflected quadrants (DZ-071), rotational quadrants (CH-002), wedged cross (AP-045), and reflected and rotational quadrants (FK-011). Not to scale. (From left to right: courtesy of the Domuztepe project, reproduced from Braidwood and Braidwood 1960: Fig. 379.10, © Trustees of the British Museum, reproduced from Tomas 2011: SpAS 38).

Sub-Designs	Count	Total%
Reflected Quadrants	15	57.7%
Rotational Quadrants	6	23.1%
Wedged Cross	3	11.5%
Reflected and Rotational Quadrants	2	7.7%

Table 5-39: Quadrants sub-design groups

Quadrants are an unusual group as it is partially defined by the symmetry of the design as opposed to motif type. As such designs within the sub-design groups vary in

their motif similarity but all have the same symmetry types. *Reflected Quadrants*, *Rotational*, and *Reflected and Rotational Quadrants* are simple in that they have either reflected, rotational, or both types of symmetry. The final group, *Wedged Cross*, is an exclusively early Ubaid design found at Tepe Gawra and Arpachiyah. It is one of the designs that appears to continue into the late Ubaid, at Gawra at least, and it is very uncertain if it is really late Neolithic, the Arpachiyah example (Figure 5-19) is unstratified and the two Gawra examples come from the level 'XIII – Well' which cut through earlier material but is difficult to date stratigraphically. They have been assumed to be late Neolithic but the use of deeply cut wedges is unusual.

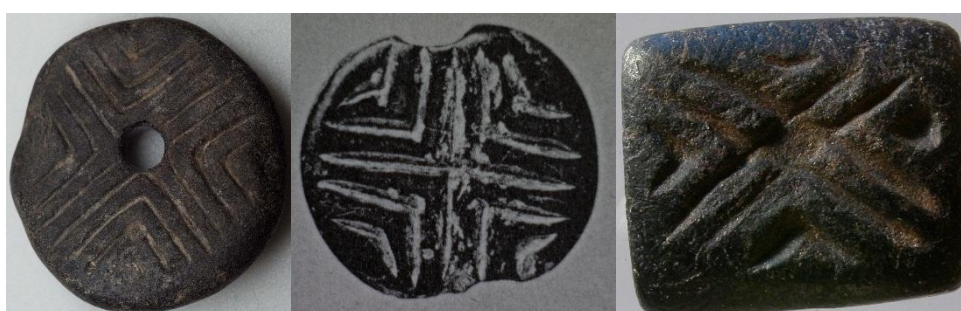


Figure 5-20: Chevrons sub-design group. From left to right: Three chevrons + (AT-002), Few chevrons (GW-012), Chevrons with triangles (DZ-067). Not to scale. (From left to right: © Trustees of the British Museum, reproduced from Tobler (1950: Pl. CLIX. 20), Courtesy of the Domuztepe project).

Sub-Designs	Count	Total%
Three Chevrons +	9	64.3%
Few Chevrons	3	21.4%
Chevrons with Triangles	2	14.3%

Table 5-40: Chevrons sub-design groups

Chevrons are a very cohesive group consisting of a central cross with V shapes (chevrons) in quadrants aligning with the centre of the seal. There are three sub-design groups, *three chevrons +* covers seals with at least three chevrons (not including any central cross), *few chevrons* have one or two chevrons (and potentially a central cross). The final group has triangular cut wedges for the outer chevron. There is no reason to assume the differences are meaningful and it is to be assumed that seals of this design group could represent a single distinct group.



Figure 5-21: Irregular (AC) (CB-003). (Courtesy of the Domuztepe project ©)

*Irregular (AC)* covers objects where the designs are clearly aligned centre but do not fit any of the other groups. Figure 5-21 shows an example of this group. I imagine further examples of many of these irregular examples (or related examples) will be found in future excavations enabling them to move into their own sub-design groups.



Figure 5-22: Rosette Seals (From left to right: DZ-039, DZ-151, YK-008. Not to scale. (Left and Middle: Courtesy of the Domuztepe project, Right: reproduced from Caneva and Köroğlu 2010: Fig. 30).

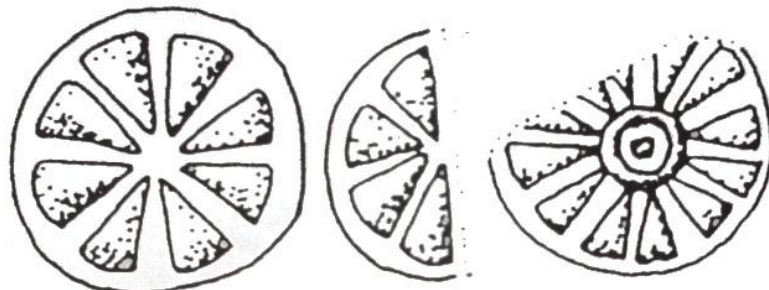


Figure 5-23: Tell Sabi Abyad sealing type F. (Adapted from Duistermaat 1996: Fig. 5.4).

Rosettes are a rare but interesting design group providing almost the only parallel between general late Neolithic seals and the designs at Tell Sabi Abyad. There are two examples from Domuztepe and one from Yumuktepe. Figure 5-23 shows design type F from Sabi Abyad illustrating the similarity. Interestingly the examples from Domuztepe date to around 500 years after the sealings from Tell Sabi Abyad and the Yumuktepe example is from loosely the same period. The design is rare at Tell Sabi Abyad with only 6 examples (of 300) (Duistermaat 1996: 354) and rare in the wider late Neolithic suggesting it may represent the use of seals from the wider late Neolithic within the localised practices at Tell Sabi Abyad or vice versa.

### 5.4.3 Central Focus

Central focus is the least common main super-design group representing only about one sixth of seals. It is divided into 6 design groups, Table 5-41, with unequal distribution. It is defined by designs which are either divided along the middle of the object or metered into panels. Many of the motifs are shared with aligned centre and cross-hatching with only diamonds as a totally 'unique' design group. These similarities reinforce that while the designs vary in alignment the overall range of seal motifs is limited.

Designs	Count	Total%
Lines	74	74.0%
Cross-hatching (CF)	12	12.0%
Chevrons	10	10.0%
Diamonds	3	3.0%
Quadrants	1	1.0%
Total	100	100.0%

**Table 5-41: Central Focus design groups**

Sub-Designs	Count	Total%
Angled Divided	24	32.4%
Square Divided	15	20.3%
Parallel	10	13.5%
Vertical and Horizontal	7	9.5%
Vs	5	6.8%
Angled Metered	4	5.4%
Diamond Parallel	3	4.1%
Single	2	2.7%
Screw	2	2.7%
Parallel Divided	2	2.7%

**Table 5-42: Lines sub-design groups**

The most common design group 'lines' is subdivided into ten sub-design groups defined by the relative alignment of their lines. These are pictured in Figure 5-24 which illustrates the differences between the different groups. While there are a lot of sub-design groups the variation is only in how the lines are arranged in various linear patterns.





Figure 5-24: Sub-design groups of lines. Clockwise from top left: angled divided (DZ-020), square divided (EK-058), parallel (EK-010), vertical and horizontal (DZ-011), parallel divided (CV-004), screw (DZ-016), single (EK-061), diamond parallel (AP-123), angled metered (GW-020a), Vs (AP-023). Not to scale. (Clockwise from top left: courtesy of the Domuztepe project, courtesy of The Rouj Basin Project 2011, courtesy of The Rouj Basin Project 2011, courtesy of the Domuztepe project, adapted from von Wickede 1990: No. 193), courtesy of the Domuztepe project, courtesy of The Rouj Basin Project 2011, courtesy of UCL Institute of Archaeology 2011, adapted from Tobler 1950: Pl. CLXI. 48, © Trustees of the British Museum).

The second most common group is ‘cross-hatching (CF)’ and covers designs that are divided versions of cross-hatching. It is divided into three groups with typical examples in Figure 5-25. Divided and metered have multiple panels of cross-hatching divided by parallel lines. Surrounding lines has a central panel of cross-hatching along the middle of the object with surrounding lines.

Sub-Designs	Count	Total%
Divided	7	58.3%
Surrounding Lines	3	25.0%
Metered	2	16.7%

Table 5-43: Cross-hatching (CF) sub-design groups



Figure 5-25: Sub-designs of cross-hatching (CF). From left to right: divided (DZ-047), surrounding lines (KU-017), metered (GW-038). Not to scale. (From left to right: courtesy of the Domuztepe project, adapted from Yener et al 1999: Fig. 17.21 & Pg. 66-67, adapted from Tobler 1950:Pl. CLXXII. 20).

The third most common group is chevrons and includes designs with the same V shaped incisions as aligned centre-chevrons but arranged differently. It is divided into three sub-design groups illustrated below. Four of the *divided* examples are fragmentary sealings of the same or a very similar seal from Domuztepe. The fragments come from different contexts within the site and therefore probably represent more than one sealing. They have to be therefore treated as four separate objects.

Sub-Designs	Count	Total%
Divided	7	70.0%
Parallel	2	20.0%
Metered	1	10.0%

Table 5-44: Chevrons sub-designs



Figure 5-26: sub-design groups of Chevrons. Left: divided (DZ-150a), Middle: parallel (EK-027), Right: metered (UK-006). Not to scale. (L: courtesy of the Domuztepe project, M: courtesy of The Rouj Basin Project 2011, R: © Trustees of the British Museum).

The final two groups diamonds and quadrants are very rare. The single example of *quadrants* is rotational, as in aligned centre, but with only a single middle division, left in Figure 5-27. The three examples of diamonds are divided into two *divided* and one *metered*. Both *divided* are from the site of Judaidah (right example in Figure 5-27) and may be fragments of the same object although their context is unclear. The *metered* is from Domuztepe (left in Figure 5-27) and the motif in the middle of the object (resembling an ankh) is unique in the seal glyptic. Interestingly all three examples are also ‘plaques’ suggesting they are not actually seals. As discussed earlier plaques rarity makes interpretation difficult.

Sub-Designs	Count	Total%
Divided	2	66.7%
Metered	1	33.3%

**Table 5-45: Diamonds sub-designs.**

Sub-Designs	Count	Total%
Rotational (2)	1	100.0%

**Table 5-46: Quadrants sub-designs.**



**Figure 5-27: Sub-design groups of Diamonds and Quadrants. Left: Quadrants-Rotational (YK-006), Middle: Diamonds-Metered (DZ-031) and Right: Diamonds-Divided (JD-007). Not to scale. (L: Reproduced from Caneva and Köroğlu 2010: Fig. 33, M: courtesy of the Domuztepe project, R: Reproduced from Braidwood and Braidwood 1960: Fig.66.6).**

#### 5.4.4 Figurative

There are 27 ‘figurative’ seals. Eighteen of these are anthropomorphic and nine are zoomorphic. Table 5-47 shows the sites these objects are from and Table 5-48 summarises the design groups and sub-design groups.

Naturalistic seal sites		Count	Total%
Animal	Tepe Gawra	5	55.6%
	Domuztepe	2	22.2%
	Yarim Tepe III	1	11.1%
	Unknown	1	11.1%
Human	Arpachiyah	16	88.9%
	Domuztepe	1	5.6%
	Tell Barri	1	5.6%

**Table 5-47: Figurative seals and sites**

Designs and Sub-Designs		Count	Total%
Animal	Quadruped	9	100.0%
Human	Foot	1	5.6%
	Hand	17	94.4%

**Table 5-48: Designs and sub-designs of figurative seals**

The classification of the seals with anthropomorphic designs was difficult due to the subjective nature of the category involved. Figure 5-28, Figure 5-29, and Figure 5-30 show the anthropomorphic seals, the question is whether the designs are deliberately anthropomorphic or whether the shapes are with standard geometric designs. BR-001 is convincingly a foot shaped design (it has toes) but it is unclear if DZ-012 is hand lines or



cross-hatching on a hand-shaped seal, the lines are deepest at the finger 'joints' but it is distinctly unclear. The remaining 16 hand-designed seals are on impressions from Tell Arpachiyah (Figure 5-30 is one of the better preserved examples). It is clear all the impressions have the same hand shape but the preservation and publication of the impressions is inadequate to know if they all have the same design. From what can be reconstructed of the design, see Figure 5-31 for von Wickede's reconstruction, the fingers are marked but the central star like pattern is more ambiguous and does not conclusively relate to any patterns on the hand. As such, while I have treated them as anthropomorphic designs there is the potential for re-assessment.

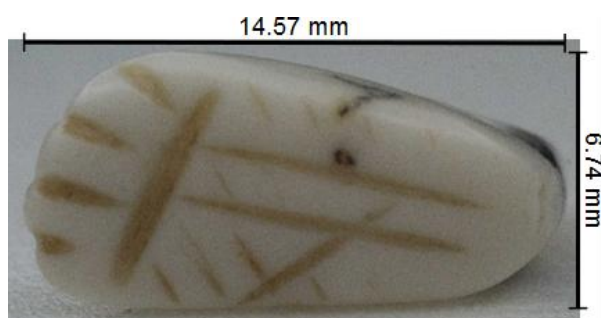


Figure 5-28: Foot from Tell Barri (BR-001) (© Trustees of the British Museum).

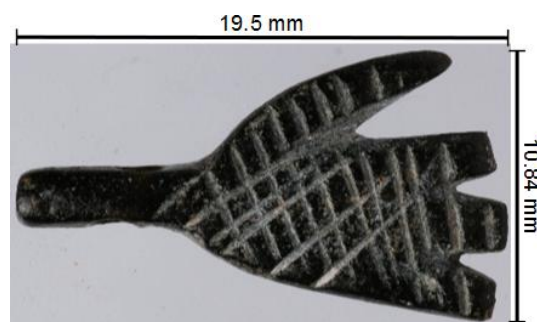


Figure 5-29: Hand from Domuztepe (DZ-012) (Courtesy of the Domuztepe project).



Figure 5-30: Hand from Arpachiyah (AP-165) (Courtesy of UCL Institute of Archaeology 2011).



Figure 5-31: Reconstructed hand from Arpachiyah (Adapted from von Wickede 1991:Fig. 1.1).

Anthropomorphic seals are interesting but rare making it difficult to relate them to the rest of the late Neolithic glyptic. They may tell of an association between creating impressions and human hands and feet but without wider evidence it is hard to theorise. The Arpachiyah examples are also found impressed in large numbers, up to eighteen times, on the impressed sealings – beyond what would be necessary for identification purposes. This might relate to specific events at Arpachiyah relating to the Burnt House and will be discussed in the next chapter where the action of sealing is analysed.

There are nine seals with zoomorphic designs most of which (five) come from Tepe Gawra. Tepe Gawra's stratigraphy makes it difficult to know the exact period objects come from but four appear to be Early Ubaid and one is Halaf. The Yarim Tepe III seal comes from the Halaf-Ubaid Transitional, one of Domuztepe examples is late Pottery Neolithic (DZ-200) and the other is late Halaf (DZ-129). From the late Ubaid onwards almost all seals have zoomorphic designs and their rarity in the late Neolithic is one of the key reasons for a disjunction in glyptic styles between the Early and Late Northern Ubaid. Tell Sabi Abyad, in the Balikh, does have zoomorphic designs that date to the late Pottery Neolithic (Figure 5-34) but, as is detailed in section 6.6.5, come from a context without concrete associations with the wider late Neolithic glyptic.

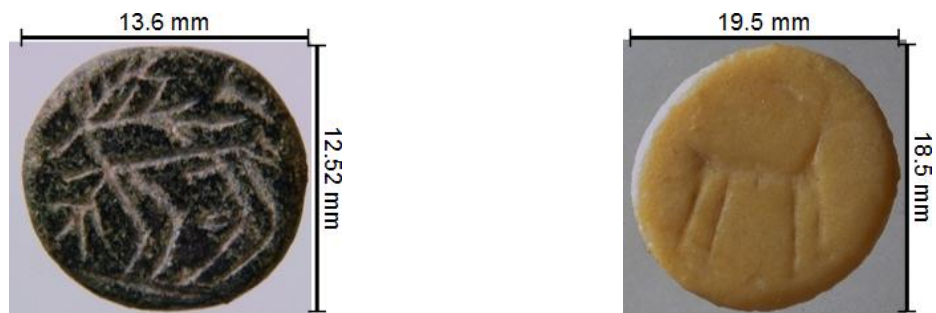


Figure 5-32: Domuztepe (left: DZ-100, right: DZ-129) (Courtesy of the Domuztepe project).

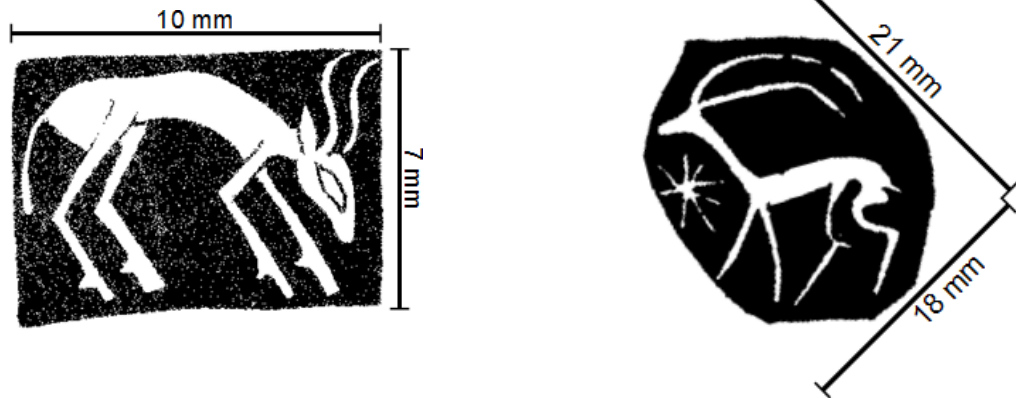


Figure 5-33: Tepe Gawra (left: GW-030A, right: GW-028) (L: Adapted from Tobler 1950: Pl. CLXVI. 123, R: Adapted from Tobler 1950: Pl. CLXIV. 103).

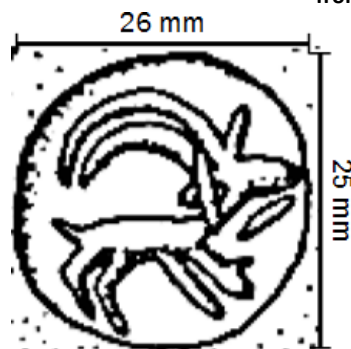


Figure 5-34: Animal from Tell Sabi Abyad (Adapted from Akkermans and Duistermaat 1996: Pg. 23 No. 2).

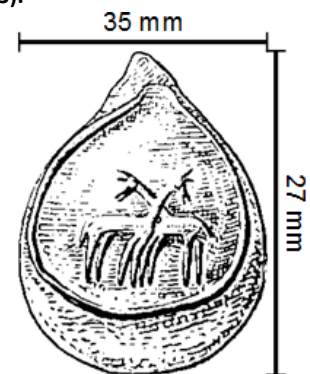


Figure 5-35: Yarim Tepe III (YT-033) (Adapted from Merpert and Munchaev 1993b: Fig. 9.30).

As with the seals with anthropomorphic design these seals are too rare to interpret or analyse stylistically and while it seems likely that they are predecessors of the design types that dominate the Late Ubaid it is clear they were unimportant to the glyptic of the late Neolithic.

#### 5.4.5 Irregular

There are eighteen irregular objects from the late Neolithic. Fourteen of these have totally unique designs and four have 'random lines' with no internal organisation. It is likely the former 14 are not truly unique designs and further examples will no doubt come to light as study continues. Figure 5-36 and Figure 5-37 show examples of the two types.

Ultimately they offer little to the overall debate around seals except to reinforce the incompleteness of the sample, and more importantly to illustrate how standardised late Neolithic seals are as only 2.9% cannot be fitted into a clear grouping.



Figure 5-36: 'random lines' example (AP-022) (© Trustees of the British Museum).



Figure 5-37: 'unique' example (EK-007) (Courtesy of The Rouj Basin Project 2011).

#### 5.4.6 Conclusion

Having outlined the different design groups above it should be clear that there are strong parallels at a macro-level with considerable variation within the specifics of the different design. The motif variety is limited and there are no designs, except possibly figurative, that do not fit the over-arching geometric nature of the glyptic. I do not mean to suggest that people in the late Neolithic would have classified the designs in the same way, but it does suggest that our artificial category of seal might reflect a recognisable category of object in the late Neolithic.



Figure 5-38: Union Flag playing card. © Leo Reynolds 2013. Available at <http://www.flickr.com/photos/lwr/7377200004/>. Accessed 6/10/13

Before moving onto analysing how the designs are organised in time and space it is worth discussing what I mean by limited variability. By this I am referring to a limited effective variability with regard to any individual seal being rapidly visually distinctive. The concept has received little explicit consideration in archaeology. This relates to the research discussed in chapter four (Labov (2004) in particular) where there is a continuum of categorisation, and visually an object can be categorised as the same symbol even when it is not in a defined normative form. For example, the Union Flag is instantly recognisable on the playing card, in Figure 5-38, thus having limited effective variability, even though it is not actually the Union Flag as the St Patrick's and St Andrew's crosses are not rotating and it is therefore technically varied. I do not argue there is limited technical variability as I am not aware of any two seals being physically identical, but given that seals are hand-made, presumably as individual items, for seals to be precisely identical is unlikely. My categorization relies on the concept that the symbols would be instantly recognisable, even if not technically the same. 88% of stamp seals are circular, oval, square or rectangular. 75% are brown, green, or black. Over 40% of seals have quadrilateral cross-hatching. While there are a lot of individual different examples, most would have been visually recognisable as belonging to a limited variety of symbols.

The next section will look at how the designs are organised in time and space.

## 5.5 Regional and Chronological relation to design

### 5.5.1 Geographical Spread

This section will analyse the geographical spread of seal designs to elucidate regional patterns. The analysis in this section focuses on the three main super-design groups (cross-hatching, aligned centre, central focus). Design groups and sub-design groups are discussed in 5.5.3.

Table 5-49 shows the super-design groups by modern country. Each country has similar percentages of central focus designs and Turkey and Syria have similar percentages of cross-hatching (41.6% in Turkey and 43.9% in Syria) and aligned centre designs (38.8% in Turkey and 37.6% in Syria). In Iraq cross-hatching (58.5%) is much more common than aligned centre (26.8%). This suggests a clear regional divide but the relative percentages in the regions within countries makes the picture considerably more complicated as summarised in Table 5-50.

	Cross-hatching		Aligned Centre		Central Focus		Total	
	Count	Row%	Count	Row%	Count	Row%	Count	Row%
Turkey	89	41.6%	83	38.8%	42	19.6%	214	100.0%
Iraq	107	58.5%	49	26.8%	27	14.8%	183	100.0%
Syria	69	43.9%	59	37.6%	29	18.5%	157	100.0%
Unknown	8	44.4%	8	44.4%	2	11.1%	18	100.0%
Total	273	47.7%	199	34.8%	100	17.5%	572	100.0%

**Table 5-49: Countries by super-design groups**

		Cross-hatching		Aligned Centre		Central Focus	
		Count	Row%	Count	Row%	Count	Row%
Turkey	Kahramanmaraş	41	35.7%	50	43.5%	24	20.9%
	Amuq	27	51.9%	16	30.8%	9	17.3%
	Şanlıurfa	17	51.5%	13	39.4%	3	9.1%
	Mersin			4	40.0%	6	60.0%
	Diyarbakır	3	100.0%				
	Gaziantep	1	100.0%				
Iraq	Ninawa	89	57.8%	41	26.6%	24	15.6%
	Sinjar	14	56.0%	8	32.0%	3	12.0%
	Arbil	3	100.0%				
	Kirkuk	1	100.0%				
Syria	Idlib	30	41.7%	28	38.9%	14	19.4%
	Al Hasakah	17	43.6%	16	41.0%	6	15.4%
	Latakia	11	47.8%	7	30.4%	5	21.7%
	Al Raqqah	10	52.6%	6	31.6%	3	15.8%
	Damascus	1	25.0%	2	50.0%	1	25.0%
Unknown	Unknown	8	44.4%	8	44.4%	2	11.1%

**Table 5-50: Countries and regions by super-design groups**



Table 5-50 shows many regions do not match the country distributions. Iraq's regions largely fit the distribution. In Turkey Amuq and Şanlıurfa have considerably more cross-hatching than aligned centre seals while Kahramanmaraş is the only region with more than four seals where there are more aligned centre designs than cross-hatching. Only Idlib and Al Hasakah matches Syria's distribution with loosely similar amounts of cross-hatching and aligned centre while Latakia and Al Raqqah have considerably more cross-hatching than aligned centre designs. This diversity is even more complicated at the site level as Figure 5-39 shows. The pie charts show the three sites with the most seals in each country.

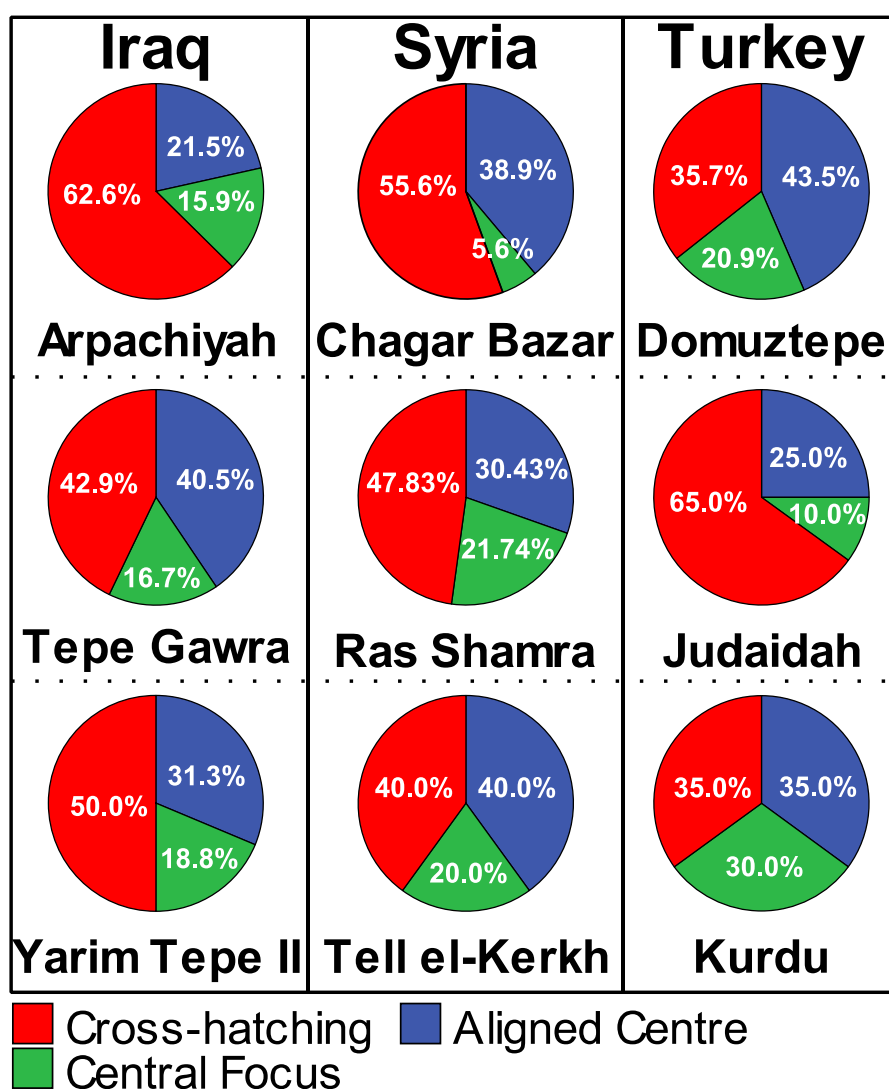


Figure 5-39: Pie Charts showing the three most common super-design groups at main sites. (Author's copyright)

Essentially the country and regional variations are not visible at a site level. While Yarimtepe II and Arpachiyah have considerably more cross-hatching than aligned centre designs Tepe Gawra does not. Within Syria, Chagar Bazar has an unusually low level of

central focus designs, Ras Shamra is similar to Arpachiyah and only Tell el-Kerkh resembles the national distribution. Within Turkey, Domuztepe has more aligned centres than cross-hatching designs while Judaidah is the opposite with many more cross-hatching than aligned centre designs.

This is unsurprising to a certain extent as both countries and regions have no archaeological reality but it is interesting that in contrast to the morphology no clear geographical patterns are visible. Instead there are similarities that cut across regional divides and strong elements of localism. That Tepe Gawra, only a few km from Arpachiyah, can have quite different percentages of design types suggests to me we are seeing evidence that seal designs cut across site level cultural units and are united at a supra-regional level where they do not unite local communities, but instead connect people and groups across the late Neolithic world.

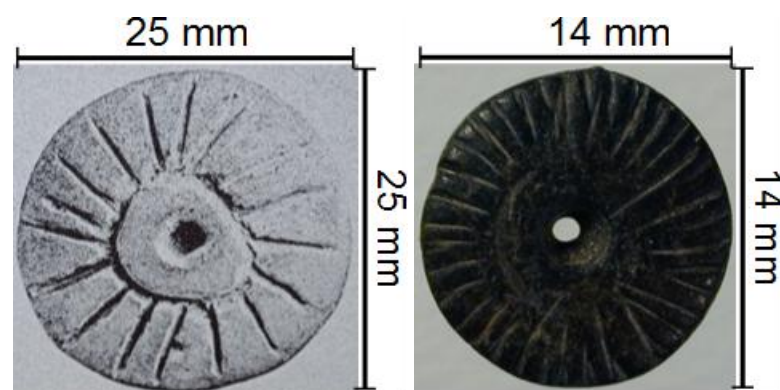


Figure 5-40: Lines and circle. GW-016 (left), DZ-117 (right). (L: Adapted from Tobler 1950: Pl. LXXXVIII.a 12, R: Courtesy of the Domuztepe project 2012.

This is no great surprise. For example Figure 5-40 shows the two examples of *Aligned Centre – Lines – Line and Circle* designs, one from Tepe Gawra and one from Domuztepe. Geographically these two sites lie at opposite ends of my study yet are the only two seals from the late Neolithic to share this specific design. Unless coincidence can explain the visually similar character of seal designs found across the late Neolithic this similarity is hard to explain by anything except a common symbolic language at a supra-regional level. This concept of a shared symbolic language will form the basis of the interpretation and analysis in the following two chapters. I shall now look at the chronological changes in overall seal design before looking more specifically at the variation within the super-design groups.

## 5.5.2 Chronology

Chronologically it is difficult to compare the designs over time as over two thirds of seals date to the Halaf. Table 5-51 and Figure 5-41 shows the counts and percentages of cross-hatching, aligned centre, and cross-hatching in the three main periods. It illustrates that the periods are quite similar but there is clearly a fall in the amount of central focus designs and a rise in cross-hatching designs during the Halaf. The change is only about 5% and may primarily reflect the smaller samples of Pottery Neolithic and Ubaid objects. Statistically the null hypothesis that the distribution in each period is not dissimilar passes a Pearson's chi goodness of fit test at 0.05 significance with a p-value of 4.864 at 4 degrees of freedom (asyp sig 0.302). At the super-design group level this means that each of the three main periods has much the same types of design within them.

	Cross-hatching		Aligned Centre		Central Focus		Total	
	Count	Row%	Count	Row%	Count	Row%	Count	Row%
Pottery Neolithic	53	44.2%	40	33.3%	27	22.5%	120	100.0%
Halaf	187	49.5%	133	35.2%	58	15.3%	378	100.0%
Ubaid	25	42.4%	20	33.9%	14	23.7%	59	100.0%

Table 5-51: Number of objects from each 'period'.

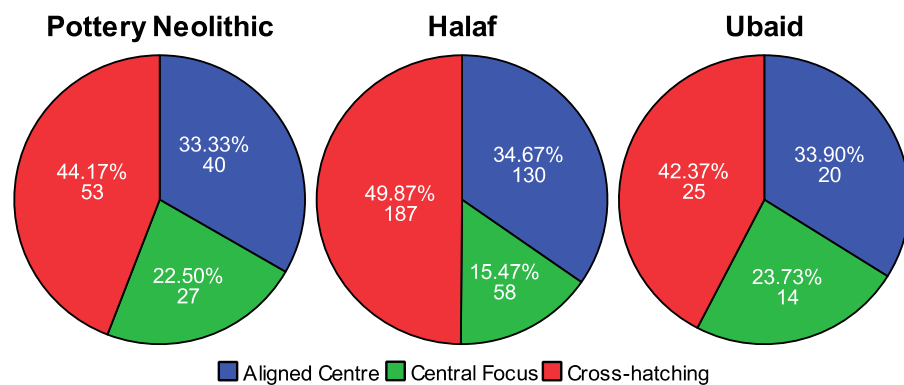


Figure 5-41: Main Periods, main super-design groups (Author's copyright).

This is reinforced when cross-referenced geographically, Figure 5-42, where the differences discussed in section 5.5.1 are visible. The predominance of cross-hatching at Arpachiyah is clearly visible during the Halaf period in Iraq but the more balanced division of aligned centre and cross-hatching designs at Tepe Gawra in the Ubaid is also visible. This suggests to me that while there is considerable localised distinction in the morphological types the stasis in the design suggests that the designs relate to supra-regional identities.

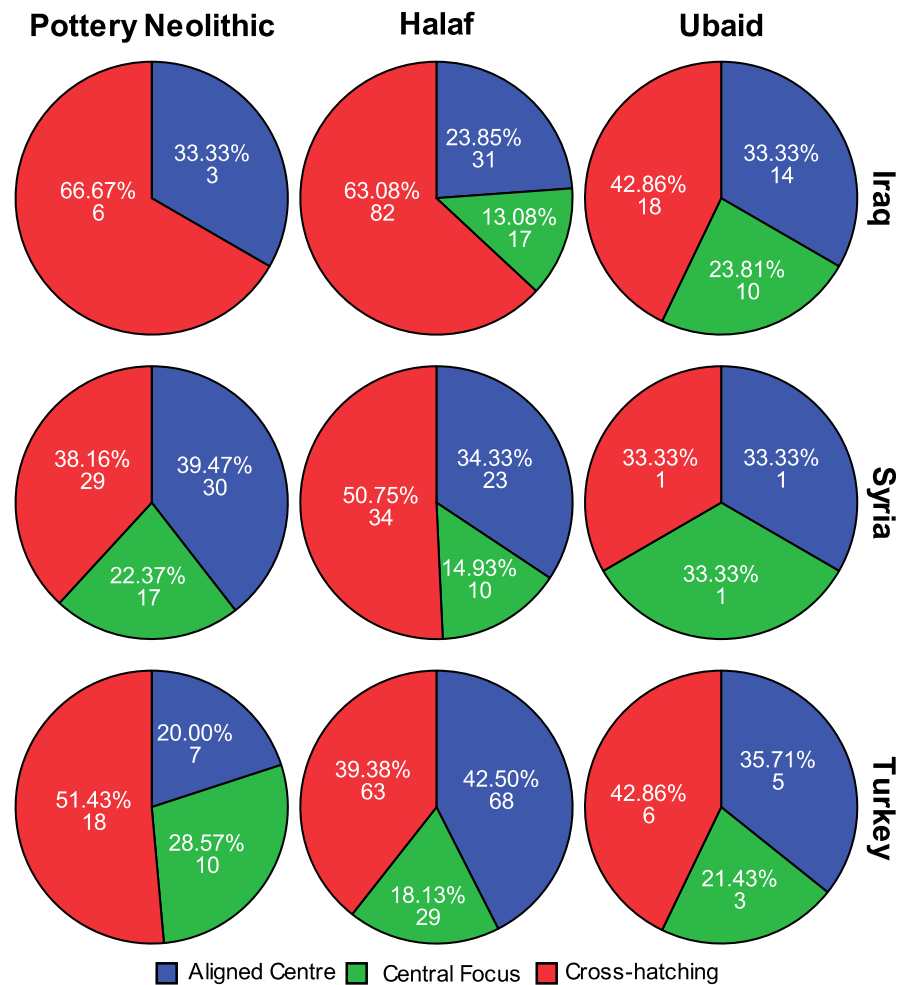


Figure 5-42: Pie charts showing main three design groups compared by period and modern country (Author's copyright).

Essentially this illustrates that most designs appear fully 'formed' and continue without much change until the Late Ubaid. There are six Pre-Pottery Neolithic seals but they are essentially very typical with normal designs (four cross-hatching, one aligned centre, and one central focus) suggesting we do not have the earliest phases of seals as there no evident developmental phases.

Having analysed the super-design groups I will now look at chronological and geographical variation within these groups.

### 5.5.3 Design and Sub-Design analysis

Analysing the specifics of the design groups and sub-design groups is challenging because many are rare, especially the sub-design groups. This limits what can be said about the development of specific design types over space and time as it is difficult to identify statistically significant patterns. Only standard (CH) cross-hatching has reliably big enough groups to comment on statistically and I will discuss it below. For aligned centre and central focus I will primarily provide tables illustrating the difficulty of analysing the groups with minor commentary.

#### 5.5.3.1 Cross-hatching

There are 265 seals from Iraq (107), Syria (69) or Turkey (89) with cross-hatched designs. Geographically Syria and Turkey have very similar amounts of the different design groups while Iraq has about 10% less standard (CH) and 10% more framed (CH) (Table 5-52).

There are 24 framed cross-hatched seals from the late Neolithic, ten of which come from Tell Arpachiyah and four come from Tepe Gawra (60.9% of the 24) with no other site having more than one example. Chronologically there are similar amounts of framed (CH) in both the Halaf and the Ubaid with a smaller amount in the Pottery Neolithic (Table 5-53). The sample size is too small too reliably form chronological conclusions, there are only 53 cross-hatched objects from the Pottery Neolithic and 25 from the Ubaid as a whole. The large amount of framed (CH) at Tell Arpachiyah however may relate primarily to the nature of the context. The 'burnt house' is a unique deposit and one of the few closed contexts in my thesis suggesting it may have had 'abnormal' (or

Design groups	Iraq		Syria		Turkey	
	Count	Total%	Count	Total%	Count	Total%
Standard (CH)	74	69.2%	56	81.2%	76	85.4%
Irregular (CH)	17	15.9%	9	13.0%	10	11.2%
Framed (CH)	16	15.0%	4	5.8%	3	3.4%

**Table 5-52: The amount of cross-hatched seals design groups in each country.**

Design groups	Pottery Neolithic		Halaf		Ubaid	
	Count	Total%	Count	Total%	Count	Total%
Standard (CH)	50	94.3%	130	72.6%	19	76.0%
Irregular (CH)	2	3.8%	30	16.8%	3	12.0%
Framed (CH)	1	1.9%	19	10.6%	3	12.0%

**Table 5-53: The amount of cross-hatched seal design groups in main periods.**

technically more normal and less average) relative types of seals. It may reflect the specific events involved in the burning of the site. These events will be discussed in section 6.6.3.1 of the next chapter.

Irregular (CH) has a roughly similar percentage in both the Ubaid and the Halaf with a smaller amount in the Pottery Neolithic. Iraq, Syria, and Turkey all have similar percentages of irregular cross-hatching and it is clear that for the large part irregular cross-hatching was found at a low level across the late Neolithic. The lower number of irregular (CH) in the Pottery Neolithic probably relates to sample size, as does the exceptionally high percentage of standard (CH). Within the sub-design groups of standard (CH) however a clear pattern is apparent. Square and diagonal cross-hatching develops as a common design between the Pottery Neolithic and the Halaf.

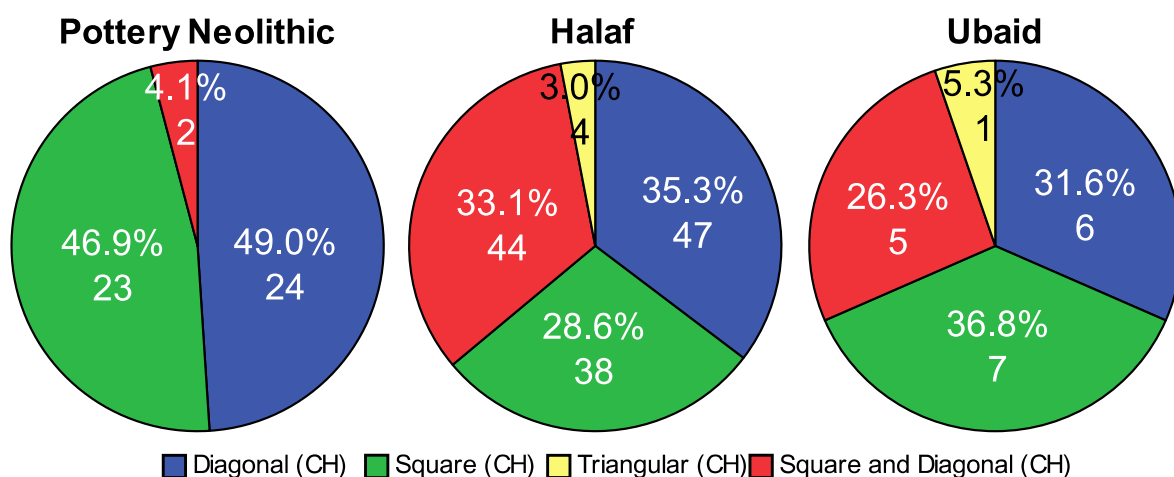


Figure 5-43: Charts showing Standard (CH) over time. Does not include three Unknown (CH), one from the Pottery Neolithic and two from the Halaf (Author's copyright).

Figure 5-43 shows this change clearly illustrating a shift from predominantly diagonal (CH) (49%) and square (CH) (46.9%) cross-hatching in the Pottery Neolithic to diagonal (CH) (35.3%), square (CH) (28.6%) and square and diagonal (CH) (33.1%) cross-hatching in the Halaf with this tripartite distribution continuing into the Ubaid.

Square and diagonal (CH), Figure 5-44, creates triangular cross-hatches. As mentioned in section 5.4.1 this is either a combination of square (CH) and diagonal (CH) or an active attempt to create triangular cross-hatches. When cross-referenced geographically the pattern remains much the same. Table 5-54 illustrates this showing there is a clear rise in square and diagonal (CH) at the expense of square (CH) and diagonal (CH) in Iraq and Syria. In Turkey the rise in square and diagonal (CH) is largely at the expense of square (CH) and diagonal (CH) actually increases slightly. However the

Pottery Neolithic samples are small generally and this difference may possibly be accident of preservation or localised tradition since Turkey is also the only country with any square and diagonal (CH) in the Pottery Neolithic.

		Diagonal (CH)		Square (CH)		Square and Diagonal (CH)	
		Count	Row%	Count	Row%	Count	Row%
Iraq	Pottery Neolithic	3	50.0%	3	50.0%		
	Halaf	17	34.0%	16	32.0%	17	34.0%
	Ubaid	3	23.1%	5	38.5%	5	38.5%
Syria	Pottery Neolithic	16	59.3%	11	40.7%		
	Halaf	9	40.9%	6	27.3%	7	31.8%
	Ubaid	1	100.0%				
Turkey	Pottery Neolithic	5	31.2%	9	56.2%	2	12.5%
	Halaf	18	34.6%	15	28.8%	19	36.5%
	Ubaid	2	50.0%	2	50.0%		

Table 5-54: Square (CH), diagonal (CH), and square and diagonal (CH) over time and space



Figure 5-44: Square and diagonal (CH). (AP-036). (© Trustees of the British Museum).

The reasons for this change are not apparent and I will discuss possible social significance in section 5.6. I would suggest however that it is a combination not an entirely new type. The underlying quadrilateral base is clear and as they were aware of how to make purely triangular cross-hatches they could have chosen to.

### 5.5.3.2 Aligned Centre

There are regional variations and chronological variations within the design groups of Aligned Centre. Figure 5-45 shows pie charts showing the differences in the three countries over time with the same data shown in Table 5-55. It is immediately apparent that none of them are particularly similar even within periods. As discussed in the previous section there is considerable variation in the amount of different design groups across chronological period and geographical region. There is no strong patterning to aligned centre design groups across the late Neolithic with the relative percentages of different types of design fluctuating on a site by site basis. Most design groups are found in most countries or regions at some chronological point with no discernible patterning.

		Iraq		Syria		Turkey	
		Count	Total%	Count	Total%	Count	Total%
Pottery Neolithic	Lines	1	33.3%	15	50.0%	3	42.9%
	Square and Lines	1	33.3%	4	13.3%		
	Circles			5	16.7%		
	Quadrants			4	13.3%	2	28.6%
	Chevrons	1	33.3%	1	3.3%		
	Irregular (AC)			1	3.3%	1	14.3%
	Rosette					1	14.3%
	Total	3	100.0%	30	100.0%	7	100.0%
Halaf	Lines	17	53.1%	6	24.0%	14	20.6%
	Square and Lines	10	31.2%	4	16.0%	26	38.2%
	Circles	3	9.4%	8	32.0%	8	11.8%
	Quadrants			4	16.0%	8	11.8%
	Chevrons			1	4.0%	8	11.8%
	Irregular (AC)	2	6.2%	2	8.0%	2	2.9%
	Rosette					2	2.9%
	Total	32	100.0%	25	100.0%	68	100.0%
Ubaid	Lines	5	35.7%			3	60.0%
	Circles	3	21.4%			1	20.0%
	Quadrants	5	35.7%	1	100.0%	1	20.0%
	Irregular (AC)	1	7.1%				
	Total	14	100.0%	1	100.0%	5	100.0%

Table 5-55: Design groups of aligned centre over modern country and culture-historical period.

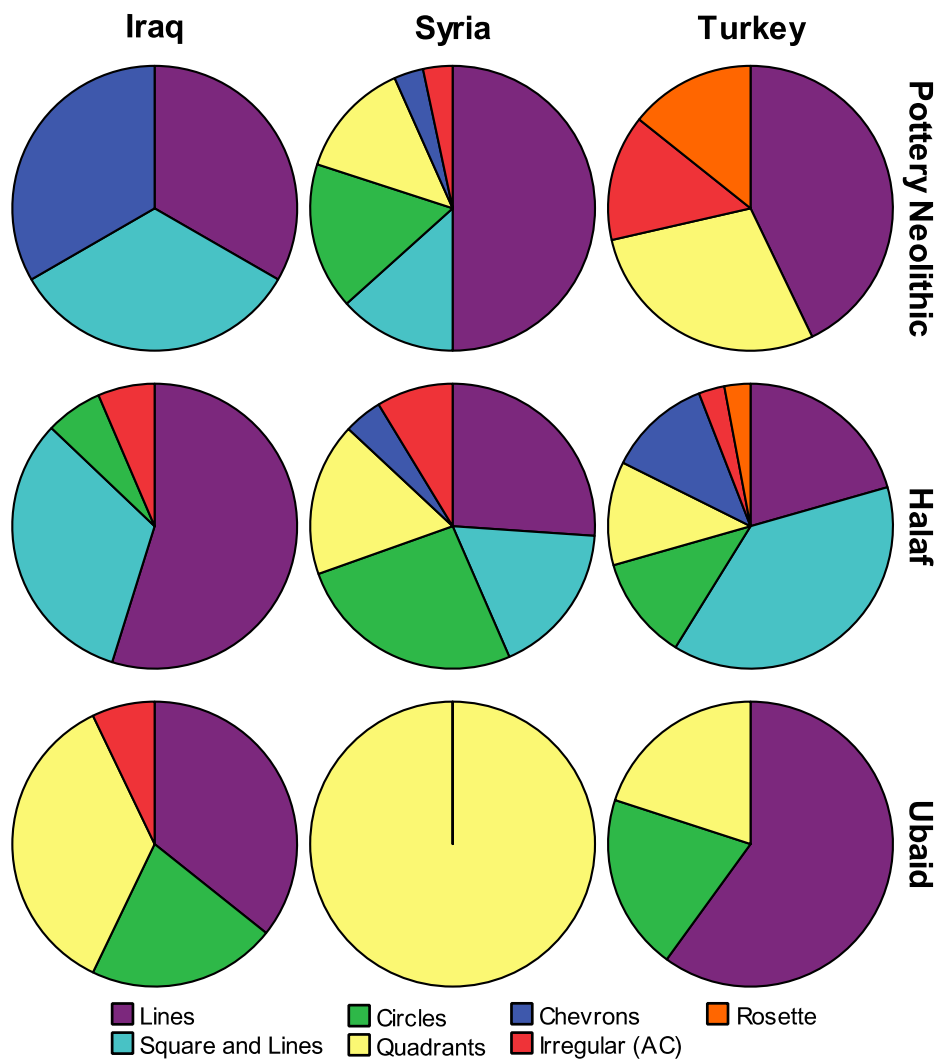


Figure 5-45: Pie charts showing aligned centre design groups regionally and chronologically (Author's copyright).



Design groups and sub-design groups		Pottery Neolithic		Halaf		Ubaid	
		Count	Total%	Count	Total%	Count	Total%
Lines	Centripedal	3	15.8%			1	12.5%
	Lines			8	21.6%	1	12.5%
	Lines and Circle			1	2.7%	1	12.5%
	Lines and Cross	12	63.2%	18	48.6%	4	50.0%
	Lines and Cross-Circle			2	5.4%		
	Lines and Dot	2	10.5%	3	8.1%	1	12.5%
	Single Cross	2	10.5%	5	13.5%		
Square and Lines	Circle, Square and Lines			3	7.5%		
	Square and Lines (A)			6	15.0%		
	Square and Lines (B)	2	40.0%	11	27.5%		
	Square and Lines (C)	2	40.0%	14	35.0%		
	Square and Lines (D)			6	15.0%		
	Triangle and Lines	1	20.0%				
Quadrants	Reflected and Rotational Quadrants			2	16.7%		
	Reflected Quadrants	2	33.3%	8	66.7%	4	57.1%
	Rotational Quadrants	4	66.7%	2	16.7%		
	Wedged Cross				68.8%	3	42.9%
Circles	Circles with Peripheral Lines	2	40.0%	12	75.0%	2	50.0%
	Just Circles	1	20.0%	2	12.5%	2	50.0%
	Radiating Circles	2	40.0%	2	12.5%		
Chevrons	Chevrons with Triangles			2	22.2%		
	Few Chevrons	1	50.0%	1	11.1%		
	Three Chevrons +	1	50.0%	6	66.7%		
Irregular (AC)		2	100.0%	6	100.0%	1	100.0%
Rosette	Circular Centre			2	100.0%		
	Pointed Centre	1	100.0%				

Table 5-56: Design and sub-design groups of aligned centre compared to period

At the sub-design group level most sample sizes are too small to analyse. Table 5-56 shows the sub-design groups of aligned centre compared to the main chronological periods. For every sub-design group there appears to be possible patterning but the numbers are too low to be certain. For example the second most common type of the **design group** 'lines' in the Halaf is the **sub-design group** 'lines', this type is not found at all in the Pottery Neolithic. However, as there are only 37 Halaf period **design group** 'lines' seals (and only 19 Pottery Neolithic ones) the chance of any patterning being significant is low. That said, most types are present in all periods with the possible exception of there being no design group 'square and lines' or design group 'chevrons' in the Ubaid. However there are only 20 Ubaid aligned centre seals suggesting incomplete data

(particularly as Chevron designs generally carry on well after the late Neolithic (cf. Rempel 2005)).

Geographically the same applies (in Table 5-57) with most types found across North Mesopotamia. Some sub-design groups are only found in one country, 'wedged cross' and 'rosette' for example, but as they each are only respectively represented by three examples nothing should be extrapolated from this.

Ultimately the geographical and chronological patterning of the aligned centre designs suggests an absence of patterning without conclusive evidence of chronological or geographical focuses for any of the design groups or sub-design groups.

Design groups and sub-design groups		Iraq		Syria		Turkey	
		Count	Total%	Count	Total%	Count	Total%
Lines	Centripedal	1	4.3%	3	14.3%		
	Lines	3	13.0%	1	4.8%	5	25.0%
	Lines and Circle	1	4.3%			1	5.0%
	Lines and Cross	10	43.5%	11	52.4%	13	65.0%
	Lines and Cross-Circle			1	4.8%	1	5.0%
	Lines and Dot	4	17.4%	2	9.5%		
	Single Cross	4	17.4%	3	14.3%		
Square and Lines	Circle, Square and Lines					3	11.5%
	Square and Lines (A)	1	9.1%	1	12.5%	4	15.4%
	Square and Lines (B)	6	54.5%	2	25.0%	5	19.2%
	Square and Lines (C)	3	27.3%	4	50.0%	9	34.6%
	Square and Lines (D)			1	12.5%	5	19.2%
	Triangle and Lines	1	9.1%				
Quadrants	Reflected and Rotational Quadrants			1	11.1%	1	9.1%
	Reflected Quadrants	2	40.0%	5	55.6%	7	63.6%
	Rotational Quadrants			3	33.3%	3	27.3%
	Wedged Cross	3	60.0%				
Circles	Circles with Peripheral Lines	3	60.0%	6	54.5%	6	66.7%
	Just Circles	2	40.0%	2	18.2%	1	11.1%
	Paired					1	11.1%
	Radiating Circles			3	27.3%	1	11.1%
Chevrons	Chevrons with Triangles					2	25.0%
	Few Chevrons			1	50.0%	1	12.5%
	Three Chevrons +	1	100.0%	1	50.0%	5	62.5%
Irregular (AC)		3	100.0%	3	100.0%	3	100.0%
Rosette	Circular Centre					2	66.7%
	Pointed Centre					1	33.3%

Table 5-57: Design and sub-design groups of aligned centre compared to modern country

### 5.5.3.3 Central Focus

Central focus is dominated by a single design group – ‘lines’ – which accounts for almost 75%. The sample sizes of all other design groups are too small to comment as the largest of them, the design group ‘cross-hatching (CF)’ has only 12 examples. Table 5-58 summarises the data regardless and illustrates that except for the design group ‘lines’ all other central focus designs are more common in Turkey. However as the entire sample is only 25 no pattern should be discerned from this.

Periods, design groups and sub-design groups			Iraq		Syria		Turkey	
			Count	Total%	Count	Total%	Count	Total%
Pottery Neolithic	Chevrons	Divided					1	100.0%
		Parallel			2	100.0%		
	Diamonds	Divided					2	100.0%
Halaf	Quadrants	Rotational (2)					1	100.0%
	Cross-hatching (CF)	Divided			2	100.0%	5	83.3%
		Metered	1	50.0%				
		Surrounding Lines	1	50.0%			1	16.7%
	Chevrons	Divided			1	100.0%	4	100.0%
Ubaid	Diamonds	Metered					1	100.0%
	Cross-hatching (CF)	Metered	1	100.0%				
		Surrounding Lines					1	100.0%
	Chevrons	Divided					1	100.0%

**Table 5-58: Sub-design groups of central focus except for ‘lines’ compared to period and modern country.**

Design groups and sub-design groups		Iraq		Syria		Turkey	
		Count	Total%	Count	Total%	Count	Total%
Pottery Neolithic	Angled Divided			5	33.3%	3	50.0%
	Diamond Parallel			1	6.7%		
	Parallel			2	13.3%		
	Single			1	6.7%		
Halaf	Square Divided			6	40.0%	3	50.0%
	Angled Divided	6	40.0%	1	14.3%	6	33.3%
	Angled Metered	1	6.7%			1	5.6%
	Diamond Parallel	2	13.3%				
	Parallel	4	26.7%	1	14.3%	1	5.6%
	Parallel Divided			1	14.3%	1	5.6%
	Screw					1	5.6%
	Square Divided			2	28.6%	3	16.7%
	Vertical and Horizontal	1	6.7%			5	27.8%
	Vs	1	6.7%	2	28.6%		
Ubaid	Angled Divided	2	22.2%				
	Angled Metered	2	22.2%				
	Parallel	1	11.1%			1	100.0%
	Screw	1	11.1%				
	Single			1	100.0%		
	Vertical and Horizontal	1	11.1%				
	Vs	2	22.2%				

**Table 5-59: Sub-design groups of central focus - lines compared to period and modern country.**

The most common group, lines summarised in Table 5-59, again displays no patterning that appears to transcend the sample sizes. Central focus seals are generally much rarer than the other main two types and nothing notable can be added to this except that as with cross-hatching and aligned centre most designs of seal are found in most countries and periods with no evidence of significant difference between regions and periods.

To conclude, analysis at a finer level than super-design group is limited by the small number of many types of design but, with the exception of the widespread presence of square and diagonal cross-hatching after the Pottery Neolithic, there are no regional and chronological distinctions that can be assigned any significance beyond those caused by the small sample sizes. Different types of design fluctuate on a site by site basis reinforcing the concept that they do not reference regionally or chronologically structured identities.

## **5.6 Design Conclusion**

Ultimately, it is clear that the way I have classified the seals (by overall motif) does not illustrate any geographical or regional trends but this very absence of patterning on a regional scale is actually evidence of patterning on a more abstract scale. It illustrates wide-spread intercutting networks of relationships that must have united people across the late Neolithic at a level above the site. I believe the only way to explain such similar designs at a macro level yet still appreciate the variety that individual sites have at a micro level is to suggest that seals in the late Neolithic represent a supra-regional symbolic 'language'. Within this context the designs on seal reference a concept that functions outside of the site structure. Chronologically there is very limited evidence for the earliest stages of late Neolithic seals and, with the exception of square and diagonal (CH) cross-hatching, the seal glyptic appears for the large part static. The lack of change, particularly in contrast to the rapid change in other objects such as pottery during the period, suggests that the seals relate to a relatively static ideology or symbolic identity that, archaeologically speaking, appears to date to the end of the eight millennium BC and does not substantively change until the middle of the fifth millennium BC.

The question remains of what the development of square and diagonal cross-hatching might represent. Socially there is little evidence but the sudden increase

between the late Pottery Neolithic from 6.06% of cross-hatched designs to 28.57% of cross-hatched designs in the early Halaf might relate the context of the development to the Halaf itself. As the most visible elements of the Halaf phenomena are changes in consumption practices (via pottery styles) this suggests the possibility of associations between consumption practices and seals. However, as is discussed in section 6.3 seal designs generally pre-date pottery designs and there is no evidence they are otherwise related making it unlikely a single type of seal design would be related to changing consumption practices. As such, this chronological correlation is presumably coincidental relating to another social change that occurred at a similar period to the development of Halaf pottery styles. The specific meaning of the change is harder to theorise but because of the rectilinear form of square and diagonal cross-hatched seals I would suggest this represents the combination of two aspects of the existing symbolic language as opposed to a new participatory element. I develop my interpretation of the symbolic meanings of seal designs in chapter 7 and shall return to discuss the possible significance of square and diagonal cross-hatching there. The more general significance of seal designs representing a shared symbolic language will be developed in the following chapters as it will form the basis of my interpretation of seals in both chapters 6 and 7.

The next aspect of analysis in this chapter is to relate the design analysis to the morphology analysis and elucidate any potential relationships between the shapes of seals and their designs.

## 5.7 Design related to body type

A deliberate aim of this thesis was to treat each attribute as a potentially stand-alone classificatory factor and as such I analysed designs separately from morphology. This section will compare the two and see what patterning is present in the types of designs you get on certain shapes and types of seal.

Super-design groups	Pendant Seal		Stamp	
	Count	Total%	Count	Total%
Cross-hatching	70	52.2%	173	46.9%
Aligned Centre	34	25.4%	144	39.0%
Central Focus	30	22.4%	52	14.1%
Total	134	100.0%	369	100.0%

**Table 5-60: Number of stamps and pendant seals compared to main three design groups**

Table 5-60 shows the number of stamps and pendant seals for the three main design groups which illustrates that pendant seals have about double the amount of cross-hatching to aligned centre and central focus. Stamps are different with aligned centre and cross-hatching having loosely similar amounts (cross-hatching is 6.9% more common) and central focus only accounting for 14.1% of stamp designs. This suggests there is a difference in the types of designs found on stamps compared to pendant seals and the difference is probably large enough to represent some patterning of the data, though the pendant seal sample size is much lower than that of stamps, but does not immediately lend itself to interpretation, particularly as strictly speaking body type records relative method of suspension. As such the following analysis will discuss body face data for the different design groups directly without explicit reference to body type except for a division in the analysis because, as discussed in section 5.1.1, the face shapes of pendant seals and stamps are not formally comparable. Section 5.7.1 will analyse the distribution of super-design groups compared to body face while section 5.7.2 will analyse the distribution of design groups and sub-design groups compared to body face and section 5.7.3 will draw conclusions. Table 5-61 repeats Table 5-5 to illustrate the relative percentages of body face for stamps and pendant seals.

Stamp				Pendant Seal			
Body Type and Face	Count	Total%		Body Type and Face	Count	Total%	
Circular	121	28.7%		Pear	31	20.9%	
Oval	80	19.0%		Triangular	28	18.9%	
Rectangular	97	23.0%		Oval	23	15.5%	
Square	55	13.0%		Diamond	10	6.8%	
Triangular	12	2.8%		Shield	8	5.4%	
Pear	1	0.2%		Drop	7	4.7%	
Unknown	19	4.5%		Unknown	6	4.1%	
Diamond	6	1.4%		Sickle	6	4.1%	
Clover	15	3.6%		Circular	6	4.1%	
Irregular	5	1.2%		Rectangular	5	3.4%	
Trapezoid	5	1.2%		V-shaped	4	2.7%	
Sickle	1	0.2%		Figurative	4	2.7%	
Figurative	2	0.5%		Irregular	3	2.0%	
Winged	2	0.5%		Winged	2	1.4%	
Oxhide	1	0.2%		Trapezoid	2	1.4%	
				Screw	2	1.4%	
				Square	1	0.7%	

**Table 5-61: Faces by body types**

## 5.7.1 Analysis of super-design groups compared to body face

### 5.7.1.1 Stamp

The analysis in this section will compare the super-design groups to stamp face shapes. The analysis does not include irregular or figurative designed seals as there are only seven of each type (many of the figurative designs are on impressions). Table 5-62 shows there is a clear preference of face shape for some of the design groups. Each of the three most common face shapes (circular, rectangular, and oval) has a dominant type of super-design group. In particular circular has a very high percentage of aligned centre accounting for almost half (46.5%) of all aligned centre objects while having a low percentage of central focus. This is contrasted for rectangular faces which appear to have a preference for cross-hatching at the expense of aligned centre. Oval faces also have a high percentage of central focus suggesting the following potential patterns:

- Aligned centre designs are very common on circular faced stamps.
- Aligned centre designs are uncommon on rectangular faced stamps.
- Cross-hatching designs are common on rectangular faced stamps.
- Central focus designs are common on oval stamps.
- Central focus designs are uncommon on circular stamps

These patterns are only suggestions and the analysis in the further sections will investigate whether there are more nuanced relationships within these but it does suggest there was a preference for which type of super-design group went with which type of face shape. This is not to say that there are specific ‘types’ of seal with certain designs and certain face shapes but that preferences may have existed for certain designs.

Face Shapes and Super-Design Groups		Cross-hatching	Aligned Centre	Central Focus	Total
Circular	Count	35	67	3	105
	Column%	20.2%	46.5%	5.8%	28.5%
Rectangular	Count	64	15	12	91
	Column%	37.0%	10.4%	23.1%	24.7%
Oval	Count	30	20	19	69
	Column%	17.3%	13.9%	36.5%	18.7%
Square	Count	25	26	4	55
	Column%	14.5%	18.1%	7.7%	14.9%
Clover	Count	5	8		13
	Column%	2.9%	5.6%		3.5%
Triangular	Count	3	1	6	10
	Column%	1.7%	0.7%	11.5%	2.7%
Diamond	Count	2	2	2	6
	Column%	1.2%	1.4%	3.8%	1.6%
Unknown	Count	4	1		5
	Column%	2.3%	0.7%		1.4%
Trapezoid	Count	3	1	1	5
	Column%	1.7%	0.7%	1.9%	1.4%
Irregular	Count	1	2	2	5
	Column%	0.6%	1.4%	3.8%	1.4%
Winged	Count	1		1	2
	Column%	0.6%		1.9%	0.5%
Sickle	Count			1	1
	Column%			1.9%	0.3%
Oxhide	Count		1		1
	Column%		0.7%		0.3%
Figurative	Count			1	1
	Column%			1.9%	0.3%
Total	Count	173	144	52	369
	Column%	100.0%	100.0%	100.0%	100.0%

**Table 5-62: Super-design group compared to face shape of stamps**



### 5.7.1.2 Pendant Seal

The analysis in this section will compare super-design groups to face shapes. The analysis does not include irregular or figurative designed seals as there are only four irregular pendant seals and two figurative ones. Table 5-63 shows less clear preferences for than for stamp shapes but still suggests a few potential patterns:

- Aligned centre designs are common on pear faced objects.
- Aligned centre designs are uncommon on triangular faced objects.
- Central focus designs are uncommon on pear faced objects.

Face Shapes and Super-Design Groups		Cross-hatching	Aligned Centre	Central Focus	Total
Pear	Count	11	16	3	30
	Column%	15.7%	47.1%	10.0%	22.4%
Triangular	Count	19	2	5	26
	Column%	27.1%	5.9%	16.7%	19.4%
Oval	Count	11	4	7	22
	Column%	15.7%	11.8%	23.3%	16.4%
Diamond	Count	4	5	1	10
	Column%	5.7%	14.7%	3.3%	7.5%
Shield	Count	4	2	2	8
	Column%	5.7%	5.9%	6.7%	6.0%
Drop	Count	6			6
	Column%	8.6%			4.5%
Circular	Count	2	4		6
	Column%	2.9%	11.8%		4.5%
Rectangular	Count	5			5
	Column%	7.1%			3.7%
Sickle	Count	1		3	4
	Column%	1.4%		10.0%	3.0%
V-shaped	Count			3	3
	Column%			10.0%	2.2%
Unknown	Count	2		1	3
	Column%	2.9%		3.3%	2.2%
Winged	Count	1		1	2
	Column%	1.4%		3.3%	1.5%
Trapezoid	Count	1		1	2
	Column%	1.4%		3.3%	1.5%
Screw	Count			2	2
	Column%			6.7%	1.5%
Figurative	Count	1		1	2
	Column%	1.4%		3.3%	1.5%
Irregular	Count	1	1		2
	Column%	1.4%	2.9%		1.5%
Square	Count	1			1
	Column%	1.4%			0.7%
Total	Count	70	34	30	134
	Column%	100.0%	100.0%	100.0%	100.0%

Table 5-63: Super-design group compared to face shape of pendant seals

With the exception of the common nature of aligned centre designs on pear faced seals the relative differences of the main types of super-design group and face shape are minimal and most super-design groups for specific face shapes are within 10% of the total distribution suggesting only a limited association between the type of super-design and the shape of the face for pendant seals. The next section will analyse the design and sub-design groups again compared to the shape of the face.

## 5.7.2 Analysis of Design Groups and Sub-Design Groups compared to Face Shape.

### 5.7.2.1 Stamp

Design Groups and Face Shapes		Standard (CH)	Irregular (CH)	Framed (CH)	Total
Rectangular	Count	56	6	2	64
	Column%	37.1%	37.5%	33.3%	37.0%
Circular	Count	29	5	1	35
	Column%	19.2%	31.2%	16.7%	20.2%
Oval	Count	25	5		30
	Column%	16.6%	31.2%		17.3%
Square	Count	23		2	25
	Column%	15.2%		33.3%	14.5%
Clover	Count	4		1	5
	Column%	2.6%		16.7%	2.9%
Unknown	Count	4			4
	Column%	2.6%			2.3%
Triangular	Count	3			3
	Column%	2.0%			1.7%
Trapezoid	Count	3			3
	Column%	2.0%			1.7%
Diamond	Count	2			2
	Column%	1.3%			1.2%
Winged	Count	1			1
	Column%	0.7%			0.6%
Irregular	Count	1			1
	Column%	0.7%			0.6%
Total	Count	151	16	6	173
	Column%	100.0%	100.0%	100.0%	100.0%

Table 5-64: Cross-hatching design groups compared to the most common face shapes for stamps only.

Table 5-64 shows the number of each design group of cross-hatching for the face shapes of stamps. Unsurprisingly Standard (CH) almost perfectly matches the total distribution in 5.7.1 because it offers 86% of objects with cross-hatched designs. Irregular

(CH) may show patterning as there are no square examples but there are only 16 objects in the group. Similarly Framed (CH) has only six objects and does not offer potential patterns with any reliability.

Sub-Design Groups and Face Shapes		Rectan gular	Circular	Oval	Square	Clover	Total
Diagonal (CH)	Count	22	7	8	8	2	47
	Row%	46.8%	14.9%	17.0%	17.0%	4.3%	100.0%
Square (CH)	Count	21	9	11	4	1	46
	Row%	45.7%	19.6%	23.9%	8.7%	2.2%	100.0%
Square and Diagonal (CH)	Count	12	10	3	11	1	37
	Row%	32.4%	27.0%	8.1%	29.7%	2.7%	100.0%
Triangular (CH)	Count		3	1			4
	Row%		75.0%	25.0%			100.0%
Unknown (CH)	Count	1		2			3
	Row%	33.3%		66.7%			100.0%
Total	Count	56	29	25	23	4	137
	Row%	40.9%	21.2%	18.2%	16.8%	2.9%	100.0%

**Table 5-65: Standard (CH) sub-design groups compared to the most common face shapes for stamps only**

Table 5-65 shows the numbers of each sub-design group of standard (CH) for the five most common shapes of stamp. The distribution of both diagonal (CH) and square (CH) are quite similar both having distributions that are mostly similar to the total distribution. Square and diagonal (CH) has a noticeably lower amount of oval (10.01%) and rectangular (8.5%) and higher amount of square (12.9%) faces which may represent tangible patterning as discussed in section 5.2 and 5.5 where between the Pottery Neolithic and Halaf you begin to find square and diagonal (CH) in larger numbers and the number of rectangular and oval faced seals falls as the number of square faced seals increased.

Design Groups and Face Shapes		Circular	Square	Oval	Rectangular	Clover	Total
Lines	Count	25	1	11	6	2	45
	Row%	55.6%	2.2%	24.4%	13.3%	4.4%	100.0%
Square and Lines	Count	11	15	1	4	3	34
	Row%	32.4%	44.1%	2.9%	11.8%	8.8%	100.0%
Quadrants	Count	6	6	3	2	2	19
	Row%	31.6%	31.6%	15.8%	10.5%	10.5%	100.0%
Circles	Count	10	3	3		1	17
	Row%	58.8%	17.6%	17.6%		5.9%	100.0%
Chevrons	Count	9		2	2		13
	Row%	69.2%		15.4%	15.4%		100.0%
Irregular (AC)	Count	3	1		1		5
	Row%	60.0%	20.0%		20.0%		100.0%
Rosette	Count	3					3
	Row%	100.0%					100.0%
Total	Count	67	26	20	15	8	136
	Row%	49.3%	19.1%	14.7%	11.0%	5.9%	100.0%

**Table 5-66: Aligned centre design groups compared to the most common face shapes for stamps only**

Table 5-66 shows the numbers of seals for each design group of aligned centre compared to the five most common face shapes of stamp. The bottom row shows the percentages of each of the face types which I compared with the percentage values for each of the design groups. A number of potential relationships are visible:

- Lines designs are uncommon on Square faced objects.
- Square and Lines designs are common on Square faced objects.
- Quadrant designs are less common on Circular faced objects.
- Circles designs are not found on Rectangular faced objects.
- Chevrons designs are predominantly on Circular faced objects.

As with the relationships in section 5.7.1 these suggestions are of degree not kind and the sample sizes of all are small with the majority of the observed figures being at most about 20% away from the total for each of the face types. This suggests that while there may have been a preference for which type of aligned centre went with which face it was only a preference and there was no deterministic relationship. As discussed in section 5.5.3 the sample size of the sub-design groups for aligned centre is too low to analyse with any hope for accuracy.

Face Shapes and Design Groups		Lines	Cross-hatching (CF)	Chevrons	Quadrants	Total
Oval	Count	14	2	2	1	19
	Column%	34.1%	40.0%	40.0%	100.0%	36.5%
Rectangular	Count	9	1	2		12
	Column%	22.0%	20.0%	40.0%		23.1%
Triangular	Count	6				6
	Column%	14.6%				11.5%
Square	Count	2	2			4
	Column%	4.9%	40.0%			7.7%
Circular	Count	3				3
	Column%	7.3%				5.8%
Irregular	Count	2				2
	Column%	4.9%				3.8%
Diamond	Count	2				2
	Column%	4.9%				3.8%
Winged	Count	1				1
	Column%	2.4%				1.9%
Trapezoid	Count	1				1
	Column%	2.4%				1.9%
Sickle	Count	1				1
	Column%	2.4%				1.9%
Figurative	Count			1		1
	Column%			20.0%		1.9%
Total	Count	41	5	5	1	52
	Column%	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 5-67: Central focus design groups compared to the face shapes for stamps only**

Table 5-67 shows the number of each design group of central focus for all the face shapes of stamp type. The table is transposed as compared to the previous tables in this section because of the larger number of face shapes. The table does not show much, primarily because the lines design group accounts for 78.8% of the table. Unsurprisingly because of this the distribution in section 5.7.1 and that of lines is similar. There are not really enough examples of any of the other types to comment further and analysis of the sub-design groups of lines does not add any further data, as discussed in 5.5.3.

### 5.7.2.2 Pendant Seal

Face Shapes and Design Groups		Standard (CH)	Framed (CH)	Irregular (CH)	Total
Triangular	Count	12	4	3	19
	Column%	30.8%	23.5%	21.4%	27.1%
Pear	Count	6	2	3	11
	Column%	15.4%	11.8%	21.4%	15.7%
Oval	Count	9	2		11
	Column%	23.1%	11.8%		15.7%
Drop	Count	2	3	1	6
	Column%	5.1%	17.6%	7.1%	8.6%
Rectangular	Count	3	1	1	5
	Column%	7.7%	5.9%	7.1%	7.1%
Shield	Count	3		1	4
	Column%	7.7%		7.1%	5.7%
Diamond	Count	1	3		4
	Column%	2.6%	17.6%		5.7%
Unknown	Count		1	1	2
	Column%		5.9%	7.1%	2.9%
Circular	Count	1		1	2
	Column%	2.6%		7.1%	2.9%
Winged	Count	1			1
	Column%	2.6%			1.4%
Trapezoid	Count		1		1
	Column%		5.9%		1.4%
Square	Count			1	1
	Column%			7.1%	1.4%
Sickle	Count	1			1
	Column%	2.6%			1.4%
Figurative	Count			1	1
	Column%			7.1%	1.4%
Irregular	Count			1	1
	Column%			7.1%	1.4%
Total	Count	39	17	14	70
	Column%	100.0%	100.0%	100.0%	100.0%

**Table 5-68: Cross-hatching design groups compared to the face shapes for pendant seals only.**

Table 5-68 shows the number of each design group of cross-hatching as compared to face shapes for pendant seals. Unlike with stamps where 86% of cross-hatched stamps are standard (CH) only 55.7% of pendant seals are. This is interesting in itself and suggests that the choice of the type of cross-hatching on pendant seals was a different choice to that of stamps. Beyond this the distribution of each type of design group loosely matches the total distribution which, except possibly for the absence of oval irregular (CH) pendant seals, suggests limited preference to deciding what shape of seal to put different designs on.

The higher amount of framed (CH) pendant seals probably relates to the same factor mentioned in 5.5.3 relating the specific practices visible at Arpachiyah where seven of the framed (CH) pendant seals come from. Pendant seals are more common in the eastern regions than in the western regions but as three of the other framed (CH) pendant seals come from Tepe Gawra and one comes from Gogjeli (about 10 km south-east of Arpachiyah) it may suggest there is a specific 'type' of pendant seal focused around the Ninawa region of North Iraq but this relies almost solely on Arpachiyah, and as I have discussed and will discuss again, Arpachiyah is unusual.

		Diagonal (CH)	Square (CH)	Square and Diagonal (CH)	Unknown (CH)	Triangular (CH)	Total
Triangular	Count	5	4	2		1	12
	Column%	35.7%	30.8%	20.0%		100.0%	30.8%
Oval	Count	3	3	3			9
	Column%	21.4%	23.1%	30.0%			23.1%
Pear	Count	2	2	2			6
	Column%	14.3%	15.4%	20.0%			15.4%
Shield	Count	1		2			3
	Column%	7.1%		20.0%			7.7%
Rectangular	Count		3				3
	Column%		23.1%				7.7%
Drop	Count	1		1			2
	Column%	7.1%		10.0%			5.1%
Winged	Count	1					1
	Column%	7.1%					2.6%
Sickle	Count		1				1
	Column%		7.7%				2.6%
Diamond	Count	1					1
	Column%	7.1%					2.6%
Circular	Count				1		1
	Column%				100.0%		2.6%
Total	Count	14	13	10	1	1	39
	Column%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 5-69: Sub-design groups of standard (CH) compared to the face shapes for pendant seals only**

Table 5-69 shows the sub-design groups of standard (CH) compared to face shape. The distribution of square (CH), diagonal (CH) and square and diagonal (CH) all match the total distribution. The sample sizes are small and the chronological change in square and diagonal (CH) visible in the previous section is no longer visible, however, as pendant seals are also predominantly Halaf this is unsurprising.

Face Shapes and Design Groups		Lines	Square and Lines	Circles	Irregular (AC)	Quadrants	Total
Pear	Count	9	4	2	1		16
	Column%	56.2%	50.0%	28.6%	50.0%		47.1%
Diamond	Count	2	2		1		5
	Column%	12.5%	25.0%		50.0%		14.7%
Oval	Count	2		2			4
	Column%	12.5%		28.6%			11.8%
Circular	Count	1	1	1		1	4
	Column%	6.2%	12.5%	14.3%		100.0%	11.8%
Triangular	Count	1	1				2
	Column%	6.2%	12.5%				5.9%
Shield	Count	1		1			2
	Column%	6.2%		14.3%			5.9%
Irregular	Count			1			1
	Column%			14.3%			2.9%
Total	Count	16	8	7	2	1	34
	Column%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 5-70: Aligned centre design groups compared to the face shapes for pendant seals only.**

Table 5-70 shows the number of each design group of aligned centre for the various face shapes of pendant seal. The sample sizes are very low for all types with only 34 seals in the entire table. Lines matches the total distribution but also offers half the sample and while square and lines and circles are missing common face shapes (oval for square and lines and diamond for circles) the sample sizes of eight and seven objects respectively are too low to comment on. Unfortunately this means I can suggest no possible relationships.



Face Shapes and Design Groups		Lines	Cross-hatching (CF)	Total
Oval	Count	3	4	7
	Column%	12.5%	66.7%	23.3%
Triangular	Count	5		5
	Column%	20.8%		16.7%
V-shaped	Count	3		3
	Column%	12.5%		10.0%
Sickle	Count	3		3
	Column%	12.5%		10.0%
Pear	Count	2	1	3
	Column%	8.3%	16.7%	10.0%
Shield	Count	2		2
	Column%	8.3%		6.7%
Screw	Count	2		2
	Column%	8.3%		6.7%
Winged	Count	1		1
	Column%	4.2%		3.3%
Unknown	Count	1		1
	Column%	4.2%		3.3%
Trapezoid	Count		1	1
	Column%		16.7%	3.3%
Figurative	Count	1		1
	Column%	4.2%		3.3%
Diamond	Count	1		1
	Column%	4.2%		3.3%
Total	Count	24	6	30
	Column%	100.0%	100.0%	100.0%

**Table 5-71: Central focus design groups compared to the face shapes for pendant seals only.**

Table 5-71 shows the number and percentages of the two design groups of central focus that are found on pendant seals. There are only 30 pendant seals with central focus designs and 24 of them are lines. The remaining six are cross-hatching (CF) which has a very high percentage of oval face which may suggest a potential relationship but the sample size is very low. The distribution of lines largely follows the total distribution and the sub-design groups analysis offered no further information as the sample size is again, as discussed in 5.5.3, too low to reliably draw conclusions from.

### 5.7.3 Conclusion of 5.7

The first conclusion to draw is that the sample size is problematic for many design groups compared to face shapes. This means the patterning I have discussed in the previous section must be considered provisional until considerably more seals are found to neutralise certain levels of unrepresentativeness. That said the analysis has suggested that the designs on the seals and the shapes of the seals were not totally independent. It does appear that active choices were made to associate certain designs with certain faces. None of the patterns are absolute and while, for example, square and lines designs are most common on square faced seals it is only to some degree as there are square and lines made on other types of face shape. Furthermore the range of face shapes remains low, particularly for stamps where 87.6% of seals were square, rectangular, oval, or circular, suggesting this variation may reflect personal preference more than proscribed categories. I have suggested that the shape of the faces of objects changed according to 'regional' fashion, but it could equally have changed according to design fashion. If you were a participant in the imagined community reflected by one of the designs than the choice of shape to go with design appears to have remained largely free but if you saw another member using a circular seal maybe you chose to have one with the same shape.

Theoretically there may also be a 'technological' aspect to the possible patterning. Certain shapes of seal may lend themselves to certain design types. For example an aligned centre design on a circular seal is visually complementary whereas more effort would have had to go to fit an aligned centre design on a rectangular seal (though as 10% of aligned centre designs are on rectangular seals this is clearly not an insurmountable issue). Ultimately at the present stage of research I do not believe any of the possible patterns identified above can be reliably extrapolated to general principles or simply interpreted as there are too many unknown elements.

This concludes the design and morphology analysis of the thesis and the next sections will analyse the remaining material characteristics of seals, namely material and colour.

## 5.8 The Material

For the materials of seals I have had to rely on existing data, either published reports or records such as the Domuztepe small find database meaning there is very little consistency to the terminology. Mineralogical analysis was beyond the scope of this thesis and I have done little more than change some colloquial materials to their mineral group. Two material attributes were recorded, basic material and specific material. Basic material (Table 5-72) illustrates that the vast majority of objects are stone.

The specific materials of bone and shell are unknown, both metals are copper, and the organic substance is reputedly bitumen. Clay is divided into 35 baked (97.2%), and one paste (2.8%). The 'paste' seal (GW-033) is from Tepe Gawra and I have had no way to ascertain the reliability of the assignation. The material is some form of clay but it is unclear what sort.

Materials	Count	Total%
Stone	597	91.7%
Clay	36	5.5%
Bone	13	2.0%
Shell	2	0.3%
Metal	2	0.3%
Organic	1	0.2%
Total	651	100.0%

**Table 5-72: Basic materials of all objects except for 87 objects (mostly impressions) with an unknown material.**

Types of Stone	Count	Total%	Types of Stone	Count	Total%
Unknown Stone	260	43.6%	Flint Cortex	3	0.5%
Serpentine	100	16.8%	Calcite	3	0.5%
Steatite	95	15.9%	Jasper	2	0.3%
Limestone	30	5.0%	Jadeite	2	0.3%
Marble	25	4.2%	Hematite	2	0.3%
Greenstone	15	2.5%	Alabaster	2	0.3%
Chlorite	13	2.2%	Schist	1	0.2%
Peridotite	12	2.0%	Rock Crystal	1	0.2%
Gabbro	6	1.0%	Kaolinite	1	0.2%
Quartzite	5	0.8%	Dolerite	1	0.2%
Obsidian	5	0.8%	Chert	1	0.2%
Cornelian	4	0.7%	Basalt	1	0.2%
Sandstone	3	0.5%	Agate	1	0.2%
Quartz	3	0.5%			

**Table 5-73: Stone specific materials**

There is little variation in the specific materials of stone as over three quarters of objects are of unknown stone, steatite (soapstone), or one of the serpentine group minerals. The most interesting thing this illustrates is the bias in archaeologist's interpretations. Tell el-Kerkh has serpentine but no steatite whereas Arpachiyah has only one serpentine and 45 steatite. Steatite and serpentine minerals range from white to black and are both soft easily workable rocks that are difficult to tell apart without chemical analysis. There is also little distinction drawn between minerals and rocks, chlorite is a mineral not a rock and greenstone is not anything but is probably also a chloritic mineral. Ras Shamra has 16 steatite objects and one schist – which is odd as steatite is a talc-schist. Essentially I reached the conclusion that without chemical analysis the material designations of the majority of objects cannot be trusted. However, the designations for the large part suggest most stone seals were made of some sort of generally soft easily workable stone.

It is also important to consider the potential materials that might not have survived. This is an unquantifiable element but experimental work carried out on 24 of the *cretulae* from Arslantepe tentatively identified the materials of the seals that made the impressions. They suggested there were six metal seals, six stone seals, seven bone or ivory seals, and two wooden seals (Cristiani et al. 2007). While this is only 24 *cretulae* if the ratio held true, minus the metal seals as these would not be common in the Neolithic, then the massive dominance of stone seals may be unrepresentative. Seals made from bone or ivory may have been much more common than the few bone seals that have survived, Hamoukar's Uruk levels provided large amounts of bone seals without many stone seals (Gibson et al. 2002). However bone normally survives quite well at late Neolithic sites and we cannot begin to quantify how many wooden seals there were. I would suggest we can assume there would have been some perishable seals, although how many more is essentially unquantifiable and for the purposes of this study I assume the dominance of stone to be representative.

There are a few comments that can be made concerning clay objects. Most clay objects are stamps (69.4% or 25). Chronologically (Table 5-74) it is clear clay stamps are predominantly Pottery Neolithic as 64% of clay stamps come from the Pottery Neolithic and only 8% from the Halaf. This stands in contrast to stamps irrespective of material where 33% of stamps are Pottery Neolithic and 54.9% are Halaf. There are other clay stamps in the Pottery Neolithic at places like Çatalhöyük or Byblos and there being more

clay stamps from the Pottery Neolithic probably illustrates a relationship with or knowledge of other clay stamps with different purposes and designs.

Clay Stamps	Count	Total%	All Stamps	Count	Total%
Pottery Neolithic	16	64.0%	Pottery Neolithic	137	32.5%
Pottery Neolithic/Halaf	1	4.0%	Pottery Neolithic/Halaf	9	2.1%
Halaf	2	8.0%	Halaf	228	54.0%
Ubaid	6	24.0%	Ubaid	41	9.7%

**Table 5-74: left: clay stamps, right: all stamps.**

This relationship has ended by the Halaf period and this may relate to what a seal *is*. If clay was an appropriate medium for seals you would expect to find more. As they are only found in numbers while seals are still, relatively, new and then become rarer it might represent a formalisation of the concept of what a seal should be made of. The rise in clay seals during the Ubaid may or may not support this, the sample of Ubaid seals overall is small and the six clay stamps come from only two sites (three at Arpachiyah, three at Tepe Gawra). It is possible we are seeing a pattern localised around Mosul or we might be seeing an element of break-down in the late Neolithic system. The wide changes in the Ubaid from geometric to tic designs on seals along with a relative increase in clay seals might suggest the structuralising principles that had maintained seals as a relatively unchanged phenomena for millennia were no longer as secure, possibly because the beliefs supporting them began to break down. Interestingly, ten of the thirteen bone seals also come from the Pottery Neolithic maybe supporting the idea that in the earlier centuries of seals there was more flexibility in their material.

There is another interesting element as a number of the clay seals are reused pot sherds. This includes a clay stamp from Tell Kurdu and five of the nine clay stamps from Tell el-Kerkh, two of which are pictured (Figure 5-46, Figure 5-47). They are all, except EK-007, quite ‘roughly’ made and represent one of the few clear examples relating seals to another object of material culture. Due to their rarity it seems unlikely they were part of the dominant narratives surrounding late Neolithic seals, and whether they were just made of a useful ubiquitous material, or they represent a deliberate reuse of specific pots is unknown from the present sample. I think it is likely that, possibly with the exception of EK-007 that also has a ‘unique’ unusual design, that these objects are not special and as with general clay objects represent the potentially more fluid nature of early seals (though the Tell Kurdu seal is Halaf) and reflects on-going negotiations on how seals should look.



Figure 5-46: EK-007 (Courtesy of The Rouj Basin Project 2011).

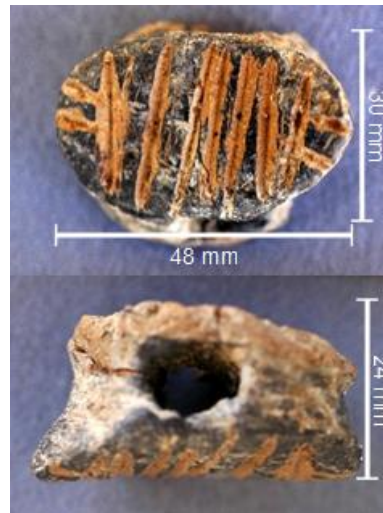


Figure 5-47: EK-017 (Courtesy of The Rouj Basin Project 2011).

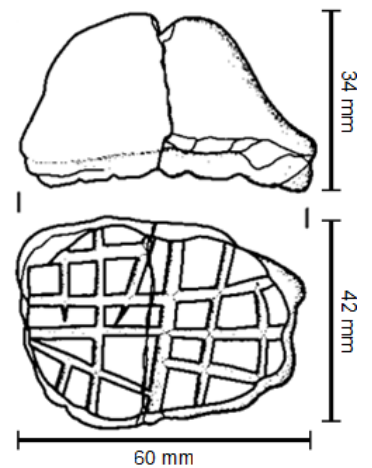


Figure 5-48: KU-024 (Adapted from Özbal et al 2004: Fig. 13.14).

It is unfortunate that no scientific analysis has been carried out on the actual materials the seals were made from as the possible origins and provenances could provide information on whether the objects themselves moved around the late Neolithic or if the ideology, iconography and style moved instead. As it stands, with the present state of research it is difficult to claim anything more than most seals were made of stone, and that stone were normally fairly soft.

## 5.9 The Colour

Colour is a difficult attribute to quantify when relying on published reports and other records as the terminology differs considerably and many photos are in black and white or do not match the published colour. For example, Figure 5-49 shows an object from Arpachiyah described as ‘greenish’ in Mallowan’s notes. As it is clearly brown he was either wrong or was describing a different object entirely. Either way it is difficult to rely on described colours and very few published sources have colour images. While I have attempted to maintain consistency in those objects I have physically seen or have colour photos of, beyond this available colours are uncertain. As such the emphasis has not been on an accurate description of colour but instead an attempt to get the generic colour ‘group’ in basic colour and record the tone/inclusions in specific colour. This worked quite well at a generic level but is very generalising.

Table 5-75 shows the basic colours of all objects except impressions. The most common is unknown reflecting the inadequate publication of many seals. Of seals we know the colour of black is the most common and along with brown and green account for 75% of seals with colour data.



Figure 5-49: AP-068 (Courtesy of UCL Institute of Archaeology 2011).

	Count	Column%
Unknown	180	27.4%
Black	178	27.1%
Brown	97	14.8%
Green	82	12.5%
Grey	38	5.8%
White	30	4.6%
Red	22	3.4%
Yellow	12	1.8%
Orange	12	1.8%
Translucent	2	0.3%
Copper	2	0.3%
Purple	1	0.2%

Table 5-75: Basic colours

Green Colours	Count	Total%
Dark Green	46	56.1%
Green	21	25.6%
Light Green	7	8.5%
Dark Green with Light Green inclusions	4	4.9%
Light Green with Dark Green inclusions	3	3.7%
Green with Brown inclusions	1	1.2%

Table 5-76: Specific colours of green

Table 5-76 shows the specific colours of ‘green’ to illustrate how little extra data specific colour provides. While a colour space specification (e.g. the Munsell colour system) could have been used to provide precise colour it still would not have accounted for the multiple colours in single objects and the additional attributes necessary to include all the colours in some of the more multi-hued examples would have rendered analysis impractical. Further difficulties arose as many of the ‘black’ objects are in fact very dark green but look black under normal light. These ambiguities render specific colour largely unusable but basic colour is generic enough to provide some comparison and shall be utilised as such.

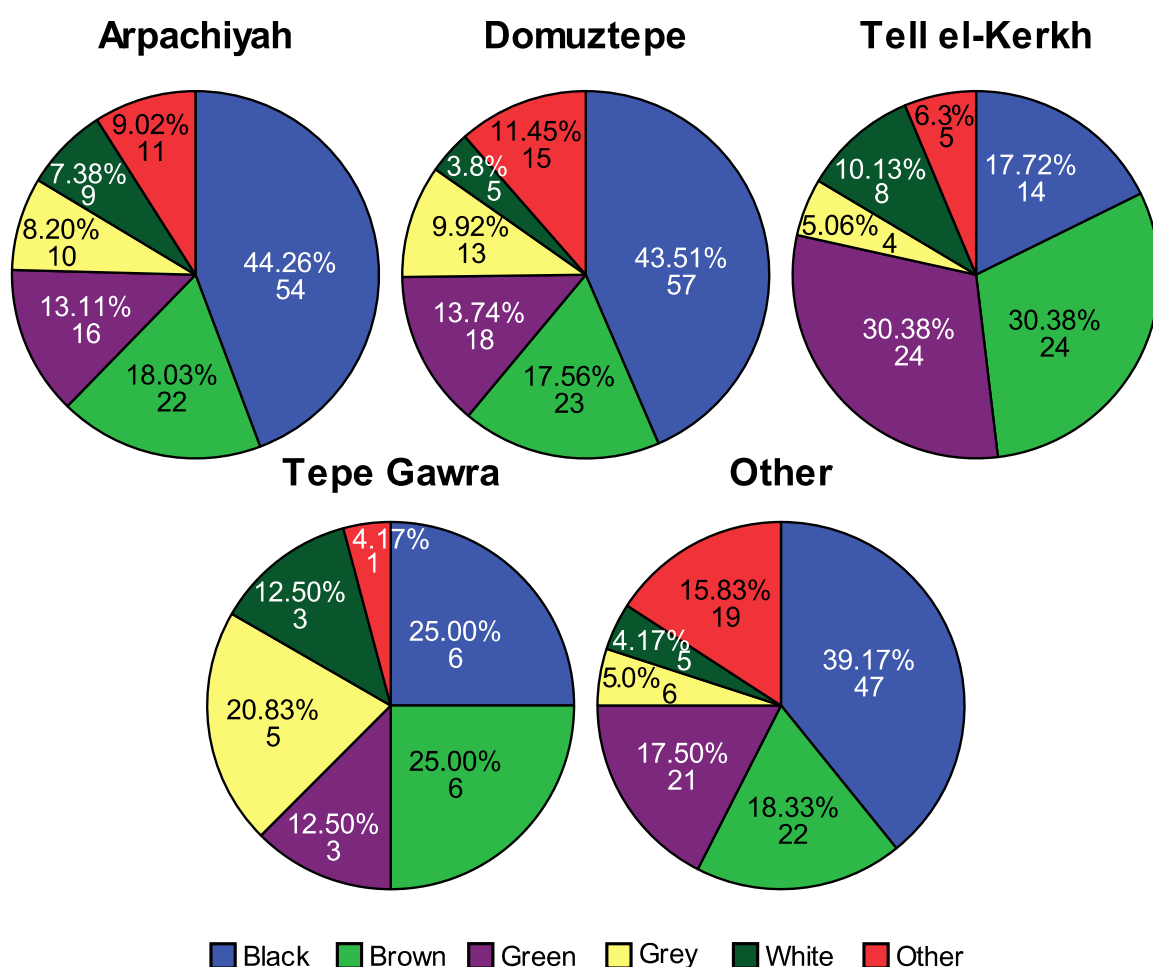


Figure 5-50: Pie charts showing percentages of colour at main sites (sites with more than 5% of seals) (Author's copyright).

Figure 5-50 shows the percentages of the most common colours at the four sites which offer more than 5% of seals. Most striking is the similarity between Arpachiyah and Domuztepe where the relative percentages of every colour except white is similar. The ‘other’ pie chart, representing all other sites, is also surprisingly similar. The only site that clearly has different relative percentages is Tell el-Kerkh where brown and green are



much more common than black. This may represent a chronological distinction (Arpachiyah and Domuztepe account for 69.1% of Halaf seals that have colour information and Tell el-Kerkh accounts for 74.7% of the Pottery Neolithic) but could equally represent the different stones available in the vicinity of the respective sites. Section 5.8 illustrated that morphological analysis is necessary to identify what stones are available in the vicinity of various sites and accurately recording the geochemistry of the stones seals are made from would provide a foundation to begin devising accurate colour classification systems for seals (as is being conducted on obsidian from a range of late Neolithic sites (Healey 2007; Healey and Campbell 2009)). This might elucidate subtle correlations between colour and other attributes but at present the colour data is limited.

## **5.10 Conclusion**

The arguments this chapter has developed with morphology and design have suggested that there are at least two narratives of late Neolithic seals. This first is morphological and can be seen in the eastern and western regions to change over the course of the late Neolithic as more ‘regular’ shapes become more popular for stamps in the western regions and pendant seals develop in the eastern regions. This is in contrast to the design analysis which has demonstrated that except for square and diagonal cross-hatching becoming more common in the Halaf there is no regional or chronological patterning that can be demonstrated with the present evidence. Instead I have suggested that this means the designs on seals represent a supra-regional symbolic language which appears seemingly fully formed probably in the late eighth millennium BC. Marrying the two, I think this suggests that people within many late Neolithic settlements had an association with the supra-regional symbolism but also maintained active lives in their communities or regions. Therefore, there are ‘fashions’ in the morphology of seals but the symbolic representations of seals appears to remain fixed. This raises interesting possibilities and suggests that previous site-centric or regional studies have failed to assess the possibility for different groups within late Neolithic society having shared associations which, while not necessarily central to their identities, might have allowed people across the late Neolithic world to claim an association with other people with whom they may not have been linguistically or directly culturally related.

This possibility is speculative and the lack of wider understanding of the specifics of late Neolithic culture makes it difficult to know how plausible it might be. It is apparent however that seal designs are not integrated on a regional or community level and appear to have referenced some shared symbolic language. This point will be developed in the next two chapters.

The chapter has raised a number of other conclusions:

- There may be associations between certain aspects of the morphology, body type and body face, and the design groups. However, the evidence for this is presently insufficient.
- Seals were not made of 'unusual' materials and while further work is required to mineralogical analyse seal materials they were predominantly made of soft stones.
- The clay and bone seals of the Pottery Neolithic may suggest a relative lack of formality as to the appropriate material of seals in their earlier phases.

The next chapter on the 'life' of seals will examine these conclusions and look at what evidence there is for the use of seals within the late Neolithic to see if this supports the idea of a supra-regional symbolic association held by parts of late Neolithic society.

# Chapter 6: Life

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This chapter discusses the 'life' of seals looking at the evidence for their use in the late Neolithic. It analyses how seals appear to have been used and the societal functions this may suggest. Section 6.1 looks at the contexts in which seals have been found and theorise as to how many there were in the late Neolithic. Section 6.2 analyses the life-span and curation of seals. Section 6.3 analyses possible relationships with other objects in the late Neolithic. Section 6.4 looks at supra-regional relationships. Section 6.5 discusses the societal functions seals may have been used for, other than sealing practices which are discussed in section 6.6. Section 6.7 provides a conclusion.

## 6.1 Contexts and ownerships

This section will analyse the archaeological evidence for contexts and seal numbers to allow for an interpretation of the scale of ownership within late Neolithic society and investigate any evidence for particular social practices.

How many seals might there have been? This study looked at some 600 seals and 80 impressions. Although this is a small number considering the late Neolithic lasted up to 2000 years and covered thousands of square miles, this sample does include most extant and provenanced late Neolithic seals. This suggests seals were much rarer than other elements of material culture such as pottery or beads. However, seals are small objects, and many late Neolithic excavations were undertaken long before systematic and more accurate recovery techniques were in common use. Modern excavations tend to be of limited horizontal exposures. For example, over 150 seals have been found at Domuztepe in excavations over 15 years (as of 2012) which have exposed approximately 8% of the vertical surface of a tell that is up to 12 metres deep and predominantly late Neolithic. Formal estimates suggest there are over five hundred seals in the plough soil alone (Campbell et al. 1999: 414) and assuming the excavated areas are not atypical which, given the contexts (see below), is hardly a stretch of the imagination, suggests there must be thousands of unexcavated seals at the site. No excavations of late Neolithic sites have come close to excavating entire sites. One of the few where a large, though indeterminate, proportion of the site was excavated was at Arpachiyah. There 112 Halaf seals were found at the site with a total area of between one and two hectares

(Mallowan and Rose 1935: 7). Arpachiyah was excavated by up to 180 workers with only two supervisors (Mallowan and Rose 1935: 2) implying that many more seals would be found if Mallowan's spoil-heaps were excavated, although interestingly none were found in Hijara's (1997) small scale excavations at Arpachiyah.

The potential number of seals is complicated by the factor that at different sites different amounts of seals have been found. For example, the Soviet excavations at Yarim Tepe II were on a large scale but found only twenty seals. While their excavation techniques were not to modern standards, they were not as rudimentary as those of Mallowan. That they found only one fifth of the seals found at Arpachiyah suggests there is more than archaeological coincidence between patterns of find density. At certain sites no seals have been found, even in quite large excavations as at Kharabeh Shattani (Watkins 1986; Watkins et al. 1995). This may relate to the preservation of different materials but even if it does certain sites have noticeably more stone seals. This is difficult to interpret, the social structure of the multiplicity of late Neolithic settlements is ambiguous and there does not appear to be any patterns between how many seals a site has. Certainly there is no significant geographical or chronological patterning to be found. It suggests that the networks of relationships that involved the use of seals were not shared equally in the late Neolithic. Some sites, or strata of people within those sites, would seem to have been more involved in these networked relationships than others.

Even accepting unequal exposure, one can estimate tens of thousands of stone seals during the late Neolithic. Population estimates are unreliable and while population in the late Neolithic is considered to be of low-density, people were spread across most of north Mesopotamia, with numerous small settlements and camp sites, many of which would be archaeologically invisible (Banning 1998: 230). This makes estimating the population of the late Neolithic problematic, and while some large settlements, like Domuztepe, may have had between 1500 and 3000 residents (Campbell et al. 1999), most settlements would have had populations of a few hundred. However, if we follow the argument of Bernbeck (2008a) that many small settlements visible in the late Neolithic are parts of multi-sited communities, consisting of multiple moving settlements and transient camps, then our single site estimates are unlikely to come close to the overall late Neolithic population. While unquantifiable, there were far fewer stone seals than the hundreds of thousands of people who would have lived and died during the late Neolithic.

The possibility of seals being made of perishable materials, discussed in section 5.8, remains. As discussed in section 5.8 the use of bone is unlikely, it is probably that wooden seals existed but it would require work to be done on the seal impressions, in the same manner as the experimental work at Arslantepe (Cristiani et al. 2007), to attempt to identify which materials made which impressions. However, in the present absence of evidence it is assumed that the appropriate material for seals was stone.

It is impossible to be sure of the overall population of the late Neolithic, how many seals there might have been, or the reasoning behind their unequal distribution. It is however clear that there were not enough seals for everyone to have had one.

Contexts	Count	Total%
Loose in soil	595	88.9%
Burnt Structure	35	5.2%
Burial	26	3.9%
Death pit	7	1.0%
Floor	4	0.6%
Under-floor Deposit	1	0.1%
Oven Fill	1	0.1%
Total	669	100.0%

**Table 6-1: Contexts**

This picture of the presence and availability of stamp seals, or lack thereof, is only partially clarified by the contextual information. The vast majority (88.9%) of seals were found in contexts that I have termed 'loose in soil'. This represents objects found in apparently non-structured deposits or where no contextual

information is available. The remainder are predominantly from the 'burnt structure' at Arpachiyah, burials, or the 'death pit' at Domuztepe. The four seals from floors are problematic, as the published data does not make clear whether their actual position was on or near floors and what the function of the room was. The under-floor deposit from Yarim Tepe II was interpreted as a foundation deposit but, along with the oven fill from Tell Sabi Abyad, are unique examples. Some of the seals from Tell el-Kerkh may have structured contexts but more contextual data was not available.

The 35 objects found in the 'burnt structure' at Arpachiyah provides limited information as only seven were seals (five pendant seals and two stamps) with the remaining 28 objects being impressions (representing 25 impressed sealings). The 'burnt structure' is therefore discussed separately in section 6.6.3 in the analysis of late Neolithic sealing practices.

There are 26 burials including seals from the late Neolithic:

- Three 3<sup>rd</sup> millennium BC burials at Chagar Bazar (CB-002, CB-022, and CB-026) in the re-use of Halaf material.
- Fifteen from the cemetery at Tell el-Kerkh (EK-080 – EK-094).
- Two from ambiguous contexts at Arpachiyah (AP-048, and AP-073).
- Three ambiguous Ubaid contexts from Tepe Gawra (GW-032, GW-038, and GW-062).
- One from Judaidah (JD-018).
- One from Yarim Tepe II (YT-022).
- One from Boztepe (BZ-001).

Late Neolithic burials are rare, and for the large part we do not know how the dead in the late Neolithic were disposed of (Pollock 2011: 36). The revealed practices have great variety as illustrated by a late Pottery Neolithic cemetery excavated at Tell el-Kerkh. The excavators found 200 graves in a combination of single graves, urn burials, and mass-graves, containing at least 240 individuals. Burials were found in primary, secondary, and cremation conditions (Tsuneki and Hydar 2011: 2, 10). Around 6% of people buried at Tell el-Kerkh were in association with seals split between 11 burial contexts (2 mass-graves, 9 single burials) containing a wide range of age and sex (Tsuneki and Hydar 2011: 8). Seals at Tell el-Kerkh are common in settlement contexts with 59 coming from the same period as the cemetery. This suggests that seals were not normally disposed of in graves at Tell el-Kerkh.

The other burial sites do not counter this position. There is not enough contextual information at Arpachiyah, Tepe Gawra, Judaidah and Yarim Tepe II to be sure the excavated seals were definitively associated with the burials. If they were, then Arpachiyah, Tepe Gawra and Judaidah were from single (presumably primary) inhumations. There is no age or sex data available for the Arpachiyah or Tepe Gawra burials. At Judaidah the seal was found under the skull of a juvenile (Braidwood and Braidwood 1960: 133) and at Yarim Tepe II the seal was found in a pot burial of a cremated adolescent with a number of other vessels and beads (Merpert and Boehmer 1993: 146). The seal from Boztepe was found in a double primary inhumation at the joint between the right clavicle and humerus of an unsexed adult burial (Parker and Creekmore

2002: 30). There is no apparent patterning to the burial data and I will refer to specific cases in the analysis below but it appears that the primary method of seal disposal was not in burials.

The 'Death Pit', a unique feature at Domuztepe, contained six seals and an impressed sealing. The death pit contained 10,000 highly fragmented animal and human bones (Kansa et al. 2009: 160) representing at least 11 cattle, 21 sheep/goat, 8 pigs, 6 dogs and 36 humans (Kansa et al. 2009: 167). It was the result of a huge feasting event involving cannibalism over a period of a few days to a few weeks (Kansa et al. 2009: 163). After the event the area was marked and left without buildings for a number of decades (Kansa et al. 2009: 163). The seals were "found in and close to the Death Pit and may have been deliberately deposited there" (Carter et al. 2003: 122). The uniqueness of the context makes it difficult to extrapolate general interpretations and given the feasting will have involved hundreds of people (Kansa et al. 2009: 163) and the cannibalism of some of the people found in the pit it is impossible to know if the seals were associated with the living or the dead. Without comparative examples the death pit remains a fascinating context that tells us nothing at an over-arching level of how seals were used in quotidian practices.

While the contexts for "loose in soil" provided no archaeological evidence of structured practices they may have been the result of them. The deposition of mundane material can be structured deposition (Richards and Thomas 1984). Some of the seals from Domuztepe (the site for which I have accurate contextual data) were deposited in fill consisting of feasting debris thereby suggesting an association with feasting events, however the majority of seals from Domuztepe, and elsewhere, do not come from contexts that have left traces of structured behaviour and in the absence of evidence to the contrary I will assume that most seals were not deposited of in explicitly structured ways.

It can be inferred from the above that contextual data is limited and when coupled with the generally low numbers of seals suggests seals were not primarily involved in site-based quotidian practices. Instead I believe this analysis reinforces the suggestion made in chapter 5 that the seals were primarily integrated outside of the local milieu. Certainly the contextual data tells us nothing at a general level about identities seals were involved with or their contexts of use. Section 6.2 will analyse the curation of seals and how this may shed light on their use or role within society.

## 6.2 Curation and Condition

The time that seals remained in use and circulation is conjectural. Seals could have been used for generations, or been single-use objects. Except for pendant seals and the ‘type’ of western stamps (with a square/circular face, flat profile, and central eyelet), seals are typologically static and there is no way to know when a seal was made. The only clear curational element is that seals are disposed of throughout the Pottery Neolithic, Halaf and early Ubaid. In later periods they appear only in secondary contexts, e.g. matrix containing late Neolithic seals was used as building material in late Bronze Age levels at Tell Sabi Abyad.

Condition	Count	Total%
Excellent	323	48.3%
Ok	175	26.2%
Unsure	113	16.9%
Poor	58	8.7%
Total	669	100.0%

**Table 6-2: Condition**

Profile Condition	Count	Total%
Good	401	72.1%
Unknown Break	67	12.1%
Fresh Break	46	8.3%
Unsure	21	3.8%
Worn Break	19	3.4%
Fresh Chipped	2	0.4%

**Table 6-3: Profile condition**

Face Condition	Count	Total%
Good	402	72.3%
Unknown Break	54	9.7%
Fresh Break	45	8.1%
Unknown Chipped	24	4.3%
Fresh Chipped	19	3.4%
Worn Chipped	5	0.9%
Concretions	4	0.7%
Worn Break	3	0.5%

**Table 6-4: Face condition**

I attempted to assess how long seals were used for by looking at condition at deposition. Table 6-2 shows the conditions of all stamps, pendant seals, and plaques in the thesis. 55% of objects are in ‘Excellent’ condition (no damage), 39.7% are either ‘Ok’ (with one chip or break), or ‘Poor’ (both suspension and face are damaged). Table 6-3 shows the conditions of the profiles (both suspension and general profile) and Table 6-4 the conditions of the sealing face. They show that published data is often inadequate to ascertain the character of damage. However, where information is available faces normally have fresh breaks/chips (88.9% of the 72 with data). Profiles are similar (71.6% of the 67 with data) and thirteen of the nineteen with worn, broken, suspensions had new suspensions drilled in them. Stamps were clearly normally deposited complete, but when they were broken it was presumably shortly before deposition or post-



depositionally. Some freshly broken objects could have been broken during excavation but, whilst common archaeologically, there is no reason to assume any of objects in the sample was broken in excavation unless explicitly mentioned.



**Figure 6-1: Three worn breaks (left: AP-060, middle: AP-091, right: EK-035) (Left and Middle: courtesy of UCL, Institute of Archaeology 2011, Right: courtesy of the Rouj Basin Project 2011).**

45 objects have freshly broken faces, 28 of which also have fresh broken suspensions or no preserved suspension. There are 17 with broken faces and complete suspensions varying considerably in how they are broken. The three stamps with worn breaks (AP-060, AP-091, and EK-035 - Figure 6-1) have minor breaks which do not obscure the design and all appear to have had been used subsequent to breaking. That the only worn examples have minor breaks suggests there may have been a concern with the totality of the design, and that if an object's design was obscured it was deposited.



**Figure 6-2: Pendant seal from Arpachiyah (AP-094) with arrows illustrating piercings (Courtesy of UCL, Institute of Archaeology 2011).**

Of profiles and suspensions. Twenty stamps and pendant seals have a worn break. Twelve were re-drilled, two were partially re-drilled, five were fully broken, and one was partially broken. This suggests that if an object could be re-drilled, then it would be. This again suggests a concern with the totality of the design, with most re-drilling appearing to avoid damaging the design. AP-094 illustrates this (Figure 6-2) where after the initial suspension was broken a new suspension was drilled through the thin side of the object which,

from the level of polish, appears to have been used before it, presumably, also snapped.

Of the 44 suspensions with fresh breaks, 24 also have fresh broken faces where the object was highly damaged. The 20 objects with fresh breaks and complete faces do not appear to be worn through but may have done and it is unclear how they would have broken.

I believe the condition data suggests that most seals were deposited complete or shortly after they were broken. I shall discuss below how I believe some of the broken examples may have been actively broken, but I shall initially discuss the wear on these objects to evaluate what that suggests about the length of time they were curated.

Wear	Count	Total%
None of note	526	89.6%
Suspension	24	4.1%
Drilled	23	3.9%
Face	8	1.4%
Suspension and Face	4	0.7%
Defaced	2	0.3%

**Table 6-5: Wear**

Table 6-5 shows the recorded 'wear' on seals, pendant seals, and plaques. The vast majority of objects show very little evidence of *significant* wear. That is not to say they have no wear and many seals have polishing around the suspension which suggests they were

likely to have been suspended, but not to the degree that the suspension began to wear through the seal. It is difficult to tell how much of the indentation around the suspension loops are due to wear or due to the original shape of the drill. It may be possible to ascertain this with more detailed analysis of the objects but I know of no such study. Heavy wear is visible on the suspensions of 24 objects. There is some overlap with 'worn break' profiles but most are complete objects displaying clear wear on the suspension.

The next most common group 'drilled' refers to objects where the suspension has broken, and the object was then re-drilled to make a new suspension. 'Face' and 'suspension and face' illustrate how unusual it is for objects to have a worn face and covers objects where part of the design has been obscured by wear on the face. The two 'defaced' seals will be discussed later but the wear data suggests that seals were not curated to the point of wearing out but primarily deposited without major wear.

Unfortunately, in itself this us tells little about the use-life of seals. I know of no studies that have quantified the wear of stones. The most common stones used are serpentine minerals or steatite, both soft, and which would, presumably, wear relatively quickly. However, without experimental archaeology, we cannot quantify the age of an object from the amount of wear. There are some seals where the condition and wear do suggest elements of seal identity.



Figure 6-3: Re-drilled face seals. Clockwise from top left: Judaiah (JD-011), Tell Hassuna (HS-001), Arpachiyah (AP-040), Tell el-Kerkh (EK-001), and Domuztepe (DZ-007) (Clockwise from top left: Reproduced from Braidwood and Braidwood 1960: Fig. 68.1, Reproduced from Lloyd et al 1945: Pl. XI:2, © Trustees of the British Museum, courtesy of The Rouj Basin Project 2011, and courtesy of the Domuztepe project).

There are 12 seals (AP-040, AT-002, DZ-007, EK-001, EK-012, FK-006, HS-001, HS-002, JD-011, JD-020, KU-006 and MT-001 – five of these pictured in Figure 6-3) which, after the suspension was broken, were re-drilled through the centre, and show heavy wear on the broken suspension. The top three in Figure 6-3 are very similar and while the others have different forms and designs the same practice is evident. The heavy wear on the broken suspensions suggests they were used long after breaking and subsequently re-drilled but there is essentially no wear on the design faces. I believe this reinforces the suggestion that complete designs were important, all of the pierced holes are small, and do not obscure the design. The re-piercing and heavy wear on the old suspension suggests that the objects were old, but would also make them impractical for sealing purposes or display. If the new suspension was strung, then the string would have partially obscured the design. It suggests to me that the possession or presence of the object might have been more important than displaying it.

A stamp seal from Domuztepe (DZ-035, Figure 6-4) might provide a clue to the potential importance of curation. The outer diagonal crosses are incised at a greater depth than the middle ones and even assuming some wear, it would be unlikely that the different incision depths of the square cross-hatching and the diagonals is not intentional, particularly as the diagonals fit in the squares and do not connect. Given there appears to



Figure 6-4: DZ-036 from Domuztepe's Face (Courtesy of the Domuztepe Project).

be some wear on the suspension it is unlikely this seal is 'unfinished' and the possibility arises that this seal has been deliberately carved to appear heavily worn. Possibly this semblance of age might relate to the introduction of square and diagonal cross-hatching between the Pottery Neolithic and the Halaf. The seal might have been made to look old to give its relatively new design a notion of heritage or antiquity. Unfortunately there are no parallels for this object.

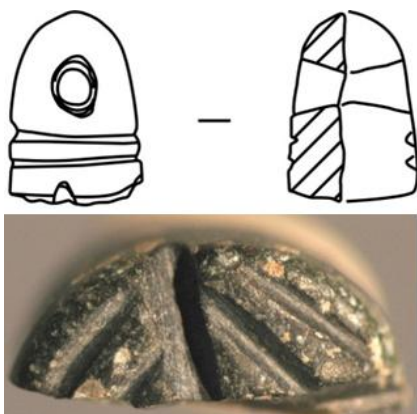


Figure 6-5: Broken Seal from Tell el-Kerkh (EK-004) (Courtesy of The Rouj Basin Project 2011).

More generically, the analysis raises the question of how or why a stone seal is 'accidentally' broken when they are so small and the period largely lacks hard surfaces. There has been no empirical work looking at accidental versus deliberate breakage in the late Neolithic of the Middle East, but some work has been carried out in the Balkans Neolithic. It was found that clay figurines, clay stamps, and various other small objects only reliably broke on cobbled stone floors.

They did not break on grass, wooden, stamped clay, or fired clay surfaces (Chapman and Daygarska 2007: 7–8). Stone cobbles are very rare in late Neolithic North Mesopotamia and I assume that the accidental breakage of seals, given stone is generally harder than ceramics, must have been rare. The example in Figure 6-5 (EK-004) is broken down the centre of the seal, a very unusual angle, suggesting intentional action.





Figure 6-6: Defaced Seals (DZ-048 - left and centre, AP-013 - right) (Left and Middle: Courtesy of the Domuztepe Project, Right: © Trustees of the British Museum).

I believe we are looking at the deliberate breaking of seals before deposition. Two seals (Figure 6-6) have been actively defaced in clear attempts to break the integral whole of the object and design. While most objects are deposited complete, that up to a third are potentially being deliberately broken before deposition suggests a concern with breaking the efficacy of objects. There are no quantifiable differences between the broken seals and the non-broken seals, but it is unlikely to be concerned with identification. The designs of DZ-048 and AP-013 are easily reconstructable. AP-013 actually has the most common seal design (diagonal cross-hatching) which is so generic (over one in ten of all seals) to make obscuring the design for identification purposes seem pointless.

By breaking the physical whole of the seal the objects link with the symbolic system could be broken, rendering it 'ready' to be discarded. Most seals have designs that cover the entire face, and by extension any damage to the physicality of the seal might have been enough to damage any potential power it contained. This may account for why matching broken parts are never found as separating them may also have been necessary to destroy the symbol.

If it is assumed that (some) breaks are deliberate, it raises an interesting possibility. Many breaks, as in EK-007 (Figure 6-5), are tiny and seals would be difficult to have held or placed on a surface to break them. EK-007 is only 7mm wide on the complete edge (and 3mm on the broken edge) and it would have necessitated securing to avoid it moving or sinking on/through the hand or surface. We have little idea of how late Neolithic seals could have been secured or were made. There are no workshops and only a few presumed seal blank have been found. Even in later periods there is very little evidence of lapidaries (Sax et al. 1998: 2–3). There are bead 'workshops' from the late Neolithic, and it has been suggested that seals were made in the same places (Belcher 2011), but I am unaware of any seal blanks having been found with bead blanks although it is likely that similar technologies were involved. No empirical work has been conducted

on the specifics of reductive technologies in the late Neolithic but experimental work on the production of Indian carnelian beads, using a sandstone or quartzite grinding stone, took four days to hand grind a rough-out as opposed to four hours when secured in a wooden vice (Kenoyer et al. 1991: 53). There is no evidence for mechanisms for securing beads in the late Neolithic. Ethnographically stone or wooden anvils or benches to secure beads are common (Wright 2012: 17–21). Stocks (2003) carried out experiments based on images in Egyptian tombs, and suggests wall reliefs showing bead drilling carried out on three-legged tables, may have represented wooden troughs containing blocks of clay into which the beads were fixed to be drilled (Stocks 2003: 215). Similar methods may have been involved in the late Neolithic.

Regardless of the specifics a vice, anvil or bench would provide a secure surface upon which to hold and therefore make, or break, a seal. Reductive technologies have a transformative aspect and while there is a tendency to see stone working technology in the late Neolithic as quite basic (Akkermans and Schwartz 2003: 132) this underappreciates the level of skill and knowledge required to do any sort of lithic work. By carving stone to make a seal, and then reducing that seal back into stone, potentially using the same tools, could suggest a cyclical metaphor applied by the people of the late Neolithic using the same forces to both create and destroy the seals. It is notable seals are not the only stone objects commonly broken. Stone bowls are rarely found complete and cannot be reconstructed from the fragments (Campbell forthcoming), i.e. certain fragments are missing as with the broken seals. While more work is required to understand how seals could be broken the possibility for a cyclical metaphor of construction and destruction has interesting implications.

To conclude the analysis of the condition and wear on seals does not provide enough accurate data to evaluate the objects length of curation, but does suggest certain important conclusions. Of prime importance is that it is clear that designs were intended to be complete. Looking at the total of the seal corpus while there are blank seals (~26, of which some may be other objects never intended to be decorated) there is no reason to assume designs are incomplete. There is a group of 13 seals incised with 'partial' cross-hatching which likely represent a specific type of design as opposed to being unfinished, but see Tomas (2011) for an opposing view. Even with unusual examples (like AP-010 in Figure 6-7) there is no obvious reason to assume it was intended to be otherwise.



Figure 6-7: Seal from Arpachiyah (AP-010) (© Trustees of the British Museum.)

Given the importance of an integral design it appears that at the end of a seal's use-life while many were deposited complete, many were broken, seemingly deliberately, to damage the integrity of the design. This suggests that the designs themselves, along with the objects, had an efficacy which through the act of breaking

and separating the parts could be rendered inert. There is not enough data to say why some were broken and some were not. There appears to be no significant difference in the design, morphology, or other attributes. Possibly breaking may relate to different groups within communities with different practices or notions of ritual performance relating to the circumstances in which an object reached the end of its use-life.

More generally, it is probable that most objects were not curated for long periods of time. The absence of empirical data leads to speculation on the basis of seal re-workings but I would assume any individual seal was in use for at most a few generations. While not long this time scale is still considerably longer than many other forms of late Neolithic material culture, e.g. pottery, and possibly even settlements (Bernbeck 2008a). This suggests seals had a certain ubiquity and maybe a sense of antiquity but not one where individual objects represented a deep antiquity.

In section 6.3 I shall discuss the relationships between seals and other objects.

## 6.3 Relations with other objects

The vast majority of seals were found with no other visible objects. A few may have been associated with beads but there is no clear evidence the seals were strung with them. It is possible seals were associated with perishable objects such as clothing or other forms of bodily adornment, such as tattooing, but there is no evidence for these parameters.

When compared with extant objects there is little overlap of design or morphology. The simplest association is with pendants and beads because they are items of similar size and potential items of bodily adornment. However there is no recognisable or structural overlap in designs between stamp seals and beads and most pendants. There is some slight overlap morphologically between pendant seals and other pendants. For example, DZ-004 (Figure 6-8) is a pendant seal from Domuztepe which has a



Figure 6-8: Pendant Seal (DZ-004) (Courtesy of the Domuztepe Project).

morphology that resembles a ‘normal’ pendant but while it has an appropriate geometric design it is morphologically unusual for a pendant seal and should probably be classified as a ‘normal’ pendant. Ambiguous objects such as this are rare, and there is no contextual evidence to suggest there was explicit overlap in classification between the types of seal and other objects of bodily adornment. If they were

found to have been made in the same structures, as discussed in section 6.2, it is possible there was a metaphorical connection but on the basis of current evidence seals in the late Neolithic do not seem to have been an obvious part of wider practices of bodily adornment.

The only type of bodily adornment object with design parallels to seals are six clay ‘bead seals’ that (though contextually unclear) appear to come from the Ubaid levels at Tell Arpachiyah. Figure 6-9 illustrates three of these. The morphological form is not used for late Neolithic stamp seals and the design parallels are tenuous, the middle example shows parallels with the ‘wedged cross’ sub-design group of aligned centre. There is no evidence for their context or use. I know of no other objects quite like these and it is unclear whether they are related to the seals or constitute a type of bead.





Figure 6-9: 'bead seals' from Tell Arpachiyah (Left and Middle: Reproduced from Mallowan and Rose 1935: Pl. VII.b, Right: © Trustees of the British Museum).

Of the remaining objects from the late Neolithic the most common one that may offer design parallels is geometrically styled pottery. The geometric pottery styles of the late Pottery Neolithic and Halaf periods develop gradually from undecorated pottery styles beginning around 6400 BC (Nieuwenhuyse 2007). The origins of pottery styles are unknown. A popular explanation is that pottery styles are skeuomorphs of, now lost, basketry or fabrics (Nieuwenhuyse 2007: 215). It has also been suggested that the designs derive from body painting or tattooing (Croucher 2005). While a pot with a cross-hatched decoration may be a skeuomorph of a basket, a seal is unlikely to be. The seal glyptic appears some 500 years earlier than geometrically styled pottery and except for square and diagonal cross-hatched designs, does not change between the Pottery Neolithic and Halaf. Body painting or tattooing offers a more plausible model for seal design but there is no reason to assume seal designs reflect anything except their own shared symbolic system.

Apart from chronological incompatibilities my main contention against using parallels between pottery and seals is the makeup of designs. Late Neolithic pots are rarely decorated with a single motif while all seals, essentially, have only one motif covering the entire face of the seal. This suggests a different design intention. While seals are smaller, multiple designs could have been used and seals could have been made larger. The similarities that do exist, e.g. cross-hatching, may be purely coincidental. As such, I believe it is unlikely there is any association between the designs on pottery and seals. An interesting possibility is that the designs on pottery could originate from those of seals. While most pottery designs have multiple repeating motifs across their surface, through directed analysis it might be possible to identify singular motifs that reflect stamp

seal designs. I am unaware of any research that has considered this possibility and imagine it could prove a fruitful area of study.



**Figure 6-10: Anthropomorphic Pot**(Courtesy of Stuart Campbell)

The final category of late Neolithic objects that are often decorated is figurines, figurines are prevalent across the late Neolithic and are often painted (Akkermans and Schwartz 2003: 143–144). Belcher (Pers. Comm.) has suggested some figurines, such as the anthropomorphic pot in Figure 6-10, may be wearing seals (in this case in the navel). It remains difficult to compare seal designs with figurine designs however due to the unavailability of sources that discuss figurines at a Neolithic scale, a soon to be completed PhD by Ellen Belcher at Columbia University on late Neolithic figurines will provide the data source to enable comparisons between seal designs and figurine designs without the need for considerable amounts of primary research.

The presence of seal designs on other media, such as pottery or figurines, would reinforce the idea that seal designs represent a shared symbolic language. The likelihood of cross-media relations in late Neolithic symbolism has been suggested by a number of scholars (Campbell and Fletcher forthcoming; Wengrow 2008; Croucher 2012). However, it is difficult to place seals within the general material fields of the late Neolithic as they are not associated with other objects or specific contexts. This lack of association suggests that their use was outside of the normal structuring principles used within the settlements of the late Neolithic where things like pottery may have been used. The lack of evidence of their use with clear quotidian practices suggests they were not associated with in-settlement relationships.



**Figure 6-11: EK-010 design** (courtesy of The Rouj Basin Project 2011)

Some scholars, Mallowan and Rose (1935: 91) and Wengrow (2008: 14), have raised the possibility that seals are skeuomorphs of natural objects such as teeth, shells, or bones. This is an interesting point and stone replicas of finger bones, though without any incised design, are known from Arpachiyah (Mallowan and Rose 1935: 101). A number of the forms could well represent teeth, particularly blunt cone and cylinder forms, and the design type Central Focus – Lines – Parallel Lines could mirror

designs on shells (see Figure 6-11 for an example). More research is necessary to quantify any potential relationship between seal forms or designs and natural shapes, many of the more common seal forms are geometric disks (over 65%) that do not lend themselves to skeuomorphic analysis. However, even if only a small amount of seals were skeuomorphs of natural objects this is a significant point as it would provide support for Charvát's (1992; 1994) and Wengrow's (2008) argument that seals could be used as extensions of the body. Further research building on Wengrow's framework would be productive to determine baselines for what constitutes a skeuomorph.

Section 6.4 discusses whether seals were used in relationships beyond North Mesopotamia.

## **6.4 Supra-North Mesopotamian Relationships**

The late Neolithic of North Mesopotamia is a period which had links far beyond its theoretical limits. This shows itself most clearly in the obsidian trade but is also reflected by trade in other materials such as shells or bitumen. Obsidian was acquired from a variety of Turkish sources over distances of hundreds of kilometres. The mechanisms for this network are not understood, and different sites have quite different sources, types, and uses of obsidian (Healey 2007). Evidence for other long distance trade is less clear but there is no reason to assume seals were involved in any of it. As discussed in section 4.5.3 late Neolithic seals, except for those from Niğde and Nevşehir provinces of Turkey, are not found outside of the late Neolithic 'world'. Archaeologically they are not associated with obsidian (only 0.8% of seals are made from Obsidian) or other materials which might have required long-distance trade.

While further work investigating the mechanisms of late Neolithic trade might elucidate possible relationships between seals and the wider world the ubiquity of seals in the late Neolithic contrasts with their absence outside of the late Neolithic and suggests they functioned to negotiate relationships between people of the late Neolithic and were not involved in negotiating relationships outside of the late Neolithic 'world'. While seals are often interpreted as evidence of trade there is no tangible reason to assume they were involved in trade in the late Neolithic.

Section 6.5 will summarise the points raised in sections 6.1 – 6.4 and offer an interpretation of how seals were used in the late Neolithic.

## 6.5 Uses of seals

The arguments in the previous sections have each raised conclusions which I summarise as:

- The contextual data is very limited and provides no contexts of use.
- The contextual data illustrates they were mostly deposited in seemingly unstructured rubbish deposits.
- The curational data illustrates that while most seals were deposited whole, a significant minority were deliberately broken in a manner that damaged the wholeness of the design and by extension the efficacy of the symbol.
- The curational data is very unclear but suggests any individual seal would be curated for at most a couple of generations.
- There is no evidence of relationship with any other items of material culture in the late Neolithic.
- There is no evidence of relationships with trade within or outside of the late Neolithic.

Throughout the above discussions I have suggested these conclusions imply stamp seals they were not used to identify, augment, or reflect community-level social relations. The designs clearly reflect a late Neolithic shared symbolic language which was not integrated on the community level but instead negotiated relationships between parts of communities. However, seals are clearly used in local ways as illustrated by their rare presence in burials and some of the localised practices discussed above. These appear to be below the level of community practice. As such, I think it is clear that seals were not used by members of single communities to identify themselves to each other or to other communities. In this section I want to discuss what other aspects of identity or practices seals could have reflected. However, it is necessary to review what is known of late Neolithic identity.

Essentially, we know nothing certain of late Neolithic identities, society or personhood. Little theorisation has been carried on how kin groups, families, persons or any other traditional social group were arranged or on how people in the late Neolithic might have perceived their identity. Individual aspects of identity such as the treatment of the dead and notions of time (Pollock 2011) or relationships with place (Bernbeck

2008a) have been studied but there is no attempt to offer a definition of how societies functioned, even on the local scale, in the late Neolithic. Some social evolutionary analysis has been made by Watson and LeBlanc (1973) suggesting the existence of chiefdoms and by Forest (1996) and Breniquet (1996) who suggested the existence of tribes. Unfortunately, as has long been demonstrated (Feinman and Neitzel 1984), social evolutionary approaches cannot agree on which social traits fit with which rank and as such, even if one could agree on a social evolutionary ranking for the late Neolithic it would tell us little.

This lack of a frame into which to fit discussions of seal identity is unfortunate as it means methodologically my argument stands alone instead of as part of a constructive ontology. While I am not attempting to produce a 'lifeworld' (in the Habermassian sense) of the late Neolithic a conceptual framing is useful. As such I want to briefly outline theories on how societies function to thereby provide a frame to the discussion and analysis.

Most important are Bourdieu's (1977; 1984) *practice theory*, and Giddens's (1984) *structuration*. Bourdieu (1977: 78) gives people *habitus* which is "the durably installed generative principle of regulated improvisations". Structuration was independently developed but argues for a similar point (cf. Giddens 1984: 2). Both practice theory and structuration provide a functional mechanism for people to be active agents (as in the ability to act within the world), yet have them framed by social structures (the pre-existing conditions that influence and limit available opportunities). The use of these theories in Middle Eastern archaeology is limited (though see Bernbeck 2008a for a discussion of related concepts) but they have been highly influential in other areas of archaeology (perhaps most influentially deriving from Jones 1997) by providing a frame as to how identity works in social contexts without the necessity of arbitrary value judgements of social structures. I should note post-structuralist approaches have been criticised for being over-atomistic in their emphasis on the, modern, individual (Thomas 2004: 144–148) and underplaying the significance of structure in favour of agency (Gronow 2008). These critiques are valid and the latter issue is a fundamentally unresolved problem relating to the duality of structure and agency in the social sciences. The criticism re-individual is countered by the theory of *personhood*.

Personhood is what it is to be a person in a society and derives from the recognition that the bounded, closed 'individual' is a product of western modernity and is

not indiscriminately appropriate to past cultures (Fowler 2004). Fowler introduced a contrasting concept of dividual identity. Dividual identity is “a state of being in which the person is recognised as composite and multiply-authored. People are composed of social relations with others to the degree that they owe parts of themselves to others” (Fowler 2004: 8). The theory relates to how people *perceive* their identity within any social context. This makes identifying identities on the individual to dividual spectrum difficult as the theory relates to internalised semantic perception. The over-arching point is very important however, as it recognises that the ‘western’ individual is a product of modernity and is not equivalent to an agent. Persons have agency in a doxic relationship with structure regardless of if they are individuals or dividuals.

Within personhood theory objects can be important. Fowler identifies a type of dividual identity he calls partibility where it is suggested that parts of a person “can be extracted and given to another person to whom it is owed” (Fowler 2004: 9) in the form of objects. This type of relational personhood is closely associated with the notion of inalienability. An inalienable object is one which has been “imbued with affective qualities that are expressions of the value an object has when it is kept by its owners and inherited within the same family or descent group” (Weiner 1985: 210). More generally the theory illustrates that aspects of one’s personhood can originate outside of the person providing an arena for objects to be efficacious, without merely passively reflecting imposed meanings. Objects, places, smells, persons, communities, etc. can all be givers and receivers of aspects of personhood in different social contexts. The very ambiguity of this theory provides a notion or frame of how society functions that partly circumvents our lack of understanding of late Neolithic society.

The first aspect of identity with which seals may have been associated is identification. Did the possessing and/or wearing of a seal identify one publically or privately as a member of a group? Previous scholarship has largely assumed they were personal artefacts used to mark personal identity but a plethora of other identities could have been reflected. While there is no evidence for this, this section is based on the assumption that seals were worn by people. No burial, or other site, data directly associates seals with any part of the body (as discussed in 5.1 the seal from Boztepe was not found at the wrist) although there is evidence some seals have been found *near* the neck in burials.

Burial data shows that if single persons owned/had them, they were either bequeathed, or deposited outside of burials. This suggests seals were not used for identifying single persons. If they had been personal, one would expect them to be deposited in burials or more formally than in the rubbish contexts they are generally found in. This suggestion is supported by the lack of variety in seal designs and their relative scarcity, there are not enough for everyone to have had a seal in the late Neolithic and the designs are too restricted for individual identification. This does not preclude singular persons owning seals for other identity based reasons, but they were not used by singular persons to identify themselves.

The burial data similarly suggests seals were not associated with age, or biological sex based identities. The seals in burials display no structure relating to age or biological sex of the burial occupants. Similarly there is no patterning in the design or morphology of seals as compared to different ages and biological sexes of persons in burials. However, this absence of specific patterning may reflect the data as it is clear the primary place for seal deposition was not in burials, and traces of biological sex or age based identities might not be found in other contexts.

A more complex question lies with kin group identification. 'Households' and 'families' are often discussed in the late Neolithic but poorly defined and we do not know how society defined kin groups. It is unlikely families were equivalent to households (Özbal 2012), dental analysis of a range of skeletons at Çatalhöyük has demonstrated there was no genetic relationships between the people buried in individual houses (Pilloud and Larsen 2011). While this cannot be directly extrapolated to late Neolithic North Mesopotamia it does, in lieu of research, provide the best example of how family relations in the late Neolithic were unlikely to have been structured on households. I do not believe seals were associated with family or household identities.

The first evidence against their use as family identities is the lack of design variety, there are just too few designs. There is essentially no change or patterning in the design of seals either regionally or chronologically. If a seal design was used by a single family, more variety than the 50 or so sub-design groups identified would have been required. Some designs are too common, those with square (CH) or diagonal (CH) cross-hatching are almost interchangeable and account for one in four of all late Neolithic seals implying in this context a form of family based inequality that is unlikely to have existed in the late Neolithic. There is a geographically based difference in the distinction between stamps in

western regions and stamps and pendant seals in eastern regions, which may represent different groups, but is at too large a scale to imply differences on the family level. This takes into account the imperfect distribution of seals across the late Neolithic, and even if not every family had one there are still not enough designs. The contextual data also suggests against family because of the lack of structured treatment. An example of this is a multiple burial (concentration 10) from Tell el-Kerkh. The south accumulation of 'concentration 10' was interpreted as a family or kin-group burial. It contained the burial of at least fifteen individually added people, with the grave re-sealed after each (Tsuneki and Hydar 2011: 19). Of the fifteen, six were younger than twelve, one was between twelve and twenty, five were over twenty, and three were of indeterminate age. While most could not be sexed there were at least three males and two females (Tsuneki and Hydar 2011: 19). There were few grave-goods, one flint blade, two clay disks, two stamp seals and 'several' beads. No specific information is available on these seals. If we follow the argument that it is a family burial, for which there is technically no positive evidence, it is hard to rationalise there being two stamp seals. If a seal was owned by a family dynasty we would expect to find none, as, assuming the family was not extinct, why would they bury the seal instead of keeping it. The presence of seals in the burials of children supports this. At least three of the seventeen individual burials at Tell el-Kerkh with seals are child burials. Excluding the multiple burials, and burials without published data, this rises to three of eight. Child mortality is high at the site and 48% of burials are non-adults with 55% of those between one and three (Tsuneki and Hydar 2011: 28). It is possible that the seals in child burials represent the final member of dynasties and the seal is buried with them, but this is unlikely. Even if we assume they represented generic symbols of the family instead of dynastic seals the problems discussed above occur, there are still too few designs and too few seals overall.

Households are a more complicated issue as while families of some form can be assumed to have existed in the late Neolithic the possible forms of households are unknown. However, all the arguments above apply equally. There is the possibility for other higher level kin or perceived kin identities and I will return to discuss these after looking at what I loosely term 'value' identities.

'Value' identities vary considerably and I will discuss seals reflecting achieved identities, as being high value or status goods, or being inalienable. I believe seals, as a class of artefacts, are not inalienable. Most seals appear to have been discarded in a non-



structured manner implying they were essentially not that special. In later Mesopotamia, the loss of a seal was a very serious event. An Ur III text from Nippur records that, when the seal of the merchant Ur-DUN was lost, the assembly ordered a horn blown in the streets (Steinkeller 1977: 48). Similarly a Neo-Babylonian tablet records the exact day a seal had been lost (Hallo 1977: 57), presumably to stop claims after that date. In both these examples it is clear the seal was synonymous with the identity or authority of its owner. The presence of most late Neolithic seals in what are essentially rubbish deposits suggests that the loss or deposition of the artefact in itself was not particularly important. This implies individual seals did not become imbued with their owner's 'essence' in an inalienable sense (though as I will discuss later they may have done so in a temporary sense).

Seals are unlikely to have been 'generic' high value goods. Materially they are only rarely made of unusual materials, and their production, while intricate, would not necessarily need craft specialists. Their poor contexts and relative commonness also suggests a certain ubiquity, as opposed to exclusivity. The burial record supports this, as they are essentially too rare to be considered exclusive. While one of the burials at Tell el-Kerkh was buried with three stamp seals all that remained of the burial was an articulated hand, making conclusions about the relative status of that burial difficult. Grave-goods are fairly common at Tell el-Kerkh and about half of primary inhumations (Tsuneki and Hydar 2011: 6) contain some sort of goods, often beads or pendants. Isotopic analysis shows no significant variation in the origin or diet between those with grave goods and those without (Tsuneki and Hydar 2011: 32) suggesting they were not of different status. Given that most seals at Tell el-Kerkh, and the wider late Neolithic, are found in rubbish deposits, as opposed to burials or formally disposed of, it is hard to see how seals could have functioned as elite goods, even if one temporarily assumed late Neolithic society was based on stratified inequality.

A third type of identity is more ambiguous. Achieved identities are ones which have, theoretically, been achieved through merit. In the modern world this includes aspects of identity as in a profession. In the late Neolithic identifying achieved identities is hard. While it is assumed there were some part-time craft specialists, there is very little archaeological evidence of this. Similarly while society could have been full of ritual specialists, successful gatherers, excellent wall builders, or fantastic dancers we have no archaeological evidence for any form of achieved identities, though presumably they

existed. Seals could have functioned as 'badges' of a particular status used by a group within society who had earned, or been given, that status. However, as the arguments above show, if they were an important object that a person had been awarded personally reflecting or augmenting a key aspect of their biography, it could be expected that the seals would have been deposited with more concern. Throwing seals away with what appears to be rubbish, does not suggest the object in itself was important.

Given the contexts in which seals are found, their commonplace materials, and lack of diversity, it is likely that a person in the late Neolithic with a seal was probably of no higher a status than a person without one. Unless they implicitly passively reflected tacit identities then their deposition was not conducted in a way to preclude people recovering them. Late Neolithic space was rarely dead and the deposition contexts most seals are found in were parts of networks of inter-cutting pits and other negative features. Even burial space, as illustrated by the articulated hand that is all that remains of one of the burials at Tell el-Kerkh, was clearly active space. Only in exceptional circumstances, as with the death pit at Domuztepe, was dead space created, and even there within a few generations the space was in domestic use again. When we include the observation that seals are unlikely to be inalienable it seems unlikely that possession of the object was required to symbolise an identity. I suggest that either they reflected an identity one had regardless of whether one possessed the object or not or they symbolised short-term identities. As such I believe seals can only have reflected identities that did not, structurally, represent different, unequal, statuses. This suggests to me two avenues of identity, one encompassing the shared symbolism of seals across the late Neolithic, and the second being utilised in sub-community level identities between people within communities.

The form of non-status reflecting shared symbolic system I think seals may have reflected is generic forms of actual or perceived kin identity (clans, etc.). As discussed the social constitution of late Neolithic society is unknown, but settlements having different descent lines within them is hardly controversial. Such identities would explain the presence of seals with, prototypically, the same design at different sites and the relative stasis of seal designs, for while new families could have formed clan-like structures are more likely to have remained fairly constant. As such, seals may have been used to negotiate relationships of parts of different communities who had a perceived common identity with other parts of other communities that were not shared by everyone in the

late Neolithic. This argument forms the core of chapter 7 and I will return to it there where it relates directly to the 'meaning' of seals in the late Neolithic. Instead I want to evaluate the short-term identities for which seals may have been used.

Short-term identities involve temporary aspects of existence, e.g. menstruation, getting ill, or getting attacked by spirits (short-term being defined by impermanence not time). These identities are archaeologically intangible but it is clear that a seal by itself was essentially unimportant but that the designs on seals were efficacious. This is most clearly illustrated by sealing practices, discussed in depth in section 6.6, which demonstrate seals could project efficacy through their symbolism. When taken in light of the concern with deliberate object breakage in section 6.2 it is probable that the efficacy derives from the design as opposed to the object. The basis for this section lies with the theory above and the case studies discussed in chapter 2. Many of the case studies discussed in section 2.2.3 were of transitory identities relating to specific, predominantly apotropaic, events. The specific practices discussed involved the use of seals in:

- Pregnancy
- Healing sickness
- Against a sorcerer
- Protecting travellers

For these practices a seal was only necessary during the event itself. Hence a seal that protected a woman during pregnancy and childbirth would be unnecessary once the woman had given birth. Similarly once a curse or illness had lifted an apotropaic seal would no longer be necessary. Seals could have been worn by travellers between communities for apotropaic purposes who, upon reaching their destination threw their seal away, its amuletic value gone. There is a wide area of possible apotropaic uses of seals as with the use of any amuletic device. The specifics do not matter as much as the recognition that seals with efficacious designs could be amuletic. Seals could also have been used talismanically, sealing practices in particular partially demonstrate seals could project their efficacy. For example, a seal could have been used to curse people as easily as they might have protected people. Although archaeologically there is little understanding of late Neolithic society one can speculate that such uses are plausible and even probable.

I would like to suggest a possibility that could unite the practices above relating to the idea of 'essences' earlier. Seals could have acted as 'lightning rods', absorbing 'bad' essences from internal (sickness) or external (curses) threats. Once a seal was 'full' or it had succeeded/failed it may no longer have been useable. Examples of this sort of practice are common in later Mesopotamia, particularly involving figurines where they frequently operated as surrogates (Scurlock 2006: 49–59), but I am unaware of any explicitly involving seals (or amulets). It is unlikely seals were single-use objects as they do appear to have been used over relatively long periods of time but the principle remains appropriate. An apotropaic or talismanic seals could have had 'charges', certain events could have been more significant than others, or a seal could be disposed of when it failed. For example, a seal being used to treat an illness might have been used repeatedly until it failed and thus necessitated the disposal of the seal. The deposition of seals suggests they had limited potential. The rarity of sealing practices may support this as it suggests a concern with the seals efficacy being a limited resource.

Contra to the above conjectures is the very rareness of seals, there are not enough to imply wide use for apotropaic or talismanic purposes in the late Neolithic. It is possible use was restricted to specific purposes (i.e. protection from spirits) but as their unequal distribution and low numbers suggests seals may have been used only by specific parts of communities while other parts of the community had other mechanisms for dealing with events like illness. Much more could be theorised about such short-term practices but ultimately without further evidence or wider theorisation of late Neolithic social structures the argument remains cyclical. However, in the absence of evidence of community level uses of seals such specific uses of seals seem plausible, particularly if we take into account ideas about ritual performance in the late Neolithic (cf. Campbell et al. forthcoming; Pollock 2011). It is an area where further research is necessary to elucidate potential scales of relationship.

In conclusion, I submit that at a macro level seals were, relatively, passive artefacts reflecting a late Neolithic imagined community but at a micro level the designs may have been profoundly efficacious. This appears contradictory but most objects have multiple meanings and to show that a case study in chapter 7 evaluates how single objects can operate at multiple levels of identity. Before this however in section 6.6 I will discuss late Neolithic sealing practices and offer an interpretation of what the sealing practices represent.

## 6.6 Relationships with Clay

The only archaeological evidence for seal use is to create impressed sealings. However, the specific social processes involved in the creation of sealings have only rarely been considered at the expense of being assumed to be the physical traces of administrative actions as was discussed in chapter two and three. This section will analyse what evidence there is of late Neolithic sealing practices and offer an interpretation suggesting late Neolithic sealing practices represent efficacious sealing in social contexts. It is arranged in reversed chronological order beginning in section 6.6.1 with clearly administrative sealing practices in the Late Chalcolithic. Section 6.6.2 discusses the Ubaid, section 6.6.3 discusses the late Halaf, section 6.6.4 discusses the earlier Halaf, section 6.6.5 discusses the Pottery Neolithic and section 6.6.6 concludes the chapter.

### 6.6.1 The Late Chalcolithic

The Late Chalcolithic is outside the timeframe of this thesis but is the first period with evidence of large scale administrative sealing practices. Within the region covered here the best published example is from the site of Arslantepe, near Malatya, Turkey. A 'palace' of 0.2 hectares was excavated and dated to period VI A (3350-3000 BC). The 'palace' has limited domestic contexts and is interpreted to have primarily been a central redistributive unit, administering food distribution in its rural hinterland (Frangipane 2007b: 476). Over 2000 impressed sealings were found in distinct archives reflecting at least 209 different seals (Frangipane and Pittman 2007: 288). Full details of the sealing practices are published in the *Arslantepe Cretulae: An early centralised administrative system before writing* volume (Frangipane 2007a).

In regard to the discussion in section 2.2.2 the sealing practices at Arslantepe are clearly repetitive and formal. Multiple storerooms were found with separate storerooms contained sealings with different designs on them (Frangipane 2007c: 29). These sealings were archived in central locations before being dumped at a later date (Frangipane 2007b: 467). Sealings were never found haphazardly or in secondary deposits (Frangipane 2007c: 29). Up to four ranks of seal could be identified based on how commonly a seal's impression was and the contexts of use. The highest ranked, most common, seals were also used as door seals (Frangipane 2007b: 470–472). There was also a strong correlation

between the forms of vessels excavated at the site and the forms of many impressed sealings clearly used as stoppers (Feriloi et al. 2007: 171–173).

The practices at Arslantepe look clearly administrative. The archiving process, structured deposits, and ranked designs all illustrate a concern with accountability while the correlation between vessel forms and sealings demonstrates a clear link with sealed goods. The practices at Arslantepe are both repetitive and formal and while the specifics of the practices are presently unevaluated an ideological framework of trust in the sealing system must have been apparent. This section illustrates an unambiguously administrative sealing context and I will now move backward in time to look at Ubaid sealing practices.

### 6.6.2 The Ubaid

The Ubaid as a period is poorly understood and between the middle of the sixth millennium BC and the late fifth millennium BC there is very limited evidence of sealing practices. Tepe Gawra and Tell Arpachiyah contain small numbers of sealings and the only site with larger scale evidence is Değirmentepe.

Değirmentepe was a late Ubaid site north-east of Malatya. It was flooded in 1986 by the Karakaya Dam and excavated between 1978 and 1986 (Esin 1994: 59). The carbon dates from the site are unreliable (Gurdil 2005: 46–47) but Gurdil (2005: 176–182) argues the Ubaid occupation lasted about 140 years in the second half of the fifth millennium BC. Esin (1994) reports 450 impressed sealings, and provides a comprehensive iconography and typology of the sealings with limited contextual evidence. Gurdil's (2005: 195) reassessment reduced 450 to 88 with a primary context. Both Gurdil (2005) and Esin (1994) interpret the sealings as being involved with trade relations that possibly involved metal production (Gurdil 2005: 203). Most of the sealings had a reverse indicating they had been sealed to materials such as leather, rope, wood, reed, basket and cloth with a theoretical correlation between find spot and motif (Esin 1994: 79).



Figure 6-12: Sealings from Değirmentepe (Adapted from Esin 1994).

Glyptically, the designs suggest a transitional stage between the geometric designs of the late Neolithic and the figurative designs common in the Late Chalcolithic. This is most noticeable in the addition of human and bird (also bird-human) figures which are absent in the late Neolithic. This suggests that by the late Ubaid the vestiges of late Neolithic seals remain, but only as part of wider sealing practices. Whether the context is related to metal trading at Değirmentepe is hard to say. The amount of sealings, the difference in motifs between find spots, and the fact that many of the reverses show strings and that most of the rest were sealed to a tangible fabric suggests there was a very clear concern with controlling access. This may well be an administrative context although not of the scale of Arslantepe. Prior to Değirmentepe there are no sites with wide-scale sealing practices until the late Halaf, although at some sites there is evidence for small scale use.

At Tepe Gawra twelve early Ubaid impressed sealings were found. The dating and context of the sealings is unclear (von Wickede 1990: 126–7) and no information is recorded on the sealings themselves, only the impressions. This makes it impossible to interpret the sealing practices visible at the site. Tell Arpachiyah has about 30 sealings that probably date to the late fifth millennium BC these are discussed in section 6.6.3.1 on Arpachiyah.

### 6.6.3 The Late Halaf

Khirbet Derak dates to the end of the Halaf and 30 bitumen sealings were found there (Forest 1987). Only three pictures have been published (Figure 6-14), some had string and stick marks on the reverse and all were found in an area of refuse (Forest 1987: 84). No other information is available. The three pictures show two circular seals with animal designs and the third a seal with a chevron design. There is not enough contextual or iconographic evidence to suggest what practices might have been visible at the site and the practices may or may not have been administrative.



Figure 6-14: Bitumen sealings from Khirbet Derak (Adapted from Forest 1987: Fig.3).



Figure 6-13: Gawra Ubaid sealing (Reproduced from Tobler 1950: pl. LXXXIX.b).

There are two sealings from Tepe Gawra's Halaf levels. One of them, like the Ubaid examples above, has no published information beyond the impression but the other, Figure 6-13, is a clay disk and not unlike a number of the examples from Tell Arpachiyah where the majority of evidence for Halaf sealing practices originates.

#### 6.6.3.1 Arpachiyah

Arpachiyah is the site from which the belief in Neolithic sealing and administration derives. Mallowan reported finding 50 impressed sealings but based on the work of von Wickede (1991) there are in fact 71 (AP-128 – AP-198), 21 of which he found at the Institute of Archaeology, University College London. In the table below I have assigned them, following the lead of Campbell (2000), A (Arpachiyah) numbers starting at 1200.



Von Wickede divided the sealings into four groups, summarised in Table 6-6 ('Gawra' corresponds to the late Ubaid phases XI/XI-A at Tepe Gawra).

Gawra	A601 – A614a/b, A1208 - A1219	27
Halaf	A615a-f, A617, A618, A619a-r, A620a-h, A1200 – A1207	42 (26 from Burnt house A619-20)
Ubaid	A616	1
Ninevite 5	A1220	1

Table 6-6: Periods of the impressed sealings from Arpachiyah (adapted from von Wickede (1991)).

The sealings from Arpachiyah have been used as the evidence of administrative practices in the Halaf (cf. Akkermans and Duistermaat 1996; Fiandra 2000; Carter 2010). This interpretation is however based on incorrect assumptions as to the character of the Arpachiyah sealings as none of them were sealed to a tangible object. Before discussing this it is important to note that other than the sealings from the burnt house there is great ambiguity in assigning many of the sealings from Arpachiyah to specific periods. Von



Figure 6-15: AP-129 impression (Courtesy of UCL Institute of Archaeology 2011).

Wickede assigned chronological periods typologically, understandably given the limited contextual information, but while there are Ubaid levels at Tell Arpachiyah they have never been reliably dated and were poorly excavated with little appreciation for negative features. This led von Wickede to assign seals from the same area and depth to either the Halaf or 'Gawra' on stylistic grounds. This is important as if von Wickede's 'Gawra' sealings were reinterpreted as being earlier, the argument I propose becomes tenuous. An example of the difficulty is AP-129 (Figure 6-15) which shows a goat like creature possibly with another goat's head behind it. It was found in the 'T.T.4 Well' which was, according to Mallowan and Rose (1935), a Halaf period well that fell out of use in the Ubaid and was slowly back-filled. However, the objects in the small finds catalogue with the context 'T.T.4 Well' are a clear mixture of Halaf objects and Ubaid objects without recorded depth. Stylistically it is unlikely to be Halaf but contextually may be. Because of this ambiguity, I have accepted von Wickede's (1991) assignments unless there is clear contextual reason to challenge them. As such all sealings he assigned as 'Gawra' are assumed to be Late Ubaid. The contextual information on the post-Halaf sealings is available in Aktanak.

After excluding the post-late Neolithic sealings, 42 sealings remain and the table below summarises the morphological and stylistic information about them.

Number	Context	Depth	SealingType	SuperDesign	DesignGroup	SubDesignGroup
AP-144	Loose in soil	Unknown	Clay disk	Cross-hatching	Irregular	
AP-146	Loose in soil	2 m E-W	Clay disk	Cross-hatching	Standard	Diagonal
AP-159	Burnt Structure	T.T.6	Clay disk	Unknown		
AP-160	Burnt Structure	T.T.6	Clay disk	Unknown		
AP-168	Burnt Structure	T.T.6	Clay disk	Irregular		
AP-170	Burnt Structure	T.T.6	Clay disk	Figurative	Human	Hand
AP-171	Burnt Structure	T.T.6	Clay disk	Figurative	Human	Hand
AP-172	Burnt Structure	T.T.6	Clay disk	Cross-hatching	Standard	Square
AP-173	Burnt Structure	T.T.6	Clay disk	Cross-hatching	Standard	Diagonal
AP-175a	Burnt Structure	T.T.6	Clay disk	Cross-hatching	Standard	Square and Diagonal
AP-175b				Cross-hatching	Framed	Square and Diagonal
AP-176a	Burnt Structure	T.T.6	Clay disk	Cross-hatching	Standard	Diagonal
AP-176b				Central Focus	Lines	Parallel
AP-177	Burnt Structure	T.T.6	Clay disk	Aligned Centre	Lines	Lines
AP-179	Loose in soil	Unknown	Clay disk	Figurative	Human	Hand
AP-180	Loose in soil	Unknown	Clay disk	Central Focus	Lines	Parallel
AP-185	Loose in soil	1.2 m F	Clay disk	Cross-hatching	Standard	Square
AP-196	Loose in soil	Unknown	Matting	Aligned Centre	Square and Lines	Square and Lines (C)
AP-148	Loose in soil	Unknown	String	Aligned Centre	Square and Lines	Square and Lines (C)
AP-150	Loose in soil	Unknown	Strung Clay	Cross-hatching	Standard	Square
AP-151	Loose in soil	3m T.T.	Strung Clay	Cross-hatching	Standard	Square
AP-152	Burnt Structure	T.T.6	Strung Clay	Cross-hatching	Standard	Diagonal
AP-153	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-154	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-155	Burnt Structure	T.T.6	Strung Clay	Unknown		
AP-156	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-157	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-158	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-161	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-162	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-163	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-164	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-165	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-166	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-167a	Burnt Structure	T.T.6	Strung Clay	Cross-hatching	Standard	Diagonal
AP-167b				Aligned Centre	Square and Lines	Square and Lines (B)
AP-169	Burnt Structure	T.T.6	Strung Clay	Figurative	Human	Hand
AP-178	Loose in soil	Unknown	Strung Clay	Figurative	Human	Hand
AP-143	Loose in soil	Unknown	Unclear	Cross-hatching	Standard	Diagonal
AP-145	Loose in soil	Unknown	Unclear	Cross-hatching	Standard	Diagonal
AP-147	Loose in soil	T.T.	Unclear	Aligned Centre	Irregular	
AP-181	Loose in soil	Unknown	Unclear	Cross-hatching	Irregular	
AP-182	Loose in soil	Unknown	Unclear	Central Focus	Lines	Vertical & Horizontal
AP-183	Loose in soil	Unknown	Unclear	Cross-hatching	Framed	Metered
Burnt Structure 25		Clay Disk 15		Aligned Centre 5		
Loose in soil 16		Strung Clay 18		Cross-hatching 16		
		Matting 1		Central Focus 3		
		String 1		Irregular 1		
		Unclear 6		Figurative 16		
				Unknown 3		

Table 6-7: Halaf sealings from Arpachiyah.

The sealings are from the 'burnt house' (26) or without structured context (16). Interpretations of the 'burnt house' at Arpachiyah were outlined in the introduction (chapter 1), but in brief it is a building that appears to have been burnt found in level TT 6, the last unambiguous Halaf level, which contained a wide variety of high quality objects. It has been interpreted in a number of ways the most compelling of which is it being a deliberate pseudo-funerary burning (Campbell 2000). The unstructured contexts vary but none have any reported association with other objects or features.

The sealings can be morphologically divided into two main types, strung clays (18) and clay disks (15), neither of which could actually be sealed to another item/object. Only one Halaf sealing from Arpachiyah (AP-196) has been clearly sealed to anything, with the remaining 8 being ambiguous.

Figure 6-16 shows typical examples of the two main types. Clay Disks, on the left, consist of simple disks of clay and could not have 'sealed' anything and by implication are unlikely to have protected, or controlled access. Von Wickede (1990: 98) suggests they are clay lids. However, as von Wickede (1990: 97) himself points out, the average size of the clay disks (up to 3cm) is less than that of the closed form vessels at Arpachiyah (between 5 and 8cm) making it improbable they functioned as lids.



Figure 6-16: Left: Clay Disks (AP-146) and Right: Strung Clay (AP-178) (L: Courtesy of UCL, Institute of Archaeology 2011, R: © Trustees of the British Museum).

Strung clay, on the right, are tubular lumps of clay with singular strings through them. They were interpreted by von Wickede (1990: 35) as labels or wrapped around knots which closed containers, a purpose Mallowan and Rose (1935: 98) also suggest. Without a knot there is no way the strung clays could have stopped anything they were attached to being opened and those examples that are broken, as in Figure 6-16, show no evidence of knots. Again there is nothing inherent in a strung tubular lump of clay to suggest it was for protection and controlling access. Previous interpretations of sealing practices at Arpachiyah have singularly ignored their failure to actually *seal* anything.

With one exception there is no evidence that the Halaf sealings from Arpachiyah were used to seal anything or used as administrative *cretulae*. At best the practices could be described as labelling, which, while potentially administrative, could have a wide number of interpretations. When one takes into account the designs as well an administrative interpretation is even less likely. 12 of the 25 sealings from the burnt house have the same hand-shaped impression on them, though possibly there is more than one similar hand shaped seal represented. The hand design at Arpachiyah is presently unique. If the practices at Arpachiyah are administrative then the level of inequality (with almost 50% of all 'sealed' material having the same design) would be unprecedented for the late Neolithic. Similarly most of these sealings have also been impressed several times, up to 18, with the same seal. This practice has been interpreted as making it easier to see at a glance what the seal on one of the sealings is, but as the multiple sealings are frequently on only one side of an object, clay disks in particular normally only have one impressed side, ease of labelling is overly imaginative.

More generally there is no evidence of social structures, storage, repetition, formality, or any of the other factors associated with administrative sealing at Arpachiyah as discussed in 2.2.2. The sealings in the burnt house instead appear to represent a singular event. The sealings from outside the burnt house come from individual scattered contexts with no semblance of formality or structure.

The question then is what are the sealing practices at Tell Arpachiyah? I suggest this is sealing for efficacious purposes. It is unlikely to be a coincidence that the only cache of Halaf sealings was found in a deliberately burnt pseudo-funerary context. Such a potent ritual event would have involved ceremonies and given the small size of Arpachiyah it is likely people came from other areas to the ceremony and in this context the sealings represent the attaching of powerful efficacious symbols to things or people

associated with the events. The isolated sealings could then be seen as the product of individual events occurring for specific reasons. In section 2.2.3 I discussed a text that described a hole containing powerful substances being sealed and impressed to ensure the efficacy of the contents. An isolated impressed sealing could equally be the product of a specific event where the efficacious power of a seal was useful. I will develop the theoretical basis of this interpretation in chapter 7.

Before moving onto discussing the earlier Halaf practices it must be stated that it is ultimately very difficult to interpret the sealing practices at Arpachiyah because of the poor quality of excavation. Mallowan employed 180 workers with only two supervisors, though he did hire some experienced local overseers (Mallowan and Rose 1935: 2), and for many trenches the field notebooks (stored in the British Museum) contain very little information beyond isolated comments. Even the plan of the Burnt House, Figure 6-17, is very unclear and there is no recorded relationship between the rooms nor is it clear which rooms objects came from – though many came from the largest room. The edges of the structure were denuded but the remaining plan is very difficult to rationalise as a single building, particularly as it has no recorded evidence of doors.

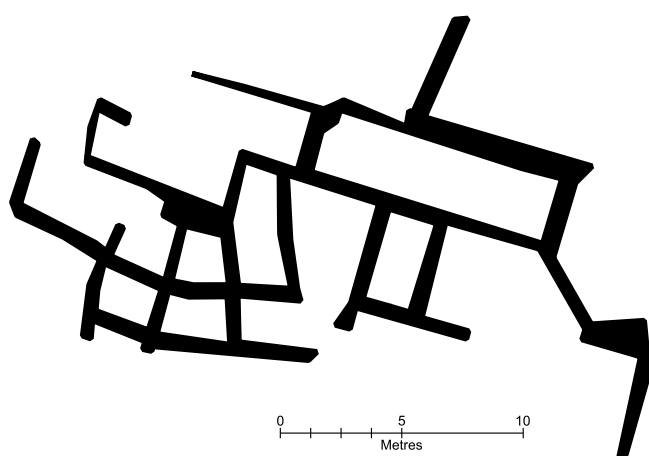


Figure 6-17: 'Burnt House' (Adapted from Mallowan and Rose 1935: fig. 3).

It is hard to know what practices of any kind were happening at Arpachiyah because of how it was excavated, and while it is clear that there were fascinating and largely unique late Neolithic practices at the site it is impossible to accurately know what they were. Assuming that it was a deliberate burning then it seems plausible the impressed sealings were

involved in this destruction and it is especially unfortunate that we have no idea what contexts within the burnt house the clay disks and strung clays came from or whether they were found in association with other objects. It is, though, difficult to accept these practices as being administrative for the reasons shown above and specific episodes of efficacious practice provides a more plausible reading of what evidence we have.

## 6.6.4 Earlier Halaf

Impressed sealings are found in small numbers at many earlier Halaf sites. It has been suggested that the low numbers are an accident of preservation or recovery. However, at the site of Fıstıklı Höyük, a small early Halaf site in Turkey (Bernbeck et al. 2003: 56), all shaped clay lumps were systematically collected. These were found in considerable numbers across the site, yet only two had seal impressions on them. This is important, as here accident of recovery cannot be blamed for the absence of sealings. Both impressed sealings were broken, and retained no reverse making it unclear whether or not they had ever been attached to something. Assuming Fıstıklı Höyük is not unusual, and there are no grounds for this, then there is no reason to assume there were many more sealings than have been found.

Small-scale sealing practices seem the norm during the early parts of the Halaf. The only earlier Halaf site with more than two impressed sealings is Domuztepe where thirteen impressed sealings have been found. Table 6-8 summarises the available data on 12 of these. The thirteenth, DZ-121, was found in the topsoil and post-dates the late Neolithic. Six reverses are damaged making identifying what they were sealed to impossible. DZ-159 is a Strung Clay but either the design has somehow worn off, or it was impressed by something without a design. DZ-124 is a clay disk with a flat reverse. DZ-111, DZ-143, and DZ-148 all show string marks but it is unclear whether they were strung clay or true sealings.

Number	Design Group	Type	Context	Lot
DZ-111	Aligned Centre Lines	String	Loose in Soil	574
DZ-120	Aligned Centre Square and Lines	Unclear	Loose in Soil	2454
DZ-124	Central Focus Lines	Clay disk	Death Pit	2607
DZ-143	Irregular	String	Loose in Soil	4823
DZ-144	Cross-hatching Standard (CH)	Unclear	Loose in Soil	3976
DZ-145	Central Focus Zigzags	Strung Clay	Loose in Soil	4008
DZ-146	Central Focus Zigzags	Unclear	Loose in Soil	3981
DZ-147	Central Focus Zigzags	Unclear	Loose in Soil	3976
DZ-148	Central Focus Lines	String	Loose in Soil	3096
DZ-150	Central Focus Zigzags	Unclear	Loose in Soil	4889
DZ-159	No visible Impression	Strung Clay	Loose in Soil	5915
DZ-162	Aligned Centre Lines	Unclear	Loose in Soil	3732

Table 6-8: Domuztepe impressed sealings





Figure 6-18: Sealings from Domuztepe. Top Row: DZ-111, DZ-120, and DZ-124. Second Row: DZ-143, DZ-144, DZ-145. Third Row: DZ-146, DZ-147. Fourth Row: DZ-148, DZ-150. Bottom Row: DZ-159, DZ-162. (None to scale). (Courtesy of the Domuztepe Project 2011).

The resolution of the data is too low to comment on the Domuztepe sealings as discrete entities. Particularly as DZ-145, DZ-146, DZ-147, and DZ-150 all appear to have been impressed with the same seal and may even be a fragmented single sealing (though all come from different lots). There are also eleven unimpressed sealings from Domuztepe. Figure 6-19 shows an unimpressed sealing (it is in fact the only true sealing from Domuztepe) and Figure 6-20 shows an unimpressed strung lump. This suggests there was more to sealing practices in the Halaf than impressing seals into clay. Nothing in this random selection of practices suggests access or control and I would argue that these practices are equally likely to be isolated efficacious sealing events. This may be supported by the presence of DZ-124 in the death pit as it is to be assumed all the objects placed in that context were put there deliberately (Campbell et al. forthcoming).



Figure 6-19: Unimpressed Sealing (Courtesy of the Domuztepe Project).



Figure 6-20: Domuztepe unimpressed strung lump (Courtesy of the Domuztepe Project).

None of the evidence for Halaf sealing practices definitively suggests administrative practices; almost all sealings are isolated in rubbish contexts or come from the two most unique Halaf ritual events, the death pit and the burnt house. While the rubbish contexts may represent structured deposition, there is no reason to assume this and therefore there is no reason to suppose this has anything to do with formalised administrative practices. Instead the isolated nature of the practice is more suggestive of the idea of individual events of efficacious sealing for discrete purposes.



## 6.6.5 Pottery Neolithic

From most Pottery Neolithic sites there is no evidence of sealing practices and without Tell Sabi Abyad evidence would be almost non-existent. This section is divided into three, 6.6.5.1 a discussion of Tell Sabi Abyad, 6.6.5.2 a discussion of Tell el-Kerkh, and 6.6.5.3 other evidence for Pottery Neolithic sealing practices.

### 6.6.5.1 Tell Sabi Abyad

Level 6 of Tell Sabi Abyad is called the ‘burnt village’ and dates to c. 6000 BC. Over 300 sealings were found in the burnt village, making Tell Sabi Abyad the only example of large-scale late Neolithic sealing practices. 300 sealings are published in Duistermaat (1996) and all statistics refer to them. Sixteen more sealings have been published in Akkermans and Duistermaat (2004) and around 30 more are mentioned in Duistermaat (2010) with a few published in Akkermans et al (2006). Of the primary 300, 189 (63%) have impressions on them and 111 (37%) are unimpressed. The table below summarises what they were sealed to and how many were impressed/not impressed of each type.

Type of Impression	No Imp	Impressed	Total	% None	% Seal	% Container
Basketry	18	94	112	16.07	83.93	37.33
Pottery	62	31	93	66.66	33.33	31
Unknown	18	31	49	36.73	63.27	16.33
Maybe Leather?	5	15	20	25	75	6.66
None	0	8	8	0	100	2.66
Maybe straw?	0	5	5	0	100	1.66
Plaited Mat	3	3	6	50	50	2
Stone vessel	3	1	4	75	25	1.33
Leather bag	2	1	3	66.66	33.33	1
Total	111	189	300	37	63	100

Table 6-9: Tell Sabi Abyad sealings reverse data (adapted from Duistermaat (1996: Table 5.1 and 5.2)).

For a full discussion of the specific practices see Duistermaat (1996). Contextually 201 (~67%) of all the sealings came from one room (Room 6 building 2) (Duistermaat 1986, 371) and the sealings were found with other, often broken, small finds including clay disks, tokens, figurines, and miniature vessels (Duistermaat 1986: 367). The clay from which the sealings were made was likely to have been local to the site (Duistermaat and Schneider 1998). The sealings have been interpreted as the evidence of administrative sealing in the seventh millennium BC (cf. Collon 1997b; Fiandra 2000).

This sealings were initially interpreted by the excavators as sealed goods being imported into the settlement (Duistermaat 1996: 367). However, when the clay was found to be local, they reinterpreted it as a sealing system where a transhumant element of society sealed their share of some domestic resource, possibly grain, potentially in small containers containing tokens (Akkermans and Duistermaat 1996). They suggest an analogy with communal granaries in Libya.

I believe there are issues with this interpretation but before discussing this there is a wider issue to be addressed with the Tell Sabi Abyad sealings. Namely there is no evidence they are related to the seals studied in this thesis. The designs are different and appear unrelated to the wider late Neolithic glyptic, although Duistermaat (2010) offers a counter-argument. Duistermaat (1996) divides the Tell Sabi Abyad designs into 27 groups, most of which are shown in Figure 6-21. Types not displayed include H a cowrie shell, L and T human figurines (Figure 6-23 shows type T), and Q a blank hand. The most common design is A, representing ~25.9% of impressed sealings. This is followed by types C (~15.2%), B (~7.6%), D (~7.1%), and T (~4.6%), which together cover about 60% of the seal designs. 12.7% of the remainder have unknown designs leaving the remaining 22 types of design comprising only about 27% of impressed sealings. There are no late Neolithic seal designs that parallel the five main types. Design types F, W, X, Z, and AA, do show parallels with the late Neolithic but account for only 6% of impressed sealings and may be late Neolithic seals used within Tell Sabi Abyad's system. Realistically except for two impressed sealings from Tell Boueid II (Figure 6-22), a middle Khabur site, Tell Sabi Abyad's designs are without compelling parallel.

The only link with late Neolithic seals is the action of sealing which, as discussed in section 6.5, is something seals were used for, not what they were **for**. There is no evidence to suggest the Tell Sabi Abyad impressions were even made with seals as no physical seals with these designs have been found. All the published seals from Tell Sabi Abyad site fit into the wider late Neolithic glyptic.

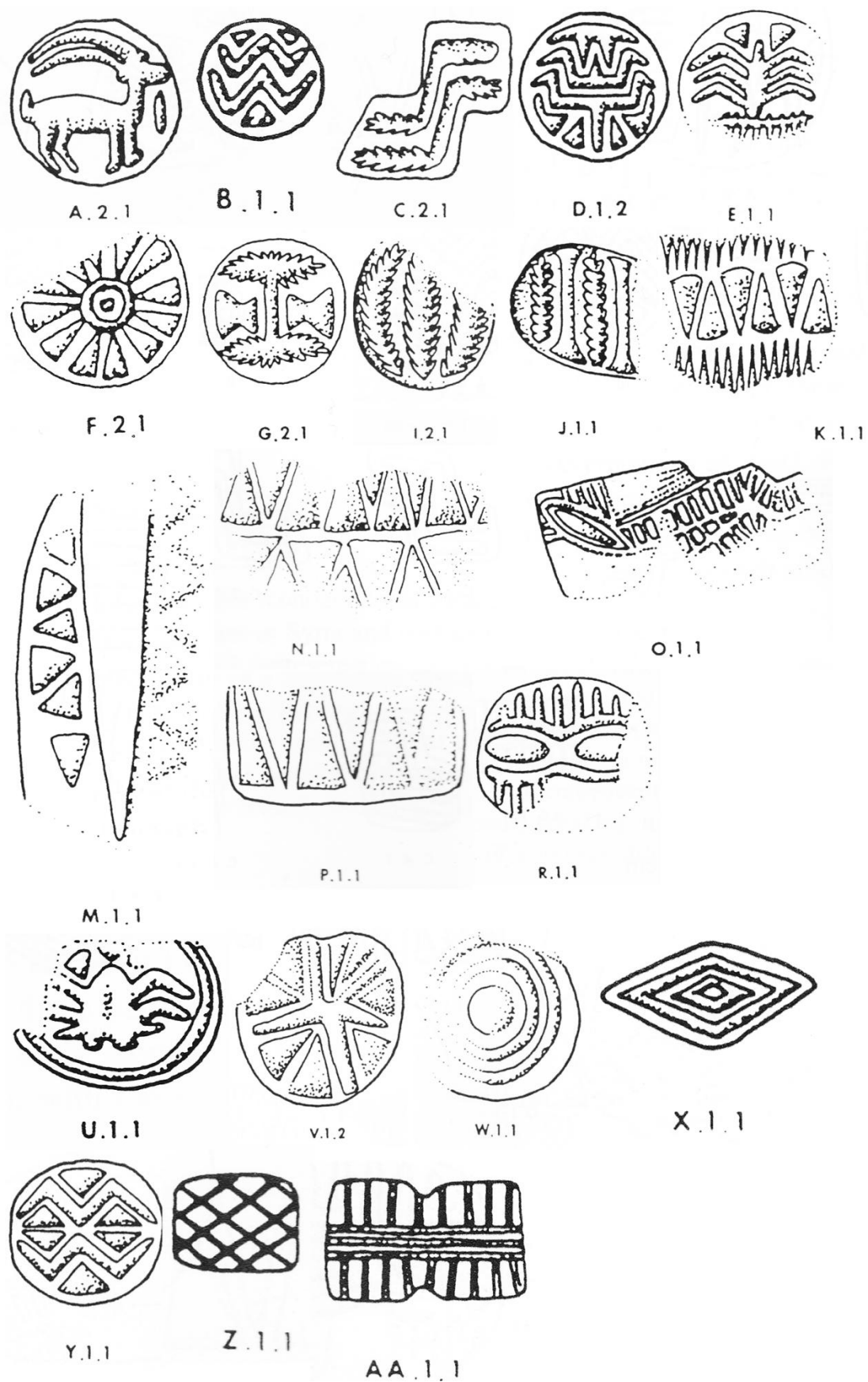


Figure 6-21: Seal designs from Sabi Abyad (Adapted from Duistermaat 1996: Fig. 5.3-5.6).

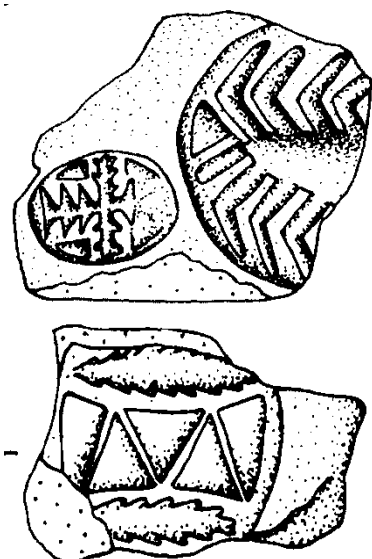


Figure 6-22: Tell Boueid II sealings (Adapted from Duistermaat (2002: 149-150).

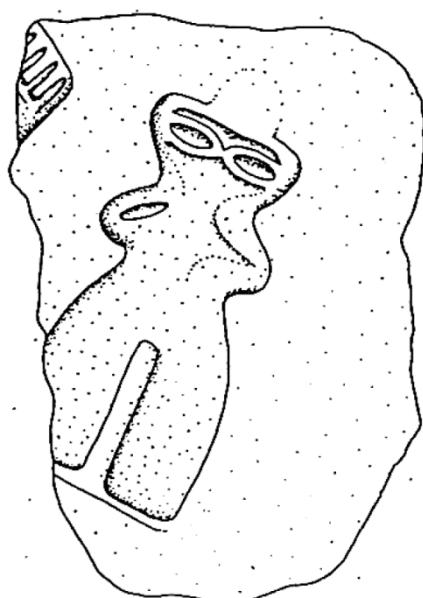


Figure 6-23: Human figurine impression from Tell Sabi Abyad (Adapted from Akkermans and Duistermaat 1996: Fig. 5).

As was suggested to me by Stuart Campbell the impressions at Tell Sabi Abyad could have been made by carved designs on the end of wooden poles for all the archaeological evidence we have. Making designs in soft materials was not the exclusive preserve of seals in the late Neolithic. Tell Sabi Abyad illustrates this clearly as the fifth most common design type T, Figure 6-23, is a humanoid figurine. A figurine is categorically not a seal and the use of cowrie shells and hand-figurines at the site demonstrate how the action of sealing involved more than seals. Seals were not the only things used for

creating impressions in the late Neolithic, pottery in particular can feature impressed styles created with combs, shells, or rocker stamps (Nieuwenhuyse 2007: 169–171). As such, given the present state of evidence I do not think the impressions at Tell Sabi Abyad were created with objects that can be classified as belonging to the same group as those seals that form the subject of this thesis.

If the objects used at Tell Sabi Abyad were different from those in the wider late Neolithic then the specific nature of the practices is less important but worth discussing briefly. With the present level of data I do not believe it is possible to conclusively

argue that the practices at Tell Sabi Abyad are administrative, one in three sealings is unimpressed, implying a third of people either did not participate in this arrangement or that a third of the stored produce went unmarked. Following Bernbeck's (2008a: 62) argument that people's 'lifeworld' does not allow them to actively question all aspects of their life, an activity as mundane as a method for storing grain would likely be quotidian and the chance that a third of the settlement (of only a few hundred people) was actively subverting it is unlikely. This does not mean that the practices are not administrative, just that simply claiming the objects represent produce owned by transient elements of the

community does not explain all of the visible practices. Hopefully the publication of further data from the site will begin to elucidate the situation.

I would argue that, as with Arpachiyah and the isolated practices analysed above, the practices at Tell Sabi Abyad could be efficacious sealing, albeit using a different source of efficacy. One of the key features of the burnt village is it was burnt. As such, the sealings may relate to the burning. One sealing 'archive' has been found at Tell Sabi Abyad, but for the communal storage of perishable foodstuffs, i.e. grain, annual ones would be required, although admittedly preservation issues could explain some of this absence. In contrast if the sealed objects had been assembled for a major ritual event there would be only one 'archive'. The deliberate burning of buildings appears common in the Neolithic of the Middle East (Verhoeven 2000; cf. Cessford and Near 2005; Twiss et al. 2008) but has not been proven either way for Tell Sabi Abyad. However, as at Arpachiyah, if the site was deliberately burnt then preparatory events would have been necessary. Sealing hundreds of small vessels containing efficacious substances could be a community level ritual practice preparing their settlement for burning. The practices at Tell Sabi Abyad could relate to ownership and control. The objects that created the impressions and the sealing practices are different from the rest of the late Neolithic and there is no reason to assume they are related, however more work is required to explain how this administrative context might have functioned. In particular the publication of later seasons at the site might demonstrate whether the archive in the Burnt Village is a singular or repetitious event, if repetitious it would greatly strengthen the administrative argument, if singular I would suggest it could be a large scale event of efficacious sealing.

#### 6.6.5.2 *Tell El-Kerkh*

Tell el-Kerkh has six impressed sealings (Figure 6-24 and Figure 6-12) which have late Neolithic designs. The site is in the process of publication, and much of my data comes directly from pre-publication material kindly supplied by Akira Tsuneki. Most of the occupation dates to between c. 6900 and 5500 BC, with most of the seals and sealings from the site dating to El-Rouj 2c between 6600 and 6100 BC. Three of the sealings have designs that are too fragmentary (EK-076 and EK-079) or too ephemeral (EK-075) to comment on, but EK-075, EK-077, and EK-078 have typical late Neolithic geometric designs.

Code	Context	Reverse	From	To	Phase	References
EK-074	Loose in Soil	Basketry and String	6100	5500	Rouj2d	Tsuneki et al (1997); Fig. 24:6
EK-075	Loose in Soil	Basketry	6600	6100	Rouj2c	Tsuneki et al (1998); Fig. 17:12
EK-076	Loose in Soil	Basketry	6600	6100	Rouj2c	Tsuneki et al (1998); Fig. 17:13
EK-077	Loose in Soil	Basketry and String	6600	6100	Rouj2c	Tsuneki et al (2000); Fig. 12:13
EK-078	Loose in Soil	Matting	6600	6100	Rouj2c	Tsuneki et al (2000); Fig. 12:12
EK-079	Loose in Soil	None	7000	5500	Rouj2	Unpublished

Table 6-10: El-Kerkh impressed sealings



Figure 6-24: El-Kerkh impressed sealings. Clockwise from top left – EK-074, EK-075, EK-076, EK-079, EK-078, and EK-077 (Courtesy of the Rouj Basin Project 2011).

None of the sealings have reported structured contexts, and they were not found together. Luckily the reverse sides are unusually well preserved, with only EK-079 having no clear sign of having being sealed to something. EK-074 and EK-077 have basketry and string impressions making them the only late Neolithic examples of *true* sealings that might have sealed something closed. EK-075, EK-076, and EK-078, have clearly been attached to something but are less clearly about ‘access’.

As with the Halaf sealings, this does not represent a body of formalised repetitive sealing practices. Six isolated sealings, with generic designs, reinforces the ideas of efficacious sealing developed above. These sealings may be the singular results of various practices related to controlling access either because the contents are efficacious or require sealing to enable that efficacy to develop, not because they need protecting.



### 6.6.5.3 Other evidence

There are only two other Pottery Neolithic sites with ‘sealings’ Tell el-Kowm and Tell Bouqras. Tell Bouqras in north-eastern Syria has Pottery Neolithic levels (c. 6,700 – 6200 BC) (Akkermans and Schwartz 2003: 121). At least seven impressed plaster wafers were found (Akkermans et al. 1983: 356), though only three are published (Figure 6-25). No information is available on use except that two of the wafers had both positive and negative impressions showing that the plaster was applied multiple times (Akkermans et al. 1983: 357). They have been interpreted as lids, as they have similar dimensions to the opening of plaster vessels, and plaster mortar was found on the wafers (von Wickede 1990: 45). This mortar is not mentioned by the excavators and I have not discovered where von Wickede found this information. No phasing or contextual information is available except that they come from the upper layers of the site – presumably closer to 6200 than 6700. Glyptically six had “lozenge patterns and zig-zag lines” (Akkermans et al. 1983: 356) (left and right: Figure 6-25), and the seventh had a quadruped (middle: Figure 6-25). The caprid may be similar to those of Tell Sabi Abyad and the other designs have late Neolithic parallels but without contextual information, phasing, or images it is difficult to interpret them. They do illustrate the action of sealing was not only restricted to clay but otherwise there is not enough evidence to interpret the practices.



Figure 6-25: Bouqras Wafers (Left: Adapted from Marechal 1982: Fig. 4.5, Middle: Adapted from Akkermans et al. 1983: Fig. 4.3, Right: Adapted from Akkermans et al 1983: Fig. 3.1).

Tell el-Kowm, in North-East Syria, was excavated independently by French and American teams. The chronology is uncertain, but the relevant levels date to somewhere between 6800 and 6100 BC. This is similar to Bouqras and the two sites have been treated as contemporary (cf. Duistermaat 2010). The American excavation found about 500 plaster containers and about 200 flat pieces, which may have been used to construct storage bins or else could be architectural (Dornemann 1986: 18–21). Ten of the flat

pieces are decorated, one of them may have been stamped (see Figure 6-26) on both sides (Dornemann 1986: 17). The French excavations found at least 200 plaster pieces and eighteen were decorated (cf. Marechal 1982; von Wickede 1990: 47). These have been interpreted as being used in the construction of vessels and as covers (Marechal 1982: 223–225).



Figure 6-26: Kowm wafers (Adapted from Marechal 1982).

The designs on the wafers are geometric and appear to display repeated chevrons. It is however difficult to know if this is sealing in the sense being analysed and as with rocker designs on pottery these may be ‘decorative’. As at Bouqras there is not enough data to reliably interpret them.

Von Wickede (1990: 47) argues both sites demonstrate a concern with control. However, the mortar on the wafers from Bouqras could as easily be about constructing containers as closing them and I am not convinced the wafers from Tell el-Kowm are even sealings, in the concept I am discussing. If they are there is no reason to assume an administrative purpose and they could equally be sealing for efficacious purposes.

#### 6.6.6 Conclusion of the relationships with clay

I argue that the sealing practices visible in the late Neolithic relate to efficacious sealing for specific events. These range from large-scale events such as the burning of Tell Arpachiyah to small isolated events which resulted in the low number of sealings found at many Halaf sites. The ideological basis of this will be discussed in chapter 7 but the above discussion leads to a more general conclusion. There is no compelling evidence for administrative sealing practices before the second half of the fifth millennium BC using the objects defined as seals in this thesis. I acknowledge there is no conclusive evidence



of sealing being used for any defined purpose in the late Neolithic but the scattered evidence of sealing practices provides no evidence of the repetition or formality of sealing practices I suggest as necessary for administrative sealing practices. Preservation issues could be the reason for this and the scattered sealing practices across the late Neolithic may represent administrative practices. However, there is no evidence of their use in ownership or control, as I discussed above except for a couple of impressed sealings from Tell el-Kerkh most late Neolithic sealings are clay disks, strung clay, or too fragmentary to reconstruct a use. While these could provide evidence of administrative practices, such an interpretation would need to justify the character of the administrative practices without basing them on the assumption that impressed pieces of clay are inherently related to ownership and control, an assumption challenged in chapter 2.

A wider question is whether the sealing practices at sites like Arslantepe ultimately derive from late Neolithic practices or were 'inspired' by them. It seems probable that the knowledge or memory of sealing for efficacious purposes that I believe is visible in the late Neolithic could easily be manipulated into controlling access. This possibility will be further examined in section 4 of chapter 7.

Furthermore it is clear that sealing was only one aspect of the biography of seals. Seals outnumber impressions seven to one in the late Neolithic and while it is possible many sealings have not survived there is no reason to assume they were ever of comparable or greater numbers than seals. As discussed in section 6.5 seals were multiple objects used on a number of scales of social interaction and it is clear that sealing was only one facet of them. The impressions from Tell Sabi Abyad illustrates more than one type of object was used for sealing practices in the late Neolithic. Further research may elucidate relationships with the seals studied here but there is no reason to assume they are related suggesting that the action of sealing had no formal relation with the objects we call seals. It is possible that a range of objects, presumably those that could project power, could be used for sealing, though admittedly sealing never appears to have been common in the late Neolithic. The theoretical implications of wider practices of sealing are interesting, particularly ideological links with impressed designs on ceramics, and an area where further research would be productive.

## 6.7 Conclusion

In this chapter the evidence for the ‘use’ of seals in the late Neolithic has been evaluated. Section 6.1 analysed the contexts in which seals are found and theorised how many there were in the late Neolithic. It argued that there were a lot less seals than people in the late Neolithic suggesting they were restricted to parts of communities. The contextual data tells us little as seals are predominantly found in unstructured rubbish deposits, although structured actions could have placed them there. Section 6.2 analysed the data on the condition and wear of seals suggesting that due to relatively low levels of wear they were likely to be in use for at most a few generations, although there is no empirical research to corroborate this. It also demonstrated that while most seals were deposited complete a significant minority were broken, possibly deliberately. Section 6.3 concluded there was no evidence of associations between seals and any other type of late Neolithic object while section 6.4 similarly concluded there was no evidence of the use of seals in trade relations inside or outside of North Mesopotamia.

Section 6.5 drew together the arguments in sections 6.1 – 6.4 to argue that seals were not inalienable, high value goods, symbols of achieved identity or status, personal identifiers, or family identifiers. Instead I concluded that the seal designs were efficacious but that seals themselves were not necessarily especially important. As such I suggested they were associated with real or perceived kin identities above the community and short-term identities below the community. These short-term identities represent the use of seals in impermanent situations for a variety of ‘magical’ (primarily amuletic or talismanic) purposes deriving from the efficacy of the seal and the shared symbolic system it referenced. Finally section 6.6 analysed the evidence for sealing practices arguing that the practices visible in the late Neolithic related to specific events that necessitated efficacious sealing and there was no evidence of the scale, formality, or repetition necessary for administrative sealing. The large scale practices at Arpachiyah and Tell Sabi Abyad were, as such, singular episodes, although I also suggested that, due to the lack of design parallels and absence of seals with such designs, the objects used at Tell Sabi Abyad were a different class to those under study here.

Little of the argument in this chapter is definite, the lack of data for contexts, sealing practices, wear rates, or late Neolithic society makes it difficult to argue anything with any degree of certainty. The next chapter will develop the analysis in this chapter offering an interpretation of why seals were made and used for the suggested purposes.

# Chapter 7: Birth

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The purpose of this chapter is to theorise *why* seals were made. It will discuss what iconographical and ideological role an object whose designs barely change over a 1500 year period could have had within the late Neolithic. The interpretation in this section derives from the analysis and data of the previous two chapters but it is important to restate that more work is required to develop a deeper understanding of late Neolithic persons and society. Previous research has focused on abstract ‘high’ level issues, e.g. why the Halaf (cf. Breniquet 1996), or specific cases, e.g. Halaf burial practices (Pollock 2011), without constructing a picture of what sort of society the ‘normal’ late Neolithic person lived in. The eternal archaeological difficulty of discerning the difference between ‘normal’ and ‘extraordinary’ practices coupled with the gaps in the archaeological record mean that studies of the late Neolithic of North Mesopotamia are still in their infancy and as emphasised in chapter 6 there is no framework into which to fit an interpretation of seals. As such the interpretations I present here should not be taken as a manifesto, as it is based *only* on seals and *my* views regarding general settlement patterns and social practices in the late Neolithic.

There are five sections, section 7.1 builds on the suggestions introduced in the previous chapter and offers a theoretical explanation of how objects multiplicity of meanings functions. Section 7.2 will discuss the possible origins of this meaning and how it relates to wider societal changes in the late Neolithic. Sections 7.3 attempts to answer the question of what is a seal? and what is a sealing? Section 7.4 discusses possible relationships between late Neolithic seals and later seals and sealing practices. Finally section 7.5 concludes.

## 7.1 Potential Identities and Meanings

In chapter 6 I discussed how I believe seals had multiple meanings at different levels, a supra-community meaning used to connect groups of people across the late Neolithic and a sub-community meaning where the efficacy of seal designs was used for efficacious purposes. The suggestion that an object might have more than one meaning is non-controversial but these two aspects of meaning are somewhat contradictory as the sub-community interpretation suggests the objects (designs) were efficacious but at a supra-community level they may have passively reflected an identity that people had whether or not they possessed the seal. I shall elucidate this multiplicity through using the concept of indexical symbols. Indexical symbols (and indexical icons) are a development of Piercean semiotics by the anthropologist Tambiah (1984), though it in part derives from Burkes (1949), who combined two of Pierce's object-signs. Pierce identified three main types of object-sign, the 'icon', the 'index', and the 'symbol'. An icon resembles that to which it refers (i.e. a statue of a sheep is an icon of a sheep), a symbol has an arbitrary link between the sign and what it refers to (i.e. most words), and an index which is seen as the most relevant to material culture studies (Knappett 2002: 103; Preucel 2006: 71). Knappett provides an example of an index via an archaeologist's trowel, an experienced worker prides themselves on the wear on their trowel and the "patina of experience, of accumulated wisdom" (Knappett 2002: 108) this references. As such the trowel indexically suggests its owner is an experienced archaeologist. Many objects are combinations of more than one sign, a fact Pierce recognised, and hence in the above example a trowel is also an icon of archaeology (and wall building).

However, the way multiple signs function simultaneously within a single object has been less discussed with meanings being treated as separate aspects. Tambiah's concept of the indexical symbol and indexical icon circumvents this by offering a more structured interpretation of how objects function. Tambiah (1984) discusses how Thai amulets are indexical icons (and symbols). The amulets are/were ubiquitous amongst all levels of Thai society (Tambiah 1984: 196–197) and provide an excellent example of a shared, imperfect, symbolic system. Within this system while "amulets in the shape of an animal, bird, human, or deity have certain virtues related to their form and intrinsic nature, it is the monk and lay specialist who importantly charge them with efficacy" (Tambiah 1984: 223). This creates a dichotomous relationship between the amulet's form and the source of their efficacy making them either *indexical symbols* or *indexical icons*.

Indexical symbols are “symbols that are associated with the represented object by a conventional semantic rule, and they are simultaneously also indexes in existential, pragmatic relation to the objects they represent” (Tambiah 1984: 4). Indexical icons are similar, but instead of a symbolic relation to a semantic construct, they have an iconic relation with what they represent as well as the indexical relationships (Tambiah 1984: 348). In some ways indexical symbols and icons act as object equivalents of *habitus*, where the internalised structures of society are in conflict with how this is interpreted in the object. An example from Tambiah (1984: 278) refers to amulets depicting the monk Acharn Čūan. The amulet illustrates him carrying an umbrella, a bowl, and a kettle. These are traditional *symbols* of his vocation, the itinerant Buddhist monk and symbolise his charisma (in the Weberian sense). However, the owner of the amulet interpreted them in a different way:

“The begging bowl signified, said our informant, that the amulet owner will acquire material goods and property; the umbrella would afford a peaceful life and provide shade and a cool breeze (rom yen); the kettle meant that there will be sufficient water to go with the food.”

(Tambiah 1984: 278)

The informant, Mr Lai, was the man who commissioned the amulets on behalf of a Thai bank (Tambiah 1984: 276–278). To him the signs are not just symbols of a charismatic monk but also indexical references that transfer value to the possessor. As the commissioner of the amulets he is an authority, and not merely a third party reinterpreting. This illustrates how the same symbols can have different sets of meaning depending on the context, or the interpreter (Tambiah 1984: 278). All objects negotiate multiple relationships, and the notion of indexical icons/symbols is a simple way to accept multiplicity of meanings without prioritising any specific meaning. Meaning and importance is contextual; the amulet in this example can be symbolic or iconic when representing the monk Acharn Čūan or itinerant monks generally, and an index when interpreted by Mr Lai. These meanings are complementary, they derive from the same efficacy of the charismatic monk, yet are distinct depending on the interpreters *habitus*. Archaeologically, the indexical icons/symbols offers great potential as a theory to explain the role of objects within the duality of structure as it illustrates how objects can function within structure and within agency. An object can represent multiple positions on the

spectrum simultaneously through its different interpretations, and helps one as an archaeologist to appreciate the way object's meanings can be negotiated.

With seals it is likely the geometric designs on seal faces had meanings and may well function as true symbols. As such it is likely beyond our ability to ever reconstruct their specific meaning. These symbols were likely the recourse of the supra-community practices discussed in 6.5 where seals participated in a late Neolithic imagined community between groups of people. However, the sub-community practices also discussed in section 6.5 suggest they also had indexical meanings deriving their influence from the same source, the efficacy of the symbol, but in specific contexts had different meanings. As such seals are indexical symbols, and as I will show later impressed sealings are indexical icons.

I discussed in chapter 6 how seals negotiated relationships between groups of people in communities with a sense of perceived common identity with groups of people in other communities. I suggested this was a permanent, ascribed identity, but not one related to structured inequality. Ascribed identities tend to be discussed in terms of economic inequality and unequal status in much of prehistory but they are not inherently unequal or economic. Even horizontally egalitarian societies have kin groups, sodalities, or other within/between group organisations. In these membership is often ascribed by age or other immutable factors (e.g. caste or religion) and while this may affect relative statuses, i.e. coming of age rites, does not have to foster permanent inequality.

The question the next section will ask is what form of imagined community the seal designs might reflect? It is clear they are not equally distributed across the late Neolithic, as shown by certain sites having no seals, but must have been generally pervasive and known across the late Neolithic. Taking this perspective I shall offer an interpretation of origin and specifics of this late Neolithic imagined community.

## 7.2 Origins and transitions

The late Neolithic was a very mobile period with long distance trade routes, clear contact between settlements, and shared material culture. While the period seems to have had a low population density there were probably many small settlements, hamlets, and camp sites which are archaeologically invisible (Banning 1998: 230) with a low level constant occupation across much of North Mesopotamia. Within this setting one should not think of the late Neolithic as a world dominated by permanent settlements and territories, but as a world of fluid boundaries with a high level of mobility (Campbell and Fletcher forthcoming). Many late Neolithic buildings, particularly in the Halaf (cf. Campbell and Fletcher in press), seem to have been quite ephemeral and many settlements were both short lived and small. Fıstıklı Höyük for example is only 0.5 hectares and is occupied for only between 100 and 150 years (Campbell 2007: 13). If you follow Bernbeck's (2008a) argument of a state of pseudo-permanent mobility at sites like Fıstıklı Höyük then it suggests that some late Neolithic communities, or parts of communities, may have been in a, relatively, permanent state of flux. Bernbeck traces a narrative at Fıstıklı Höyük from its initial occupation as a camp site of people who came from a different 'focal' site through its becoming a 'focal' site before it too gradually declines as people leave to new 'focal' sites before it is finally abandoned by permanent settlers but still used by transitory persons. It suggests many of the small sites visible in the late Neolithic were actually parts of wider communities with individual sites being only "a section of a much larger, dynamic" (Bernbeck 2008a: 65) community. Bernbeck argues that sedentism should not be contrasted with mobility and the traditional separation between sedentary villages and close-knit mobile groups is inappropriate, living in dispersed multiple settlements is no less 'normal' than sedentism in context (Bernbeck 2008a: 66).

Contrasting with these small sites are large sites which were occupied for long periods of time. It has been traditionally suggested they should be seen as "anchor sites which were probably invested with considerable social and ritual meaning" (Akkermans and Schwartz 2003: 150). However more recent work has shown that the majority of large sites should not be considered single sites, Tell Sabi Abyad is about 5 hectares but the excavators argue that it was actually a number of distinct 0.5-1 hectare settlements which moved around with little of the site continuously occupied (Akkermans et al. 2006: 151). Domuztepe (20 hectares) appears to be an exception to this as the majority of the

site was occupied in the late Halaf (Campbell et al. 1999: 400). It is however possible that Domuztepe consisted of spatially bounded areas with different groups living in the same location (Campbell and Fletcher forthcoming) with different areas in the site marked through decoration on pottery (Fletcher 2008). There may be less of a contrast than physically appears however, if many small sites were parts of larger communities then the overall community population could have been considerably larger than is suggested by the small sites. As such, the mobile communities could have had similar populations to many of the larger sites. It is difficult to say at this stage as many of the other large late Neolithic sites, like Takyan Höyük (Algaze 1989a) or Mounbatah (Akkermans 1989) are unstudied and it is conjectural if any of them represent large single settlements or conglomerated small settlements. Future work may elucidate the community organisation at large late Neolithic sites but archaeologically speaking the evidence available suggests they should not be seen as 'anchor' sites as there are too few (none are known in Iraq) and the visible practices do not suggest an economic or political centre. They may well have had important social roles, allowing different mobile communities to mix or by providing ritual or ideological roles. However, presently they remain the exception.

Ultimately there was probably more than one way of living the late Neolithic and the differences in settlement patterns may be indicative of different regional traditions or different groups with shared material culture but at a level beyond the local context it is clear that across large parts of the late Neolithic there was an "an element of shared understandings of symbols, and perhaps even shared social narratives and myths" (Campbell and Fletcher forthcoming). The designs on seals fit neatly into this conception of the late Neolithic as the material manifestation of a shared symbolic system in which some late Neolithic people participated. The 'some' element is one of the most important aspects. Most work on the late Neolithic, as outlined in Chapter 2, has treated communities (whether in a single site or on a more diverse scale) as relatively fixed entities which interacted with other communities. Seals provide evidence that there must have been ties between parts of different communities across the late Neolithic. This would explain why the designs on seals remain the same for 1500 years and yet the morphology of the seal clearly changes at a regional level. If the designs symbolised part of a group's (or multiple group's) identity within a community then the designs would link persons across the late Neolithic world while the changing morphology (as well as the



individual practices) illustrates their involvement in local and/or regional relationships as well. There are not enough seals, nor are the designs varied enough, to account for every assumed group in society but there is no reason that all the people in one settlement must have had the same cultural identities. If one looks ethnographically many small-scale societies have people within settlements claiming different aspects of identity, and sharing others, using different paraphernalia united by common beliefs and styles. For example the Jalari fisherman-caste village of Jalaripalem in South India was a village of ten local lineages from nine descent groups (Rao 1973: 17). The Jalari caste is divided into exogamous 'clans' called *intiperlu* which are made up of local lineages which arrived independently at the settlement (Rao 1973: 18). These lineages are spread around the area and the different descent groups within the village are members of different *intiperlu* (Rao 1973: 17). Such a breakdown of society is common in users of Dravidian languages (Rao 2004; cf. Narahari 2009) and provides an interesting parallel to the types of practices I suggest were present in the late Neolithic. Indian society is notably stratified and that aspect of it is unlikely to be transferable to the late Neolithic and the analogy I draw is the suggestion that different lineage groups within a common ideology could live in one place while retaining their links outside the settlement which are symbolised in different ways. Seals may therefore reflect one or more of these groups within disparate communities.

The major question involves the origin of this inter-group relationship. Ultimately this question cannot be answered using the seal data. Seal designs enter the archaeological record as essentially a fully formed group of material culture with only one common type of design demonstrably developing during the late Neolithic. This suggests their origin predates the evidence, and while more excavation might provide a developmental stage, the origins of late Neolithic seals probably lie in the end of the eighth millennium BC or the earliest seventh millennium BC. This may loosely correlate with the culture-historic shift from the Pre-Pottery Neolithic to the Pottery Neolithic but the end of the Pre-Pottery Neolithic and start of the Pottery Neolithic is poorly understood and a focus on transition is probably detrimental. Looking more generally there is clear contrast between settlement patterns of the eighth millennium BC and settlement patterns of the seventh millennium BC. There is a clear material disjunction as the majority of eighth millennium BC sites are abandoned before new smaller seventh millennium BC sites are founded. In the Southern and Central Levant most eighth

millennium BC sites are abandoned and replaced with smaller Pottery Neolithic sites in previously unoccupied locations (Kuijt 2000: 94). In Syria many seventh millennium BC sites appear to be on virgin soil or re-occupied old sites after periods of abandonment (Akkermans and Schwartz 2003: 106–107), although some like Tell el-Kerkh continue with seemingly unbroken occupation (though at present only on Tell el-Kerkh 2, the smallest of the mounds, suggesting the settlement may have shrunk). Southeast Turkey is similar with only a few sites existing in both periods and where settlement does continue there is normally considerable change. At Çayönü, for example, the seventh millennium BC occupation is much reduced in size, with different architecture, lithics, and a shift in subsistence patterns from the eighth millennium BC settlement all suggesting some disjunction (Yakar 2011: 97). In Iraq archaeologically there is little or no evidence for eighth millennium BC occupation (Campbell and Fletcher forthcoming: 3).

While there is clear continuity between the periods for a variety of mediums, e.g. Byblos type arrowheads (Akkermans et al. 2006: 153), there is unambiguous change in settlement patterns. This change is poorly explained and while it has been linked to climate change through human over-exploitation (Nissen 1993: 182) the evidence for this is questionable (Akkermans and Schwartz 2003: 111). There have been suggestions of increased pastoralism (Gopher and Gopher 1993: 307), but this is a symptom not a cause for settlement abandonment as it does not explain why people would abandon their settlement and become pastoralists. While there have been no social explanations for this change an aspect that has largely gone unappreciated is a clear change in people's attachment to place.

In the eighth millennium BC arguments are frequently put forward as to how there was a strong site- or place-based identity with house-based ancestral lineages. It is argued that "people were tied to chosen places" (Akkermans and Schwartz 2003: 98) by practices of burying the dead under the floor and rebuilding houses in the same place. It is suggested that this ancestral presence maintained order within society via communal ancestry rooted in the settlement people lived (Kuijt 2001). This functioned as an integrating principle allowing settlements to grow to thousands of people. While rarely discussed, Watkins (2004: 11) being an exception, much of this theory draws from Lévi-Strauss' notion of the *sociétés à maison* which sees houses as microcosms of the world (Carsten and Hugh-Jones 1995). The seventh and sixth millenniums BC are different however as the changes in settlement patterns, the great increase in mobility and the

emphasis on small temporary settlements suggests that late Neolithic people did not retain the same attachment to fixed ancestral buildings or places. At Çatalhöyük similar arguments have been made suggesting there was a gradual shift in the first half of the seventh millennium BC from ancestral relationships situated within houses to relationships between houses (Hodder 2005: 12; Twiss et al. 2008: 53) which may represent a microcosm of the types of relationship I believe may be operating in the wider Mesopotamian late Neolithic.

I suggest it is here we can find the origins of seals, as people left (and I make the assumption they left in parts of communities) settlements to settle in new, smaller, communities or take up more transitory life styles they would have required new ways of integrating society and dealing with ancestors. These people could have retained a memory of living in large sedentary farming settlements with the designs on the seals representing remembered settlements. It is irrelevant whether they remembered specific communities or imagined ones, either way they could have used this memory to negotiate their relationships in and between their new communities. In a sense I mean to suggest that maybe the late Neolithic was like the colonial United States in that it was full of people who lived together yet claimed different 'mythical' homelands. New memories that linked people to a shared past, regardless of whether it existed, would be a simple way to provide the notions of ancestry and identity lost when the settlements were abandoned. The mobile, transhumant, and sedentary elements of late Neolithic society were divided by many aspects of identity but could have had a common 'foundation' myth based on a memory of upheaval. Most societies have foundation myths ranging from the Polynesians various mythical home-islands (Finney 2009) to the Ancient Greek belief in the 'Return of the Heracleidae', a mythological movement of the descendants of Heracles into the Peloponnese used to explain the dominance of Classical languages over pre-Classical languages in Classical Greece (Hall 1997). An interesting analogy comes from the Grassfields region of Cameroon which in the 1880s was home to over three hundred kingdoms called 'fondoms'. Composed of clans and lineages each had their own origin but each kingdom as a whole also had an ancestral origin from a single sacred site which it shared with a number of other kingdoms. The kingdoms were linked by a common myth of ancestral origin which manifested itself through shared ceremonial events (Rowlands 1987).

It is clear that between the eighth and seventh millenniums BC general settlement patterns had changed and the idea that people within the late Neolithic world would have had mythical homelands is not unreasonable. I suggest that seals may have been symbols of this. Different symbols could have represented different homelands, ancestral founding figures, guiding spirit, etc. If different groups within settlements all had different imagined homelands then the question remains as to why seals are relatively rare. Potentially seals were made of perishable materials such as wood. This would theoretically explain why there are no seals from Kharabeh Shattani as they would not have survived. As such while the extant seals may represent the relationships of a few groups in society, the non-extant ones could represent other groups. It is equally plausible however that seals were predominantly of stone and were restricted in use to a part of society, while other parts of society represented that aspect of their identity through another, unknown, item of material culture or even entirely different forms of imagined community. The plural nature of late Neolithic society is seen in the sheer variety of the burial data from the cemetery at Tell el-Kerkh which is difficult to justify in a society where all the members of a community shared a single identity or fixed structures for burial practices. This idea of multiple identity representation is not without precedent, Frangipane (2007d: 162) has suggested something similar to explain the variety of Halaf burial practices. Current ideas suggest that part of this variety can be explained by the idea of ritual performance, in which each time the ritual specialist conducts an event this involves improvisation rather than formal practices as there is no fixed tradition of practice (Pollock 2011). The idea of ritual performances does help explain some aspects of seal function as shown above and in chapter 6 (e.g. the burnt house) but primarily at the sub-community level as it does not explain the stasis of seal designs, though I will return to the notion in section 7.3.

There is no way to know any truth of the argument above with the present state of research but future avenues of work, various scientific analyses, further research of changing pathways between the eighth and seventh millennium BC, would all be fruitful ways to test the potential of this idea. Regardless of the specificity of the suggested origin of seal designs my overarching argument that seals represent extra-regional descent groups allows most practices surrounding seals to be explained. Essentially I argue that seals are the physical manifestations of practices that existed to provide aspects of an

identity to members of a community which was a chimera of various different descent groups who maintained indeterminate connections across time and space. Seals in child burials are a case in point where they could represent a memento of the only identity they had at death as they did not have time to create new identities or integrate more closely into the community and develop their own identities. As shown above and in chapter 6 there are not enough seals, nor are they varied enough to represent every descent group within the late Neolithic, but it is possible there were more constructed of perishable materials or that totally different objects of material culture were used that have not survived. It is possible that it was only specific groups within society that had this common identity, possibly ritual specialists or craft specialists who inherited their status but the evidence and theorisation of late Neolithic social practices is insufficient to elucidate the existence or nature of specialists. However, it seems likely that late Neolithic society was connected in ways we are only beginning to suspect and a static shared material culture in a setting of great difference, I think, suggests the origin of that material in a shared foundation myth which might relate to earlier settlements. When this ideology finally began to break down almost 2000 years after its inception seals and other shared aspects of material culture are replaced by stratification and other economic practices that lead to the traditional concepts of the development of state societies.

Section 7.3 will take the interpretation developed in sections 7.1 and 7.2 and offer suggestions as to the *specific* nature of seals and what sealing practices were for in the late Neolithic.

## 7.3 What is a seal, and what is a sealing?

### 7.3.1 What is a seal?

Section 7.2 has outlined my interpretation of the source of seals efficacy and what their symbolic iconography illustrated. This section will develop this argument and discuss ‘what’ the function of a seal was. I would suggest three uses:

1. Identification
2. Amuletic or Talismanic
3. Creating impressions

One and two are discussed in this section, three is discussed in section 7.3.2. The first of these, identification, is the simplest and merely suggests that as there were unlikely to be physical or practical connections between the people who might have shared membership of the imagined communities, seals served as a way to identify people when different members of the imagined community met. Or else to identify people within communities as members of the imagined community to people who were not members. If I had to pick I would assume this was the formal meaning of seals. In Tambiah’s terminology the identification is the symbolic aspect of the indexical symbol which is “associated with the represented object by a conventional semantic rule” (Tambiah 1984: 4). In the example in 7.1 of the amulet with a monk on it, this role is the symbol of the charismatic monk.

The next two, amulets and talismans, are the indexical aspect of the indexical symbol in that “they are simultaneously also indexes in existential, pragmatic relation to the objects they represent” (Tambiah 1984: 4). That being Mr Lai’s interpretation of the amulet. I discussed a range of possibilities in section 6.5 of the last chapter and as there I do not believe it is possible to associate the use of seals with specific amuletic or talismanic uses. But there is clearly potential for their use in such areas and it seems likely that if seal designs did reflect a mythology or descent group it is plausible that at multiple levels of practice they could have been imbued with magical properties. In the light of recent evaluations that have emphasised the role of performance in the late Neolithic (cf. Campbell et al. forthcoming; Pollock 2011) I think amuletic or talismanic uses are unlikely to have been wholly formalised but might have resulted from the improvisation by

specific specialists who upon encountering a situation they thought necessitated the appropriation of a powerful efficacious symbol did so. Performance may account for the difference in treatment between different seals explaining why some may have been deliberately broken and some were not, in the events that led to their deposition the relative informality in practice led the involved persons to decide appropriate practice. Hopefully, as studies of seals and the late Neolithic advance specific examples of this level of practice may be identified and discussed.

An example may be the growth of square and diagonal (CH) between the Pottery Neolithic and the Halaf. This growth is at the expense of square (CH) and diagonal (CH) and as discussed in chapter 5 I believe it is the combination of the two designs. Following my argument for the source of the seal efficacy I believe this may represent the creation of a third lineage while the two other lineages continued. Given the spread of square and diagonal (CH) this represent the combination of sizeable parts of the groups symbolised by square (CH) and diagonal (CH) who could not join one of the existing lineages and instead created their own, an amalgamation of the existing identities, possibly claiming a more multiple heritage. Such practice could clearly be the result of ritual performance as an appropriate response to the events that lead to the rise of square and diagonal (CH) were negotiated.

The third use of seals was for creating impressions, this is discussed in section 7.3.2.

### 7.3.2 What is a sealing?

In section 6.4 of the previous chapter I deconstructed the existing interpretations of sealing practices to argue that the isolated extant visible practices were related to sealing for efficacious purposes (as in sealing to have an effect). It is clear seal designs are efficacious and if this derives from an ancestral or mythical association it reinforces this interpretation. Creating impressions is a talismanic use of a seal but it raises an important question, do the designs on the impressions iconically reflect the seal used to impress them or is the seal used merely to reproduce the design thereby indirectly projecting efficacy by making the impression a symbol of the overall symbolic system. Given the present state of evidence there is no way to know, but I would conjecture that they functioned as icons. Impressions with appropriate designs were only made with seals and as impressions reveal a negative aspect I assume they functioned as the icons of symbols.

An impressed sealing is more than just an icon of a seal because it also indexically reflects the person, or persons, who made the impression(s) and the social relationships in which they were implicated. Within the different contexts discussed in Chapter 2 the relative importance society places on these two aspects of symbolism varied. Some of the magical examples in chapter 2 emphasised the iconographic aspect, for example the impressions used to trap the giant tortoise were of a specific talismanic seal (Wagner 1997: 214). Other examples, most notable using of fingernails to seal documents (Postgate 1976: 8–9), emphasises the indexical element of the sealing to the exclusion of an iconic role. Most practices however reinforce both aspects, as with the sealing worn by non-Muslims in the early Islamic empire (Robinson 2005: 427) iconically reflected their subjected status but also indexically references the personal relationships of power between the sealed person and the sealer.

In practice this entails that no sealing practice was likely to have been done for only one purpose, even dry administrative sealing is more than ‘just’ closing. At Arslantepe the seals are interpreted as having been used by persons or ‘institutional’ persons but the excavators suggest the variety in designs and styles “reflects the existence of different social groups, perhaps of different cultural and even ethnic roots, who converged in the economic system of the palace” (Frangipane 2007a: 475). Within this context while the primary role of the sealing practices may have been economic with the sealings iconically representing the people or the institution they represented, it is likely that they also indexically referenced the power relations between these proto-bureaucrats and the different social groups in the area. This is not neutral sealing ‘for the greater good’, but living persons embroiled in relationships and shows that the practices that seem the most prototypical example of early administration would have involved far more varied relationships than pure ‘administration’.

There are probably no examples of sealing practices that were purely of single function, whether magical, administrative, or even branding and in practice any particular sealing practice would have involved multiple forms of relationship reflecting the multiple nature of impressed sealings. Within this more fluid view the sealing practices in the late Neolithic are therefore unlikely to have only one meaning and given the often singular places where they were found suggests specific indexical relationships. Their iconic function comes from the static seal designs coupled with the concept of descent groups



or mythologies I outlined in section 7.2 but the indexical element would have been implemented with much more specific, localised meanings.

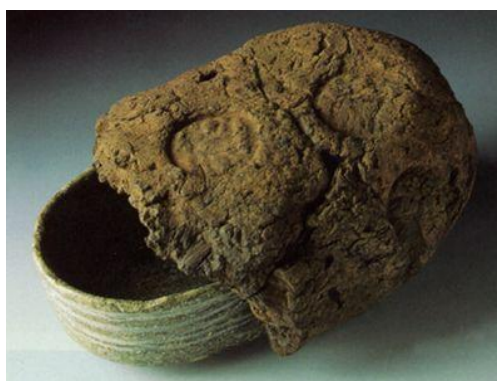


Figure 7-1: Sealing from Tell Sabi Abyad.  
Reproduced from  
[http://www.mcq.org/syrie/aac3\\_gp\\_recipient.htm](http://www.mcq.org/syrie/aac3_gp_recipient.htm)  
Accessed 7th October 2013



Figure 7-2: Clay disk from Arpachiyah (AP-185).  
Courtesy of UCL, Institute of Archaeology.

In 6.6.3, closure was not a concern and another social practice must explain the phenomena. This ambiguity suggests the notion of performance and improvisation as discussed in section 6.5 was important to sealing practices in the late Neolithic. The variety of visible practices reflects the varied ideas and beliefs of the participants. Within this I do not believe it is possible to provide a singular definition of the purpose of sealing practices, and it is likely that the variety in sealing forms represents a variety of sealing uses. Further research to elucidate contexts of use for sealings, and alternative terminologies, would be a useful avenue for the future.

My interpretation of many of the isolated sealing practices visible in the late Neolithic is that it was for efficacious purposes using a powerful symbol. These practices could have been carried out by ritual specialists for specific persons or as elements in events and rituals more generally. The use of the efficacious character of seals at specific events does explain why at most sites impressed sealings are found by themselves in apparently random contexts. If the impressed sealings are the material manifestations of

Beyond this it also provides an explanation for the variety of sealing practices in the late Neolithic. As discussed in Chapter 6, few late Neolithic sealings had reverses showing they had been attached to a container or surface, many were stung clay (with a string hole) or clay disks (with no attachments). Looking more inclusively and including the Tell Sabi Abyad material, there is a great variety of impressed sealing. In a singular example almost the entire container was covered in clay (Figure 7-1). Most of the sealings from Tell Sabi Abyad do suggest a concern with closure, as discussed in section 6.6.5, and Wengrow's (2008) argument about sealing changing temporal relationships may well apply. For other varieties of sealing practices, such as the clay disks (Figure 7-2) from Arpachiyah, discussed

specific events where powerful substances or witness were required then they would have been made either on an ad-hoc basis as events unfurled or as a structured happening. The two mass events at Arpachiyah and Tell Sabi Abyad are larger in scale but presently unique and, while less likely to be based on informal improvisation, fit the argument as well in a social structure that better reflects what we know of late Neolithic society.

It is also possible that part of the efficacy of sealing derived from the efficacy of the person sealing. Many of the strung clay and clay disk impressions from Arpachiyah have been sealed multiple times (up to 18) and each could have been impressed by a different person lending their efficacy, consent, or bearing witness to the burning. Each impression could have increased the power of the sealing overall to the level deemed necessary for the unique practices present at the burnt house. Parallels for this outside of Arpachiyah are limited, multiple sealings are known from Domuztepe, although they have been sealed fewer times. Similarly many of the Tell Sabi Abyad sealings have been impressed multiple times in what is again apparently a unique event and it may be the significance of the actions at both Arpachiyah and Tell Sabi Abyad that necessitated more people and more powerful sealings.

In conclusion this interpretation of sealing fits with what is known of the 'complexity' of late Neolithic society. As argued in chapter 6 earlier interpretations of late Neolithic seals regarded sealing practices as administrative and ignored the context and society in which different impressed sealings were found. My argument proposes that the sealing is similar in practice but different in purpose and that sealings as indexical icons are unlikely to ever have had only one, immutable, meaning. The discussion of seal uses proposed similar points highlighting a range of possible uses which functioned both as symbols of their designs and indices of a wider range of more local relations surrounding the morphology and treatment of the objects.

The final section 7.4 will address the question of what happened to this identity system, and by extension do later seals and sealing practices derive from the late Neolithic?

## 7.4 Relations with later Sealing Practices

The earliest evidence for formalised administrative sealing practices occurs in the second half of the fifth millennium BC, but the evidence there is minimal. The earliest ‘conclusive’ evidence of formalised administrative sealing practices in North Mesopotamia comes from Arslantepe between 3350 and 3000 BC (Frangipane 2007a: 25). The unanswered question sections 7.1 to 7.3 have left is what happened to this identity system in the Late Ubaid and how and when was it replaced. There is at present no answer to this given our poor understanding both of the Halaf-Ubaid Transitional and the Early to Late Ubaid transition. The Halaf-Ubaid transition in particular is almost unknown (Campbell 2007: 21–2) and the evidence for the Ubaid in general is limited to single sites in certain regions and periods (Henrickson and Thuesen 1989: 457; Carter and Philip 2010: 10–11). Late Neolithic seals continue in use well beyond the pottery styles that traditionally defines the late Neolithic has changed and it is very difficult with the present evidence to know what the nature of the change between the Halaf and the Ubaid and between the Early and Late Northern Ubaid is and how that relates to actual social practices. This makes it very challenging to contextualise whether later administrative personal seals and sealing practices develop from the late Neolithic or independently. It is clear that glyptically there is a profound shift in the designs found on seals sometime in the middle to late Northern Ubaid. This transition is archaeologically clear with a shift to an animal (and lesser extent human) dominated glyptic (von Wickede 1990: 126) most clearly visible at Tepe Gawra where between the Halaf and later Ubaid levels (though there is no direct excavated relation (Campbell 2007: 21)) there is no clear overlap between the geometric and figurative glyptic styles. The best evidence of Northern Ubaid sealing practices comes from Değirmentepe where there may be evidence of a more transitional glyptic with both geometric and figurative seal designs present on the impressed sealings but it is difficult to interpret specifically what social practices are present at Değirmentepe and as I showed in chapter 6 they may well be administrative in some form. Ultimately we know little about the late Ubaid sealing practices that would provide evidence for a link, or lack thereof, between late Neolithic and later sealing practices. However, it is possible to draw a general narrative suggesting that late Neolithic sealing practices do evolve and develop into Chalcolithic sealing practices.

It is widely recognised that the earliest evidence of wide-spread sealing practices using cylinder seals in the Middle East is institutional and primarily personal sealing practices clearly develop only in the third millennium BC (Collon 1997b: 12). I have suggested that late Neolithic sealing practices relate to efficacious actions surrounding significant social practices. I also suggest this power came symbolically from the designs which related to supra-regional associations of descent. The transition therefore, from seal designs reflecting ancestral or mythical descent to seals designs reflecting institutions could therefore relate to wider shifts in society, most prominently the increase in social hierarchy and inequality as occurs after the Ubaid. Dominant institutions, which were primarily religious (Liverani 2006: 61), could have appropriated earlier semi-magical practices related to protection or closure for their own purposes. The ideological difference between sealing things to protect and enhance their efficacy and sealing things to ensure their protection is minimal if both were done in the name of a 'higher' power, the only element that has changed is the specific higher power.

There is no evidence of a link between the sealing practices of the late Neolithic and the Chalcolithic but my suggestion offers a plausible transition as it fits into the wider narratives visible in Middle Eastern history where the fundamental changing of society and social practice is visible through increasing levels of inequality initially via powerful institutions and then later through powerful individuals/families. Reinforcing the idea of a single narrative is the amuletic functions of later seals. As I discussed at length in chapter 2 the magical and amuletic function of proto-historical and historical period seals was an important function of Middle Eastern seals where sealing for efficacious purposes was common. Many existing narratives of the development of late Neolithic sealing, as discussed in chapter 3, argue sealing practices reflected ownership, trade and controlling access with little or no amuletic or magical function (von Wickedede 1990: 29) with these functions only developing once you reach historic contexts. However, following my argument it is much more likely that administrative sealing develops out of magical sealing. In this context the use of seals and sealing practices for amuletic/talismanic purposes throughout proto-history and into the historic period requires less explanation. It is the maintenance of an older seal use continuing with new and different sources of efficacy and with an additional role in more administrative relationships.

It is difficult to say if there is a relationship between late Neolithic and later sealing practices but it is clear that on either side of the Chalcolithic sealing practices are clearly

varied with a wide range of purpose. There is no reason to draw a single narrative and I do not accept progressive arguments that see the late Neolithic as a transitional phase between sedentism and agriculture and early states but the importance of sealing practices from the late Neolithic onwards does provide the possibility of a 'continuity' within contexts and societies lacking other links. Further research is necessary to reinterpret chalcolithic sealing practices elucidating what different purposes of sealing were present and any relationships between the different periods.

## 7.5 Conclusion

In conclusion, this chapter has argued that late Neolithic seal designs derive from the memories of eighth millennium BC settlements and a need for fixed conceptual elements in the fluid world of the late Neolithic. This memory was used symbolically by groups of people within late Neolithic communities to negotiate their relationships both within their own and between other communities. While this symbolical meaning may have exhibited the formal 'meaning' of seals they were also used indexically in performance rituals for a range of possible magical uses using the efficacy of this ancestral or mythological memory.

This interpretation fits the available evidence. Stylistically seals appear towards the end of the eighth millennium BC and show no fundamental change until the end of the late Neolithic. While there are some morphological changes there is no evidence of changing practices or associations between seals and their contexts, most of which appear un-structured, and as such I assume the symbolic meaning of seals remained (relatively) stable for the entirety of the late Neolithic. As such the shared symbolic system appears to originate around the transitional period between sedentary farming communities and the more mobile lifeways that characterise the late Neolithic. As such it is presumably related to social changes occurring during this time. None of the visible practices contradict this, though I acknowledge much work remains to be done both on changes that occur between the eighth and seventh millennia BC as well as continued analysis of seals as more are discovered.

The next chapter is the conclusion and will draw together themes that have arisen during the thesis.

# Chapter 8: Conclusion

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Having reached the conclusion a moment of reflection is called for. The purpose of this thesis was to examine and challenge existing paradigms of late Neolithic seals and offer an alternative interpretation that better reflected the objects themselves and their contextual information. This I have done, but one question does remain. Why it has taken 80 years for this administrative paradigm of seals to be challenged? There is no evidence or *reason* for administration in the late Neolithic and late Neolithic seals are so clearly not individual as to have left me wondering throughout my thesis if anyone had actually ever bothered to study them. Many of the points I raise throughout my thesis should be largely self-evident and have not required the use of complex statistics or theory to elucidate. I shall return to answer this question after summarising what I have demonstrated.

## 8.1 Summaries

This thesis has demonstrated a range of things. Chapter 2 showed the ways seals have been used globally to demonstrate the variety of uses seals have had, as well as outlining previous theorisations of the late Neolithic. Chapter 3 reviewed the existing literature and argued it had, with some recent exceptions, failed to consider seals in their own context and instead discussed them merely as part of a dominant narrative of developing administration. I suggested this was for two reasons, the narrative of societal progression and the inadequate way by which seals had been classified. Existing classifications treated overall morphology as the sole attribute of interest in seal typology artificially imposing a rigidity and failing to appreciate the variety of seals. Chapter 4 addressed this by outlining a different ontological perspective of classification moving from Aristotelian classification with its belief in essential attributes and suggesting the construction of a classification system following the idea of prototype theory. This allowed for a classification of seals that better reflects their possible multiplicity and allowed analysis of seals by a wide range of parameters. This analysis was provided in chapter 5 and demonstrated a range of concepts associated with seals which are summarised below:

- Seals emerge fully formed presumably in the late eighth millennium BC. This suggests any evidence of the earliest stages of seals is missing.
- Seal designs appear to reference a supra-regional shared symbolic language.
- Seal designs are not integrated below the supra-regional with no patterning in the distribution of designs at a site, region, or modern country level.
- Seal designs are practically unchanging over the late Neolithic, except for the development of square and diagonal (CH) cross-hatching.
- Seal morphology shows clear evidence of regional and chronological patterning suggesting the development in the Halaf of a specific type of stamp in the western regions (prototypically with a circular or square body face, flat body profile, and central eyelet piercing) and pendant seals in the eastern regions.
- Preferences appear in morphology choice but do not appear to be proscribed.
  - Four in five stamps have circular, oval, square, or rectangular faces.
  - One in two pendant seals have pear or triangular faces but there is otherwise a lot more variety than with stamps.
  - Almost four in five pendant seals have wedge or flat profiles.
  - One in two stamps has a flat profile but there is otherwise a lot more variety than with pendant seals.
  - Body piercing largely correlated with body profile.
- These preferences suggested both stamps and pendant seals hung vertically as the more visible aspects of both types vary more than the less visible aspects of the seal.
- There are potential correlations between some design types and some body face types. These preferences suggest some connections across some parameters such as aligned centre designs are very common on circular faces but uncommon on rectangular faces. However it was concluded that there was not enough data to reliably interpret these phenomena.
- Most seals were made of fairly soft, easily workable, stones.
- High levels of clay and bone seals in the Pottery Neolithic may suggest a relative informality over the appropriate material for seal construction that was lost over time.
- The publishing of material and colour is inadequate for analytical purposes.

Many of these conclusions remain standalone but the overarching pattern of static designs and variable morphology was developed in chapter 6 which analysed the available contextual and curatorial data on seals as well as investigating evidence for ownership and use. This raised the following conclusions:

- Most seals come from seemingly non-structured rubbish deposits.
- Burial was not the most appropriate place to dispose of seals.
- While most seals were deposited entire a significant minority appear to have been deliberately broken or damaged before deposition, possibly using some of the same mechanisms that were used to create them.
- It is not known for how long seals were curated but it was unlikely to be more than a few generations.
- There is no evidence of association between seals and other late Neolithic objects.
- There is no evidence of the involvement of seals in late Neolithic or supra-North Mesopotamian trade relations.
- There is essentially no archaeological evidence of seal use.
- Seals were unlikely to have been used for identification within settlements by persons or families as there is not enough variety or positive evidence.
- Seals were unlikely to reflect high status goods, inalienable objects or achieved identities because of the lack of formal practices and apparently casual nature of deposition.
- At a macro level I suggested instead they represented non-status related generic forms of perceived kin relationship.
- At a micro level I suggested seals were used in a wide variety of ways reflecting short-term identities through amuletic and talismanic ways using the efficacy of the shared symbolic language.
- Seals were used for sealing purposes but were not for sealing. Instead the practice of sealing appears to have been more widespread than just with seals.
  - o I used this to suggest that as no examples of the objects used to make the Tell Sabi Abyad impressions were found there was no reason to assume they were made by seals.



- There is little evidence of the administrative use of seals for sealing practices with no evidence of formal or repetitive practices and, at many sites, such as Arpachiyah, little evidence of things actually being sealed.
- Sealing practices were interpreted as singular efficacious events for a variety of possible purposes deriving from the efficacy of the seal design.

Many of the arguments in chapter 6 remain provisional due to the lack of evidence for any contextual use of seals or impressed sealings. This absence of data does make it difficult to offer any conclusive explanations for the character or meaning of seals but I offered an interpretation of the meaning of seals in chapter 7. Presenting seals as dualistic items, using the concept of indexical symbols, mediating relationships symbolically between groups of people within settlements and other groups of people within other communities in the late Neolithic as well as being used indexically for a wide variety of more specific amuletic and talismanic uses. I suggest that the efficacy of these uses come from the symbolism on seals being a material referent of a memory of a real or mythological homeland. I suggested this because of the presumed origins of late Neolithic seals in the last centuries of the eighth millennium BC or first centuries of the seventh millennium BC which may correlate with a major shift from fixed notions of ancestral place in the landscape or settlement to a more transitory, pastoral way of life without a fixed place but still needing a framing of location in the world via the shared symbolic language that seals reflect. This interpretation is provisional as considerable more research is required on the earliest phases of the seal glyptic, the character of the eighth – seventh millennium BC changes, as well as many other areas.

Chapter 7 hypothesised that post-late Neolithic seals developed out of late Neolithic seals with the appropriation of their magical/ancestral/mythological efficacy by the temple institutions of the late Chalcolithic that seem to have dominated the structuring principles of the late Chalcolithic. This appropriation was likely a simple development as the material uses, primarily sealing practices, are almost identical but the frame of reference has changed from specific events of isolated sealing to formalised institutional practices. The source of the sealings efficacy could have remained the same in both however, some form of higher power, possibly ancestral elements in the late Neolithic and personified gods in the later periods.

## 8.2 Frames

This thesis explicitly focused on seals almost to the exclusion of the wider material fields of the late Neolithic. This was deliberate but did not leave much leeway for discussing wider changes in the material fields of the late Neolithic. Seals were part of a larger material world, and while they were not directly involved with much of that world the late Neolithic as a whole is illuminated by a general elaboration of material culture, particularly in the Halaf. The prime example for this is the introduction of pottery as a mass product and the gradual rise of elaborate pottery styles. Similarly there is great diversity in objects like beads, stone bowls, or figurines which increases over the late Neolithic. Why there is this elaboration of material culture is a much harder question to answer as the changes are not concurrent. Pottery for example elaborates long after seals begin to be found. However, as I have discussed in relation to the indexical practices of seals much of this variety might relate to concepts of performance (Pollock 2011) as different late Neolithic communities copied and improvised ideas from others, and is likely reflected in the divide in seal morphology between western and eastern regions.

Within this there are questions that relate to the history of study, there are not that many object categories in the late Neolithic and this elaboration of material culture takes place within a limited range of types. For example, there are no amulets in the late Neolithic, although there used to be. Mallowan suggested that the amulets at Arpachiyah were used as seals, but fast-forward to the present and we have kept the seals but lost the amulets. The world we have constructed for late Neolithic objects is limited in its openness and there is little sub-division of many object types. Possibly some of the apparent elaboration within what we have classed as one type of object should be recognised as multiple object types.

Another observation on this note is that after the late Neolithic the only aspect of this elaboration that survives is seals. This is probably meaningful, as despite the vast social changes after the late Neolithic seals do continue. This suggests some continuity in meaning, as I argued in section 7.4, but also raises one final question. Should late Neolithic seals keep the name seal? Sealing was only one use of late Neolithic seals and seals appear not to have been primarily symbols of administration or personal identity as they are in later periods. Should therefore seals be given a new name, one that breaks the explicit association with later seals and sealing practices? Parallels can be found in how archaeologists initially called the clay stamp seals from Çatalhöyük seals but have now

begun calling them stamps to better reflect their implied function (Türkcan 2005). However, seals in the late Neolithic *are* seals and while their main functions varied as indexical symbols they were also used for sealing purposes. As the background chapter shows seals, in many contexts, are used for far more than sealing and by extension the name is appropriate, but the definition is not.

In section 7.4 I discussed the origins of later sealing practices and suggested that the administrative use of seals arose from the late Neolithic symbolic and amuletic types of sealing tacitly accepting the majority view that later seals are predominantly administrative. However, I am unsure of this view. In Chapter 3 I discussed how the problem of definition of late Neolithic seals had arisen from the retro-fitting of later uses of stamp seals, but the late Neolithic is by no means the only period where people have ignored the context of objects they call seals. Throughout the history of the Middle East there seem to have been multiple types of object termed ‘seals’ without evidence of use for sealing purposes.



Figure 8-1: 'Jemdet Nasr' type seal (BM 126427) from Tell Brak (© Trustees of the British Museum).

The paramount example of this is 'Jemdet Nasr' (late fourth millennium BC) type stamp seals which have very distinctive drilled motifs and are often carved in the shape of an animal (Figure 8-1). There is no evidence of their use for sealing and late fourth millennium BC impressions on sealings and tablets are of a different style (Matthews 1992a: 19). Matthews (1992a: 19) suggests the Jemdet Nasr stamp seals may be amulets or badges of office. However, as with late Neolithic seals while previous interpretations are recognised to be lacking (Matthews 1992a; Matthews 1992b) no dedicated attempt has been made to address this gap.

'Jemdet Nasr' stamp seals are only one example and it seems likely that archaeologists have equated different varieties of object (even if most of them were technically used for some form of sealing) as part of a single narrative of increasing administration and complexity which even in state societies may be very flawed. Many Ubaid – late Chalcolithic seals raise similar questions to those which prompted this study.

There are limited correlations between physical seals and sealings, at Arslantepe with its thousands of sealings they found no physical seals (Frangipane 2007a: 355). The designs are also frequently quite generic. The 'Gable' seals in Figure 8-2 are a common type and while they are clearly slight differences they are instantly recognisable both morphologically and symbolically. Simply put they are not individual, this does not preclude administrative use, but particularly in light of my discussion in section 7.3 that impressed sealings are indexical icons this suggests even at sites with clear administrative use of seals, like Arslantepe, the sealings should be reinterpreted within their contexts to see *why* they were sealing and how that sealing system socially functioned.



Figure 8-2: Two 'Gable' type seals (© Trustees of the British Museum).

More work is required on post-late Neolithic stamp seals to investigate their actual contexts of deposition, their contexts of use, their styles and variation, as well as the social context present at the time of use. I would argue that the narrative of social complexity and progression that has impacted the study of late Neolithic seals has also limited the study of later seals. The distinction being that while in the late Neolithic 'administration' was necessary to provide evidence of redistribution or exchange and the emergent elites that went along with this, in later periods with higher social evolutionary rankings no critical thought was required because the origins of administrative sealing were reputedly found in the late Neolithic and therefore seemingly required no justification.

This means that, definitionally speaking, *seal* is appropriate but people's definition is not. Seals are not inherently administrative, nor are they inherently used for sealing. Instead I would suggest the word seal could be better defined as objects that can project or reflect power through the efficacy of their design. While this could be for sealing, it could also be for the amuletic, talismanic, or ideological uses discussed in chapters 2 and 6. Similarly the source of the efficacy could be a shared symbolic language as I suggest for

the late Neolithic or inalienable associations with specific people such as is seen with the seal of Augustus. As such, a seal is simply an object that can project or reflect its efficacy. This is maybe a little simplistic and a more accurate definition might be 'a seal is an object that can project or reflect its efficacy and is, amongst other things, sometimes used for creating impressions'. The specific definition is unimportant however, the key aspect is moving away from a functional to a social definition. This removes some of the value judgements implicit in traditional definitions of seals leading to a recognition that seals are not *inherently* administrative or *inherently* for creating impressions.

## 8.3 Questions

Finally, I want to return to the question I asked at the start of this chapter. That question was 'why has it taken 80 years for this administrative paradigm of seals to be challenged?' There is quite a simple answer. Simply administrative sealing has helped scholars of the late Neolithic.

Ideas of 'social complexity' (via processualist archaeology) are one of the few theoretical schools, as discussed in chapter 2, to have impacted upon Middle Eastern Archaeology and are heavily based in modernism. Implicit in modernism is the idea of progress from simple to complex, and it is essentially 'progress' social complexity is intended to measure. Within this model the late Neolithic needed to be more complex than the early Neolithic, and less complex than the Chalcolithic. However, in social complexity (or evolutionary) terms the early Neolithic is quantifiably more 'complex' than the late Neolithic with considerably larger settlements, and complex ritual practices. By contrast all the late Neolithic exhibits is long distance trade, also present in the early Neolithic though on a larger scale, elaborate pottery, and administrative sealing practices. Essentially it is late Neolithic sealing practices being interpreted as representing a functional administration that has for the past 80 years allowed scholars to argue that the late Neolithic is a complex period, in social evolutionary terms.

Methodologically ideas of progression are inappropriate for the study of how past societies functioned, the key traits that mark the attainment of progression (or its derivative complexity) are based on value judgements about factors that were important in the development of modernity (Rowlands 1987: 32). One of the most important of these value judgements is the ideas of bureaucracy and institutions. These aspects are key elements of first world society and efficient government is often associated with

efficient bureaucracy and institutions. Administration is a bureaucratic act and administrative seals have allowed scholars to argue their communities or societies display complexity without the necessity for investigating how these societies functioned in practice. This may be a theoretical point, but progression as a concept allows scholars to be lazy. For example, the assumption there is administrative sealing in the late Neolithic entails that for the late Chalcolithic no attempt is made to justify the presence of administration as the idea that civilisation is progressive makes it unnecessary. To be theoretically sound, without direct cultural continuity (which there is *not* between the late Neolithic and the late Chalcolithic) every social practice should be justified in its own context.

Admittedly a progressive narrative does make it easy to justify researching any period in archaeology because 'progress' ultimately culminates in modern, western, nation states. This means that "while archaeology is the study of the past, there is generally an implication that what is being studied is significant because it has contributed in some way to the present state of affairs" (Thomas 2004: 53). Part of the use of this narrative in archaeology is *realpolitik*, persuading a disinterested public that funding archaeology is in the public good requires some angle to attract their interest.

As such, while my reinterpretation is useful, showing that there is little conclusive evidence of administration in the late Neolithic and little reason to assume the objects we call seals are indicators of personal property is more so. None of the sealing practices visible in the late Neolithic clearly demonstrate the formality or repetition which I suggest is necessary for administration and when coupled with the, in social evolutionary terms, absence of evidence of social complexity one is left with a late Neolithic that is visibly not as complex as the early Neolithic. The progressive narrative of social complexity over Middle Eastern prehistory cannot function leaving a theoretical void.

This void is where I think much late Neolithic research could productively be focused. The late Neolithic is a fascinating period. The 'fall' in complexity after the early Neolithic has never been questioned and why people abandoned large, assumedly stable, settlements for a transitory pastoral lifestyle has gone unevaluated. If it cannot be pigeonholed as a transitional period between the early Neolithic and the late Chalcolithic then what is it? I hope in the years to come questions of this nature begin to be asked and with any luck 'answered'. There are so many fascinating questions that

remain to be answered of the late Neolithic and as more data is gathered we will get closer and closer to suggestions that begin to explain the multiplicity of the late Neolithic.

# Appendix 1: Classification

This appendix details the attributes used in the classification system. As discussed in Chapter 3 there is no formal over-arching structure and each attribute is considered separately. Most of the attributes relate directly to classification but a number are comments on the classificatory designation or modern contextual information (such as the object's location). Attributes that contain multimedia information are not described here. Each attribute has a unique four digit number (in the format A1.1.1.1) used to reference between the different tables. If an Attribute has an open answer it will have four entries ('sub-ordinate of', 'super-ordinate of', 'scope note', and 'examples'). If it has a fixed answer it will have 'possible properties' instead of 'examples' which will define the answers that attribute may have. Each table is discussed individually beginning in A1.1 with the Seals and Sealings table.

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## A1.1 Seal and Sealings Tables

These two tables share many of the same attributes and are thus discussed together with the first box of each attribute stating which of the two tables it refers to.

### A1.1.1 Item Code

#### *A1.1.1.1 Item Code*

Refers to: *Seals and Sealings*

Sub-ordinate of: *None*

Super-ordinate of: *None*

Scope note: An arbitrary code generated for each artefact to uniquely identify it. All Item Codes have a two letter site code followed by a sequentially generated number based on the order objects were entered into the database. See A1.2.1.1 for site codes.

Example: AP-001 is the first artefact from Arpachiyah or DZ-047 is the 47th artefact from Domuztepe.

## A1.1.2 Site

### *A1.1.2.1 Site*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Equivalent of:	Site (0)
Scope note:	The site the artefact is from. Details for the sites and publications used form Appendix 2. Also see the sites table (A1.2) below.
Example:	Arpachiyah

## A1.1.3 Material

The material attribute group comprises three different attributes

### *A1.1.3.1 Basic Material*

Refers to:	<i>Seals and Sealings</i>														
Sub-ordinate of:	<i>None</i>														
Super-ordinate of:	Specific Material														
Scope note:	The basic-level category Basic Material records the type of material.														
Possible properties:	<table><tr><td>Bone</td><td>The desiccated remains of living creatures</td></tr><tr><td>Clay</td><td>Objects made from clay minerals</td></tr><tr><td>Metal</td><td>Metallic objects</td></tr><tr><td>Organic</td><td>Organic is a loose term that in this case refers to bitumen.</td></tr><tr><td>Shell</td><td>Shells</td></tr><tr><td>Stone</td><td>Stones</td></tr><tr><td>Unknown</td><td>Objects where the material is unknown</td></tr></table>	Bone	The desiccated remains of living creatures	Clay	Objects made from clay minerals	Metal	Metallic objects	Organic	Organic is a loose term that in this case refers to bitumen.	Shell	Shells	Stone	Stones	Unknown	Objects where the material is unknown
Bone	The desiccated remains of living creatures														
Clay	Objects made from clay minerals														
Metal	Metallic objects														
Organic	Organic is a loose term that in this case refers to bitumen.														
Shell	Shells														
Stone	Stones														
Unknown	Objects where the material is unknown														

### *A1.1.3.2 Specific Material*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>Basic Material</i>
Super-ordinate of:	<i>None</i>
Scope note:	Specific Material refers to the type of Basic Material. Possible properties below provides the different potential types contained within this thesis.

Possible properties:	Metal:	Copper	Bone:	Unknown Bone
	Organic:	Asphalt/Bitumen	Clay:	Baked Clay
	Shell:	Unknown Shell		Unbaked Clay
				Paste
	Stone:	Agate	Flint Cortex	Peridotite
		Alabaster	Gabbro	Quartz
		Basalt	Greenstone	Quartzite
		Breccia	Jadeite	Rock Crystal
		Calcite	Jasper	Sandstone
		Chert	Kaolinite	Schist
Chlorite		Limestone	Serpentine	
Cornelian		Marble	Steatite	
Dolerite		Obsidian	Unknown Stone	

#### *A1.1.3.3 Material comment*

Refers to: *Seals and Sealings*

Sub-ordinate of: *None*

Super-ordinate of: *None*

Scope note: Comments on any information provided about the material in the publication.

Example: 'Described as almost monomineralic chloritic'

### A1.1.4 Morphology

The morphology attribute group contains information on the shape of the objects within the database. It consists of seven attributes (six of which are unique to the seals table).

#### *A1.1.4.1 Body Type*

Refers to: *Seals and Sealings*

Sub-ordinate of: *None*

Super-ordinate of: *Body Face and Body Profile*

Scope note: *Body Type* records the general morphological form of the object and is primarily focused on how the object would hang when suspended. It is the only morphology attribute shared with sealing though in that table every entry has 'Sealing'.

Possible Properties:	Bead	Longitudinally pierced objects without an appropriate design.
	Bead Seal	Longitudinally pierced object with an irregular wedge design
	Impression	An impression of an object with an appropriate design.
	Irregular	Objects with unique or indeterminable forms
	Pendant	Objects <i>without</i> an appropriate incised design where the design hangs vertically when suspended vertically.
	Pendant Seal	Objects <i>with</i> an appropriate incised design where the design hangs vertically when suspended vertically.
	Plaque	Objects with an incised design and no method of suspension
	Stamp	Objects with an appropriate incised design where the design hangs horizontally when suspended vertically.
	Unknown	When the physical form is unknown.
	Whorl	Spindle whorl with interesting designs
	Sealing	A piece of mud/clay which has or has not been sealed to something and then has or has not been impressed.

#### *A1.1.4.2 Body Face*




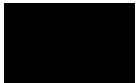
















Refers to: *Seals*

Sub-ordinate of: *Body Type*

Super-ordinate of: *None*

Scope note: The face of the object is the side with incisions on objects with designs and the base/side in objects that do not. The shapes are deliberately inclusive and the images below are generalisations, actual objects will vary from the prototype. The list is not exclusive and new faces should be added as appropriate.

#### Possible Properties:

	Circular		Pentagonal
	Clover		Rectangular
	Diamond		Screw
	Double-Axe		Sickle
	Drop		Square
	N/A		Trapezoid
	Figurative		Triangular
	Oval		Unknown
	Oxhide		V-Shaped
	Pear		Winged

#### A1.1.4.3 Body Profile

Refers to: *Seals*





















Sub-ordinate of: *Body Type*

Super-ordinate of: *None*

Scope note: The profile of the object is the shape of the seal viewed from the longest side of the object. Within each possible property there is considerable variation and the different groups are not exclusive, where eyelets have been illustrated on the images below it is

important to note that this is merely the prototypical form of that property and the actual examples may not have an eyelet.

Possible properties:

	Blunt Cone		Lentoid
	Boot-shaped		Figurative
	Bowled		Pear
	Cone		Pyramid
	Cylinder		Raised
	Dome		Ridged
	Domed Cylinder		Right-Angled Triangle
	Flat		Twin
	Gable		Unknown
<b>N/A</b>	Irregular		Wedge
	Lens		

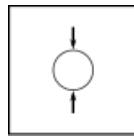
A1.1.4.4 Body Piercing

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>Piercing Summary, Body Type</i>
Super-ordinate of:	<i>None</i>
Scope note:	This attribute records the specific character of how an object is suspended. It is sub-divided into internal and external piercings

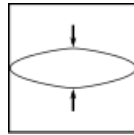


which are divided by whether the objects suspension is pierced through the body of the object or if a special eyelet was used.

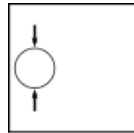
Possible  
Properties:



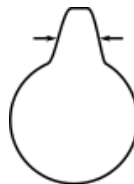
Central Eyelet (external). An eyelet rises from the middle of the back of the object.



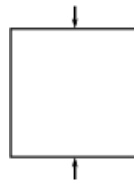
Covering Eyelet (external). Same as central eyelet but the eyelet covers the entire



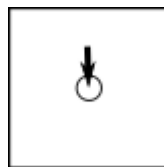
Off-centre Eyelet (external). Eyelet is small but off-centre on the back of the object.



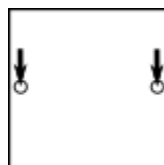
Vertical Eyelet (external). Eyelet rises from above the sealing face.



Pierced through Body (internal). The entire body of the seal is pierced normally longitudinally.



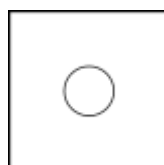
Pierced through Face (internal). The object is pierced through the face of the object.



Double pierced through face (internal). The object is pierced twice through the face, normally at either end.



Unknown Piercing No information is available on any potential piercing.



Handled (no piercing). A handle rises from the back of the object but is un-pierced.



Un-Pierced (no piercing). No piercing is present in the object.

#### *A1.1.4.5 Piercing Summary*

Refers to:	<i>Seals</i>	
Sub-ordinate of:	<i>None</i>	
Super-ordinate of:	<i>Body Piercing</i>	
Scope note:	This property records the type of suspension recorded in the previous property.	
Possible properties:	Eyelet	Piercing is separate from the general object body.
	Internal Piercing	Piercing was through the general object body
	Unknown Piercing	No information on piercing was available.
	No Piercing	No piercing in the object.

#### *A1.1.4.6 Body Elements*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This property covers any other aspects of the morphology that is not formally classified above.
Example:	"Notched"

#### *A1.1.4.7 Body Comments*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This property records any issues or comments on the morphology of the objects.
Example:	"Has been heavily and deliberately damaged making the original shape impossible to ascertain"

### A1.1.5 Design Classification

The design attribute group is made up of 5 properties (none of which are found in the *sealings* table) which together classify the different design types of all the objects within the database. The first three attributes are sequential, *Super-Design Group* is the super-ordinate level attribute of *Design Group* which in turn is the super-ordinate level attribute of *Sub-Design Group*.

#### A1.1.5.1 Super-Design Group


Refers to:	<i>Seals</i>	
Sub-ordinate of:	<i>None</i>	
Super-ordinate of:	<i>Design Group</i>	
Scope note:	This top-level categories groups objects into their overall category.	
Possible Properties:	Aligned Centre	Objects where the design aligns with the centre of the object.
	Central Focus	Objects where the design is split along the middle of the object or aligned longitudinally.
	Cross-hatching	Object design has no alignment and the main motif is cross-hatched lines.
	Irregular	Designs without parallel.
	Figurative	Designs that show human or animal features.
	Other	Other objects without standard designs.
	Unknown	No information is available on the design.



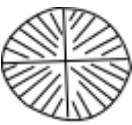

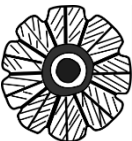

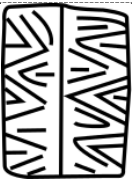


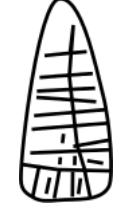
#### A1.1.5.2 Design Group


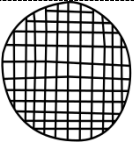
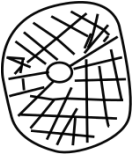
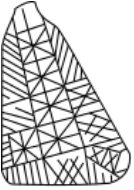

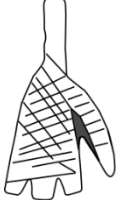

Refers to:	<i>Seals</i>	
Sub-ordinate of:	<i>Super-Design Group</i>	
Super-ordinate of:	<i>Sub-Design Group</i>	
Scope note:	This basic-level category is the attribute where all the objects within it share the most aspects and is divided below by Super-Design Group. Unknown has no <i>Design Groups</i> . All pictures below are of actual objects that best fit the group.	

Possible

Properties:

<b>Aligned Centre</b>		<b>Chevrons</b>	A central cross with V shapes (chevrons) in the four quadrants that align with the centre.
-----------------------	---	-----------------	--

		Circles	Predominantly aligned lines around a central double circle or number of internal circles.
		Claws	Tubular shapes with internal lines that align with the centre of the object.
	N/A	Irregular (AC)	An aligned centre design that does not fit any of the other groups.
		Lines	Lines without other major features which align with the centre of the seal.
		Quadrants	Rotational or reflectional motifs aligned with the centre of the object.
		Rosette	Multiple notched 'petals' aligned with the centre of the object
		Square and Lines	A square around the outside of the seal normally with central cross and radiating lines.
Central Focus		Chevrons	Parallel Vs or zigzag motifs divided by a central partition.
		Cross-hatching (CF)	Standard (CH) cross-hatching divided by a central partition
		Diamonds	Diamond motifs divided by a central divide or metered panels
		Lines	A central line bisects the seal with a variety of parallel or angled lines (normally mirrored) in the bisected section.

		Quadrants	Design with a rotational or reflectional symmetry aligned along a single plane.
Cross-hatching		Standard (CH)	Cross-hatching where the design is regular.
		Irregular (CH)	Cross-hatching where the hatches are irregular and may be of varied sizes and alignments.
		Framed (CH)	Standard (CH) cross-hatching with lines either in panels or framing the cross-hatching.
Figurative		Animal	Objects with an animal based design.
		Human	Objects with a human based design.
Irregular	N/A	Unique	This property covers objects that have a unique formal design without parallel.
		Random Lines	This property covers objects without any apparent cohesion in the design.
Other	N/A	Bead	A transversely pierced object without an incised design.
	N/A	No visible impression	An impression of an object that left no trace of the design
	N/A	Pendant	An object that hangs vertically when suspended without design.
	N/A	Seal Form	An object with a seal morphology but no design or incomplete.
	N/A	Wedges	Group of beads from Arpachiyah with a distinctive wedge design.

### A1.1.5.3 Sub-Design Group




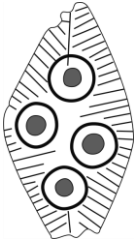


Refers to: *Seals*





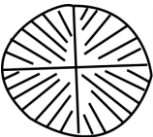


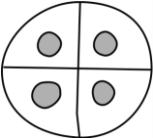


Sub-ordinate of: *Design Group*


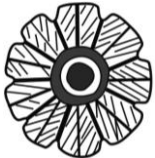




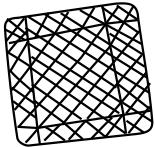


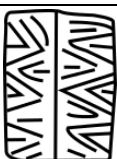
Super-ordinate of: *None*

Scope note: Sub-Design Group is the lowest level of the design classification and covers objects which are very similar to each other. Objects within this group have designs which might differ in scale but are predominantly inter-changeable (on design terms though the morphology may vary considerably as well). It is divided below by *Super-Design Group* and *Design Group*.







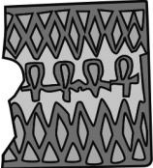


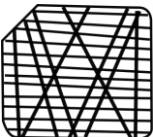
Possible Properties:

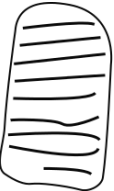
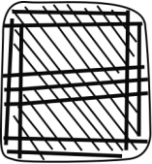

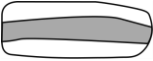
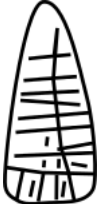


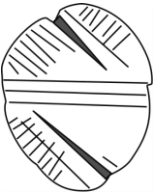
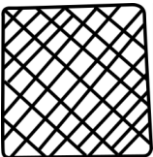
<b>Aligned Centre</b> Chevrons		Chevrons with Triangles	Any number of chevrons with the chevron closest to the edge a triangular depression.
		Few Chevrons	Between one and two chevrons (not including the central cross).
		Three Chevrons +	Three or more chevrons (not including the central cross).
Circles		Circles with peripheral lines	Single or double-circle motifs loosely arranged around the centre of the object
		Just Circles	One or more single or double circle without other features
	N/A	Spiral	No picture exists of the spiral (EK-072).
		Radiating Circles	Circles radiating from a central depression
Claws	No sub-division		

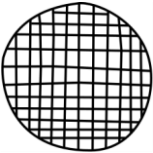
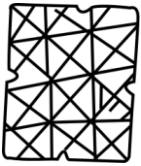
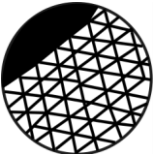

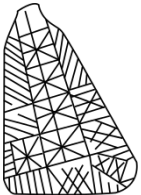
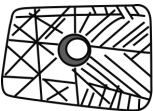


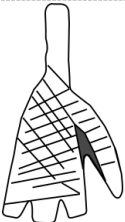
Irregular (AC)		No sub-division	
Lines		Centripetal	Line motifs rotating around the centre of the object, normally with a central depression.
		Lines	Only line motifs aligned with the centre of the object
		Lines and Dot	Line motifs aligned with the centre of the object, with central depression.
		Lines and Circle	Line motifs aligned with the centre of the object, with double circle.
		Lines and Cross	Line motifs aligned with the centre of the object, quartered by a cross
		Lines and Cross-Circle	Line motifs aligned with the centre of the object, with cross inside circle
		Single Cross	Single cross motif
Quadrants		Reflected and Rotational Quadrants	Design has both reflectional and rotational symmetry around along x-y axis
		Reflected Quadrants	Design has only reflectional symmetry along x-y axis
		Rotational Quadrants	Design has only rotational symmetry along x-y axis


		Wegded Cross	Wedges cut in four quadrants with central cross and frame made of smaller wedges
Rosette		Circular Centre	Double circle motif surrounded by multiple 'petals' containing lines.
		Pointed Centre	Multiple 'petals' containing lines aligned with the centre of the object.
Square and Lines		Square and Lines (A)	Square around a central cross. Aligned lines in the quadrants. Square does not touch edges.
		Square and Lines (B)	Radiating square motifs around one or more central crosses. No, or few aligned lines.
		Square and Lines (C)	Square around a central cross. Aligned lines in the quadrants. Square touches edges.
		Square and Lines (D)	Square aligned with seal body. Matrix cross-hatched. May have central cross
		Circle, Square and Lines	Radiating square motifs around a circle motif. Aligned lines.
		Triangle and Lines	Radiating triangles around centre of object. May have aligned lines.
Central Focus Chevrons		Divided	Translational chevron (v) motifs divided and aligned along a central line.



		Metered	Central translational chevrons framed by panels of triangular shapes.
		Parallel	Translational chevron (v) motifs covering whole body of seal.
Cross-hatching (CF)		Divided	Cross-hatched matrix divided by one or more central lines. Cross-hatching can vary in each half.
		Metered	Cross-hatched matrix divided into three or more panels. Cross-hatching can vary in each part.
		Surrounding Lines	Central panel of cross-hatching surrounded by lines.
Diamonds		Divided	Translational diamond motifs divided and aligned along a central line.
		Metered	Translational diamond motifs panelled with additional central motif.
Lines		Angled Divided	Angled lines aligned along a central line.
		Angled Metered	Angled lines aligned upon multiple panels.
		Diamond Parallel	Parallel lines overlain with angled lines

		Parallel	Simple parallel lines
		Parallel Divided	Parallel lines overlain with straight lines dividing the seal body.
		Screw	Single line rotating around the seal body as a screw.
		Single	A single central line
		Square Divided	Straight lines aligned along a central line.
		Vertical and Horizontal	Two alignments of line, one parallel horizontally the other parallel vertically or diagonally.
		Vs	V motifs flow along centre of body (touching sides) with created quadrants containing lines.
Quadrants		Rotational (2)	Design has rotational symmetry only along the x axis
<b>Cross-hatching</b> Standard (CH)		Diagonal	Quadrilateral cross-hatching covers face and is not aligned with said face

		Square	Quadrilateral cross-hatching covers face and is aligned with said face.
		Square & Diagonal	Combination of diagonal and square cross-hatching creating triangular cross-hatching. Covers entire face.
		Triangular	Triangular cross-hatching covers face. No regard for alignment
	N/A	Unknown	Specific form of cross-hatching is unknown.
Irregular (CH)	N/A	Not sub-divided	
Framed (CH)		Diagonal	Central panel of diagonal cross-hatching framed by lines.
		Metered	Metered panels of cross-hatching and lines in varying patterns.
		Mirrored	Panel of cross-hatching and panel of aligned lines divided on the y-axis.
		Square & Diagonal	Central panel of square and diagonal cross-hatching framed by lines.
<b>Figurative</b> Animal		Quadruped	Seal displays some form of quadruped animal.
Human		Hand	Seal design reflects anthropomorphic features (hand).

	Foot	Seal design reflects anthropomorphic features (foot).
<b>Irregular</b>		
Unique	No sub-division	
Random Lines	No sub-division	
<b>Other</b>		
Bead	No sub-division	
No visible impression	No sub-division	
Pendant	No sub-division	
Seal Form	No sub-division	
Wedges	No sub-division	

#### *A1.1.5.4 Design Elements*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This property records any other aspects of the design not covered by the formal classification above.
Example:	"Partial"

#### *A1.1.5.5 Design Comments*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This property records any issues or comments on the design of the objects.
Example:	"Picture is unclear exactly what the design is. Possibly the design is Triangle and Lines."

## A1.1.6 Sealings group

Most of the attributes within the Sealings table are shared with attributes in the Seals table but there are also three attributes that are unique to the sealings table.

### A1.1.6.1 Sealing type

Refers to:	<i>Sealings</i>	
Sub-ordinate of:	<i>None</i>	
Super-ordinate of:	<i>None</i>	
Scope note:	This attribute covers the type of impressed sealing. The possible properties below include only the examples found in my sample and a broader study of sealings would include more types.	
Possible properties:	<i>Matting and String</i>	This property is for sealings that have both <i>matting</i> and <i>string</i> and are therefore the truest sealing type within this study as they could have actually sealed something.
	<i>Clay disk</i>	These sealings are pieces of clay that has not been sealed to anything, nor been strung.
	<i>Matting</i>	If the sealing shows the presence of matted materials, likely baskets.
	<i>None</i>	A property for objects that are neither impressed nor sealings (but have been considered to be so previously).
	<i>String</i>	If the sealing shows a string but the back has been removed making it unclear what/how this string was attached to anything.
	<i>Strung Clay</i>	These sealings are a lump of clay attached around a string.
	<i>Unclear</i>	If the back of the sealing has been damaged or removed making it impossible to know what it was attached to.
	<i>Unknown</i>	Where no information is available on the type of sealing.

### A1.1.6.2 Number of Impressions

Refers to:	<i>Sealings</i>
Sub-ordinate of:	<i>None</i>

Super-ordinate of:	<i>None</i>
Scope note:	This attribute records the number of impressions on the sealing. It ranges between 1 and 18, if there was more than one impression on the sealing this will be discussed in <i>Sealing Comment</i> (A1.1.6.3).
Example:	4

#### *A1.1.6.3 Sealing Comment*

Refers to:	<i>Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This attribute records any comments on the nature of the sealing or the amount of impressions.
Example:	“No image is published of the reverse of this sealing”

### A1.1.7 Condition

Condition is divided into five attributes of which only two are used in the sealings table.

#### *A1.1.7.1 Condition*

Refers to:	<i>Seals and Sealings</i>	
Sub-ordinate of:	<i>None</i>	
Super-ordinate of:	<i>FaceCondition, SuspensionCondition</i> (only for seals)	
Scope note:	This attribute records the overall condition of the object and is a summary of <i>FaceCondition</i> and <i>SuspensionCondition</i> . The definitions provided below should not be taken as absolute and are more of a guide as to the overall condition.	
Possible properties:	Excellent	If there is no damage to either the face or the profile.
	Ok	If there is substantive damage to one of the face or the profile.
	Poor	If there is substantive damage to both the face and the profile.
	Unsure	Where data is not available as to the condition
	Fragmentary Sealing	(Only for Sealings) If the object is so fragmentary as to have no idea what the overall size and shape would have been.

### A1.1.7.2 FaceCondition

Refers to:	<i>Seals</i>	
Sub-ordinate of:	<i>Condition</i>	
Super-ordinate of:	<i>None</i>	
Scope note:	This attribute records the status of the sealing face.	
Possible properties:	Good	If the face of the object is undamaged.
	<b>Break</b>	If the face of the object is broken to the extent the design is partially obscured. Must be combined with one of: <i>Fresh, Unknown, Worn</i> .
	<b>Chipped</b>	If the face of the object is broken but the design is barely obscured. Must be combined with one of: <i>Fresh, Unknown, Worn</i> .
	<i>Fresh</i>	If the Break/Chip looks new either due to post-depositional processes or it was broken shortly before deposition. Must be combined with one of: <b>Break, Chipped</b> .
	<i>Unknown</i>	If the Break/Chip is known but its specifics are obscured by poor publication. Must be combined with one of: <b>Break, Chipped</b> .
	<i>Worn</i>	If the Break/Chip looks old and was presumably still 'used' after damage but before deposition. Must be combined with one of: <b>Break, Chipped</b> .
	Concretions	If concretions conceal part of the design.

### A1.1.7.3 ReverseCondition

Refers to:	<i>Seals</i>	
Sub-ordinate of:	<i>Condition</i>	
Super-ordinate of:	<i>None</i>	
Scope note:	This attribute records the status of the object's profile.	
Possible properties:	Good	If the profile of the object is undamaged.
	<b>Break</b>	If the profile of the object is considerably damaged. Must be combined with one of: <i>Fresh, Unknown, Worn</i> .
	<b>Chipped</b>	If the profile of the object is only slightly damaged. Must be combined with one of: <i>Fresh, Unknown, Worn</i> .

Fresh	If the Break/Chip looks new either due to post-depositional processes or it was broken shortly before deposition. Must be combined with one of: <b>Break, Chipped.</b>
Unknown	If the Break/Chip is known but its specifics are obscured by poor publication. Must be combined with one of: <b>Break, Chipped.</b>
Worn	If the Break/Chip looks old and was presumably still 'used' after damage but before deposition. Must be combined with one of: <b>Break, Chipped.</b>
Unsure	If no published data was available for the profile but was available for the face.

#### *A1.1.7.4 ConditionWear*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This attribute records objects which show considerable wear or were modified at some point.
Possible properties:	<div>Defaced      If the object appears to have actively been defaced.</div> <div>Drilled      If the object has had a second (or third) suspension drilled after the initial one broke/was broken.</div> <div>Face      If the face alone is considerably worn.</div> <div>Suspension      If the suspension alone is considerably worn</div> <div>Face and      If the face and suspension are considerably worn.</div> <div>Suspension</div>

#### *A1.1.7.5 ConditionComment*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This attribute records comments about the condition.
Example:	"Face is more worn at the middle than at the sides"



## A1.1.8 Context (type)

### *A1.1.8.1 Context*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	This attribute records in brief the nature of the context the object was found in. Any context could be recorded and more information on the context is normally provided in the <i>Phase and Context Comment</i> (A1.1.12.2) in the <i>Phasing</i> attribute group. Within this database it predominantly differentiates between objects without, apparently, structured contexts which are termed 'Loose in soil' and more structured contexts.
Example:	"Death Pit"

## A1.1.9 Colour

### *A1.1.9.1 Basic Colour*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>Specific Colour</i>
Scope note:	This attribute records the dominant generic colour of an object.
Example:	"Green"

### *A1.1.9.2 Specific Colour*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>Basic Colour</i>
Super-ordinate of:	<i>None</i>
Scope note:	This attribute records the specific tone of the basic colour
Example:	"Light Green with Dark Green inclusions"

## A1.1.10 Measurements

Measurements is the largest single attribute group and records the metric measurements of the objects. Data resolution varies from site to site and not all of the attributes below are included for every object and Height (without handle), unsurprisingly, is only found in the seals table.

#### *A1.1.10.1 Length*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The length is taken as the longest dimension of the object's face.
Example:	"41.12"

#### *A1.1.10.2 Length Unit*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The unit of the length. Normally millimetres.
Example:	"mm"

#### *A1.1.10.3 Length Comment*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Whether the length is complete, broken, or no data is available.  Complete    The length is the entire length. Broken       The length is not the entire length. No Data      No data is available on the length.

#### *A1.1.10.4 Width*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The width is taken as the widest point of the object relative to the length.
Example:	"14.12"

#### *A1.1.10.5 Width Unit*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The unit of the width. Normally millimetres.
Example:	"mm"

#### *A1.1.10.6 Width Comment*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Whether the width is complete, broken, or no data is available.  Complete    The width is the entire width. Broken       The width is not the entire width. No Data      No data is available on the width.

#### *A1.1.10.7 Height (full)*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The height of the object relative to the face.
Example:	"19.31"

#### *A1.1.10.8 Height (full) Unit*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The unit of the height. Normally millimetres.
Example:	"mm"

#### *A1.1.10.9 Height (full) Comment*

Refers to:	<i>Seals and Sealings</i>
------------	---------------------------

Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Whether the height is complete, broken, or no data is available.
	Complete    The height is the entire height.
	Broken       The height is not the entire height.
	No Data     No data is available on the height.

#### *A1.1.10.10 Height (minus handle)*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The thickness of the sealing face without the eyelet. The purpose is to check for commonality with the thickness of the object's face and only applies to stamp type artefacts with a rear eyelet.
Example:	"4.95"

#### *A1.1.10.11 Height (minus handle) Unit*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The unit of the height without handle. Normally millimetres.
Example:	"mm"

#### *A1.1.10.12 Height (minus handle) Comment*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Comment on the height without handle.
	Complete    The height (minus handle) is the entire height (minus handle).
	Broken       The height (minus handle) is not the entire height (minus handle).
	No Data     No data is available on the height (minus handle).

Not	If this attribute is not applicable to the type of
Applicable	object.

#### *A1.1.10.13 Weight*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The weight of the object.
Example:	"24.57"

#### *A1.1.10.14 Weight Unit*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The unit of the weight. Normally grammes.
Example:	"g"

#### *A1.1.10.15 Weight Comment*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Describes whether the weight is complete, incomplete, or no data is available.
	Complete    The weight is the entire weight.
	Incomplete    The weight is not the entire weight.
	No Data    No data is available on the weight.

#### *A1.1.10.16 Measurement Comment*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Records any other information about the measurements.
	Normally where the measurements derive from.
Example:	"Physically measured"

### A1.1.11 Context (specific)

The context (specific) attribute group records the published information on where in an excavation the object came from. The resolution of the data available varies massively and very few objects use all three attributes.

#### *A1.1.11.1 Depth*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The nominal depth of the object from the top of the site either in metres or the excavation levels for sites, like Arpachiyah, where the level boundaries are indeterminate and specific depths are not available.
Example:	"12.7 m" or "Layer 4"

#### *A1.1.11.2 Site Area*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>Site Lot</i>
Scope note:	Site Area is the area of the site the object was found within. The size of these areas varies considerably between sites based on the individual excavation strategies at each site.
Example:	"Arpachiyah TT" or "E271"

#### *A1.1.11.3 Site Lot*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>Site Area</i>
Super-ordinate of:	<i>None</i>
Scope note:	Site Lot records the specific context lot the object is from. As with Site Area the different lots vary considerably and the data serves best to locate the object in a site and is not comparable between sites.
Example:	"3830" or "Str. 70, Basket No. 32"

### A1.1.12 Phasing

The specifics of the phase data are stored separately in the Phases table (A1.3) while the information in the Seals and Sealings table primarily is used to record why any specific object is from the phase I have assigned it.

#### *A1.1.12.1 Phase*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>Site Area</i>
Super-ordinate of:	<i>None</i>
Equivalent to:	<i>Phase (A1.3.1.1)</i>
Scope note:	The arbitrary chronological phase used in Aktanak. Derived from published information. Every site has different phases and the accuracy of the phases varies considerably depending on when/how the site was excavated. The different phases and their periods are stored in the Phases table of the database.
Example:	See table in A1.3.

#### *A1.1.12.2 Phase and Context Comment*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Comment on the accuracy and reasoning for the assignation of any particular phase.
Example:	"From the surface at Domuztepe, as such relating it to the C phasing of Domuztepe is not possible. A generic phase covering the Halaf occupation (DomuztepeGenHalaf) will be used for these artefacts as that should cover the relevant period, there being little Pottery Neolithic on the surface at Domuztepe."

#### *A1.1.12.3 Sub-Period*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The chronological phase the object was classified as by the excavator. Essentially site specific it was used to generate the Phases I use.
Example:	"XIII - Well"

### A1.1.13 Modern contextual information

A selection of six attributes not directly related to the classification of the artefacts within this study. They are non-essential attributes and are only filled in if the information is available.

#### *A1.1.13.1 Location*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The present location of the object, if known.
Example:	"The British Museum"

#### *A1.1.13.2 Excavator*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The project (or director when there was no explicit project) of the excavation the object was collected under the auspices of.  Used to note when sites had multiple excavators and when multiple sites were excavated by the same team.
Example:	"Oriental Institute's Syrian Expedition to the Amuq"

#### *A1.1.13.3 Excavator Type*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The classificatory type assigned to the artefact by the excavators or owners. Kept purely for reference purposes.
Example:	"Flat-Seal"

#### *A1.1.13.4 Excavator Number*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	The small finds number given to the artefact in the excavation.
Example:	"x4000"



#### *A1.1.13.5 Depot Number*

Refers to:	Seals and Sealings
Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	The catalogue number given to the artefact by the possessing institution, when known.
Example:	"IM.50272"

### A1.1.14 Contained in Sealing

#### *A1.1.14.1 Contained in Sealing*

Refers to:	<i>Seals</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	Impressions are stored in the seals table and this attribute links them to the sealing in the sealings table the impression is on.
Example:	"AP-178"

### A1.1.15 Artefact description

#### *A1.1.15.1 Artefact Description*

Refers to:	<i>Seals and Sealings</i>
Sub-ordinate of:	<i>None</i>
Super-ordinate of:	<i>None</i>
Scope note:	A generic description of the attributes of the artefact. This is not available for all objects and primarily is used to record any other information that does not fit in any of the other attributes.
Example:	"Possibly some similarities with stamp seals from Byblos not included in this study."

## A1.2 Sites Table

This table contains limited information about each site. Primarily attributes that help locate the site.

### A1.2.1.1 Code

Sub-ordinate of: None

Super-ordinate of: None

Scope note: The two letter site code that refers to the site and is used in ItemCode.

Possible properties	AP	Arpachiyah	KU	Tell Kurdu
	AQ	Tell Aqab	KZ	Kazane Höyük
	AT	Atchana	MT	Tell Matarrah
	BH	Banahilk	MY	Tell Maghzaliyah
	BK	Tell Brak	QS	Qminas
	BR	Tell Barri	RD	Tell Ramad
	BZ	Boztepe	RS	Ras Shamra
	CB	Chagar Bazar	SA	Tell Sabi Abyad
	CH	Chatal Huyuk	SG	Sakce Gözü
	CI	Tell Chench	TA	Tell Ahmar
	CV	Çavi Tarlası	TH	Telloh
	DB	Dhahab	TT	Ta'yinat
	DZ	Domuztepe	TU	Telul eth-Thalathat
	EK	Tell el-Kerkh	TW	Tell Tawila
	FK	Fıstıklı Höyük	UK	Unknown
	GH	Girikihaciyan	UQ	Umm Qseir
	GJ	Gogjeli	UR	Ur
	GR	Germayir	WH	Wadi Hamman
	GW	Tepe Gawra	YK	Yumuktepe
	HS	Tell Hassuna	YT	Yarim Tepe I
	HF	Tell Halaf	YT	Yarim Tepe II
	JD	Judaidah	YT	Yarim Tepe III
	KK	Kurban Höyük		

### *A1.2.1.2 Site*

Sub-ordinate of:	Region
Super-ordinate of:	None
Equivalent to:	Site (A1.1.2.1)
Scope note:	The site this entry in the table refers to.
Example:	Arpachiyah

### *A1.2.1.3 Region*

Sub-ordinate of:	Country
Super-ordinate of:	Site
Scope note:	The administrative region the site is located within. All Possible properties are modern except for Sinjar which has been separated from Ninawa and Amuq instead of Hatay. Possible properties are based on the locations of excavated Late Neolithic sites, when more are found more values should be added. Maps showing the location of each region are in Appendix 2.

Possible properties:	Arbil	A region in North-East Iraq
	Kirkuk	A region in North-East Iraq
	Ninawa	A region in North-West Iraq, divided with Sinjar to distinguish between sites around Mosul (Ninawa) and those near Tal 'Afar.
	Sinjar	The western part of Ninawa
	Al Hasakah	A region in North-East Syria
	Al Raqqah	A region in North-Central Syria
	Aleppo	A region in North-West Syria
	Damascus	A region in South-West Syria
	Idlib	A region in North-West Syria
	Latakia	A region in North-West Syria
	Amuq	A region in South-Central Turkey, technically Hatay province but all the sites are from the Amuq plain.
	Diyarbakır	A region in South-East Turkey
	Gaziantep	A region in South-Central Turkey
	Kahramanmaraş	A region in South-Central Turkey
	Mersin	A region in South-Central Turkey

Şanlıurfa	A region in South-East Turkey
Unknown	Seals with no fixed origin.

#### *A1.2.1.4 Country*

Sub-ordinate of:	None	
Super-ordinate of:	Region	
Scope note:	The modern country the site is in	
Possible properties:	Iraq	A country in the Middle East
	Syria	A country in the Middle East
	Turkey	A country in the Middle East
	Unknown	Seal with no fixed origin
Example:	Iraq	

#### *A1.2.1.5 Northings*

Sub-ordinate of:	None
Super-ordinate of:	None
Equivalent to:	Latitude (A1.2.1.7)
Scope note:	Cartesian coordinate for a point measuring the amount the site is north (or south) of the equator. Same as Latitude.
Example:	36° 24' 1" N

#### *A1.2.1.6 Eastings*

Sub-ordinate of:	None
Super-ordinate of:	None
Equivalent to:	Longitude (A1.2.1.8)
Scope note:	Cartesian coordinate for a point measuring the amount the site is east (or west) of the prime meridian. Same as Longitude.
Example:	43° 7' 34" E

#### *A1.2.1.7 Latitude*

Sub-ordinate of:	None
Super-ordinate of:	None
Equivalent to:	Northings (A1.2.1.5)
Scope note:	Cartesian coordinate for a point measuring the amount the site is north (or south) of the equator. Same as Northings.
Example:	36.400232

#### *A1.2.1.8 Longitude*

Sub-ordinate of:	None
Super-ordinate of:	None

Equivalent to:	Eastings (A1.2.1.6)
Scope note:	Cartesian coordinate for a point measuring the amount the site is east (or west) of the prime meridian. Same as Eastings.
Example:	43.126228

#### *A1.2.1.9 Comments*

Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	This attribute comments on the accuracy of the coordinates for the site and any other unclear elements.
Example:	'Published coordinates do not match published description of location'

#### *A1.2.1.10 East/West*

Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	The east/west divide is an identified division in local patterns of seal morphology and this attribute records which side of the divide any particular site is in.
Possible properties	<div>Eastern region      In Al Hasakah, Arbil, Diyarbakır, Kirkuk, Ninawa, or Sinjar.</div> <div>Western region      In Aleppo, Amuq, Al Raqqah, Damascus, Gaziantep, Idlib, Kahramanmaraş, Latakia, Mersin, or Şanlıurfa.</div>

## **A1.3 Phases Table**

The Phases table contains information on the different phases assigned to the objects in the Seals and Sealings table and is made of seven different attributes. An adjunct table at the end of A1.3 lists all the specifics of the data

#### *A1.3.1.1 Phase*

Sub-ordinate of:	<i>UpperPhase (A1.3.1.4)</i>
Super-ordinate of:	<i>Earliest Date (A1.3.1.2), Latest Date(A1.3.1.3)</i>
Equivalent to:	<i>Phase (A1.1.12.1)</i>
Scope note:	The arbitrary chronological phase used in Aktanak. Derived from Sub-Period and published information. Every site has different phases and the accuracy of the phases varies considerably depending on when/how the site was excavated.

Possible Properties: See table below

#### *A1.3.1.2 Earliest Date*

Sub-ordinate of: *Phase (A1.3.1.1)*

Super-ordinate of: *None*

Scope note: Absolute earliest calendar date in calibrated BC for the Phase.

Example: 6000 BC.

#### *A1.3.1.3 Latest Date*

Sub-ordinate of: *Phase (A1.3.1.1)*

Super-ordinate of: *None*

Scope note: Absolute latest calendar date in calibrated BC for the Phase.

Example: 4500 BC.

#### *A1.3.1.4 UpperPhase*

Sub-ordinate of: *Period (A1.3.1.5)*

Super-ordinate of: *Phase (A1.3.1.1)*

Scope note: UpperPhase groups phases from different sites which have, roughly, the same absolute calendar dates. Absolute start and end dates have not been assigned to UpperPhases.

Possible Properties: See the table below

#### *A1.3.1.5 Period*

Sub-ordinate of: *UpperPhase (A1.3.1.4)*

Super-ordinate of: *None*

Scope note: The traditional typological periods of the Ancient Middle East. Each period has a number of UpperPhases within it.

Possible Properties: See the table below.

#### *A1.3.1.6 Phase Comment*

Sub-ordinate of: *None*

Super-ordinate of: *None*

Scope note: Comment on the accuracy of the absolute calendar dating of the Phases

Example: 'This date is not very accurate'

#### *A1.3.1.7 InTime*

Sub-ordinate of: *None*

Super-ordinate of: *None*

Scope note: Yes/No field for whether the Phase is within the time period studied by this field.

Possible properties	Yes	If object is in period covered by thesis
	No	If object is not in period covered by thesis

The table below lists all the periods, upperphase, and phases and gives the dates and sites the phases are used at as well.

*Table of Phase data*

Period	UpperPhase	Phase	Earliest Date	Latest Date	Intime	Used at Site
Pre-Pottery Neolithic	PPN	Ramad 1+2	7500	7000	Yes	Tell Ramad
		RasShamraVC	7500	7000	Yes	Ras Shamra
		Rouj1	7500	7000	Yes	Tell el-Kerkh
Pottery Neolithic	Early PN	Ramad 3	7000	6800	Yes	Tell Ramad
		RasShamraVB	7000	6750	Yes	Ras Shamra
		Rouj2b	6900	6600	Yes	Tell el-Kerkh
		AmuqA	6800	6450	Yes	Amuq Sites
	Whole PN	GenericPN	7000	6000	Yes	Mixed
		YumukPN	7000	5800	Yes	Yumuktepe
		Rouj2b-c	6900	6100	Yes	Tell el-Kerkh
		AmuqA/B	6800	6000	Yes	Amuq Sites
		SakcePN	6800	6000	Yes	Sakce Gözü
	Late PN	RasShamraVA	6750	6250	Yes	Ras Shamra
		C-1	6600	6200	Yes	Domuztepe
		Rouj2c	6600	6100	Yes	Tell el-Kerkh
		RoujCemetery	6500	6200	Yes	Tell el-Kerkh
		AmuqB	6450	6000	Yes	Amuq Sites
		YarimUppHas	6300	6100	Yes	Yarimtepe I-III
		C-2	6200	6100	Yes	Domuztepe
		Hassunala-V	6200	5900	Yes	Tell Hassuna
		SabiPreHalaf	6200	6000	Yes	Tell Sabi Abyad
		SabiTransitional	6100	5900	Yes	Tell Sabi Abyad
		YarimLowHas	6100	6000	Yes	Yarimtepe I-III
Pottery Neolithic/Halaf	Late PN/Early Halaf	AmuqB/C	6200	5750	Yes	Amuq Sites
	Late PN/Whole Halaf	Rouj2c-d	6600	5500	Yes	Tell el-Kerkh
	Whole PN/Whole Halaf	Rouj2	7000	5500	Yes	Tell el-Kerkh
Halaf	Early Halaf	C-5	5650	5600	Yes	Domuztepe
		GirikHalaf	6000	5600	Yes	Girikhaciyan
		C-3	6100	5800	Yes	Domuztepe
		KhaburEarly	6100	5800	Yes	Chagar Bazar
		ArpEarly	5900	5600	Yes	Arpachiyah
		CaviHalaf	5900	5600	Yes	Çavi Tarlası
		SabiEarlyHalaf	5900	5800	Yes	Tell Sabi Abyad
		FistikliHalaf	5850	5750	Yes	Fıstıklı Höyük
		C-4	5700	5650	Yes	Domuztepe

	Whole Halaf	Rouj2d	6100	5500	Yes	Tell el-Kerkh
		RasShamraIV	6250	5500	Yes	Ras Shamra
		AmuqC	6000	5500	Yes	Amuq Sites
		GenericHalaf	6000	5400	Yes	Mixed
		Banahilk	5900	5500	Yes	Gird Banahilk
		SabiHalaf	5700	5400	Yes	Tell Sabi Abyad
		DomuztepeGenHalaf	5800	5450	Yes	Domuztepe
	Late Halaf	HalafHalaf	5700	5400	Yes	Tell Halaf
		KazaneHalaf	5700	5300	Yes	Tell Kazane
		KhaburHalaf	5700	5500	Yes	Mixed
		Qseir	5700	5500	Yes	Umm Qseir
		YarimII	5700	5400	Yes	Yarimtepe I-III
		C-5 to C-9	5650	5450	Yes	Domuztepe
		Aqab	5600	5200	Yes	Tell Aqab
		ArpMid	5600	5400	Yes	Arpachiyah
		BoztepeHalaf	5600	5400	Yes	Boztepe
		C-6	5600	5575	Yes	Domuztepe
		C-6 to C-9	5600	5450	Yes	Domuztepe
		GawraHalaf	5600	5100	Yes	Tepe Gawra
		TawilaMidLateHalaf	5600	5300	Yes	Tell Tawila
		C-7	5575	5575	Yes	Domuztepe
		C-8	5575	5500	Yes	Domuztepe
		C-9	5500	5450	Yes	Domuztepe
Halaf-Ubaid Transitional	HUT	YarimIII	5500	5200	Yes	Yarimtepe I-III
Ubaid	Early Ubaid	AmuqE	5100	4400	Yes	Amuq Sites
		GawraEarlyUbaid	5100	4600	Yes	Tepe Gawra
		ArpLate	5000	4600	Yes	Arpachiyah
		RasShamraIIIB	5000	4500	Yes	Ras Shamra
	Whole Ubaid	GenericUbaid	5100	4000	No	Mixed
	Late Ubaid	GawraLateUbaid	4600	4000	No	Tepe Gawra
		ArpVeryLate	4500	4000	No	Arpachiyah
Late	Late	AmuqF	4000	3500	No	Amuq Sites
		AmuqG	3500	3000	No	Amuq Sites
		Late	3500	0	No	Mixed
		AmuqH	3000	2500	No	Amuq Sites



## A1.4 References (objs) table

This table contains the reference information on each object within the Seals and Sealings tables stored by ItemCode (A1.1.1.1). It has three attributes.

### *A1.4.1.1 Refers to Object*

Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	The ItemCode (A1.1.1.1) the specific reference refers to. (Multiple objects may have multiple entries depending on the number of references that refer to that object).
Example:	AP-011

### *A1.4.1.2 Publication*

Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	The book/article the reference is referencing. Refer to the general bibliography for the appropriate entries.
Example:	Mallowan and Rose (1935)

### *A1.4.1.3 Reference*

Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	The specific pages/images the reference refers to.
Example:	Pg. 34 & Fig. 65.2

## A1.5 References (sites) table

This table contains the reference information on each site within the Sites tables organised by Site. Unlike Reference (objs) no page reference is provided as these are more general references.

### *A1.5.1.1 Refers to Site*

Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	The site the reference refers to.
Example:	Arpachiyah

### *A1.5.1.2 Publication*

Sub-ordinate of:	None
Super-ordinate of:	None
Scope note:	The book/article the reference is referencing. Refer to the general bibliography for the appropriate entries.
Example:	Mallowan and Rose (1935)

# Appendix 2: Site Catalogue

The site gazetteer provides basic information on all sites included within this thesis. The references refer to those used for data gathering and are in the bibliography.

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## A2.1 Iraq

### A2.1.1 Arpachiyah

<b>Item Code:</b>	AP
<b>Region:</b>	Ninawa
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 24' 1" N, 43° 7' 34" E
<b>Latitude/Longitude:</b>	36.400232, 43.126228
<b>References:</b>	Mallowan and Rose (1935) von Wickede (1990) von Wickede (1991) Some unpublished and in the British Museum and UCL, Institute of Archaeology collections.
<b>Comments:</b>	None

### A2.1.2 Banahilk

<b>Item Code:</b>	BH
<b>Region:</b>	Arbil
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 40' N, 44° 32' E
<b>Latitude/Longitude:</b>	36.6666, 44.5333
<b>References:</b>	Watson (1983)
<b>Comments:</b>	None

### A2.1.3 Gogjeli

<b>Item Code:</b>	GJ
<b>Region:</b>	Ninawa
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 21' 32" N, 43° 14' 43" E
<b>Latitude/Longitude:</b>	36.358753, 43.245295
<b>References:</b>	Mallowan and Rose (1935) von Wickede (1990)
<b>Comments:</b>	None

#### A2.1.4 Tell Chenchi

<b>Item Code:</b>	CI
<b>Region:</b>	Ninawa
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 29' 52", 43° 13' 40" E
<b>Latitude/Longitude:</b>	36.497789, 43.227717
<b>References:</b>	Algaze (1989b)
<b>Comments:</b>	None

#### A2.1.5 Tell Hassuna

<b>Item Code:</b>	HS
<b>Region:</b>	Ninawa
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 0' 26" N, 43° 13' 23" E
<b>Latitude/Longitude:</b>	36.007243, 43.223163
<b>References:</b>	Buchanan (1967) Lloyd et al (1945)
<b>Comments:</b>	Coordinates approximate. Available coordinates in Lloyd et al (1945) do not match the description by Lloyd. Followed described location.

#### A2.1.6 Tell Maghzaliyah

<b>Item Code:</b>	MY
<b>Region:</b>	Sinjar
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 23' 53" N, 42° 19' 26" E
<b>Latitude/Longitude:</b>	36.398177, 42.32398
<b>References:</b>	Bader (1993)
<b>Comments:</b>	Coordinates approximate. The coordinates in Braidwood et al (1952) do not match the described location of the site. Followed described location.

#### A2.1.7 Tell Matarrah

<b>Item Code:</b>	MT
<b>Region:</b>	Kirkuk
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	35° 12' 43"N, 44° 21' 30" E
<b>Latitude/Longitude:</b>	35.212036, 44.358382
<b>References:</b>	Braidwood et al (1952)
<b>Comments:</b>	Coordinates approximate. The coordinates in Braidwood et al (1952) do not match the described location of the site. Followed described location.

#### A2.1.8 Telul eth-Thalathat

<b>Item Code:</b>	TU
<b>Region:</b>	Sinjar
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 24' 50" N, 42° 37' 55" E
<b>Latitude/Longitude:</b>	36.413978, 42.632037
<b>References:</b>	Fukai and Matsutani (1981)
<b>Comments:</b>	None

#### A2.1.9 Tepe Gawra

<b>Item Code:</b>	GW
<b>Region:</b>	Ninawa
<b>Country:</b>	Iraq
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 29' 45" N, 43° 15' 37" E
<b>Latitude/Longitude:</b>	36.495876, 43.26041
<b>References:</b>	Rothman (2002) Tobler (1950)
<b>Comments:</b>	None

#### A2.1.10 Yarim Tepe I

**Item Code:** YT (shares code with Yarim Tepe II and III)  
**Region:** Sinjar  
**Country:** Iraq  
**EastWest:** East  
**Northings/Eastings:** 36° 20' 25" N, 42° 21' 7" E  
**Latitude/Longitude:** 36.340382, 42.352058  
**References:** Merpert and Munchaev (1993)  
  
**Comments:** None

#### A2.1.11 Yarim Tepe II

**Item Code:** YT (shares code with Yarim Tepe I and III)  
**Region:** Sinjar  
**Country:** Iraq  
**EastWest:** East  
**Northings/Eastings:** 36° 20' 15" N, 42° 20' 55" E  
**Latitude/Longitude:** 36.337595, 42.348609  
**References:** Merpert and Munchaev (1993)  
Merpert and Munchaev (1993)  
  
**Comments:** None

#### A2.1.12 Yarim Tepe III

**Item Code:** YT (shares code with Yarim Tepe I and II)  
**Region:** Sinjar  
**Country:** Iraq  
**EastWest:** East  
**Northings/Eastings:** 36° 20' 18" N, 42° 20' 51" E  
**Latitude/Longitude:** 36.338454, 42.347525  
**References:** Merpert and Munchaev (1993b)  
  
**Comments:** None

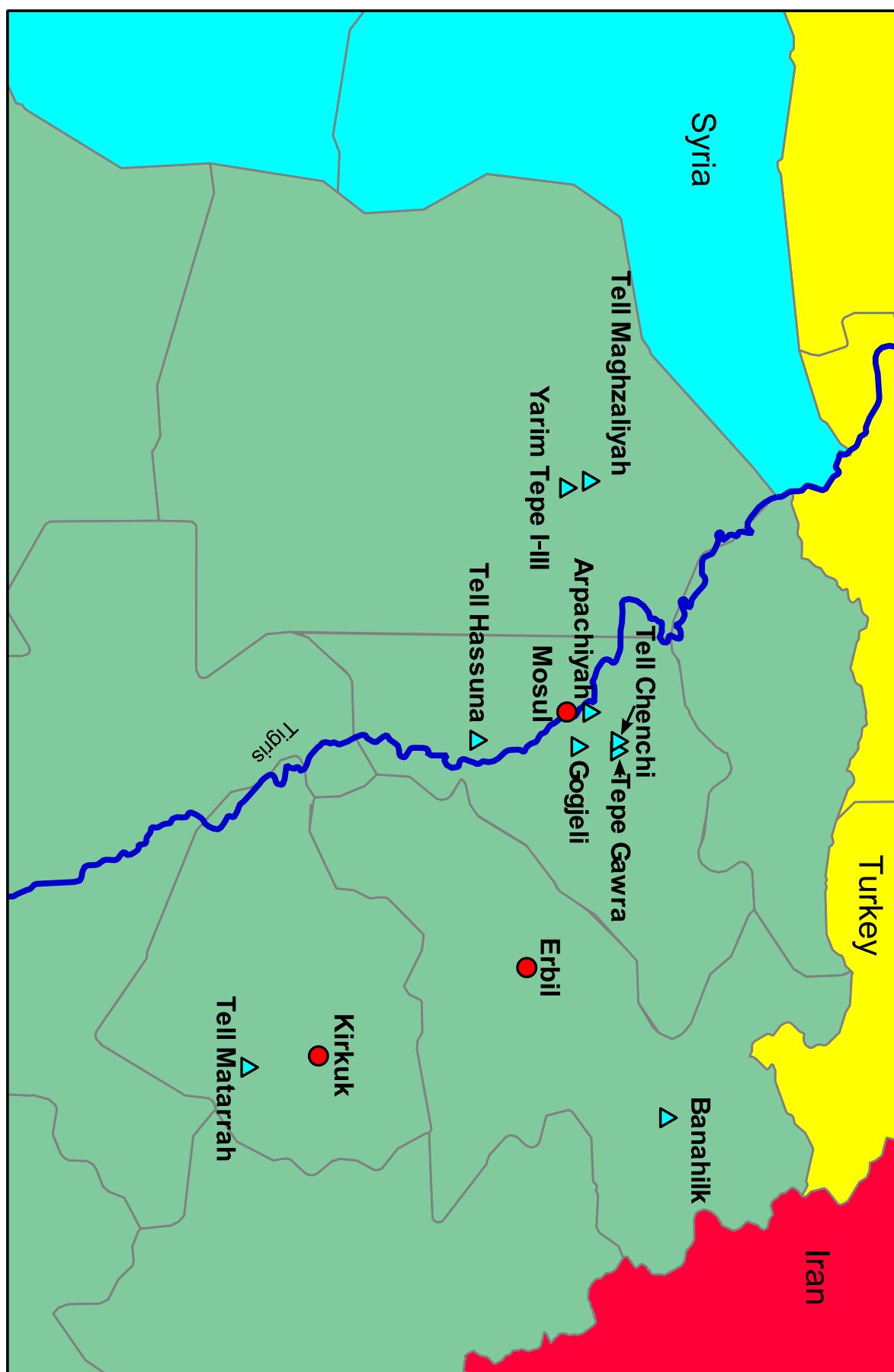


Figure A 1: Sites in Iraq



## A2.2 Syria

### A2.2.1 Chagar Bazar

<b>Item Code:</b>	CB
<b>Region:</b>	Al Hasakah
<b>Country:</b>	Syria
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 52' 33" N, 40° 53' 52" E
<b>Latitude/Longitude:</b>	36.875853, 40.897753
<b>References:</b>	Mallowan (1936) Mallowan (1937) Herzfeld (1941) Wiseman (1962)
<b>Comments:</b>	None

### A2.2.2 Germayir

<b>Item Code:</b>	GR
<b>Region:</b>	Al Hasakah
<b>Country:</b>	Syria
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 31' 23" N, 40° 32' 6" E
<b>Latitude/Longitude:</b>	36.523, 40.535
<b>References:</b>	Mallowan (1937)
<b>Comments:</b>	None

### A2.2.3 Qminas

<b>Item Code:</b>	QS
<b>Region:</b>	Idlib
<b>Country:</b>	Syria
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	35° 53' 16" N, 36° 40' 29" E
<b>Latitude/Longitude:</b>	35.88782, 36.674803
<b>References:</b>	Masuda and Sha'ath (1983)
<b>Comments:</b>	None

#### A2.2.4 Ras Shamra

<b>Item Code:</b>	RS
<b>Region:</b>	Latakia
<b>Country:</b>	Syria
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	35° 36' 7" N, 35° 46' 44" E
<b>Latitude/Longitude:</b>	35.602, 35.782
<b>References:</b>	de Contenson (1973a) de Contenson (1973b) de Contenson (1977a) de Contenson (1977b) de Contenson (1992) Schaeffer (1962) von Wickede (1990)
<b>Comments:</b>	None

#### A2.2.5 Tell Ahmar

<b>Item Code:</b>	TA
<b>Region:</b>	Aleppo
<b>Country:</b>	Syria
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 33' 44" N, 38° 16' 29" E
<b>Latitude/Longitude:</b>	36.562221, 38.274601
<b>References:</b>	Unpublished. Collection stored in British Museum.
<b>Comments:</b>	Also Tell Barsib

#### A2.2.6 Tell Aqab

<b>Item Code:</b>	AQ
<b>Region:</b>	Al Hasakah
<b>Country:</b>	Syria
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	37° 3' 30" N, 40° 53' 44" E
<b>Latitude/Longitude:</b>	37.058259, 40.895662
<b>References:</b>	Davidson and Watkins (1981)
<b>Comments:</b>	Poorly published

### A2.2.7 Tell Barri

<b>Item Code:</b>	BR
<b>Region:</b>	Al Hasakah
<b>Country:</b>	Syria
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 44' 21" N, 41° 7' 38" E
<b>Latitude/Longitude:</b>	36.739167, 41.127222
<b>References:</b>	Unpublished. Objects in British Museum.
<b>Comments:</b>	None

### A2.2.8 Tell Brak

<b>Item Code:</b>	BK
<b>Region:</b>	Al Hasakah
<b>Country:</b>	Syria
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	36° 40' 2" N, 41° 3' 30" E
<b>Latitude/Longitude:</b>	36.667222, 41.058333
<b>References:</b>	Mallowan (1947)
<b>Comments:</b>	None

### A2.2.9 Tell el-Kerkh

<b>Item Code:</b>	EK
<b>Region:</b>	Idlib
<b>Country:</b>	Syria
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	35° 49' 21" N, 36° 27' 55" E
<b>Latitude/Longitude:</b>	35.822377, 36.465164
<b>References:</b>	Tsuneki and Hydar (2011) Tsuneki et al (1997) Tsuneki et al (1998) Tsuneki et al (1999) Tsuneki et al (2000)
<b>Comments:</b>	None

### A2.2.10 Tell Halaf

**Item Code:** HF  
**Region:** Al Hasakah  
**Country:** Syria  
**EastWest:** East  
**Northings/Eastings:** 36° 49' 26" N, 40° 2' 24" E  
**Latitude/Longitude:** 36.824, 40.04  
**References:** von Oppenheim (1962)  
von Oppenheim and Schmidt (1943)  
**Comments:** None

### A2.2.11 Tell Ramad

**Item Code:** RD  
**Region:** Damascus  
**Country:** Syria  
**EastWest:** West  
**Northings/Eastings:** 33° 25' 35" N, 36° 6' 25" E  
**Latitude/Longitude:** 33.426289, 36.107079  
**References:** de Contenson (2000)  
**Comments:** Coordinates approximate, site location could not be quite worked out.

### A2.2.12 Tell Sabi Abyad

**Item Code:** SA  
**Region:** Al Raqqah  
**Country:** Syria  
**EastWest:** West  
**Northings/Eastings:** 36° 30' 13" N, 39° 5' 34" E  
**Latitude/Longitude:** 36.50358, 39.09275  
**References:** Akkermans and Duistermaat (1996)  
Akkermans et al (2006)  
Duistermaat (1996)  
Duistermaat (2010)  
Akkermans and Duistermaat(2004)  
Duistermaat and Schneider (1998)  
**Comments:** None

### A2.2.13 Tell Tawila

**Item Code:** TW  
**Region:** Al Raqqah  
**Country:** Syria  
**EastWest:** West  
**Northings/Eastings:** 36° 32' 35" N, 39° 30' 22" E  
**Latitude/Longitude:** 36.542932, 39.506146  
**References:** Jörg Becker (2005)  
Jörg Becker (2006)  
**Comments:** None

### A2.2.14 Umm Qseir

**Item Code:** UQ  
**Region:** Al Hasakah  
**Country:** Syria  
**EastWest:** East  
**Northings/Eastings:** 36° 24' 33" N, 40° 50' 58" E  
**Latitude/Longitude:** 36.409048, 40.849313  
**References:** Hole and Johnson (1986)  
Tsuneki (1998)  
**Comments:** None

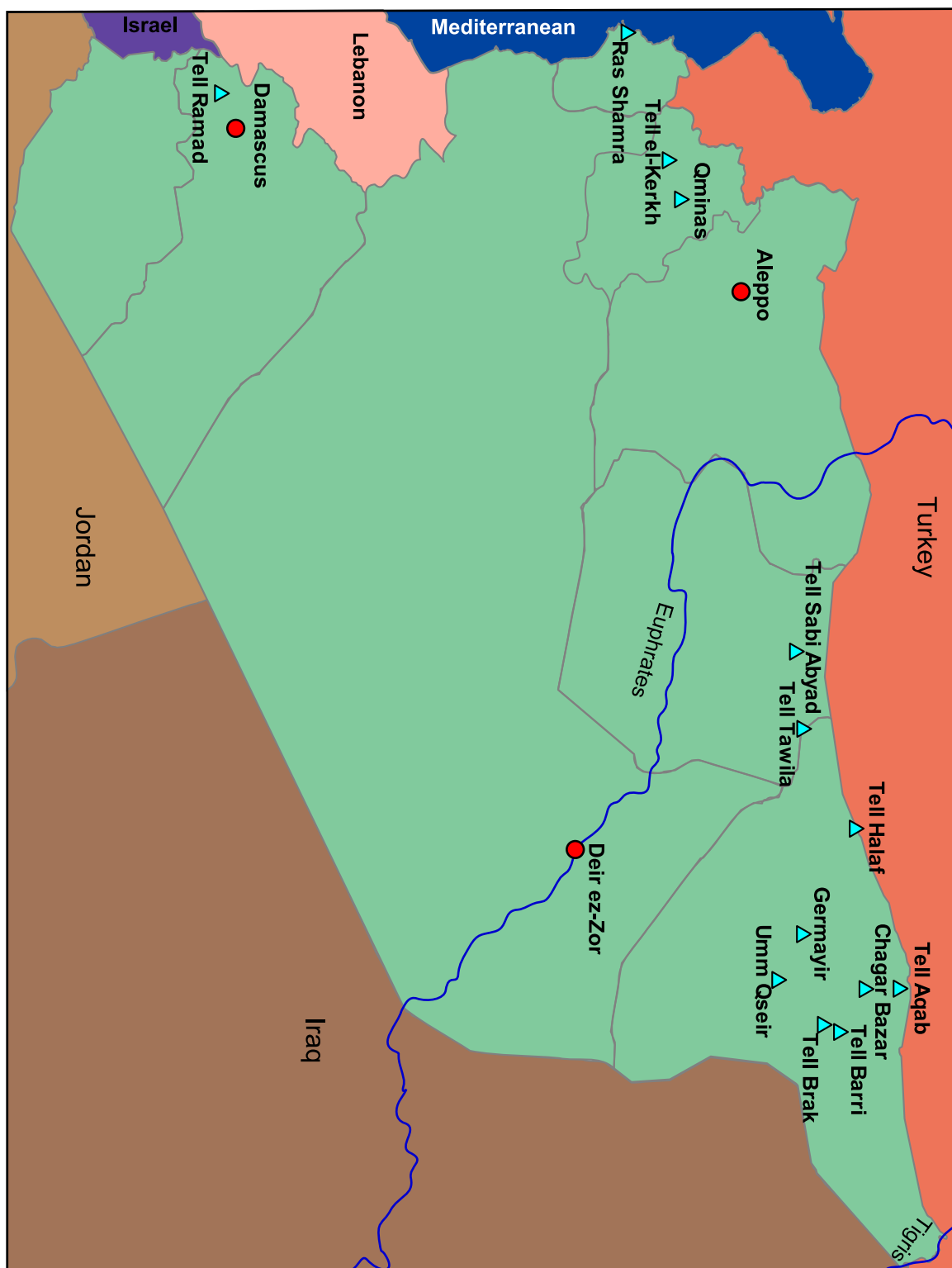


Figure A 2: Sites in Syria

## A2.3 Turkey

### A2.3.1 Atchana

<b>Item Code:</b>	AT
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 14' 16" N, 36° 23' 5" E
<b>Latitude/Longitude:</b>	36.237677, 36.384838
<b>References:</b>	Collon (2010) Woolley (1955)
<b>Comments:</b>	None

### A2.3.2 Boztepe

<b>Item Code:</b>	BZ
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 20' 13" N, 36° 23' 31" E
<b>Latitude/Longitude:</b>	36.336942, 36.391844
<b>References:</b>	Parker and Creekmore (2002)
<b>Comments:</b>	None

### A2.3.3 Çavi Tarlası

<b>Item Code:</b>	CV
<b>Region:</b>	Şanlıurfa
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	37° 44' 60" N, 38° 57' 41" E
<b>Latitude/Longitude:</b>	37.749985, 38.961271
<b>References:</b>	von Wickedede and Herbordt (1988) von Wickedede (1990)
<b>Comments:</b>	None

#### A2.3.4 Chatal Huyuk

<b>Item Code:</b>	CH
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 15' 58" N, 36° 35' 6" E
<b>Latitude/Longitude:</b>	36.29779, 36.545617
<b>References:</b>	Braidwood and Braidwood (1960)
<b>Comments:</b>	None

#### A2.3.5 Dhahab

<b>Item Code:</b>	DB
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 15' 58" N, 36° 35' 6" E
<b>Latitude/Longitude:</b>	36.26608, 36.584917
<b>References:</b>	Braidwood and Braidwood (1960)
<b>Comments:</b>	None

#### A2.3.6 Domuztepe

<b>Item Code:</b>	DZ
<b>Region:</b>	Kahramanmaraş
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	37° 19' 53" N, 37° 2' 39" E
<b>Latitude/Longitude:</b>	37.33139, 37.0442
<b>References:</b>	Carter (2010) Many unpublished
<b>Comments:</b>	



### A2.3.7 Fıstıklı Höyük

<b>Item Code:</b>	FK
<b>Region:</b>	Şanlıurfa
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 59' 44" N, 37° 58' 40" E
<b>Latitude/Longitude:</b>	36.995681, 37.977718
<b>References:</b>	Pollock et al (2001) Bernbeck and Pollock (2003) Marley et al (2006) Tomas (2011)
<b>Comments:</b>	Not sure the mound marked is Fıstıklı, the site is however in the vicinity of that point and no specific coordinates appear to be published.

### A2.3.8 Girikihacıyan

<b>Item Code:</b>	GH
<b>Region:</b>	Diyarbakır
<b>Country:</b>	Turkey
<b>EastWest:</b>	East
<b>Northings/Eastings:</b>	38° 8' 40" N, 40° 0' 23" E
<b>Latitude/Longitude:</b>	38.144348, 40.006347
<b>References:</b>	Watson and LeBlanc (1990)
<b>Comments:</b>	None

### A2.3.9 Judaidah

<b>Item Code:</b>	JD
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 16' 4" N, 36° 35' 12" E
<b>Latitude/Longitude:</b>	36.267736, 36.586703
<b>References:</b>	Braidwood and Braidwood (1960)
<b>Comments:</b>	None

### A2.3.10 Kazane Höyük

<b>Item Code:</b>	KZ
<b>Region:</b>	Şanlıurfa
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	37° 7' 11" N, 38° 50' 46" E
<b>Latitude/Longitude:</b>	37.119846, 38.846131
<b>References:</b>	Bernbeck et al. (1999) Pollock et al. (1999) Tomas (2011)
<b>Comments:</b>	None

### A2.3.11 Kurban Höyük

<b>Item Code:</b>	KK
<b>Region:</b>	Şanlıurfa
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	37° 28' 45" N, 47° 23' 49" E
<b>Latitude/Longitude:</b>	37.479081, 38.415384
<b>References:</b>	Algaze (1990)
<b>Comments:</b>	None

### A2.3.12 Kurdu

<b>Item Code:</b>	KU
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 19' 49" N, 36° 26' 40" E
<b>Latitude/Longitude:</b>	36.330149, 36.44431
<b>References:</b>	Braidwood and Braidwood (1960) Yener et al. (2000)
<b>Comments:</b>	None

### A2.3.13 Sakce Gözü

<b>Item Code:</b>	SG
<b>Region:</b>	Gaziantep
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	37° 11' 12" N, 36° 53' 29" E
<b>Latitude/Longitude:</b>	37.18663, 36.891401
<b>References:</b>	du Plat Taylor et al (1950)
<b>Comments:</b>	None

### A2.3.14 Ta'yinat

<b>Item Code:</b>	TT
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 14' 51" N, 36° 22' 35" E
<b>Latitude/Longitude:</b>	36.2475, 36.376389
<b>References:</b>	Braidwood and Braidwood (1960)
<b>Comments:</b>	None

### A2.3.15 Wadi Hamman

<b>Item Code:</b>	WH
<b>Region:</b>	Amuq
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 15' 56" N, 36° 35' 0" E
<b>Latitude/Longitude:</b>	36.265656, 36.583383
<b>References:</b>	O'Brien (1933)
<b>Comments:</b>	None

### A2.3.16 Yumuktepe

<b>Item Code:</b>	YK
<b>Region:</b>	Mersin
<b>Country:</b>	Turkey
<b>EastWest:</b>	West
<b>Northings/Eastings:</b>	36° 48' 5" N, 34° 36' 15" E
<b>Latitude/Longitude:</b>	36.801389, 34.603889
<b>References:</b>	Garstang (1953) Caneva (1999) Caneva and Köroğlu (2010)
<b>Comments:</b>	None

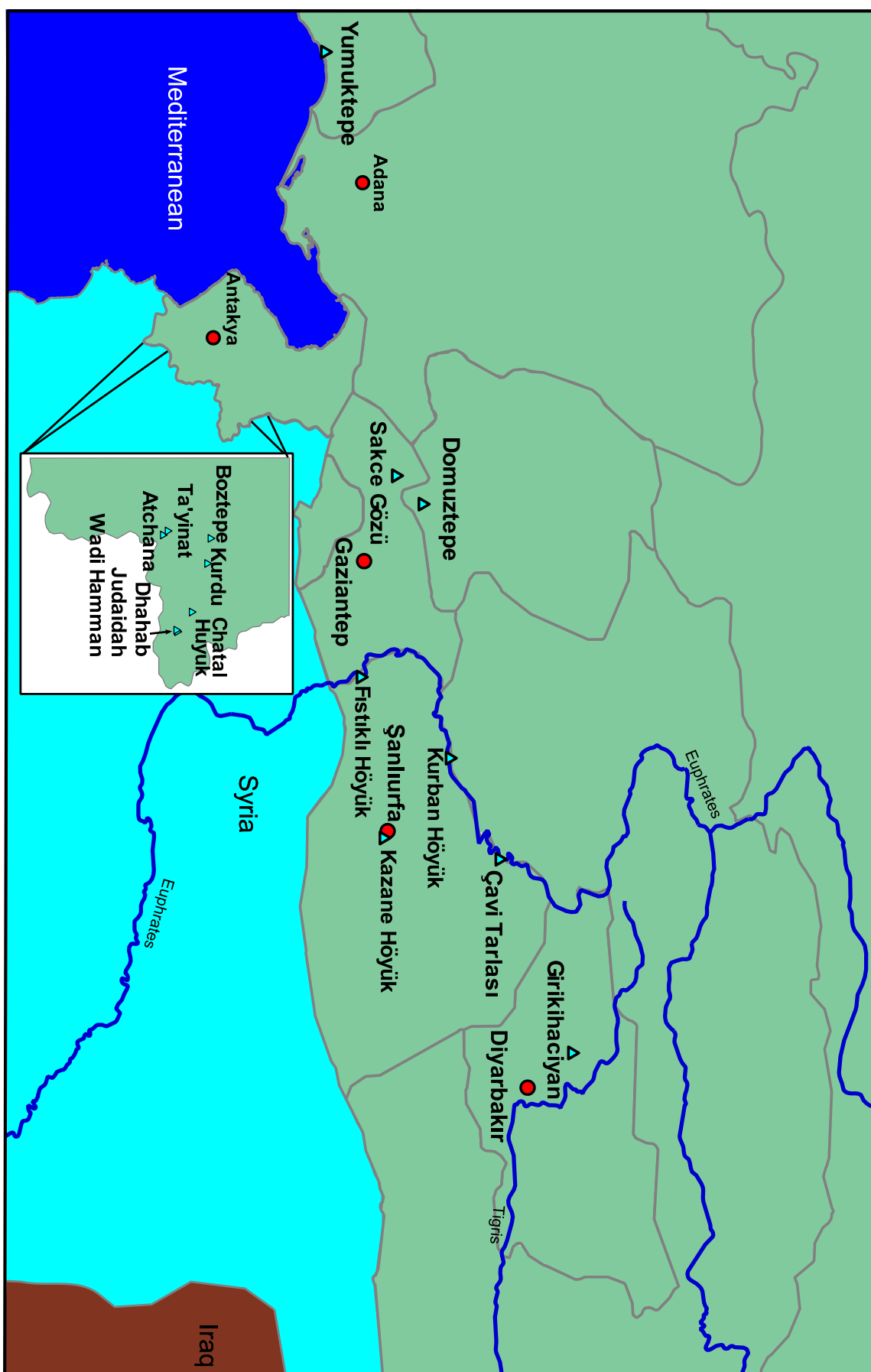


Figure A 3: Sites in Turkey

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