Universiteit Leiden
The Netherlands

Reading rubbish : using object assemblages to reconstruct activities, modes of deposition and abandonment at the Late Bronze Age Dunnu of Tell Sabi Abyad, Syria

Klinkenberg, V.

Citation

Klinkenberg, V. (2016, October 27). *Reading rubbish : using object assemblages to reconstruct activities, modes of deposition and abandonment at the Late Bronze Age Dunnu of Tell Sabi Abyad, Syria*. Retrieved from https://hdl.handle.net/1887/43796

Version:	Not Applicable (or Unknown)
License:	Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden
Downloaded from:	https://hdl.handle.net/1887/43796

Note: To cite this publication please use the final published version (if applicable).

Cover Page

Universiteit Leiden

Leiden University Repository

The handle http://hdl.handle.net/1887/43796 holds various files of this Leiden University dissertation

Author: Klinkenberg, Victor
Title: Reading rubbish : using object assemblages to reconstruct activities, modes of deposition and abandonment at the Late Bronze Age *Dunnu* of Tell Sabi Abyad, Syria
Issue Date: 2016-10-27

READING RUBBISH

USING OBJECT ASSEMBLAGES TO RECONSTRUCT ACTIVITIES, MODES OF DEPOSITION AND ABANDONMENT AT THE LATE BRONZE AGE *DUNNU* OF TELL SABI ABYAD, SYRIA

READING RUBBISH

USING OBJECT ASSEMBLAGES TO RECONSTRUCT ACTIVITIES, MODES OF DEPOSITION AND ABANDONMENT AT THE LATE BRONZE AGE *DUNNU* OF TELL SABI ABYAD, SYRIA

Proefschrift
ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op donderdag 27 oktober 2016
klokke 16:15 uur

door

Merijn Victor Klinkenberg
Geboren te Apeldoorn, Nederland
in 1981

Promotor: Prof. dr. P.M.M.G. Akkermans (Universiteit Leiden)
Co-promotor: Dr. B.S. Düring (Universiteit Leiden)

Promotiecommissie:
Prof. Dr. A. Otto (Ludwig-Maximilians-Universität München)
Dr. G.J.M. van Wijngaarden (Universiteit van Amsterdam)
Dr. A.N. Brysbaert (Universiteit Leiden)
Prof. Dr. D.R. Fontijn (Universiteit Leiden, secretaris)
Prof. Dr. C.L. Hofman (Universiteit Leiden, decaan)

Dit proefschrift werd geschreven in het kader van het onderzoeksproject 'Consolidating Empire: Reconstructing Hegemonic Practices of the Middle Assyrian Empire at the Late Bronze Age Fortified Estate of Tell Sabi Abyad, Syria, ca. 1230-1180 BC' aan de Universiteit Leiden. Dit project stond onder leiding van dr. B.S. Düring en werd financieel mogelijk gemaakt door een aan hem toegekende European Research Council Starting Grant (nr. 282785).

Een handelseditie wordt uitgegeven door het Nederlands Instituut voor het Nabije Oosten, Leiden, in de serie PIHANS, vol. 129; ISBN 978-90-6258-340-9. www.nino-leiden.nl

Table of Contents

Summary IX
Samenvatting IX
Acknowledgments X
List of figures XI
List of tables XVIII

Chapter 1. Introduction 1
1.1 Tell Sabi Abyad – research history 3
1.2 Excavation and documentation procedures 3
1.3 Chronology and stratigraphy of the *dunnu* 5
1.3.1 The original periodization 6
1.3.2 Relating the stratigraphy with the textual sources 7
1.3.3 The revised periodization 8
1.3.4 A revised relationship between the texts and the archaeology 9
1.3.5 Implications for the current research 11
1.4 The *dunnu* 11
1.5 The Assyrian Empire 12
1.6 Research aims and questions 15

Chapter 2. Methodology 17
2.1 Introduction 17
2.2 Digital model of the material remains 18
2.3 Site formation processes 19
2.3.1 Modes of deposition 21
2.3.2 Characteristics of deposits 23
2.3.3 Properties of modes of deposition 27
2.3.4 Post-depositional processes 34
2.3.5 Problems of this approach 38
2.4 The "Sequence of Events" approach 39
2.5 Conclusion 41

Chapter 3. Results 43
3.1 Introduction 43
3.2 The north-western sector. 45
3.2.1 Introduction. 45
3.2.2 Two outside spaces (area 1). 46
3.2.3 The central courtyard (area 2). 51
3.2.4 "Tammitte's office" (area 3). 54
3.2.5 The entrance hall and bathroom (area 4) 62
3.2.6 Conclusion: function and use of the NW sector. 67
3.3 The north-eastern sector 69
3.3.1 Introduction. 69
3.3.2 Pints and pottery (area 1) 69
3.3.3 Brewery and office (area 2) 77
3.3.4 Residential spaces and a kitchen (area 3). 85
3.3.5 A residential corner (area 5) 94
3.3.6 A courtyard and ephemeral structures (area 4) 97
3.4 The monumental residence 100
3.4.1 Introduction. 100
3.4.2 Front courtyard (area 1) 100
3.4.3 Central hall and eastern rooms (area 3 & 4) 104
3.4.4 Western rooms and additional bathroom (area 2) 107
3.4.5 Function and use of the monumental residence 111
3.5 The central building 113
3.5.1 Introduction. 113
3.5.2 The first construction 114
3.5.3 The extended building 116
3.5.4 Further renovations 117
3.5.5 Function and use of the central building. 120
3.6 The south-western sector. 122
3.6.1 Introduction. 122
3.6.2 On the grind (area 1) 122
3.6.3 The corner rooms (area 2). 127
3.6.4 Many ovens (area 3) 131
3.6.5 The corridor along the central buildings (area 4). 137
3.6.6 Domestic architecture (area 5) 140
3.6.7 A bakers' residence? (area 6) 144
3.6.8 Structures along the wall (area 7) 149
3.6.9 Corner rooms (area 8) 153

3.7 The south-eastern sector 156
3.7.1 Introduction 156
3.7.2 Courtyard and small building (area 1) 156
3.7.3 The servant's entrance and pottery workshop (area 2) 162
3.7.4 An apartment (area 3) 168

Chapter 4. Discussion 173
4.1 Introduction 173
4.2 Reconstructing activities at Tell Sabi Abyad 173
4.2.1 Introduction 173
4.2.2 A digital approach 173
4.2.3 Reconstructing modes of deposition 174
4.2.4 Reconstructing the Sequence of Events 177
4.2.5 Relating finds with activities by using a *chaîne opératoire* approach 178
4.3 Evidence for activities in the *dunnu* 179
4.3.1 Introduction 179
4.3.2 Workforce 180
4.3.3 Subsistence 181
4.3.4 Food preparation 185
4.3.5 Production processes 194
4.3.6 Administration 200
4.3.7 War and peace 205
4.3.8 Storage 208
4.3.9 Domestic life 211
4.3.10 Abandonment 220
4.4 The function of the *dunnu* 221
4.4.1 Introduction 221
4.4.2 The local function of the Tell Sabi Abyad *dunnu* 223
4.4.3 The function of the *dunnu* in the empire 229
4.4.4 Conclusion 234

Chapter 5. Conclusion 237
5.1 The representativeness of objects 238
5.2 The textual sources 239
5.3 Activity patterns in the *dunnu* 240
5.4 The function and use of the *dunnu* 242

Literature 245
Curriculum Vitae 253

Samenvatting

Rond het jaar 1230 v.Chr. trokken Assyrische troepen het gebied van het huidige Noord Syrië binnen. Om het gebied onder controle te houden en gebruik te maken van het landbouw potentieel werden door de bezetter verscheidene nederzettingen gesticht, zogenaamde *dunnu*'s. Een grote, versterkte, dunnu is aangetroffen en door Leidse archeologen opgegraven op Tell Sabi Abyad. In dit onderzoek is getracht aan te tonen hoe deze nederzetting gebruikt werd – welke activiteiten er plaats gevonden hebben. Dit is gedaan door te analyseren wat voor objecten er achtergelaten zijn in de verschillende ruimtes van de nederzetting. Ook is in dit onderzoek veel aandacht besteed aan hoe deze objecten achtergelaten zijn: was het bijvoorbeeld als afval gedumpt of in een plotselinge catastrofe achtergelaten?

Het onderzoek heeft geresulteerd in een her-evaluatie van de aard en functie van de *dunnu* van Tell Sabi Abyad. Het is aangetoond dat de nederzetting grotendeels gebruikt is voor huiselijke activiteiten en geleidelijk verlaten is. Dit staat in contrast met het beeld van deze nederzettingen dat we krijgen uit historische bronnen. Hierin wordt een beeld geschetst van militaire forten die dienden om landbouw producten te produceren voor de machthebbers en om de lokale bevolking onder de duim te houden. Dit onderzoek heeft bijgedragen aan een veranderd beeld van de rol van het Assyrische Rijk in nieuw veroverde gebieden. Hiermee wordt aangetoond hoe een bezettende macht niet met militair machtsvertoon alleen de controle over een gebied behoudt, maar ook gebruik moet maken van positieve stimuli.

Summary

Around the year 1230 BC Assyrian forces conquered the area of modern North Syria. To consolidate power in the region and to make use of the agricultural potential of the region, numerous agricultural settlements were founded, so called *dunnu*s. One such a settlement, was found and excavated at Tell Sabi Abyad, Syria. The settlement was relatively large and appears to have been heavily fortified. In this research the settlement was investigated to reveal what activities were played out inside. This was achieved by analysing the objects which were left behind inside the various rooms and courtyards at the site. Also the way in which these objects were deposited was subject to rigorous investigation: were the objects for instance dumped as garbage or were they left behind during rapid abandonment following some catastrophe?

The research resulted in a re-evaluation of the nature and use of the Tell Sabi Abyad *dunnu*. It has been revealed that the settlement was used largely for domestic, household activities and that it was slowly abandoned. This interpretation is in contrast with the historical view of this type of settlement. Historical sources have yielded an image of military forts which served to produce agricultural surplus for the empire and to oppress the local population. This research has aided in altering the understanding of how the Assyrian Empire consolidated its power in newly conquered areas. It illustrates how an occupying power cannot achieve hegemony with military might alone. Instead, it requires positive stimuli too.

Acknowledgements

Research into the activities within the Tell Sabi Abyad *dunnu* would not have been possible without the support of my promotor and the head excavator of the site professor Peter Akkermans. Thank you for this opportunity and for the freedom we experienced in interpreting your site anew.

During my research I shared an office and the workload with the members of the '*dunnu* team': Frans Wiggermann, Merel Brüning, Federica Fantone, Tijm Lanjouw and Hannah Plug. Thank you all very much for the countless discussions and lovely dinners!

I am grateful to my family and friends who have supported me during my PhD years. In particular my friends at the Faculty of Archaeology, Arjan Louwen, Eduard Pop, Stijn van As, it is incredible to be able to work with such good friends in the same institute for so long. I hope I will be able to enjoy your friendship for many years to come!

Through the years, the Faculty of Archaeology has offered me countless opportunities to travel, to organize meetings and workshops and to bring together fellow archaeologists for academic and social events such as in the Digital Archaeology Group. It is this context in which an archaeologist can flourish and develop, unrestrained and fully encouraged. I feel indebted to the many different board- and committee members who have aided in these efforts and to the Faculty in general. I hope to have added my part in organizing events and encouraging others.

Within the Faculty of Archaeology there have been countless colleagues with whom I have had the pleasure to discuss and share new research over lunch or during our events, too many to mention all here. In particular I would like to thank the following for their help and friendship: Eva Mol, Roy van Beek, Tijm Lanjouw, Corrie Bakels, Alexander Verpoorte, Quentin Bourgeois, Marie Soressi, and Claudia Regoor. Also I would like to extend my thanks to Ann Brysbaert for offering me a light at the end of the PhD tunnel, and perspective beyond.

Also outside of academia I have always been strongly supported by the people around me. My parents Hens and Niels Klinkenberg, brothers Paul and Michael and spouses, my non-archaeologist friends, and my girlfriend Holly Kunst have endured my academic efforts, stress and constant pre-occupation for over twelve years now. Thanks to you all for supporting me so much – and I'm sorry, but it seems it will continue, and possibly get worse!

I was fortunate enough to have Bleda Düring as my PhD supervisor. Bleda was strict but fair, critical yet encouraging, incredibly knowledgeable and a great friend. I still wonder sometimes where he found the courage to take me on as a PhD candidate, but I am eternally grateful that he did. Bleda, I have learned incredibly much from you and hope to continue to do so in our future joint projects, it has been a great adventure thus far!

To conclude, in each stage of my archaeological life there was a pivotal individual who, for reasons often unclear to me, encouraged me to continue and further my career. These were: in Deventer Michiel Bartels, during my bachelor education David Fontijn, during my master education Wil Roebroeks and during my PhD research Bleda Düring. It is to these inspiring individuals that I would like to, gratefully, dedicate this humble thesis. Thank you for your courage and support!

Chapter 1.
Introduction

This study aims to reconstruct the function and use of the Tell Sabi Abyad *dunnu*, an Assyrian, government-controlled, agricultural settlement. Understanding its role in the local society and in the Assyrian empire at large will help in answering the question of how the empire maintained its control over annexed territories. This study is a systematic investigation of the architecture and finds from the site of Tell Sabi Abyad. Special attention is given to the reconstruction of modes of deposition of objects in order to assess what they tell us about past activities. The results are compared with the textual evidence from the site in order to provide a comprehensive interpretation of what activities were actually carried out in and around the *dunnu*. The study tries to contribute to the understanding of the Late Bronze Age settlement of Tell Sabi Abyad as well as to fundamental issues in the interpretation of archaeological contexts.

This study is part of the ERC funded project Consolidating Empire: Reconstructing Hegemonic Practices of the Middle Assyrian Empire at the Late Bronze Age Fortified Estate of Tell Sabi Abyad, Syria, ca. 1230-1180 BC (grant no. 282785) performed at the Faculty of Archaeology of Leiden University, The Netherlands. The project is directed by Dr. Bleda S. Düring and is concerned with the origins of imperialism, and with how imperial systems impacted on local communities. To explore these issues, one of the earliest empires in the old world, that of the Assyrians, is investigated. The Middle Assyrian Empire, like many empires, has been mainly studied from the perspective of its capital, these studies have focussed primarily on historical sources (Postgate 1992; Jakob 2003; van de Mieroop 2004: 196-74). This historical perspective on empire yields knowledge about topics that favour economic, military and elite themes (Smith and Montiel 2001; Glatz 2009: 128). In contrast to a historical approach, the *archaeology* of empire is focussed on how empires affect local communities and landscapes (Postgate 1992; Sinopoli 1994; Pfälzner 1995; Parker 1997; Smith and Montiel 2001; Parker 2003; Glatz 2009; Tenu 2009; Fales 2011; Brown 2013). This archaeological perspective offers insight into the expression of imperialism on a smaller scale, considering the local communities which are incorporated in an imperial system. These studies indicate that the imprint of imperial domination varies significantly per geographic region (Parker 2003; Tenu 2015). In this sense, the material remains offer a bottom-up perspective of the manifestations of empire.

At the site of Tell Sabi Abyad, in Northern Syria (Fig. 1.1), a fortified settlement, a so-called *dunnu*, from the Middle Assyrian Period (1350-900 BC) was excavated. The location of this settlement in the periphery of the Middle Assyrian Empire renders it a suitable case study of imperial systems in conquered territories. Also, the remarkable preservation of the architecture and the abundance of artefacts and charred botanical remains provide the opportunity to reconstruct daily life here in great detail. Within the framework of the 'Consolidating Empire' project a team of researchers has investigated several aspects of this *dunnu*. The research includes the reconstruction of the agricultural economy of the *dunnu* (Fantone 2016) as well as how

the aspects of the architecture influenced life in the *dunnu* (Lanjouw 2016). The cuneiform sources are studied by Frans Wiggermann (Wiggermann in prep.) and the overall synthesis is in the hands of Bleda S. Düring (Düring 2016). As mentioned above, the research presented here deals with the reconstruction of activity patterns within the settlement, by studying the architecture, deposits and finds from the *dunnu*.

Fig. 1.1: Plan of Tell Sabi Abyad with the excavation grid and the Level 5 architecture. The light grey trenches were excavated. On the inset the location of Tell Sabi Abyad is indicated with modern borders.

The current study is founded on decades of work by researchers during excavations and subsequent analysis. Not only has their work made this study possible, it also has had a profound influence on the nature and state of the surviving documentation. Because of its significance to the current research the following sections deal with the research history and field methods of Tell Sabi Abyad. Subsequently the historical background of the Assyrian habitation of the mound will be discussed after which an introduction to the methodology and the research aims of the current study will be presented.

1.1 Tell Sabi Abyad – research history

Excavations at Tell Sabi Abyad (literally: 'Mound of the White Boy') started in 1986 under the direction of Professor P.M.M.G. Akkermans, and focussed on the prehistoric occupation of the site. From 1991 onwards, a large part of the excavation targeted the Assyrian period. In total, some 80 trenches, each 10 by 10 metres, have yielded finds and architecture dating to the Assyrian occupation of the site, mainly on the south-western part of the tell. The site of Tell Sabi Abyad is situated in the north of modern Syria some 30 kilometres from the Turkish border (for more general information about Tell Sabi Abyad see Akkermans 1987; Akkermans and Rossmeisl 1990; Akkermans *et al.* 1993; Akkermans 1999; Akkermans 2006; Brüning and Akkermans 2010; Wiggermann 2010; Akkermans and Wiggermann 2015). The mound is situated along the perennial Balikh River which originates in a karstic spring at 'Ayn al-'Arus, close to the Turkish-Syrian border, flowing south until its confluence with the Euphrates at modern Raqqa, Syria. Tell Sabi Abyad is situated in the broad floodplain east of the river where the Balikh is met by the Wadi al-Hamar. The Late Bronze Age site is located on the largest of a group of four mounds, which are designated Tell Sabi Abyad I – IV. The main tell, designated by the Roman numeral I, is commonly referred to as simply Tell Sabi Abyad. The tell is some five hectares in size although the Assyrian occupation seems to be concentrated on the summit and covers only one hectare.

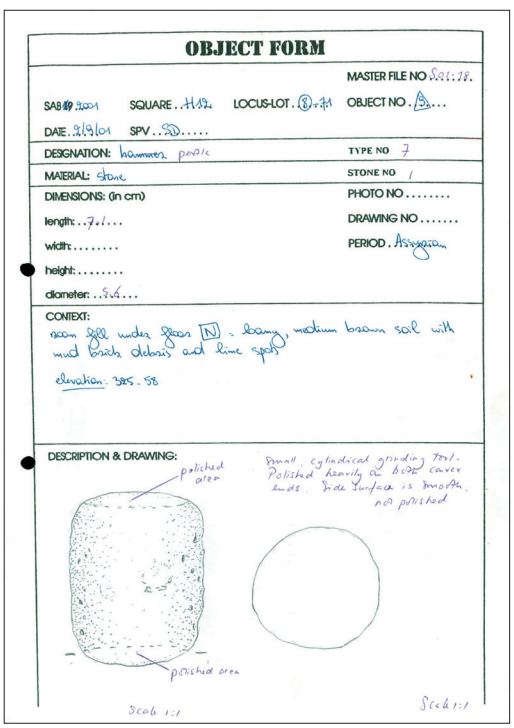
Today, the landscape surrounding the tell is dominated by agricultural fields. Tell Sabi Abyad is located just north of the 250 mm isohyet line, at the edge of the zone in which rain-fed agriculture is possible. South of this line it is necessary to irrigate the soil to grow crops. This is not a strict geographical limit as there is a marked interannual variability in the amount of rainfall. This means that for some years rain-fed agriculture is possible at Tell Sabi Abyad but periods of drought have a large effect on yields. Irrigation may have been used as a supplementary water supply in most periods and is attested for in early botanical analyses and the textual references from the site (Van Zeist 1994; Wiggermann 2000: 176-9). Recent in-depth study of the botanical evidence however suggests that irrigation was not used extensively in the Late Bronze Age (Fantone 2016), which perhaps in turn suggests different environmental conditions at that time.

1.2 Excavation and documentation procedures

During the years of excavation at Tell Sabi Abyad, between 1986 and 2010, the original excavation techniques were retained. The tell had been divided using a ten by ten metre grid. Each ten by ten metre square, or trench, is identified using a letter on the west-east axis, and a number on the north-south axis (Fig. 1.1). During excavation, the trenches were dug leaving 50 centimetres of sediments on all sides for the establishment of section baulks. The section baulks between trenches therefore measure one metre in width and the trenches measure nine by nine metres. Trenches were excavated by a team consisting of one supervisor and usually five local workmen. The workmen used pick axes and shovels to excavate in horizontal spits.

Every 5-10 centimetres, or upon the discovery of a new soil type, the surface of the trench was cleared and observed for features. If the surface exhibited separate soil types these were excavated separately. In the case features such as wall remains were found, the feature was left standing and the soil around it was excavated. During every day of excavation the square supervisor was required to handle all administrative tasks such as the administration of finds and creating of field drawings. At the end of a working day the supervisor wrote his or her daynotes; a diary of the excavation work including a description of the decisions which were made and of the discovered objects and features. The administration of the excavated remains was based on 'Features' such as walls and ovens and 'Loci' (singular 'Locus'), separate soil types visible on the surface, often architecturally delineated. The excavated artefacts from spits were collected in 'Lots': a find number specific for the Locus or Feature and the spit the items were found in. A separate Locus number was assigned every time the soil type (during excavation often called 'Deposition') changed, and at least with every 20 cm spit.

Most finds from one lot were collected in zanbils (buckets) without recording the specific location of every individual shard or fragment. This was specifically done for the most commonly occurring finds: flint, ceramic shards and animal bones. Other artefactual finds, such as complete vessels, bone tools, or metal items were collected and administrated separately as 'Objects'. For every Object the elevation and precise location within the trench was recorded in the daynotes. Objects were described in detail on so-called object forms. The form contains an overall description of the object including metrics, context information and a sketch of the object (Fig. 1.2). Because the objects themselves are stored in Syria, and are not available for study due to the current conflict (Klinkenberg 2014), the object forms are used as primary source of information about the objects for this study. Two registration numbers are present for objects: one is given during excavation and is unique within the square for a particular year, the other is the number given to the object post-excavation and is known as the 'Masterfile number' (MF-number). The MF-number is made up of four elements: first a letter denoting its find category, then the two last digits of the year of excavation, an underscore, and finally a three digit (sometimes four) sequential number, for example P96_001 for the first administrated pottery object in the year 1996 (see also table 1.1).


OBJECT FORM

MASTER FILE NO. S01:18.

SAB 99 2001 SQUARE . H19 LOCUS-LOT . 8+71 OBJECT NO . 3...

DATE . 21/9/01 SPV . SD.....

DESIGNATION: hammer pestle TYPE NO 7

MATERIAL: stone STONE NO 1

DIMENSIONS: (in cm) PHOTO NO .....

length: ..7.1... DRAWING NO .....

width: ..... PERIOD . Assyrian

height: .....

diameter: ..5.4...

CONTEXT:

room fill under floor N - loamy, medium brown soil with mud bricks debris and lime spots

elevation. 385.58

DESCRIPTION & DRAWING:

polished area

Small, cylindical grinding tool. Polished heavily at both caver ends. Side surface is smooth, not polished

polished area

Scale 1:1

Scale 1:1

Fig. 1.2: The object form of object S01-18, a stone pestle. The form includes information about the measurements of the object, its find context and a sketch (from: Tell Sabi Abyad archive).

Object type	Masterfile letter
Beads and pendants	B
Figurines	F
Glass	G
Bone, horn and ivory	I (in some years the letter J was used)
Metal	M
Other clay objects	O
Pottery	P
Stone objects	S
Tablets	T
Varia	V
Seals and sealings	Z

Table 1.1: Object categories and their abbreviations in the Tell Sabi Abyad documentation. The letters are used in the Masterfile numbers.

Drawings of the architecture were made by both the square supervisors as well as by a professional illustrator. The illustrator produced the main plans of the trenches, showing the main architecture and a selection of feature and find locations. The square supervisors produced a drawing of their own square every day after excavating. These drawings are on a smaller scale and of less precision than the large plans. These daily drawings are of great value however because they depict all the minor architectural elements, all objects and the location and extent of the Loci.

1.3 Chronology and stratigraphy of the dunnu

Several meters of deposits at Tell Sabi Abyad were assigned to the Late Bronze Age. During and after excavation a periodization of these remains into several Levels was established. The periodization was connected to the information from textual sources, dating and contextualizing the Levels (Akkermans and Wiggermann 2015). During later in-depth study of the stratigraphy, Merel Brüning, Hanna Plug and Tijm Lanjouw have offered a revised edition of the architectural sequence (Brüning and Plug 2016). Additionally, the relation between the cuneiform tablets and the stratigraphic sequence was questioned (see below).

Unfortunately the revision of the stratigraphic sequence of the *dunnu* was performed after the current study was completed. Therefore the analyses presented in this research are based on the former stratigraphic ideas. Consequently, although for this study it was attempted to analyse all features and finds from one major stratigraphic phase of the *dunnu* (Level 5), the revised periodization indicates that these deposits in fact belong to several phases of occupation. In general, the sequences which were analysed for this study can be equated to the Levels 6A and 5 of the new periodization. However, there are some chronological differences between separate areas in the *dunnu*. Most importantly, while the start of the original level 5 in the north-west of the *dunnu* can be equated to the new level 6A, in the south-east of the *dunnu* the original level 5 is allocated to the new level 5. This means that although the sequences which are described in this study have a large chronological overlap, their start and end are not necessarily simultaneous. For a comprehensive overview both stratigraphic interpretations are presented here.

1.3.1 The original periodization

The original stratigraphic sequence (Akkermans 2006; Brüning and Akkermans 2010; Akkermans and Wiggermann 2015) of the *dunnu* was divided into seven Levels, five of which were considered to date to the Late Bronze Age (Fig. 1.3). From old to young, level 7 was interpreted as a Mittani period occupation of the site which consisted of a single tower on the summit with some ephemeral structures surrounding it. The building was interpreted as being a large farmhouse, used by a family who owned some fields surrounding the hill. It is unclear how long this structure had been in use but after some time it was abandoned and fell into disrepair. The ensuing Assyrian presence at the site was allocated to levels 6 – 3. Their initial occupation was illustrated by a significant construction phase which saw the renovation of the dilapidated tower. During this renovation the ground plan of the tower stayed largely the same although the front of the building was extended several metres outwards, renewing the entire façade. Another impressive architectural change was the erection of a palatial structure adjacent to the tower. This building was constructed with much thinner walls and consisted of courtyards and two extensive apartments, both fitted with bathrooms. Additionally, in this period the settlement was surrounded by an impressive high wall and a large and deep dry moat. These structures appear to indicate that the settlement was built to have a certain military or at least defensive appearance. A number of smaller structures were created within the main outer wall and the two central buildings. These structures were used as residential areas and for craft activities such as grain processing and pottery production.

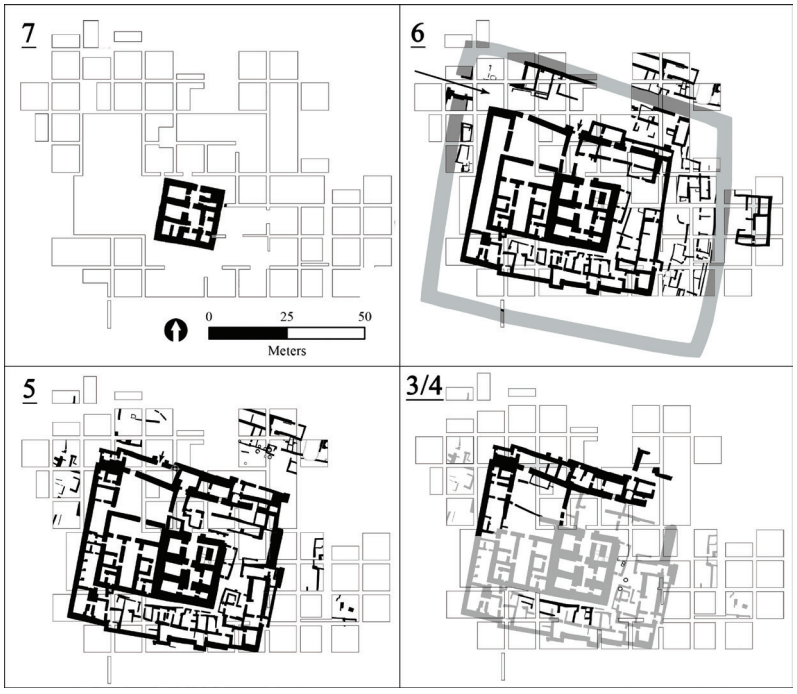


Fig. 1.3: The Late Bronze Age Levels of Tell Sabi Abyad according to the original periodization.

The end of Level 6 was considered to be characterized by a general lack of upkeep. The subsequent renovation was considered the onset of level 5. In this period the *dunnu* was also extended. The dry moat had filled up with refuse and soil and was built up in this phase. Especially the northern part of the *dunnu* was altered in layout and appearance. The main entrance was moved from the centre of the north façade to the west, where it was more or less in line with the monumental residence, perhaps denoting a change in function of this entrance. In general the phase is characterized by a larger number of small structures and additions to existing structures. The military or defensive nature which seemed to be important at the initial construction of the *dunnu* was no longer manifested to the same extent. Also the end of this phase, Level 5, was characterized by a dilapidated state of the architecture. Additionally, around the same time a large fire had broken out in the residence and in the central tower building, basically ending the use of these buildings.

Later phases are less well known due to processes of erosion and disturbance. It is clear however from architectural remains and finds which postdate level 5, that in subsequent phases the *dunnu* was still functioning to some degree. Although the central structures of the *dunnu* were in ruins, in the north of the settlement houses were being renovated and inhabited during levels 4 and 3. To what extent these later levels should be considered to represent a continuation of the *dunnu* as an institution is questioned in this original sequence. The settlement in these phases is considered to have lost its former 'grandeur' and to have functioned as a farmstead (Akkermans and Wiggermann 2015: 103). Erosion of the southern part of the *dunnu* however obscures how a large part of the settlement functioned at this time and although several important buildings were not usable anymore, the discovery of rich burials and several cuneiform tablets from this period indicate that there was at least some continuity in function and use.

The architecture and finds from levels 2 and 1 were considered to represent post-Assyrian phases, possibly Hellenistic in date.

1.3.2 Relating the stratigraphy with the textual sources

Dating of the levels was performed by correlating the periodization with information from cuneiform tablets which were found at the site (Akkermans and Wiggermann 2015). The textual evidence describes how the *dunnu* was originally owned and controlled by the King of Hanigalbat and viceroy of the Assyrian Empire, a post consecutively held by Aššur-Iddin (ca. 1233-1200 BC), Sulmanu-musabsi (ca. 1200-1197 BC) and Ili-pada (ca. 1197-1183 BC). Some of the excavated documents were inscribed with a date on which the document was written. In these cases a limmu, a year designation in the Assyrian calendar, was included, providing a secure date for them. Others could be dated based on other datable elements from the documents such as king names or references to certain known events. It should be taken into account however that the dates which are given by the documents do not date the moment of deposition but only the moment when they were written. It often occurs that a group of tablets

which are found together in an archaeological context have wide-ranging dates. The dates on the objects should therefore be taken as a date post-quem for the archaeological deposit.

Based on the occurrence of a text from the first decade of the reign of Tukulti-Ninurta I (1233-1197 BC),1 the onset of level 6, and with it the construction of the *dunnu*, was dated to approximately 1225 BC. The end of level 6 is marked by letter T02-032, describing the mourning for Tukulti-Ninurta I, and the presence of a new king, Aššur-nadin-apli. Consequently, the end of level 6 and the start of level 5 is dated to 1196-1194 BC. During level 5 the *dunnu* is owned and controlled by Ili-pada, King of Hanigalbat.

It was proposed by Akkermans and Wiggermann (2015) that the events at the *dunnu* of Tell Sabi Abyad were triggered by the main events within the Assyrian aristocracy. Around 1185 BC Ili-pada died, but the kingship (and the *dunnu*) was not inherited by his son Ninurta-apil-Ekur; instead he was exiled from the empire. His exile lasted only until the year 1183 BC in which a major power shift occurred in Aššur, and the throne of Assyria was taken by him, thereby joining the kingship of Hanigalbat with that of Aššur. It seems that the focus of this new owner of the *dunnu* shifted to the political centre in Aššur, and the *dunnu*, located in the periphery of the empire, lost its former importance. This is supposed to be reflected in the poor state of the *dunnu* architecture in what is called Level 4 and 3. This reasoning leads to the postulation that the end of level 5 and the start of Level 4 can be dated to the first years of the reign of Ninurta-apil-Ekur: around 1180 BC. The end of Level 3 has tentatively been set by Akkermans and Wiggermann to around 1125 BC (table 1.2).

Level	Description	Dates
3 and 4	Restoration and use of northern buildings	1183-1125 BC
5	Reconstruction of the *dunnu* and subsequent fire	1195-1183 BC
6	Initial construction and subsequent decline of the *dunnu*	1225-1195 BC
7	Mitanni phase building	…-1225 BC

Table 1.2: Dates of the architectural Levels of the original periodization of Tell Sabi Abyad (after Akkermans and Wiggermann 2015).

1.3.3 The revised periodization

Based on an in-depth study of the stratigraphic remains of the site, a revised periodization was established (Brüning and Plug 2016). The revised sequence (Fig. 1.4) is similar to the previous in that the same numbering system was used and where possible related to the same architectural changes.

[1] Following Akkermans and Wiggermann (2015, 89) in this work dates from the Middle Chronology (Boese and Wilhelm 1979; Boese 1982; Freydank 1991) are adhered to. All dates given are BC.

Level 7 is still considered to be represented by the central tower building. At some point after construction of the tower the surrounding wall and moat were constructed. Although they were constructed later than the tower, possibly they were in use simultaneously. The construction of these additional features is considered to represent the onset of Level 6C.

The major renovation of the central building and the construction of the residence and other buildings along the perimeter wall were placed into Level 6B. The original tower-like building was therefore first incorporated into the larger *dunnu* architecture before being renovated. The construction of the smaller structures along the perimeter wall was related to renovations of this wall, particularly in the south. Further elaboration in the north of the *dunnu*, including the repositioning of the main entrance to the *dunnu* was considered to have taken place somewhat later, in a period dubbed Level 6A. In the earlier periodization these renovations had been placed in Level 5.

The architectural layout of the start of Level 5 in this new periodization resembles the original Level 5 plan. There is however one major difference. In the original periodization Level 5 commenced with the construction of the associated buildings. In the revised periodization these constructions are placed in level 6A. Level 5 in this revised periodization starts with a second use phase of the same architecture. In the north-west of the *dunnu* for instance the representative function of the residence had already been lost at the start of level 5. Also an important official structure, known as the 'office of Tammitte' (see paragraph 3.2.4), was out of use during this new phase.

The end of Level 5 is, similar to the old interpretation, demarcated by the large conflagration and ruined state of many buildings at some point. The succeeding habitation levels are also still dubbed 4 and 3. Although these later phases are less well known from the architectural remains, it is clear that several buildings were constructed in the north of the *dunnu* and some structures from the previous phases were still in use despite their dilapidated state.

1.3.4 A revised relationship between the texts and the archaeology

The relationship between the texts and the archaeology had not been studied in great detail before. It was for instance not clear in what manner the tablets had been deposited. Also the stratigraphic position of the tablet contexts was not studied in detail. Linking the information from the two (historical and archaeological) datasets was based mainly on preliminary stratigraphic notions and a three-tiered sequence in both lines of evidence. The contexts in which tablets were found, however, do not seem to corroborate the temporal sequence as it had been suggested by Akkermans and Wiggermann (2015).

Tablets concentrations were found in several contexts. Some of these contexts date to the earliest Levels of the settlement, other to the latest. As they formally indicate only a date post-quem of their deposition into the ground, the start of some Levels can be dated along that line. A full discussion of the evidence is given in chapter 4 so here a short indication will suffice (table 1.3).

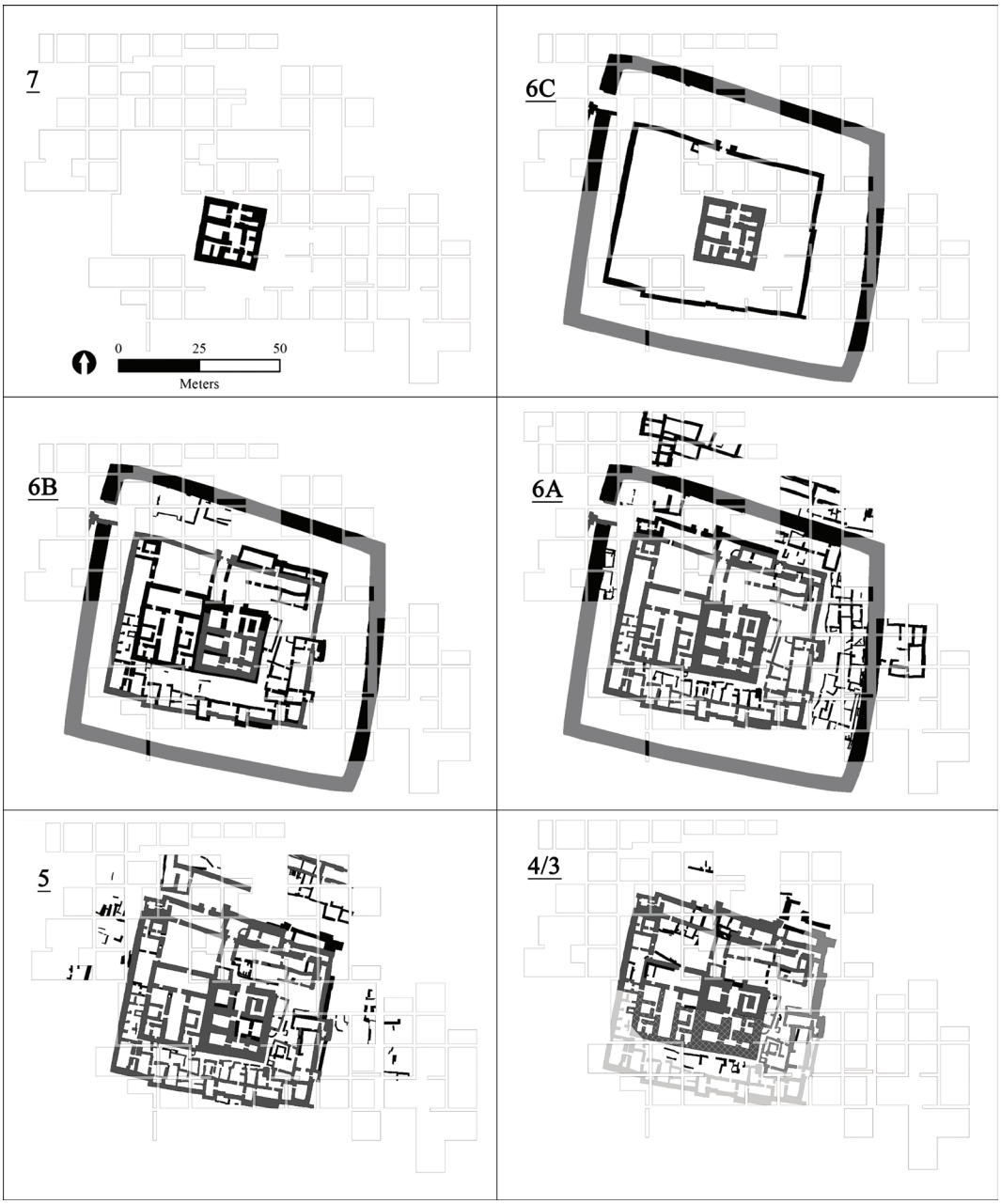


Fig. 1.4: The Late Bronze Age Levels of Tell Sabi Abyad according to the revised periodization.

In addition to the cuneiform tablets several ^{14}C samples were analysed to aid in dating the sequence (for an extensive discussion see Brüning and Plug 2016). Eight samples were analysed at the Centre for Isotope Research in Groningen of which six yielded a reliable result. The samples indicate a start date for level 6C of 1297 ± 64 calBC. Other samples date the later phases 4 and 3 at the end of the twelfth century BC.

1.3.5 Implications for the current research

The research presented here was based on the original periodization of the site. Because the level 5 deposits from that sequence covered the majority of activities carried out in the *dunnu* and because it was a horizon which could easily be followed through the settlement, it was decided to focus only on this time-slice. From the detailed analyses mentioned above it has appeared that the 'level 5 architecture and finds' belong to several different levels in the new periodization. Importantly, the new subdivision has indicated that the original Level 5 deposits should be assigned to younger levels in the north-west and to older levels in the south-west. Within single sectors (see below) the stratigraphy has remained largely the same but the correlation between sectors described in this research should therefore be taken with caution, for an up to date interpretation Brüning and Plug 2016 should be consulted.

Level	Dates
3	…
4	…
5	1184-… BC
6A	…-1184 BC
6B	1209-… BC
6C	…-1209 BC
7	…

Table 1.3: Possible dates of the architectural Levels of the revised periodization of Tell Sabi Abyad.

1.4 The *DUNNU*

Within its short life span, ca. 1225-1125 BC, the *dunnu* underwent many architectural modifications, most notably, the filling up of the moat and apparently an increasing complexity of its internal structure. At its apex in level 5 the *dunnu* housed a large number of workshops and residential structures. By contrast, there were a number of moments the *dunnu* had seemingly lost its importance and buildings had fallen into disrepair. The frequency of building activities at the *dunnu* has led to a high-resolution archaeological imprint. Some walls were preserved more than three meters in height with vaulted doorways sometimes still in place. Newly laid floors were often placed on top of old ones and a great number of seemingly *in situ* finds originated from these successive floors in all of the buildings. The short-term and high-resolution chronology from the site is rarely available in archaeology. Rather than large-scale processes which are usually the object of archaeological research, the archaeological remains of the Tell Sabi Abyad *dunnu* offer insight into short-term events (Braudel 1966; Murray 1999; Lucas 2008).

Reconstructing the architecture of the *dunnu* is facilitated by the well preserved architectural remains. During and after abandonment large amount of objects were deposited on the floors of these houses and other structures. With the collapse of architecture in the *dunnu*, these objects were trapped inside the debris. Judging from some excavated contexts, objects may have been left on the floors of some structures during abandonment of houses in the *dunnu*. A grand total of almost 10,000 Middle Assyrian objects were excavated at Tell Sabi Abyad. Due to the speed with which objects and architecture were covered by collapsing architecture and sediments, later, natural processes which influence the state, location and

presence of objects have had a limited effect on the archaeological remains. These natural, post-depositional processes such as erosion and decay have often been clearly recognizable, therefore their influence was reconstructed with relative ease. In some cases, for instance, large pits and erosion features have cut through older contexts.

Among the find material the earlier mentioned large corpus of cuneiform tablets was found. These have revealed the names of the successive owners of the settlement and they hint at its function and use. In the role of a private estate the complex and its surrounding agricultural fields served as a production centre for their owner. The agricultural estate was reconstructed to have measured 36 km2 in size with a labour force of some 900 dependants (Wiggermann 2000, 183). Its size reflected the wealth and importance of its owner; most *dunnu*s were probably much smaller (Düring 2015a). The Tell Sabi Abyad *dunnu*, in addition to its agricultural function, served a function in the Assyrian Empire as a military stronghold. It functioned as an army hub and, because of its location at the fringe of the empire, goods were custom-cleared here before they were taken further into the empire. There probably were several other *dunnu*s spread across the land, some of which are known from texts from the Tell Sabi Abyad *dunnu*. These other *dunnu*s bear the names of their founders or the name of a god such as '*dunnu*-Aššur'. The name of the *dunnu* at Tell Sabi Abyad is not yet known, it is always referred to as 'the *dunnu*' (Wiggermann 2000, 172).

1.5 The Assyrian Empire

At the start of the 14th century BC Assur was a city state under the dominion of the empire of the Mittani. This empire, which was called Hanigalbat by its neighbouring states, stretched from the Mediterranean in the west until Arrapha, modern Kirkuk, in the east (Kolinski 2015). For some time the empire was considered one of the main kingdoms of the Bronze Age, along with that of the Egyptians, Hittites and the Babylonians (van de Mieroop 2004: 143). Internal conflict however diminished the power of the empire. Two brothers, Tushratta and Artatama, lay claim to the throne of Mittani. This resulted in the separation of the empire in a western and eastern part. This severely weakened the power of the Mittani and both parts were soon incorporated in other political systems as vassal states. The western part was under control of the Hittite Empire and the eastern part was made a vassal of Assyria, under the direction of king Assur-Uballit (1353-1318 BC). It was with the reign of this king that Assyria started to develop into a major player in the international scene. The territorial expansion of the Assyrian state did, however, not start until the middle of the 13th century.

Three kings in particular were responsible for the first imperial expansions of Assyria. At first the lands of Hanigalbat were made into a vassal state by Adad-Nirari I (1295-1264 BC). Textual sources indicate that the ruler of this area, Sattuara I, king of Hanigalbat, at some point rebelled against this dominance. After subduing this rebellion and the capture of Sattuara I, Adad-nirari released him on the condition of regular tribute payments. Apparently at this time, there was no desire for total territorial domination of the area (Jakob 2015: 178).

The former Mittani area, however, remained troublesome. After the death of Sattuara his son Wasasatta revolted against the Assyrian domination. Adad-nirari campaigned into Hanigalbat again but was less forgiving to this new king. The Assyrian response included the complete destruction of the town of Iridu, home of Wasasatta, and the annexation of eight cities in the Habur triangle (Szuchman 2007: 5). The west of Hanigalbat was still under the rule of the local king, Sattuara II. Backed by the Hittites this part of Hanigalbat continued to be a problem for the subsequent Assyrian monarch. This Assyrian king, Salmaneser I (1263-1234 BC), therefore campaigned into this area and demonstrated his rule by the destruction of numerous settlements and the establishment of new administrative centres in these western parts of Hanigalbat. A decline in settlement density in the Balikh valley has also been revealed in various survey projects (Lyon 2000). It is possible that this was the result of the military campaigns of Salmaneser I (Kolinski 2015). After these conquests the Assyrian domination reached to the Euphrates River, and its territory directly bordered the Hittite Empire. It is in this period and context that the *dunnu* of Tell Sabi Abyad was probably established (Akkermans and Wiggermann 2015).

When the son of Salmaneser I, Tukulti-Ninurta I (1233-1197 BC), came to the throne of Assyria the western parts of Hanigalbat were largely consolidated within the Assyrian territory. The administration of this part of the empire was in the hands of a branch of the royal family of Assur. These administrators took over the title 'king of Hanigalbat' and were also known as Grand Vizier or the viceroy of Assyria (Jakob 2003: 59). The capital of this expanse was located at Dur Katlimmu, near the confluence of the Habur with the Euphrates (Kühne 1983). As mentioned above these successive kings of Hanigalbat owned the *dunnu* of Tell Sabi Abyad. The kingship of Hanigalbat, and with it its semi-autonomy, was abolished when the successor to this throne merged it with that of Assur. This king, Ninurta-apil-Ekur, thereby finalized a process of slow and reluctant annexation of the western parts of Hanigalbat into the Assyrian Empire which had started over a century before.

As is clear from the above, the Assyrians did not attempt to fully include Hanigalbat into their territory at the start of their dominion over the area. Western Hanigalbat was first made into a vassal of Assyria. Later, after uprisings in the area, the Assyrian military power was displayed by the destruction of some settlements. Other settlements were however allowed to remain, under the condition of loyalty to the Assyrian crown. Despite the demonstrated Assyrian military superiority over these areas, full territorial control was apparently not aspired. Rather, vassalage was economically more efficient and the areas could function as buffers between Assyria proper and enemy states such as that of the Hittites.

After the ultimate colonization of Hanigalbat by Salmaneser, the region was placed under the rule of a branch of the royal family. Hanigalbat thereby transformed from a state under the indirect rule, or yoke, into part of the core region, or lands, of Assur (Postgate 1992). Similarly, the degree of imperial rule changed from the use of the region as a buffer state, to hegemonic or indirect rule as a vassal state and ultimately culminated into direct territorial rule as an Assyrian province (Parker 2001: 254).

The transformation of a newly conquered area from buffer zone to province was by no means a natural progression of imperial dominance. Control over newly conquered territories was established by means of varying practices (Parker 2003; Düring 2015b: 310) which could range from complete colonization to the creation of a vassal state. In the Balikh area the final strategy included the establishment of new settlements and the introduction of a new population (Lyon 2000; Düring 2015b: 309). However, the southern part of the Balikh valley may still have functioned as a buffer zone, illustrating the flexible approach of the Assyrians with conquered territories (Düring 2015b: 310).

The Assyrian colonization of the Balikh valley was supported by a military presence throughout these lands in the form of chariot groups roaming the countryside, while large army bands were available on dispatch (Jakob 2015: 181). Among the new settlements which were established there, were large private estates (the so-called *dunnu*s) which functioned as agricultural production centres to provide resources for their private owner. Equally, *dunnu*s would service the empire at large by providing agricultural surplus, by functioning as a road station for military bands and caravans and to serve as nodes in the intelligence network. With the Tell Sabi Abyad *dunnu* being no exception, the agricultural lands of these settlements were worked partly by serfs deported from other parts of the empire (Akkermans and Wiggermann 2015).

Survey work which was carried out in the area indicates that most of the Middle Assyrian settlements in the Balikh valley concentrated in the area north of the modern 250 millimetre isohyet line (Lyon 2000). The Tell Sabi Abyad *dunnu* was a large settlement within a dense distribution of newly constructed small hamlets along the Balikh River. One of these hamlets which was probably under control of the Tell Sabi Abyad *dunnu* was located at Khirbet es-Shenef (Bartl 1990). The colonization of this area therefore included a substantial agricultural project. Apparently the establishment and the maintenance of this undertaking required sporadic grain subsidies from the Habur area (Lyon 2000: 101). Additionally, there was a threat of attacks by local tribes. These attacks are clearly attested in the textual sources from Tell Chuera, ancient Harbe (Jakob 2015). This settlement was located in between the Habur and the Balikh and probably functioned as a road station along an important route between these two agricultural areas (Klein 1995). It follows that a considerable effort was made for the annexation and consolidation of the west of Hanigalbat.

The Assyrian hegemony in the west was however short-lived; around the year 1197 BC Tukulti-Ninurta I was assassinated and a period of unrest broke out in the empire. This period coincides with the general decline of societies in the Mediterranean, commonly known as the Sea Peoples period or the Bronze Age Collapse (Sandars 1978; Liverani 1987; Tainter 1988; Cline 2014). Through time the Assyrian Empire fell into decline and the western and northern provinces were lost to various tribes that were previously oppressed (Brown 2013). By 1050 BC the Assyrian Empire had lost much terrain and it was not until 859 BC that the Assyrian Empire regained its strength and earlier extent again (Liverani 1988; van de Mieroop 2004: 226). In later centuries the Assyrian Empire was to become the largest empire of its time, conquering nearly the entire expanse of the Near East, including Mesopotamia, the Levant and Egypt. With these conquests the Neo-Assyrian Empire set the stage for later empires in the same region and can

be viewed as having created the blue print for successive empires such as the Neo-Babylonian and Achaemenid empires (Liverani 1987; Postgate 1992; Liverani 2001; Düring 2015b: 1).

The historical account of Mesopotamia has been described as an alternating sequence of imperial domination and relative independence (Barjamovic 2013). This may be a simplified view of the past as, for local communities at least, life was not only determined by the actions of the imperial powers. Additionally, this historical perspective focusses on the events and themes which were important to the ruling elite. The population which was present in these areas was however not solely directed by the empire. Life in these communities was for a large part not concerned with the topics which appear in the historical documents. By default, the historical perspective is biased towards an elite view of society. It could, therefore, be argued that a different approach is required in order to investigate the impact of imperial strategies on populations in conquered territories. It is believed that the material remains which are analysed in archaeological research offer a perspective which is less biased towards the ruling elite.

As a formal element of Assyrian imperial strategy in a peripheral zone of the empire, the Tell Sabi Abyad *dunnu* can inform us about the way Assyria attempted to impose its rule on local communities and which effects this had. Whereas historical accounts are largely concerned with the elite and the messages they wanted to convey, the material remains provide a perspective of activities and individuals in the *dunnu*, impartial to social or economic standing. This study may therefore be seen as yielding a bottom-up perspective of Assyrian imperialism (Klinkenberg and Lanjouw 2015).

1.6 Research aims and questions

The aim of this research is to better understand the intended function and actual use of the *dunnu* of Tell Sabi Abyad for the local society and in the Assyrian Empire at large. A thorough understanding of its function and use will help in clarifying which imperial strategies were undertaken by the Assyrian Empire in order to control the region. Additionally, it will illustrate how local society was influenced by these imperial practices.

To achieve this the architecture and finds of the site are examined using a comprehensive and systematic methodology. How the finds were deposited and how they relate to activities will play a central role in this research. One of the aims is therefore to set up a framework for the reconstruction of deposition processes in order to reconstruct past activities.

An additional theme is that the activities in the *dunnu* have changed through time and space. Some activities were performed more in one phase than in another and the location of activities within the *dunnu* also changed through time. The diachronic changes within the Level 5 *dunnu* will be charted to reveal the changing role of the *dunnu* in the local society and in the empire at large. The interpretations based on the archaeological evidence from this study will be compared to the information which derives from textual sources. The combined evidence will be used to explain the function and use of the *dunnu*.

In short the main research questions are:

- What was the function and use of the *dunnu*?
  - What activities were carried out where in the *dunnu*?
  - What are the diachronic changes of these activities?
  - How do these activities reflect the position and function of the *dunnu* in the local society and in the Assyrian Empire?
- To what extent is the archaeological evidence representative for reconstructing activities in the past?
  - How do the objects from the Tell Sabi Abyad *dunnu* relate to ancient activities?
  - How does the information from the archaeological evidence differ from the textual sources?

Chapter 2. Methodology

2.1 Introduction

Reconstructing the activities in the Tell Sabi Abyad *dunnu* is achieved through examining the material remains which were left behind at the site in antiquity. This is however not a straightforward exercise; there are three main problems with the interpretation of this large dataset which need to be addressed.

Firstly, the dataset is composed of a daunting 10,000 objects and numerous architectural elements. All these objects and features were part of densely packed stratified deposits in which their relationships are sometimes hard to identify. This large and complex dataset requires a fast and reliable data management system. With this, it should be possible to manage and visualize all finds and features. Also the numerous characteristics of, and relationships between, finds and features should be included in this system.

Secondly, the objects found during the excavation do not always represent the activities which were carried out at the location where they are found. Processes such as the cleaning of houses and natural processes such as decay influence the state, location and presence of objects and features. Also, some activities might have left behind very clear traces while other activities leave no traces at all. The processes which have occurred between the activities in the past and the excavation of the material remains are considered to have *formed* the archaeological record and are consequently known as (site-) formation processes (Ascher 1961; Schiffer 1983). Interpreting material remains requires an accurate reconstruction of these formation processes. The identification of formation processes can subsequently help in understanding the functional relationship between the object and the space in which it was found.

The third issue is one of temporality: in the past a large number of activities may have taken place in a certain location, which together express the changing meaning and function of that space. The number of activities which are consecutively carried out is often higher than the number of phases which are recognized in stratigraphic reconstructions. The periodization then does not reflect the detailed changes which in fact occur in that settlement. These small events which make up an archaeological phase are, however, important for a thorough understanding of the history of a site. Therefore, a method should be in place which records all activities which were carried out in a given space.

The methodology which is presented in this chapter is concerned with systematically investigating the material remains from Tell Sabi Abyad with regard to the problems outlined above. To this end a largely digital workflow is employed which ensures the adequate handling

of large amounts of data (paragraph 2.2). By critically evaluating the formation processes for every deposit the depositional history of all objects is determined, aiding the functional relationship between objects and space (paragraph 2.3). Ultimately, the reconstructed activities are charted in a temporal framework, visualizing the order in which activities were carried out in each area (paragraph 2.4).

2.2 Digital model of the material remains

The archive of the Tell Sabi Abyad excavations consists of large amounts of folders with paper forms and drawings. Also hundreds of A0-sized field drawings were created in the course of the excavations. To ensure that the archive will remain intact in the future and to make the archive more accessible for research a large scale digitization campaign was set up at the start of this study (Klinkenberg 2014). The work included making an inventory of and classifying all the available data. Subsequently every document was provided with a unique file name which included information about the document and processed by a scanning company. The file name was recorded physically on the documents as well as in the digital files to ensure that they could be related with one and another in future if needed. The resulting digital files were archived in a straightforward folder structure which enables users to easily locate certain documents. Additionally, a database was created which contains a wealth of information about the documents. This database can, for instance, be used to search for all object forms which describe figurines. Also it can be used to locate all documents, forms, drawings or photographs, which are related to a certain trench. The entire archive was deposited for long-term online and open access storage at the Data Archiving and Networked Services institute of the Royal Dutch Academy of Science[2].

Interpreting the material remains from Tell Sabi Abyad is undertaken using this digital archive in combination with a three-dimensional GIS (3D GIS). GIS and 3D reconstructions are widely applied in archaeology (Renfrew and Bahn 1991; Burrough and McDonnell 1998; Wheatley and Gillings 2002) and can shed light on many question regarding the spatial distribution of objects or architectural remains. While they are often considered to be separate techniques, in some research like the current, they are explicitly combined (Losier *et al.* 2007; Katsianis *et al.* 2008; Klinkenberg in press). There is a marked difference between 3D reconstructions which are made for publications and reconstructions created for use in conjunction with 3D GIS. Most 3D reconstructions of archaeological remains focus on specific (monumental) buildings from a site, such as a single temple building. Furthermore, most archaeologically inspired 3D models are focussed on the reconstruction of architecture as it may have looked in the past.

The 3D reconstruction of the Tell Sabi Abyad excavations is different as every archaeological feature will be reconstructed as it was found during excavation: in their ruined state. The model is used by Tijm Lanjouw (2016) to reconstruct the construction history of the

[2] The digital Tell Sabi Abyad archive can be found at http://dx.doi.org/10.17026/dans-294-p94z.

dunnu. For this research the digitized 3D model will consist of every architectural element of the *dunnu* with every retrieved object that was found within. Rather than an end product for visualizations, the 3D model will be used as a tool, the basis for the spatial analysis of the find material from the *dunnu*.

The 3D model will be a schematic representation of the original architecture and objects and through a link with databases it is used as a GIS model. The model therefore incorporates the spatial information of location and extent of architectural features and finds but it also includes the associated information from the database. In a practical sense it means that simply clicking on a feature or find results in the display of background information and even the scanned excavation documentation from the digital archive to pop up.

A straightforward data structure was created consisting of Spaces, Features, Deposits and Objects. Spaces are defined by excavated walls and mainly consist of courtyards, rooms and doorways. The spaces are defined as convex spaces, meaning that from every point in the space it should theoretically be possible to see all other points in the same space. Subsequently, the objects within the space are allocated to separate deposits. Commonly, a space will hold one floor layer deposit and several roomfill deposits. Lastly, (semi-) fixed features such as ovens and grinding platforms are defined. These are treated as part of the architecture of the space, separately from the deposits and the finds. The relationship between the spaces, deposits and objects can be described as follows: every space may contain one or more deposits which in turn may contain one or more objects. These relationships are modelled in the database as one-to-many relationships. These relationships also mean that a single object may not be present in several deposits, nor can a deposit be present in more than one room. If in reality an archaeological deposit such as a dump layer is present throughout several consecutive spaces, in the dataset this is described separately for every space as unique deposits. This rigid division of all material remains from the *dunnu* into numbered elements is employed simply in order to create workable, systematic units of analysis. It should not be interpreted as a representation of the division of the *dunnu* architecture in the past. During the analysis, ambiguities in the dataset are described to ensure that the rigid data structure does not interfere with an adequate understanding of the complex material remains. In the case of a large deposit spanning several spaces for instance, while for every space a separate deposit is created in the database, they are described to relate to one and another as one original deposit.

The database was created in Microsoft Access version 2010, the GIS files in ESRI ArcMap version 10. For additional 3D modelling Trimble Sketchup pro version 8 and occasionally Agisoft photomodeler version 1.1 for some photogrammetric models were used. For the 3d visualization of models and excavation data ESRI ArcScene version 10 was used.

2.3 Site formation processes

Reconstructing activities in a certain location based on the objects which were found there is only viable if the objects were indeed used in that space. Unfortunately, this is not often the

case. There are many processes which have an influence on the presence, state and location of objects. For a correct interpretation of the archaeological record it is therefore essential to obtain a thorough understanding of the processes which have ultimately formed the site.

Because of the importance of these site formation processes, they were the subject of scholarly research and debate for decades (Ascher 1961; Schiffer 1972; Wood and Johnson 1978; Binford 1981; Schiffer 1983; Schiffer 1987; Schiffer 1995; LaMotta and Schiffer 1999). These studies often focus on how certain processes blur our view on the past, termed by Rathje and Schiffer (1982) as cultural and natural transforms. In this sense, the archaeological context is an altered representation of the original or 'systemic' context (Rathje and Schiffer 1982: 106). Following this notion one could suggest that it is possible to reach a reconstruction of the *real past* in any site, as long as the formation processes are taken into account.

This position was most vocally critiqued by Binford (1981) who linked this view to a supposed 'Pompeii premise' in archaeology (Ascher 1961: 324; Binford 1981: 199). Binford rejects Schiffers proposals with the notion that if Cultural and Natural transforms simply distort our view of the past, it is presupposed that the original archaeological deposit was of a Pompeii-like nature and quality. Binford states that, rather, the archaeological remains should be regarded as a complex reflection of social structures in the past, and not a time slice of history.

Archaeological remains *are* however a consequence of human behaviour and it is clear that the processes which were described by Schiffer and others are indeed recognizable in the archaeological record. The main problem is that by considering these processes as 'disturbing' or 'altering' the archaeological record, it is assumed that there is a one typical past which is the most important to reconstruct. It is, however, a fallacy to assume that one particular time slice is completely representative of the variety of activities which were carried out in the past. The past should, therefore, not de defined as a series of static moments but as a dynamic process. Consequently, (pre- and post-) depositional processes should perhaps then not be considered to *distort* the archaeology but simply as contributing to the formation of the archaeological remains which are ultimately excavated.

For the current research this means that not only the remains on floor levels are investigated but that all deposits will be analysed for their relation to activities in the *dunnu*. The identification of formation processes, such as modes of deposition, aid in interpreting the discovered artefacts. For many similar excavations (Klein 1995; Bonatz 2013), excavators do point out the diversity of modes of deposition but do not specify a method by which these were recognized and analysed. Many other researchers have attempted to recognize the different manners in which artefacts were deposited. Verhoeven (1999) for instance, discusses all possible ways in which prehistoric contexts at Tell Sabi Abyad may have been formed, but he does not specify this for the individual deposits he has analysed. Others (Otto 2015; Pfälzner 2015) have set up elaborate ways in which to describe the degree to which deposits are considered *in situ*. The structures in the sites in question appear to have been rapidly abandoned, yielding assemblages of objects on floors which were deposited where they were last used (Pfälzner 2001: 47-53; 2013; Otto 2006: 27-29). However, the methods seem less appropriate for the

floor contexts of Tell Sabi Abyad, here it is not as clear how objects were deposited on floors. The rooms were probably slowly abandoned, and used in a large variety of ways during their existence, which means that there is a high chance of palimpsest formation.

For the current study, due to the complex make-up of object assemblages, it was decided to emphasize the qualitative description of the deposits themselves in order to deduce their mode of deposition consistently. Subsequently, based on this mode of deposition of deposits, the manner in which a structure was used and abandoned can be interpreted.

Like many of the mentioned studies, this research is strongly based on the work of Schiffer and others. Hence, the possible modes of depositions and other formation processes are also nearly identical to these previous studies. What is new in this study is that a formalized model of identification of these modes of deposition is applied. This is subsequently used to define the functional relationship between the finds in the deposit and the space they are discovered in. As an example: a collection of objects which have been deposited in a large catastrophe will be particularly representative of the activities which were carried out at that spot. Broken tools which are discarded in a garbage heap however, do not indicate specific activities at that location, save for refuse deposition. Turning this around, by determining the mode of deposition of objects from the excavation, it is possible to determine how the objects relate to the space they are found in.

In the following paragraphs, the different modes of deposition are introduced after which the identifying characteristics of deposits, such as the object content, soil matrix and its location are discussed. The final paragraph considers post depositional processes such as decay and erosion.

2.3.1 Modes of deposition

Most items at archaeological sites are deposited as refuse through the process of discard (Rathje and Schiffer 1982; Hayden and Cannon 1983; Deal 1985). Rathje and Schiffer (1982) observe four types of discard: primary, provisional, secondary and *de facto* refuse deposition (figure 2.1). Primary discard is the process of discarding items directly at the location of use. This might be exemplified by the presence of broken pieces of overfired pottery around the remains of a pottery kiln. In settlements, refuse is often removed from the household areas and deposited in dumps outside the house or settlement. In this case the deposit is termed secondary refuse. In some cases, waste might provisionally be accumulated on a heap inside the house with the intention of, on a later moment in time, discarding the waste elsewhere. These temporary deposits are termed provisional refuse.

In some cases, objects are deposited intentionally, not through discard but for the purpose of retrieving the objects at a later stage or as ritual deposition. This is known as caching. Contexts in which objects seem to have been deposited in votive hoards or as offerings are termed 'ritual caches'. In the case of storage, with the intent of picking up the stored items at a later stage, the caches are termed 'banking caches'. It is assumed that the main difference between these two types of caches may be apparent in their content; in the case of banking caches it is

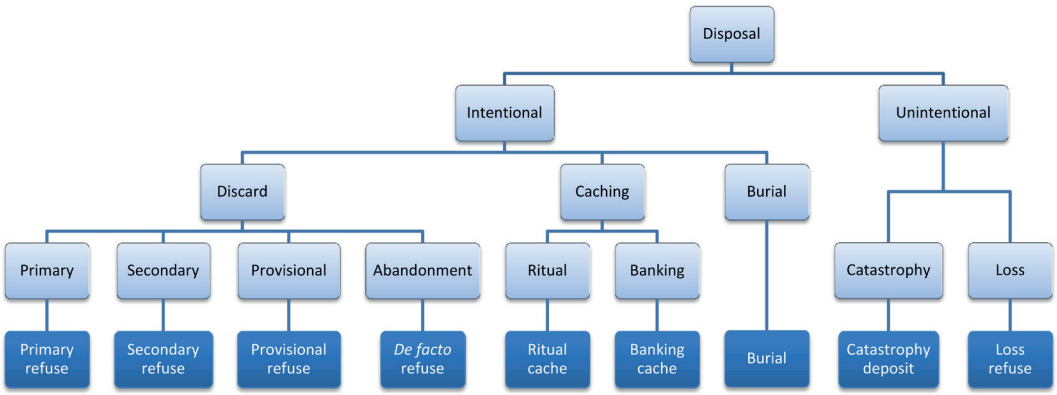


Fig. 2.1: Chart displaying the relationship between different modes of deposition and the resulting deposit types.

more likely to find a homogenous set of items, kept for trade, in an easily retrievable location in a structure which is inhabited or at least owned by the owner of the cache. A typical ritual cache might be considered to contain a smaller, or more varied assemblage of items, particularly placed in a location which is not supposed to be reached or opened again. Typically, there is no functional relation between the objects in the ritual cache and the location they are found in.

A special intentional deposit is in the form of burials. These are recognizable as deposits of human remains in a container, sometimes together with grave goods. Typically, the container, a pit or ceramic jar for instance, does not contain other deposits. When human remains are found among refuse it could be argued that this does not constitute a formal burial.

The term '*de facto* refuse deposition' is used by Rathje and Schiffer (1982) to describe the process of leaving behind items in a structure during abandonment. *De facto* refuse consists of objects which are still (re)usable but are left behind at abandonment. In the case of rapid, sudden abandonment of a settlement, primarily small, valuable items are taken along. If the abandonment is undertaken simply to move the activities to a different settlement nearby, it is likely that even large, heavy items may have been taken along. Clearly, any combination of factors will result in a different, characteristic make-up of the abandoned assemblage (Stevenson 1982; Cameron and Tomka 1993; Montgomery 1993; Inomata and Webb 2003).

De facto refuse may be seen as the final deposit of material at the actual moment of abandonment. The process of abandonment may occur gradually in a settlement however, so while one structure is abandoned, the adjacent one might still be in use. In this situation, the abandoned spaces may be used for different purposes and refuse or other material might end up in the abandoned structure. These items should however not be considered to be *de facto* refuse, as they are not left behind at the moment of abandonment. These objects are deposited through primary or secondary discard, and should be interpreted as such. As the objects from different depositional processes end up in the same context, often on the floor level of a house,

a palimpsest is created. Therefore, during the analysis of floor contexts in Tell Sabi Abyad, the objects are further analysed to distinguish their original mode of deposition.

In addition to intentional discard processes, objects might also be unintentionally deposited in the archaeological record. One of these processes is loss. Loss of objects is only possible and likely depending on the size of the object (it needs to be relatively small) and the properties of the location it is lost in. An object is more likely to get lost on a soft loam floor where it may be trampled in than on a hard plastered floor, and some areas and features such as alleyways and cesspits are likely to become 'artefact traps'. The amount of cleaning which is carried out in a room is also of influence on the probability of losing items, it is easy to spot a lost earring in a clean bathroom but finding your dice on a messy smithy floor is trickier. Since these items which are lost, termed loss refuse, are deposited at the location of use it is likely that there is a clear spatial relation between the object and the activities carried out in this place.

This clear functional relation between deposited objects and the spaces is even more evident for catastrophic deposits. A catastrophic deposit is characterized by a large number of whole objects which form meaningful and logical assemblages, relating to the room or structure they are found in. Unfortunately for archaeologists, these processes occur less frequently and most archaeological deposits consist of intentional discard.

2.3.2 Characteristics of deposits

Several properties of archaeological deposits can be used for the identification of their formation. These are described below. The main characteristics for the deposit as a whole are its location or context, and the variety of objects within the deposit. The location may be quite specific per deposit; a catastrophe deposit will for instance not be likely to end up in a pit. Equally, a banking cache is not likely to be stored on the floor of a house. Likewise, the variety of objects is expected to be low for primary refuse deposits and higher for secondary refuse deposits. This paragraph will discuss the various characteristics which are taken into account when analysing deposits. It should be noted that the variables which are determined below are specific for the situation at Tell Sabi Abyad. The term variety for instance relies heavily on the documentation system employed there. With other variables such as the damage patterns observable within a deposit, it should be clear that this regards only those finds which were recorded as objects, all fragmented ceramic and bone material was not available for this study. Obviously, an approach which would incorporate all finds from a certain context, or even the micro-debris (Rainville 2015) would result in significantly different patterns.

2.3.2.1 Context

Not often explicitly mentioned in earlier publications about the identification of formation processes, the location or context of the deposit is telling of the most likely mode of deposition. Four different context types are recognized for deposits: on top of a floor or surface, in a pit, on a dump or pile and finally in a container. Floor contexts are considered to be those deposits

which are deposited as a flat layer on top of a floor or surface. Usually this is to denote a collection of objects lying on top of a floor before being covered up by later deposits. Often at Tell Sabi Abyad a thin layer of soil is deposited along with these objects of some 5-10 centimetres thickness. Probably this soil was deposited together with the objects, therefore this thin layer of soil is considered to be part of the floor level context.

Deposits inside a pit are most likely the result of deliberate deposition of soil and related objects. A pit is regarded as an out-of-the-way feature, and is therefore a perfect recipient of material which needs to be gotten rid of. The pit feature is however not necessarily dug for the purpose of accumulation of discarded material, an example from the Tell Sabi Abyad *dunnu* is provided by the dry moat which surrounded the level 6 *dunnu*, completely filled with discarded material. Pits may also be used to deposit non-refuse materials as is the case with burials, ritual caches or in the case the intention was to reclaim the material at a later stage, as in banking caches.

A related context is that of a location on dumps or piles. Similar to pits, it is a context related to refuse deposits. However, contrary to pits, it is unlikely for burials and caches to be located on dumps or piles. A common dump layer at Tell Sabi Abyad is that of 'roomfill', deposits of secondary refuse and mudbrick debris in abandoned house structures.

The fourth recognized deposit context is the location inside a container. These containers can range from ceramic jars to a vault in a wall. A ceramic jar can itself be interred in a pit, in this case the jar has a 'pit' context while the content of the jar is considered to have a 'container' context. Objects deposited in a container are considered to have been kept there deliberately, either in an effort to formally bury something (or someone) or to temporarily store objects.

2.3.2.2 Variety

The term variety describes the diversity of material categories in a deposit. These categories are based on the documentation for find processing during field work. The categories therefore are often based on physical properties, but in some cases functional characteristics were used to define an object category. This has resulted in classes which partly overlap, for instance the category 'beads and pendants' contains many stone and metal objects. Furthermore, the selection of the appropriate find category for objects has not been consistent throughout the documentation. These issues suggest that a measure of variety based on these find categories is not a valuable exercise. However, since the categorization of finds was based on observations in the field it is believed that certain patterns might emerge from it. Therefore, a calculation was made of the amount of find categories per deposit, separately for deposits containing one until ten finds and for eleven or more. Subsequently the average and standard deviation was calculated and plotted on a graph (figure 2.2). Afterwards a linear trend line for the average plus one standard deviation and a trend line for the average minus one standard deviation was calculated. These trend lines have subsequently been simplified to give a rounded number for every deposit. These lines, dubbed low average and high average in figure 2.2, indicate the minimum and maximum extent of the average amount of objects for a deposit with a given amount of objects. A low variety for a deposit is considered to lie below the low average line, a high variety above the

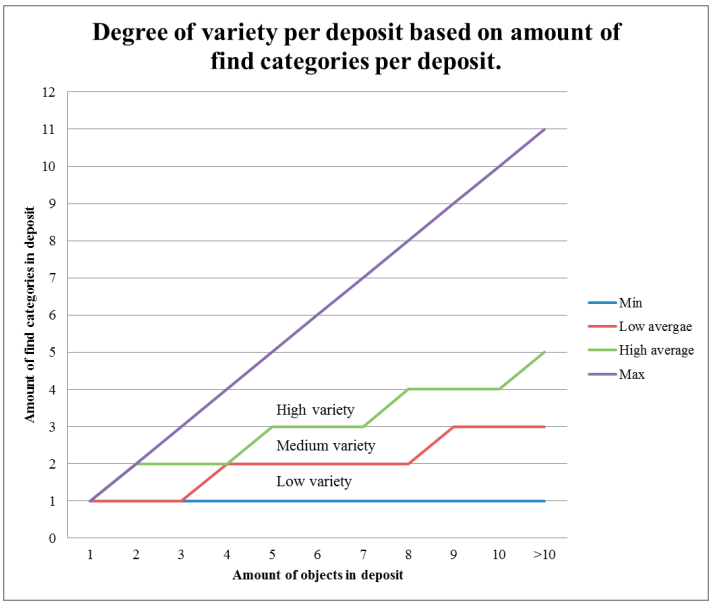


Fig. 2.2: Degree of variety of objects within a deposit.

high average line. A medium variety is considered for deposits with an amount of find categories which is equal to or lies between the two average lines. Despite the many problems concerned with these calculations, it is hoped that large scale patterns will emerge.

2.3.2.3 Structuring

An important characteristic of the composition of a find bearing deposit is the functional relationship between objects. Dubbed by Rathje and Schiffer (1982: 107) as the 'principle of dissociation' and by Schiffer (1983: 685) as 'measurement of disorganization', here the term 'structuring' is used. If all objects in a deposit relate to the same activity, the deposit is regarded to be highly structured. An object can relate to an activity as tool, waste product, raw material, by-product or as end product. An object may relate to many activities at the same time, a ceramic jar is the end product of pottery production but also a tool in food preparation or storage. This makes it difficult to quantify the degree of structuring. High structuring is proposed for deposits in which all objects can be related to one activity. A medium structuring is suggested for two activities and low for more than two. An example of a highly structured deposit could be one containing the discarded material from a production process. This may contain waste products, broken tools and end products. Despite a high variety in material categories, the objects in the deposit are strongly related to each other; it is highly structured. No quantifiable method was devised to examine the degree of structuring. Instead, this deposit attribute will be discussed on a case by case basis.

2.3.2.4 Size

The size of objects in a deposit can be informative of the related depositional process. Items which are lost are by definition small in size while a house floor assemblage with a number of very large items likely represents *de facto* refuse, and not provisional discard (Schiffer 1983: 679). For some objects from Tell Sabi Abyad the exact measurements were noted on object forms, for others unfortunately not, therefore a coarse size classification was set up. Based on the size classification of coarse gravel, cobbles and boulders (ISO 14688), three size classes based on the maximal dimension of objects are defined. Small objects equal to or smaller than two centimetres, medium sized objects have a maximal dimension between two and twenty centimetre and large objects are equal to or larger than twenty centimetre.

2.3.2.5 Use-life

The mode of deposition may also partly be deduced from the use-life stage the objects are in (Schiffer 1983: 681). A categorization was made into raw material, waste products, by-products, new end products and worn end products. For every object their position in their potential use-life is defined. If all objects in a deposit are part of a production process, as raw material or waste or by-products, they are most likely deposited as refuse. If the deposit contains primarily newly produced items, it is more likely that there is another process involved.

2.3.2.6 Damage

Also the physical state of objects is indicative of certain depositional processes. Although most studies dealing with damage patterns on objects are interested in the post-depositional processes (Brain 1981), here the variable is used mainly to deduce the mode of deposition. While fragmentary objects designate a discard process, intact items suggest something else. Three categories are defined: complete, damaged and fragmentary objects. Although it is often hard to deduce the state of objects from the documentation, in general objects are considered complete if there are no fragments missing of the object. Objects which were broken slightly after deposition are also considered complete if it is clear that they were complete at deposition. Objects with some fragments missing but with more than fifty percent of the object preserved are considered to be damaged and objects with less than fifty percent preservation are dubbed fragmentary.

2.3.2.7 Replacement cost

The replacement cost of an object can be an important indicator for its mode of deposition, very 'expensive' items will not be deposited easily whereas inexpensive, common articles can be deposited without a second thought. Although it is hard to speak of 'value' of objects as this is a culturally determined notion, the replacement cost of an object in the past is considered to be related to the availability of the material. A problematic category is that of precious or hard to replace objects made of non-expensive materials. An example is that of a cuneiform tablet which is made from readily available clay but is hard to replace because of the unique information on them. For the Tell Sabi Abyad objects a division into high, medium and low replacement cost is used. A high replacement cost for an object is considered for end products made of the following materials: metal, glass, ivory and (semi) precious stone. Medium is tentatively set for cuneiform tablets, figurines and beads and pendants. A low replacement cost is determined for clay, stone, pottery and waste products.

2.3.2.8 Relation to space

Finally, the relationship between the objects and the functional characteristics of the space they are found in is of importance (LaMotta and Schiffer 1999). In short, a logical relation between a deposit and a space may be a dump of kiln waste in an apparent pottery workshop. An illogical relationship would be inferred for butchers' waste on the floor of the same workshop. An

illogical relationship could indicate that the objects which are deposited have not been used at that same location but were only discarded there. A third relationship is that of intrusive Neolithic material in Late Bronze Age architecture.

2.3.3 Properties of modes of deposition

For this research nine types of deposits are recognized (see above). In this paragraph all types will be discussed with regard to the deposit characteristics described above. This is used to identify the characterization of deposit types which is defined below. Subsequently, these are compared with the find bearing deposits at Tell Sabi Abyad. Matching characteristics are taken to identify matching modes of deposition.

2.3.3.1 Primary refuse

Context: primary refuse is deposited at the location of use, therefore the most likely location of this deposit is on floor levels. As this type of refuse might pile up during deposition, it could be argued that it is found on a heap or pile. A typical example is that of kiln waisters on the floor of a potters workshop.

Variety: primary refuse is considered to be the result of one main activity, the items within this deposit may vary in size and shape but will often be of the same material. Typically the deposit is composed of a large amount of waste material from one production process for instance.

Structuring: although several material categories can be present in the deposit, they will all relate to the same activity, the deposit should therefore be highly structured.

Size: the size of the objects within this type of deposit may vary from very large to very small, depending on the activity they were part of.

Use-life: the objects in this type of deposit are part of a process in this space, it is therefore likely that they constitute of waste- or by-products, or raw material. Also tools on the end of their use-life may be deposited in this type of process.

Damage: it is highly probable that if there are end products present in this deposit, they are damaged. Undamaged end products are more likely to have been taken away to be used.

Replacement cost: as primary refuse items are deliberately discarded they probably do not have a high replacement cost. This is particularly the case for waste- and by-products.

Relation to space: as primary refuse is a consequence of activities in that very space, there should be a logical relation between the architecture and the objects. The room may have been built with a different purpose than for the activity which is denoted by the primary refuse however. In such a case, the architecture should at least not inhibit the activity.

2.3.3.2 Secondary refuse

Context: Secondary refuse is to be found away from the location of use. It is most likely present in out-of-the-way locations, outside the inhabited areas of the settlement. The location of secondary refuse is therefore to be found mostly in pits or on heaps or piles, preferably in uninhabited areas. In the level six *dunnu*, the dry moat surrounding the settlement was recipient of large amounts of secondary refuse, after the moat had apparently lost its defensive function. Floors which are still used are unlikely recipients of secondary refuse. After abandonment however, house structures are often used as locations for this type of deposit.

Variety: this type of deposit may contain a large variety of objects and sediments but may also contain large amounts of similar materials. If a location was considered suitable for secondary refuse disposal, it is likely that many comparable deposits were sequentially deposited on top of each other in this location. As these can be hard to discern from one and another, a palimpsest is created, with a potential large variety of items.

Structuring: Comparable to the variety within a deposit, palimpsests in secondary refuse deposits may result in low structuring. Individual deposits can however be structured, if they are the result of the secondary discard from one activity.

Size: There can be a large variety of sizes of objects in this type of deposit, both very small and very large items may be discarded through secondary discard. Typically due to a heterogeneous makeup of the deposit there should be a large variety in size classes present.

Use-life: Items discarded as secondary refuse are suspected to be of no functional use, therefore they are either part of a production process as waste- or by-products or are at the very end of their use-life. Complete, prime objects are usually not to be expected in this type of deposit.

Damage: Most objects in this deposit which are end products will be broken or fragmented. If there are complete objects within this deposit, they might have been accidentally discarded.

Replacement cost: As secondary refuse is intentionally discarded it is assumed that the replacement cost of the items as they appear in the refuse (broken or worn) is low.

Relation to space: Secondary refuse is deposited outside the area of use. Therefore, the relation between the location of the deposit and the objects should not be logical. It could be expected however that secondary refuse is not carried away further than necessary, so the presence of production waste may indicate that the related production process was located relatively close by.

2.3.3.3 Provisional refuse

Context: Provisional refuse is discarded with the intention of cleaning up at a later stage. Provisional refuse is therefore discarded at the location of use, for instance in a workshop, but is

concentrated on a heap or in a bin in some out-of-the-way location. Often this will be a corner of a room or a bin or sack against a wall. The expected location for this type of refuse is therefore on the floor or in a container.

Variety: provisional refuse is constituted of objects which were used in the room they are deposited in, as a consequence, these objects will be part of the same one or multiple activities and show a low to moderate variety.

Structuring: likewise, the variety of activities represented by the objects depends on the variety of activities which were carried out in the room. Provisional refuse is often the result of a single activity and will show high structuring.

Size: provisional refuse is constituted of items which could be temporarily deposited without being in the way. Therefore the objects are probably usually not very large. As a typical example of provisional refuse, floor sweepings may constitute of very small items indeed.

Use-life: provisional refuse is common in areas of production processes in which a temporary heap of production waste might accumulate. As provisional refuse deposition is an intentional discard process, it is not expected to contain many complete and whole objects.

Damage: As mentioned above, this deposit may consist of damaged and fragmentary items mainly, along with production waste. The deposit will likely not consist of complete end products.

Replacement cost: As provisional refuse consists of waste products, the replacement cost of the objects is expected to be low.

Relation to space: As with primary refuse, the functional relation between the space and the deposit should be logical. Provisional refuse is a direct consequence of the activities which have taken place in a space.

2.3.3.4 De facto *refuse*

Context: The name '*de facto* refuse' is given to the objects which were left in a settlement during abandonment which would normally not have been discarded. The term abandonment stage refuse is also often used to denote this type of deposit with items which apparently were not considered worth the effort to take along. The items have not been deposited through a common discard process but were left behind, which makes them 'in fact' refuse. *De facto* refuse is located on the floors of houses and courtyards, or on roofs.

Variety: *De facto* refuse may consist of a large variety of material categories.

Structuring: The objects which were left behind on floors at abandonment will most likely have been used at that location. This would suggest a high structuring in the assemblage. As many activities may have taken place at a location, this implication is not unambiguous.

Size: Objects in *de facto* refuse deposits can be of all sizes, both small items may not have been cleaned up when abandonment is imminent and very large immobile objects will be left behind because of their size and the effort which is required to take them along.

Use-life: *De facto* refuse may consist of objects in all use-life stages but typically *de facto* refuse can be recognized by the presence of complete and whole items which would normally not be discarded.

Damage: Objects within a *de facto* refuse deposit may be damaged slightly but typically this type of deposit contains a high number of complete and undamaged items at deposition.

Replacement cost: Objects within *de facto* refuse have a replacement cost which is high enough for them not to be discarded in a normal situation but not so high that they are taken along at abandonment. The decision to leave some items in the structure and take others along at abandonment is strongly tied to the mode of abandonment, consequently the average value of objects in the deposit will depend on and be indicative of this mode of abandonment.

Relation to space: *De facto* refuse is considered to be left behind on the location of use, therefore, the relation between the artefacts and the activities which were carried out in the structure should be logical.

2.3.3.5 Ritual cache

Context: Ritual caches are intentional deposits of items in an offering. Typically the objects are not supposed to be retrieved at a later stage. In the process of caching, objects are placed in a location such as a container or in or under some architectural element such as a floor, a doorstep or a wall.

Variety: The objects in a ritual deposit do not necessarily represent one set of object types, often they are considered to have been valuable items of any material category.

Structuring: Items in a ritual cache relate to one and another particularly because they are deposited together in a ritual cache, no techno-functional relationship between them has to exist.

Size: The size of the objects stored in ritual caches is depending of the size of the cache. It is assumed that most ritual offerings will be quite small.

Use-life: Ritual caches are typically deposits with valuable or meaningful objects, appropriately it is not likely to find raw material or waste- or by-products from a production process in them.

Damage: In the case of an offering of valuables, the deposited objects are probably not exhausted items, but some damage may be present. Particularly, in some situations items may have been deliberately broken as a part of the deposition process.

Replacement cost: The replacement cost of the items which are deposited in a ritual cache will in some cases be very high. In other cases, such as with clay figurines, not a monetary value but a certain meaning of the objects was deemed important. The replacement cost of ritually deposited items may therefore vary.

Relation to space: The relation between the objects found in a ritual cache and the space it is located in will often be meaningful; it is a deliberate deposition in a certain location. The strictly functional relationship between the items in the deposit and the activities which were carried out in the structure it is located in may however seem illogical.

2.3.3.6 Banking cache

Context: 'Banking caches' are deposits of valuables which are supposed to be retrieved at a later stage. The items are stored in a location which is accessible but typically not easily so. The presence of banking caches in archaeological contexts implies that there was a reason the owner of the objects was not able to retrieve his or her valuables. Typical locations are in a container such as a wall vault or sometimes in a pit.

Variety: Typically, a banking cache will contain a selection of items which are owned by one person and relate to one type of activity. The variety of material categories is therefore probably low.

Structuring: The items in a banking cache are often part of a single person or activity so the structuring is often high. Banking caches may also be used to store a variety of valuables, resulting in a slightly lower structuring.

Size: Because of their very nature, banking caches will consist of small or medium sized items with high replacement cost.

Use-life: Banking caches may contain raw material, such as metal ingots or unworked precious stones, but can also contain finished products.

Damage: A banking cache may contain damaged or fragmented items, provided they are to be used as raw material.

Replacement cost: As mentioned above, the items placed in a banking cache will have a high replacement cost.

Relation to space: As the banking cache is supposed to be opened by the owner only, it is likely that it is located in a space which is inhabited or used by the owner. In this sense, a logical relation between the space and the items in the cache may be expected. However, the objects might be used in a different location and the location choice for the cache may be depending on other factors too.

2.3.3.7 Catastrophe deposit

Context: The objects deposited during a large catastrophe such as an earthquake or volcanic eruption are assumed to have been left at the location of use, consequently they are usually located on floor levels. If the objects have fallen from shelves or higher storeys they may be located slightly higher than the floor or within collapse layers.

Variety: The deposit should contain objects relating particularly to the activities which are carried out at the moment the catastrophe struck. All types of artefacts should be trapped in the deposit, relating to the activities which took place in the location of deposition.

Structuring: Catastrophe deposits should be highly structured because they were deposited at the location they were used.

Size: In a catastrophe deposit, objects of all sizes are trapped. Catastrophe deposits are characterized by the fact that no selection of size classes has occurred.

Use-life: As with other categories of artefact variability in this type of deposit, objects of all stages of use-life may be present in catastrophe deposits.

Damage: Catastrophe deposits will contain a relatively high amount of whole or reconstructable objects.

Replacement cost: Objects of all values will have been trapped in this type of deposit.

Relation to space: Objects from catastrophe deposits are likely to relate directly to the location they are present in. Catastrophe deposits may even indicate unlikely activities in a room because of the strong *in situ* character of the objects.

2.3.3.8 Loss refuse

Context: Small items which may be lost are often lost in what is known as 'artefact traps' (Schiffer 1987). This includes corners of rooms, cracks in floors or a soft floor in which artefacts may be trampled. Loss refuse may be considered to occur among other deposits as well as it is for instance accidentally discarded with garbage or in spaces such as narrow alleyways or cesspits.

Variety: The amount of loss refuse in one location is assumed to be very small but the few items in one deposit may have been deposited at different moments in time, making it possible for a large variety of objects and related activities to be represented.

Size: items which were lost are almost by definition small. Also large items can be lost, but in contexts from which they are difficult to reclaim such as wells or deep pits.

Use-life: lost objects may be from any stage of use-life, whether an object was lost might however not be clear if it is a low-value waste product; it could be simply left there. The designation loss refuse is commonly restricted to those items which are considered worth retrieving.

Damage: Objects which were lost are often small and valuable, it is unlikely they are damaged.

Replacement cost: In the case of loss, the value of the item does not make it more or less likely to get lost. In fact, one would invest more effort into retrieving a highly valued item than for a cheap object. The designation of loss refuse is however restricted to those objects of which it is likely they have accidentally been deposited; in the case of a cheap object it could be argued it was deliberately left behind. So while items of all values may have been lost, it is most likely apparent for items of high value.

Relation to space: As loss refuse was deposited unintentionally, it is assumed that they indicate the activities in a certain space well.

2.3.3.9 Burial

Context: human or animal burials are usually located in pits or containers such as ceramic jars. Objects which are deposited in conjunction with a burial are therefore also deposited in a pit or container. If human or animal remains are located on a heap or pile or on a surface, it is likely a different process than burial was responsible for the deposition. The combination of two characteristics, the presence of human or animal remains in the context of a pit or container are therefore the most important to designate a deposit as burial.

Variety: objects within burials may vary in material categories.

Size: the variety in size classes may equally be high, both very large and very small items may be included in the deposit.

Use-life: typically, items which are interred with an individual are foodstuffs or end products, although this is not a strict distinction.

Damage: objects in a burial are usually not damaged or fragmented.

Replacement cost: items in a burial deposit were deemed worthy to accompany an individual in death, this may range from foodstuffs in ceramics to precious jewellery. The replacement cost of these objects may therefore vary considerably.

Relation to space: burials may be located inside and outside of houses, both in abandoned and inhabited areas. In some cases burials may be part of a large cemetery while in other cases a solitary burial is found.

2.3.3.10 Probability index

Table 2.1 summarizes the deposit description above, by denoting the probability of particular characteristics of deposits to occur. The probability for primary refuse to be located in a pit for instance is very low, and is denoted with the number 0 ('impossible'). It is highly probable that primary refuse is located on a floor, hence the number 3 – probable. In this sense, for every deposit type a signature composition of characteristics is obtained. Turning this around, when investigating a certain deposit, its characteristics will identify its most likely related mode of deposition. If a deposit is located on a floor level for instance, it is likely to be either primary, provisional or *de facto* refuse, or the result of a catastrophe. It is less likely that the deposit is constituted of secondary refuse or the result of caching. Investigating all characteristics of the deposit will reveal its most likely mode of deposition. This index is the basis for all deposit analyses in the following chapter. In many cases the characteristics described here appear to correctly identify associated modes of deposition. In several other cases however, the interpretation of the mode of deposition was contradicted by the deposit characteristics. Often these conflicting interpretations were the result of additional evidence such as photographs or information retrieved from the field diary.

2.3.4 Post-depositional processes

After material remains of human activity have been deposited at a certain site, they are subject to various cultural and non-cultural processes, so-called post-depositional processes. The main natural processes which can be of influence are structural collapse, erosion, decay and sedimentation. Cultural processes are earth movement processes such as digging of pits and reclamation activities such as pothunting and scavenging. Every process has a specific and particular influence on the material remains. Large scale erosion for instance may cut away half a tell site without differentiating between different deposits. In contrast, 'pothunting' is a very selective process, solely aimed at retrieving valuable artefacts from a site (Wood and Johnson 1978; Rosen 1986; Schiffer 1987). Every type of process affects the site either by adding, altering or removing artefacts from the site. In order to reconstruct activities at a certain location, it is vital to understand which of these processes were at play and what their influence was. For this study, identifying the presence and influence of post-depositional processes is achieved by looking at their specific indicators described below.

2.3.4.1 Structural collapse

Structural collapse is the process in which parts of a house collapse due to decay and lack of upkeep. In fact, this process is composed of a sequence of processes. Typically, for mudbrick houses such as at the Tell Sabi Abyad *dunnu*, the sequence of collapse can be described as follows: after a building is abandoned and left to deteriorate, firstly the roof and wall plaster are affected by wind and rain. Walls erode on top and on the outside, resulting in deposits of loam on the ground against the walls (McIntosh 1974; Friesem *et al.* 2011; 2014)it is desirable to find ethnographic analogies to throw light upon processes of decay and the subsequent deploy-

legend	
0	*impossible*
1	*improbable*
2	*possible*
3	*probable*
4	*required*

	context				variety			struc-turing			size			use-life				damage			replace-ment cost			rela-tion to space	
	floor	pit	dump/pile	container	high	medium	low	high	medium	low	large	med	small	raw material	waste product	by-product	new product	whole	damaged	fragmentary	high	medium	low	logical	unlogical
Primary refuse	3	0	1	0	1	2	3	4	2	0	2	2	2	3	3	3	0	0	2	2	1	1	3	2	1
Secondary refuse	1	3	3	1	2	2	2	3	2	1	2	3	3	3	3	3	0	0	3	3	1	2	3	1	3
Provisional refuse	3	1	1	3	0	2	3	4	2	1	0	2	3	3	3	3	0	0	3	3	0	1	3	3	1
De facto refuse	3	1	1	0	2	3	3	2	3	2	3	3	3	2	2	2	3	3	3	2	2	3	3	2	0
Ritual cache	1	2	1	3	1	2	3	3	3	2	1	2	3	1	0	0	3	3	2	1	3	2	1	0	3
Banking cache	1	2	1	3	0	1	3	3	3	2	0	2	3	1	0	0	3	3	1	0	3	2	0	2	3
Catastrophe deposit	3	0	0	0	0	2	2	3	2	2	2	2	2	2	2	2	3	2	2	0	2	2	2	2	0
Loss refuse	2	0	0	0	2	2	2	2	2	2	0	0	4	0	0	0	3	2	2	0	2	2	0	2	0

Table 2.1: Probability index of characteristics of deposits and the objects therein. The numbers indicate the probability of a characteristic to be related to a particular deposit type.

ment of altered material during all phases of deterioration, and to provide any indirect clues to the recognition of former walls. Two approaches are followed, taphonomy and ethnographic analogy. Taphonomy (a term developed in palaeontology. Particularly during this initial deposition of wall loam, natural aeolian sediments such as sand may be deposited as well. On the inside of the structure, roof material collapses onto the floor. If there are objects present on top of the roof (or second storey) these will collapse inward at this stage as well. If the roof material is largely composed of organic material, the objects which fall in may be perceived as being located on top of the floor. Objects trapped inside mudbricks of the walls may also end up on floors during collapse (LaMotta and Schiffer 1999: 25).

If the roof was taken off before abandonment, or in the case of an unroofed structure, the sedimentation of wall loam and aeolian deposits will also be present on the inside of the structure and obviously no roofing material will collapse on the floor. Often post-abandonment, the structure was used as garbage dump, resulting in a large amount of objects recorded for these layers (Hayden and Cannon 1983).

Next, large parts of walls collapse into and around the building. This is either due to a further deterioration of wall structure and therefore constitutes a natural phenomenon or is part of the renovation of the structure. In the last case, the badly eroded upper parts of walls are demolished in order to rebuild them on the structurally sound lower parts. The resulting deposits are constituted of mudbrick debris in loam with a small amount of finds, commonly none are present. These deposits are present against the walls, which creates a depression in the middle of the room. If the structure is renovated during or shortly after the deposition of mudbrick debris, this depression may be deliberately filled up to level the surface, resulting in a homogeneous layer of material. If the structure is left open for a longer period of time, refuse

and natural sediments may accumulate in this depression. At Tell Sabi Abyad often simple hearth structures are found throughout these deposits, suggesting that these spaces were often used for a variety of activities.

2.3.4.2 Erosion

Erosion of material remains can be visible in the archaeological record as an abrupt discontinuation of features or deposits. Erosion can be caused by (rain) water or wind, eroding large parts of material remains, often in the shape of a gully or slope (Schiffer 1987; Goldberg and Macphail 2006). Additionally, erosion can take place through man-made sewers or channels, this usually has a smaller effect on the material remains. Erosion commonly affects softer materials such as clay and sand more than harder materials such as stone. Erosion may also be present as a selective process, for instance depleting a surface of clay material and leaving larger stones behind. The resulting surface may be erroneously interpreted as a pebble floor for instance. At Tell Sabi Abyad large scale erosion was observed particularly on the south side of the hill (Brüning and Plug 2016). Large parts of the Late Bronze Age architecture were eroded here, limiting our knowledge of the extent of the level 3 and 4 *dunnu.*

2.3.4.3 Sedimentation

As sediments and objects are takes away by erosion, these are subsequently deposited somewhere else. Additionally, wind and rain bring other sediments to the site, depositing these among the cultural deposits. These natural sediments often cover archaeological remains and thereby protect them from other processes (LaMotta and Schiffer 1999; Goldberg and Macphail 2006). Sedimentation of eroded find-bearing material on the other hand complicates archaeological analysis by creating 'false features'. Deposits which are the result of this process can be recognized by several characteristics. Firstly the location of the deposit at the end of an erosional feature such as the bottom of a slope may be indicative. Also, secondly, the composition and spatial distribution of objects within the deposit can indicate the influence of a natural process on the deposit. Clustering or sorting of objects of a particular size class for instance can indicate the influence of water transport. Thirdly, the matrix in which the objects are present is indicative of the processes involved; a pebble layer can hardly have been blown in.

2.3.4.4 Decay

Here, the term decay is used to denote any process in which an object is altered or eradicated through biological or chemical decomposition. The processes of decay are mostly of influence on organic materials such as wood and textiles (Gillis and Nosch 2007) but also glass and metal objects are subject to extensive decay through oxidation (Fagan 1996: 466-7; Smith 2003: 94). Other materials such as ceramic and stone are markedly less affected by these processes, creating a strong bias in the archaeological record towards them (Rathje and Schiffer 1982). Table 2.2 lists the degree to which material categories at Tell Sabi Abyad were affected.

Material	Preservation at Tell Sabi Abyad
Unbaked clay	Objects made in unbaked clay are softer and therefore more sensitive to decay than baked clay, pottery. However, at Tell Sabi Abyad many objects of unbaked clay have been found, indicating that these have not been affected much by decay.
Metal	Metal objects have been largely preserved at Tell Sabi Abyad, although in a corroded state. Most iron objects are heavily rusted and bronzes are commonly green oxidized and show traces of corrosion. Thin bronzes are often broken into segments due to corrosion (Greco 1999).
Glass	The few glass fragments from Late Bronze Age deposits at Tell Sabi Abyad have been corroded slightly, resulting in an iridescent patina on most fragments. The overall state of the fragments indicates that they have not been subject to severe decay.
Bone, ivory and shell	Bone, ivory and shell objects have been preserved well at Tell Sabi Abyad. The many objects made from these materials have been recovered in an undamaged state.
Wood	Only in a charred state has wood been preserved among the material remains of the *dunnu*. It should be assumed that a large part of the original tool assemblage was constructed of wood.
Wicker	Like wood, all non-charred plant remains have been decomposed. Therefore all basketry from the site has decayed and has only been attested for as imprint in other materials (see Berghuijs 2013 for Neolithic examples from Tell Sabi Abyad).
Textile	All textiles at Tell Sabi Abyad have also decayed. Remains of these have only been found as imprint on other materials (Berghuijs 2013).
Seeds	Charred macrobotanical remains have been preserved very well (Fantone 2016).
Pollen	No pollen samples have been obtained during fieldwork.

Table 2.2: Degree of preservation of material categories at Late Bronze Age Tell Sabi Abyad.

2.3.4.5 Scavenging

Two processes of reclamation are observed at Tell Sabi Abyad, scavenging and pothunting. Scavenging is the process in which previously deposited objects are picked up from the surface and used in a new activity. If at abandonment of a structure many objects are left behind, it may be expected that useful objects were reclaimed, thereby depleting the assemblage from this structure.

2.3.4.6 Pothunting

A process prominent in modern times, pothunting aims at retrieving valuable items from an ancient site for antiquarian reasons. Tell-tale traces of pothunting include the presence of pits through ancient burials and a conspicuous lack of valuables where these are expected. As far as it can be reconstructed, at Tell Sabi Abyad there is no evidence for the occurrence of this process.

2.3.4.7 Earth movement

Through the digging of pits, levelling of surfaces for floors and the production of mudbrick building material, older deposits, objects and architectural remains are transported and transformed. These processes of earth movement can thoroughly alter the objects assemblage of a location. At Tell Sabi Abyad many examples of these processes are visible. Digging the large dry moat around the level 6 *dunnu* has cut away a large portion of the underlying Neolithic remains, which was either used to create new mudbricks or was deposited somewhere else.

Often, Neolithic objects were discovered amongst the Late Bronze Age remains, these objects probably originate from mudbricks made of Neolithic deposits. In many abandoned structures a layer of debris was deposited in order to level the surface for a new floor. The objects which are part of these deposits are thereby also deposited in this room.

2.3.5 Problems of this approach

The deposit description and the probability index described above should not be considered as a straightforward formula by which a mode of deposition can be unambiguously determined. There are four main problems with this approach which need to be taken into account.

Problem 1: the deposit description focusses on the object content and does not take into account other content of deposits such as the soil matrix and non-object items such as mudbricks. A large amount of mudbrick debris may for instance suggest that the deposit is largely made up of demolition material, secondarily deposited. If there is a large amount of burnt material contained in the matrix, such as charcoal and burnt seeds, and the registered objects within are not burned, the deposit has most likely been deposited secondarily. In the overall description of deposits in this research, the matrix is therefore also described and taken into account during interpretation.

Problem 2: during excavation, not all artefacts were registered as objects. Loose shards and bones for instance were collected in buckets and are not available for this study. In some cases pottery vessels were reconstructed after excavation by refitting the shards. These vessels could unfortunately not be included in this study as their exact location has not been documented and it proved difficult to add these to the dataset used in this study. This has a major impact on the recorded objects content of a deposit. While a floor of a house may have been completely covered with ceramics, if there were no obviously complete jars or pots present, none were registered as objects. The object content of this deposit would therefore falsely be considered to be lacking in pottery vessels. Particularly for floor level deposits this might severely influence interpretation. Therefore, for these deposits, details from the field diaries and photographs are also included in analysis. Commonly the presence of large amounts of pottery or bones is included in the matrix description.

Problem 3: the probability index is a rigidly numbered schema, not representing a realistic variety of the composition of deposits. Undoubtedly, some deposits will not adhere to the rules set out above. Therefore, the conclusions brought forward from this analysis should be taken cautiously. In some cases the final interpretation of a deposit may in fact contradict the suggestions made by the probability index, but this will be supported by sufficient argumentation.

Problem 4: a major issue for interpretation of modes of deposition is that some deposits are in fact composed of several different deposits and form a so-called palimpsest. Particularly on floors and other surfaces, many separate processes may have been at work, depositing artefacts and other items. An example of a palimpsest is that of an abandoned house floor littered

with large, heavy objects and other items which would normally not be discarded - typical abandonment stage refuse. After abandonment, this very same floor may be used to discard other objects on, for instance by the people of a neighbouring house. As these objects are mixed on the floor the composition of the floor level deposit will not, or falsely, be representative of a certain mode of deposition. In reality, every floor level assemblage may be considered to be the result of several depositional processes. Therefore an effort is taken during the analysis of these deposits to unravel them into possible separate deposits. Four approaches are used in this process. Firstly, the spatial distribution of objects is observed to extract any clusters of objects or object categories. The spatial analysis is carried out using the 3D GIS with which patterns in vertical distribution can be determined. Secondly, object characteristics such as size and damage are investigated to observe any patterning. Thirdly, objects are compared to functional characteristics of the space they are found in, perhaps some objects clearly relate to the space while others are obviously intrusive. Lastly, evidence for post depositional processes on objects is investigated for patterning. In some cases, a hiatus in deposition may be evidenced by a layer of dust or dirt accreted on some objects. Other objects, lacking this accretion, will have been deposited later. Unfortunately, in most cases, this strict disentanglement of a floor level deposit is not feasible. If some objects seem likely to have belonged to a different process than the ascribed mode of deposition of the deposit it belongs to, this will of course be taken into account during interpretation.

2.4 The "Sequence of Events" approach

The historical periodization of the *dunnu* (Akkermans and Wiggermann 2015) originally consisted of four main Assyrian phases, levels 6, 5, 4 and 3. The revised chronology (Brüning and Plug 2016) is slightly extended but still is comprised of several consecutive phases which cover the entire site. In their analysis of the stratigraphy, Brüning and Plug have allocated every stratum (a single use phase or construction event which is recognized in one trench) to certain Levels. In many cases multiple strata were allocated to a single Level. It follows that in some cases during the course of one Level, several actual use phases were attested in a building. Consequently there is a larger variability and more complex make up of activities identifiable in the archaeological record than is suggested by the periodization.

During one Level many different activities may have been carried out in a building. This makes it hard to speak of a single or 'main' function of the building during this Level. Additionally, the changes in use and function of rooms and courtyards do not necessarily correspond to the general periodization, there could be continuity of use from one phase to another while change is implied by the subdivision. Periodization of archaeological remains is a helpful tool in describing the complex succession of strata but it inevitably generalizes the very data it attempts to clarify.

One way of avoiding the generalization of the entire settlement is by examining smaller elements such as single houses. This was performed in a large number of cases under the theoretical umbrella of what is known as household archaeology. Household archaeology

(Allison 1999; Müller 2015) was coined in 1982 by Wilk and Rathje and was aimed at focussing on "the smallest and most abundant activity group" (Wilk and Rathje 1982: 618), the household. Although the intention was mainly to reach a better understanding of the social processes underlying the organisation of the house, inadvertently many household studies have also for a large part sidestepped the problem of non-contemporaneity and diachronic dynamics. Because of the small scale of the investigated unit, the chronological order of the related archaeological deposits is much less problematic (Arnold 1989; Ault and Nevett 1999; Müller 2015). It should be noted however that in fact every single deposit is the product of several activities and that no excavation has yielded a context which is truly frozen in time (Allison 1999: 12).

In the Tell Sabi Abyad *dunnu* it is problematic to apply household approaches which focus on the characterization of single households or socio-economic units (Wilk and Rathje 1982; Allison 1999; Müller 2015). The settlement was used in official as well as residential ways, not to mention the specialized production areas. The settlement was constituted of a constantly changing structure and layout of rooms and corridors. Equally, the function and use of these areas was prone to continuous reappropriation. Additionally, the *dunnu* was not abandoned in great haste, leading to a variety of complex archaeological deposits on the house floors. Whereas many household archaeology, or activity area, studies focus on sites with nearly intact house floor contexts from rapidly abandoned settlements (see for instance Allison 1999, Pfälzner 2001 and Müller 2006), in this research the analyses are focussed on more scant evidence. Ideal models of residential space such as the case with the Bronze Age Mesopotamian houses at Tell Bazi (Otto 2006; Otto 2015) cannot be recognized in the *dunnu* as a whole. Certain structures, such as the monumental residence, do lend themselves for a characterization of this kind but other structures in the settlement are incomparable in layout and probable function. As a method for distinguishing function and use on a small scale, activity area analysis, with its focus on repeated, formal use of certain areas, relies heavily on undisturbed contexts (Pfälzner 2001; 2013: 36). These ideal contexts are not available in the *dunnu* of Tell Sabi Abyad. Analysing the *dunnu* as a whole and the individual contexts within therefore requires a different approach. This is why the *dunnu* is analysed on an even smaller scale, using every room and doorway as separate spatial units, termed spaces. In the text however, these spaces are grouped into 'areas'. Each area may be considered a group of spaces which have some functional or spatial relationship. However, this grouping into areas is merely created for the sake of subdividing the paragraphs, they do not necessarily represent a functional spatial division in the past, although in many cases they might have.

In each space the archaeological evidence is analysed to chart the activities which were carried out there in the past. All activities and processes which have occurred are recorded as 'events', which are subsequently visualized in a flow chart, a so-called 'Sequence of Events' (figure 2.3). This Sequence of Events includes all events which can be derived from archaeological evidence and displays the chronological order in which they must have occurred. Additionally, it includes the related feature names and deposit numbers. These are also indicated in the text and on overview plots. By linking the sequences from various spaces, a comprehensive overview is offered of the events which have taken place in an area. In a sense it comprises of a 'Harris matrix of events'.

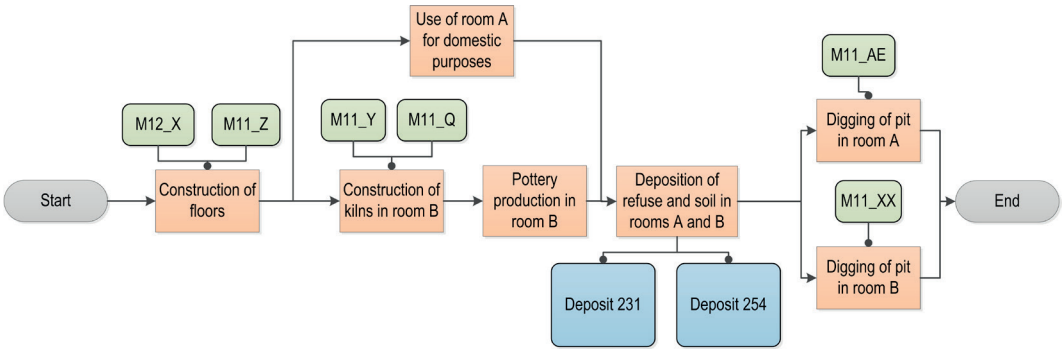


Fig. 2.3: A Sequence of Events model of two fictional rooms. Orange rectangles indicate events which have occurred in a certain space such as the construction of a floor. The green smaller rounded rectangles connected to the top of events indicate the related trench and feature name. M12_X for instance concerns feature X from trench M12. The large blue rounded rectangles connected to the bottom of events indicate the related deposit numbers.

2.5 Conclusion

The methodology described in this chapter was set up to ensure a systematic and consistent interpretation of the archaeological remains of the Tell Sabi Abyad *dunnu*. Three consecutive steps are taken in this research: digitizing, reconstructing (post-) depositional processes, and the setting up of a detailed Sequence of Events. The digitization ensures that all finds and architectural remains are included in the dataset. The reconstruction of the processes such as loss and discard which have caused and influenced the deposition of objects and architecture helps in understanding how they should be used in the reconstruction of past activities. Finally the construction of the Sequence of Events is crucial to obtain a thorough understanding of the variety of activities which were carried out in the *dunnu* through time.

It should be emphasized however that the methodology is strongly dependant on the data which are used. If, for any reason, finds have not been recorded as objects they will not have been digitized, and therefore also not used in the consecutive steps. In the analyses in the following chapter therefore, the outcome of the methodology described above is complemented with photographs, field diaries and even common sense in order to achieve a comprehensive interpretation of activity patterns. In the ensuing chapter (chapter 4) the methodology will be evaluated on the basis of the analysis results.

Chapter 3.
Results

3.1 Introduction

This chapter deals with the analysis of finds and architectural remains from the Tell Sabi Abyad *dunnu* using the methodology set out in the previous chapter. Due to time restrictions for the research it was not possible to include all Late Bronze Age phases and all material remains from the site in this study. A subset of the data was therefore selected. As the spatial extent for the research it was decided to analyse all spaces within the outer *dunnu* wall (figure 3.1). This was done because it comprises a coherent spatial unit according to the architectural layout of the *dunnu*. Also it was believed that these spaces would yield a representative selection of data about the function and use of the *dunnu*. As a temporal framework for this study it was decided to focus on Level 5 (from the original periodization, see paragraph 1.3). Unlike the preceding and succeeding phases, Level 5 was clearly recognized in every trench of the site and has yielded abundant finds and architectural remains. Additionally, it was clear from the outset of this research that the *dunnu* both flourished and deteriorated during this Level. It was therefore believed that this would yield a comprehensive view of the changing function and use of the settlement at the end of its fully functioning life span. From the analyses described below it is indeed clear that within the relatively short time-span which is discussed, a large variety of activities were carried out, signalling a constantly changing use of the *dunnu*.

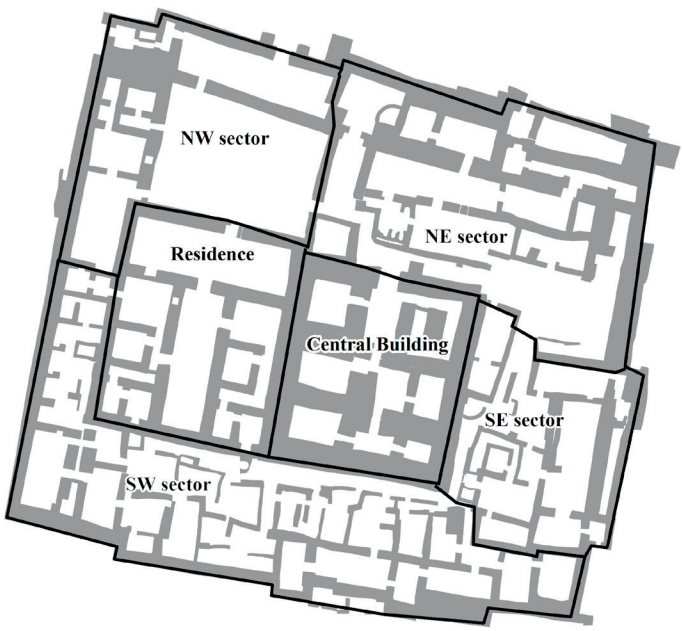


Fig. 3.1: The architecture of the Tell Sabi Abyad *dunnu* with indication of the location of the sectors within the walls.

For the sake of clarity the architectural layout of the *dunnu* was divided into several sectors. These sectors have in their turn been subdivided into separate areas (figure 3.1 and 3.2 below). This subdivision of the architecture in sectors

and areas was used in all studies which were undertaken in the framework of the 'Consolidating Empire' project (Brüning and Plug 2016; Düring 2016; Fantone 2016; Lanjouw 2016). The extent of the sectors was determined by the architectural layout and functional characteristics of the general areas. It was for instance decided to group together all spaces in the south-west which were all in some way related to food preparation. Additionally, the spaces are well connected to one and another but are somewhat isolated from the rest of the *dunnu*. Therefore, as the spaces seemed to form a coherent whole, they were defined as the south-western sector.

Within the outer *dunnu* wall six sectors were defined. Four of these are located in the corners of the *dunnu* (north-west, north-east, south-west and south-east) and two are defined as the two structures which stood in the centre of the settlement (the residence and the central building). The further subdivision of these sectors into areas was also achieved by looking at the functional and architectural relationship between spaces. The areas are designated with numbers, for instance 'area 1 of the SW sector'.

Within areas one last subdivision was applied. To be able to easily refer to individual spaces (rooms or courtyards) in areas, they were assigned a letter in alphabetical order (see for instance figure 3.3 below). This system was adopted from the work of Brüning and Plug (2016). In their work, naming of spaces commenced with the architectural layout of level 6 of the *dunnu*. After a significant change in architectural layout, new names were assigned to newly constructed spaces. Therefore the names of spaces in the Level 5 architecture do not always start with the letter 'A'. In area 5 of the NE sector for instance, rooms 'A', 'B' and 'C' were present in the preceding Level 6 but not anymore in Level 5. The spaces which are discussed in the current study are therefore labelled with the letters 'D' until 'H'. Although this may seem confusing in the light of the current study, it ensures that the interpretations from the different publications can be easily compared.

A notable exception to this subdivision is the central building in which every room was assigned an area number (see paragraph 3.5). This numbering corresponds with earlier publications about this structure (Akkermans *et al.* 1993; Klinkenberg and Lanjouw 2015) and is therefore maintained.

The discussion below follows the same subdivision into sectors and areas. Each sector is introduced, and all areas within are discussed in separate paragraphs. For each area a plan is presented which includes the space numbering, all relevant features and the floor level finds which are discussed in the text. Additionally, for every area a 'Sequence of Events' model is presented which illustrates the chronological order in which events have taken place in that area. This model also includes references to features such as ovens and bins and deposits from that area (see paragraph 2.4). Where relevant these feature names and deposit numbers are indicated in the text between brackets, for instance 'oven AM' and 'deposit 27'.

A general trend which is observable in the discussion below is that the architectural layout and the construction of features are the most informative lines of evidence for the reconstruction of the earliest use and the intended function of spaces. Most objects, even those from

floors, were found in refuse contexts or were deposited during abandonment. The objects therefore are more related to the later use of the areas under discussion. This is clearly illustrated by the 'Sequence of Events' models in which the features are connected to early events and most of the deposits to the last events.

3.2 The north-western sector

3.2.1 Introduction

The north-western sector of the level 5 *dunnu* is composed of four areas (figure 3.2). These comprise of the main entrance to the *dunnu* together with a toilet structure (4), a large courtyard (2), a series of spaces known as "Tammitte's office" (3) and two spaces with a less formal function (1). The sector could be entered from outside the *dunnu* wall through a doorway in the north of area 4. This doorway probably served as the main gate into the *dunnu* during this phase (see below). From the large courtyard one passageway led to the north-eastern sector and to the central building. Also the monumental residence was reached from this courtyard. In this sense it was a nodal point in the circulation of people through this part of the *dunnu*.

In the preceding phases the main entrance into the *dunnu* was located directly north of the central building (see figure 1.4: level 6B). At the start of the sequence which is described here this situation was altered by the construction of a new gate and courtyard, area 4. After this renovation the sector was in use as a reception court and for administrative activities. The administrative activities are suggested by the discovery of a large group of cuneiform tablets in area 3. Although most of these objects were probably discarded as secondary refuse, it is argued in paragraph 3.2.4.2 that they were probably used in the direct vicinity. The presence of a baked brick floor in the main courtyard may indicate that the space had a representative function. At some point however, this floor was destroyed and the architecture of the sector appears to be in a dilapidated state. Subsequently, new renovations were carried out. These involved the deposition of soil and refuse layers on the floors and the construction of new floors on top of these layers. Additionally, small walls were constructed inside doorways, perhaps for structural reinforcement. After these renovations the sector was used in a different fashion. The finds and features from area 1 in this later phase for instance indicate that the area was used for pottery production and food processing.

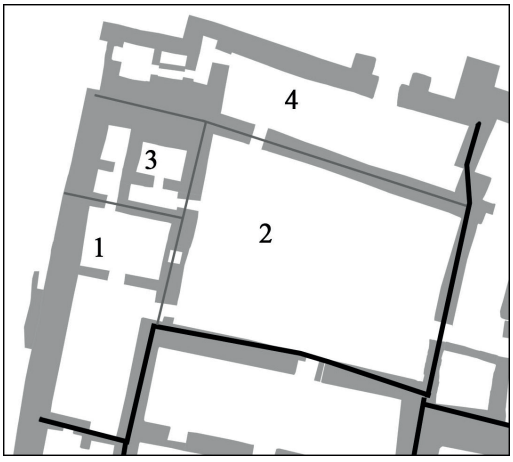


Fig. 3.2: The areas in the north-western sector.

The sequence which is discussed below per area therefore illustrates a significant change in the function and use of the north-western sector. The sector was first

used as a representative, official quarter, and through time changed into a sector which was concerned with production processes. Remarkably, in other areas, in particular in the south-west of the *dunnu*, the function and use remained the same in these periods. The monumental residence however follows the same path as the north-western sector. It is therefore very likely that these two sectors were closely related in function and use.

3.2.2 Two outside spaces (area 1)

Area 1 is located in the south-west of the sector and consists of two rectangular spaces adjacent to one and another, space A and B (figure 3.3). At the start of the sequence described here the wall which separates these spaces was not yet built and the area consisted of one long open

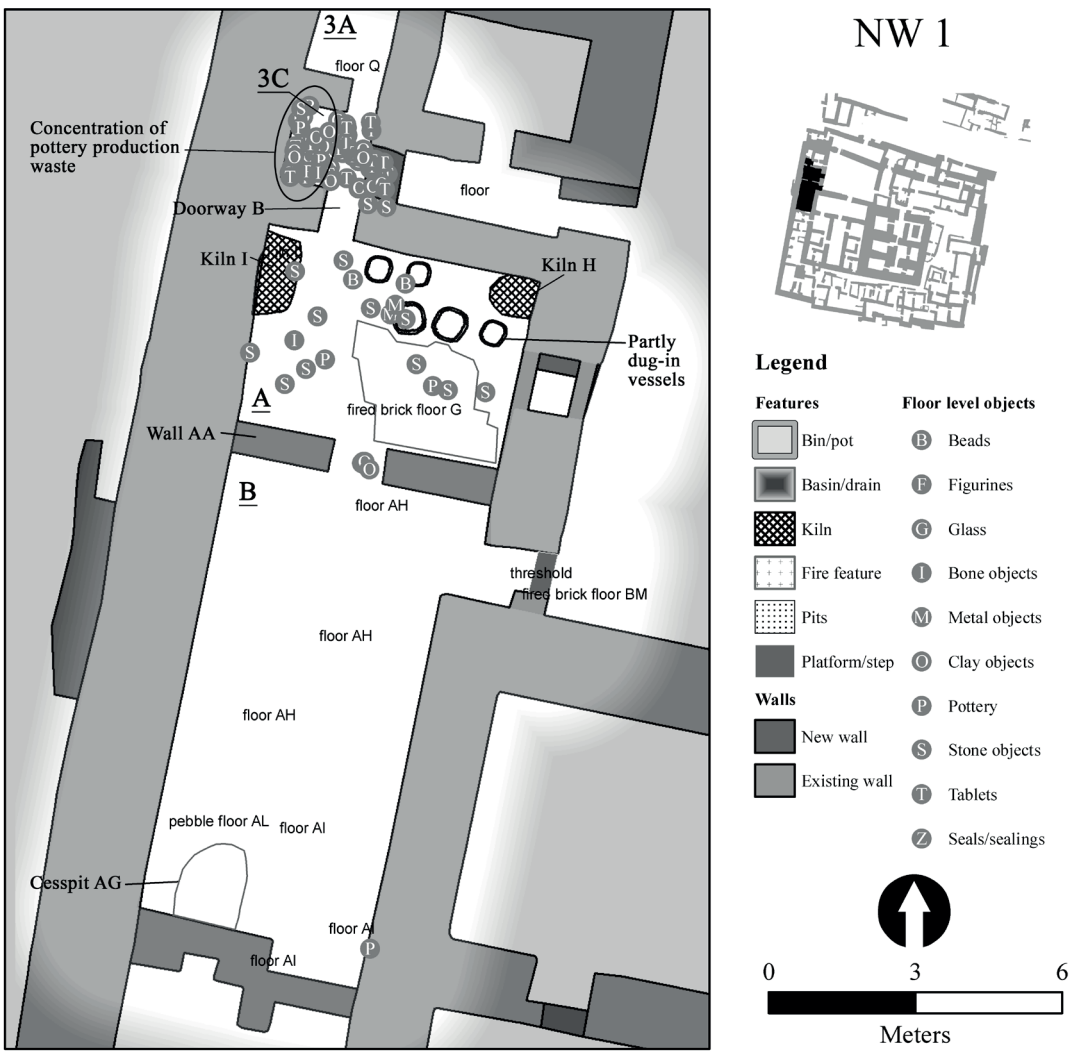


Fig. 3.3: Architecture and floor level finds from area 1 of the north-western sector.

space. During this phase the area could be reached from the large courtyard through a doorway in space A. The floor from this phase (AW/AL/AC) consisted of a loam layer with a pebble layer on top of it. This may indicate that the area was used for outside activities. Unfortunately, the floor was badly damaged and only one single find, a fragmented stone implement, was recovered from this floor (deposit 104), not enough for an assessment of the use of the space.

In the second phase, a layer of soil was deposited on top of the floor and the separating wall (AA) was built. In room A a baked brick floor (G/J) was constructed. Additionally the doorway which connected room A with the courtyard was closed off and made into a niche. To keep the area accessible a new doorway was constructed from space B towards the courtyard. Also in the north side of space A a new doorway was constructed. This doorway led to two spaces which were previously in use as a bathroom and belonged to area 3. By the construction of the doorway these two rooms (3A and 3C) were incorporated into area 1 (also see paragraph 3.2.4). Space A was probably in use for a while in conjunction with the baked brick floor. As the presence of a baked brick floor is often associated with a representative function (Akkermans and Wiggermann 2015; see paragraph 3.4), it is conceivable that the space was in use as an office or reception room for a while. The floor was however largely demolished at some point, and a careful analysis of its function in the space is therefore not possible anymore. The destruction of the floor may be related to the construction of two kilns (I and H) and five vessels which were partly dug into the ground. It is at the location of these features that the floor had been removed (figure 3.4). The construction of these features is related to the last use phases, which are characterized by pottery production and food preparation. These phases are discussed below.

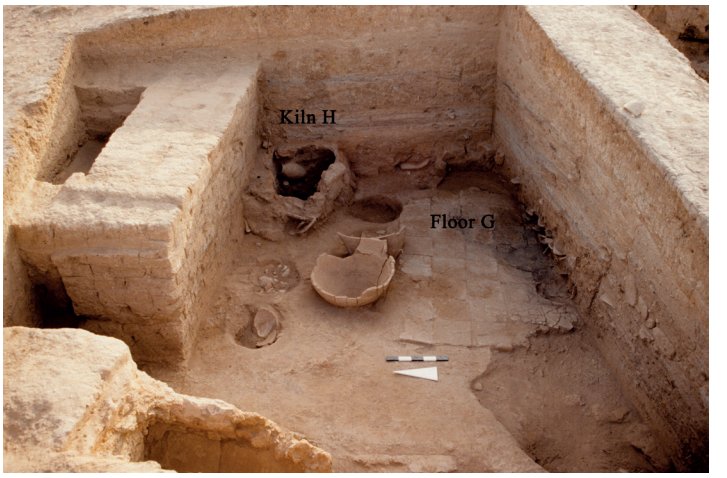


Fig. 3.4: The floor of room A during the excavation looking east. In the back to the left the remains of kiln H can be seen. Also the remains of semi dug in vessels and the baked brick floor are visible (photo by P.M.M.G. Akkermans).

3.2.2.1 Pottery workshop

Two pottery kilns were constructed in space A (kiln I and H; figure 3.3; also see Duistermaat 2008: 163). It is unknown if the two kilns were in use simultaneously. Large amounts of pottery production waste such as unfired and overfired pots were found in this room, hardly any of these items on the floor were recorded as objects unfortunately. The unfired pots and fragments

were found in two places, in kiln H and in room 3C in the north. In this room the clay objects which were found were the clay stubs of freshly shaped vessels, cut off from the bottom just after shaping. These objects were found grouped together around the corner in the room (figure 3.3; figure 3.18: deposit 97). The deposit only contained the clay fragments, and was therefore low in variety and highly structured. Additionally, the objects have low replacement cost as they are clay production waste. Therefore, considering the fact that the objects were deposited in an out-of-the-way location indicates that these were deposited here as primary or provisional refuse and that therefore this space, or a directly adjacent space, was used for pottery shaping.

Although no finds were recorded in space B, this place was perhaps also used for pottery production. It was suggested by Duistermaat (2008: 164) that extensive fire damage to the floor and walls may have been caused by open air firing of large pots. In addition to these activities, a large cesspit (AG) was constructed in the south of this space. This feature was connected to a toilet which was reached from the monumental residence.

3.2.2.2 A make-shift kitchen

Probably after the pottery kilns were out of use, five large vessels were partly dug into the floor of the space A. Because of the position of the vessels (figure 3.4) at least kiln H could not be reached anymore. Although kiln I could be reached after placing the vessels, their association with food processing (see below) makes it improbable that the space was also still used as pottery workshop. Therefore, the presence of the vessels most likely marks a new use phase of the area.

Along with the large ceramic vessels, large amounts of fragmented ceramic and stone artefacts were deposited on the floor of the room (deposit 16). Interpreting the process by which these objects were deposited is slightly problematic because the majority of artefacts has not been registered as objects. Because of the fragmented state of the ceramics only two bowls with a bent, or carinated, side were registered as objects. This type of ceramic, the so called carinated bowls, is the most frequently found objects in the excavation. Their function is not directly clear from their shape as they could have been used for multiple purposes. Their preponderance in the ceramic assemblage is due to both their large quantities in the past as well as their sturdiness – many were discovered in an undamaged state.

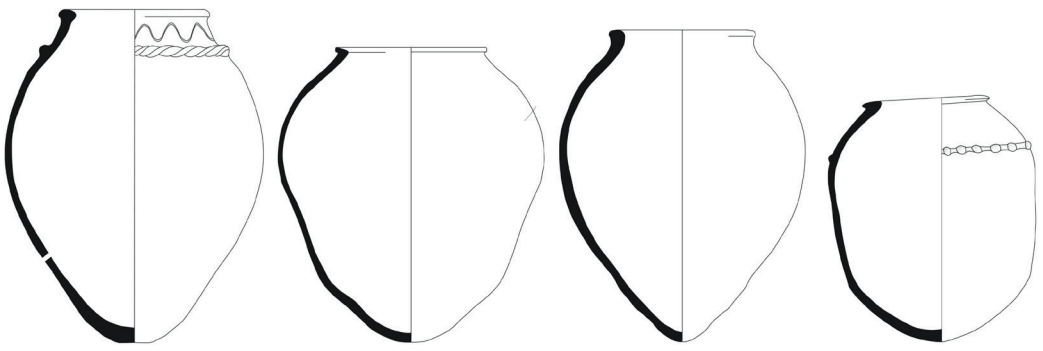


Fig. 3.5: Pottery from room A, area 1 of the north-western sector (adapted from: Duistermaat 2008: Fig. VI.3). Scale 1:20.

However, within the same deposit, post-excavation many ceramic fragments were refitted into full vessels, yielding mostly carinated bowls, straight sided bowls and a number of very large storage pots which are rare in the Tell Sabi Abyad assemblages (figure 3.5). The reconstruction of the complete vessels demonstrates that the objects were most likely complete when they were deposited. In particular the large cooking pots are helpful with the reconstruction of the mode of deposition. These vessels are likely to be left behind in a building at abandonment as they are difficult to transport. These therefore indicate that the deposit was left behind as abandonment stage, or *de facto*, refuse.

Other finds which were discovered on the floor were ten stone tools, most likely used for grinding or hammering, one complete bronze sickle and nearly one hundred ostrich eggshell fragments. The presence of the bronze sickle in this context is puzzling as the object appears to be in good condition and probably had a high monetary value. All other objects in the deposit however are related to the process of food processing. This high level of structuring strengthens the interpretation that these items were left behind in their location of use, as *de facto* refuse or, in the case of the egg shells, as primary refuse.

In addition to finds from the floor of the space, Fantone (2016) has recorded the presence of a relatively high proportion of herbs and spices among the macro botanical remains from this room, further reinforcing the interpretation of the use of the room for food preparation.

3.2.2.3 Abandonment

When space A was no longer in use for food preparation, the room was left to the elements as is suggested by a one millimetre thin layer of encrusted clay on the objects in the room. This thin, hard layer is described by the excavators to be the result of natural sedimentation in an open area. The doorway between space A and B was blocked, perhaps around the same time. In the southern space, space B, no other indications for activities were found. Both spaces were eventually covered with a layer of compact brown loam (deposit 18; 19; 102), probably as the basis for a new floor higher up.

3.2.2.4 Sequence of Events

Although not many objects were retrieved from most floors of area 1, still a large number of activities could be reconstructed (figure 3.6). Most events are related to the architectural changes which have occurred in the area. This is most apparent in the start of the sequence which describes the initial construction of the area and continues with the construction of the later division wall (AA). The contemporaneity of several events occurring in the separate spaces such as the construction and use of the cesspit and the blocking of doors is hard to establish and therefore follow separate lines.

The Sequence of Events clearly shows that although two activities, pottery production and food preparation, were most obvious from the archaeological record, many other events have occurred prior and subsequently to these. The events which cumulatively make up the area 1 sequence is comprised mainly of architectural modifications but these clearly demonstrate that many activities were carried out intermittently.

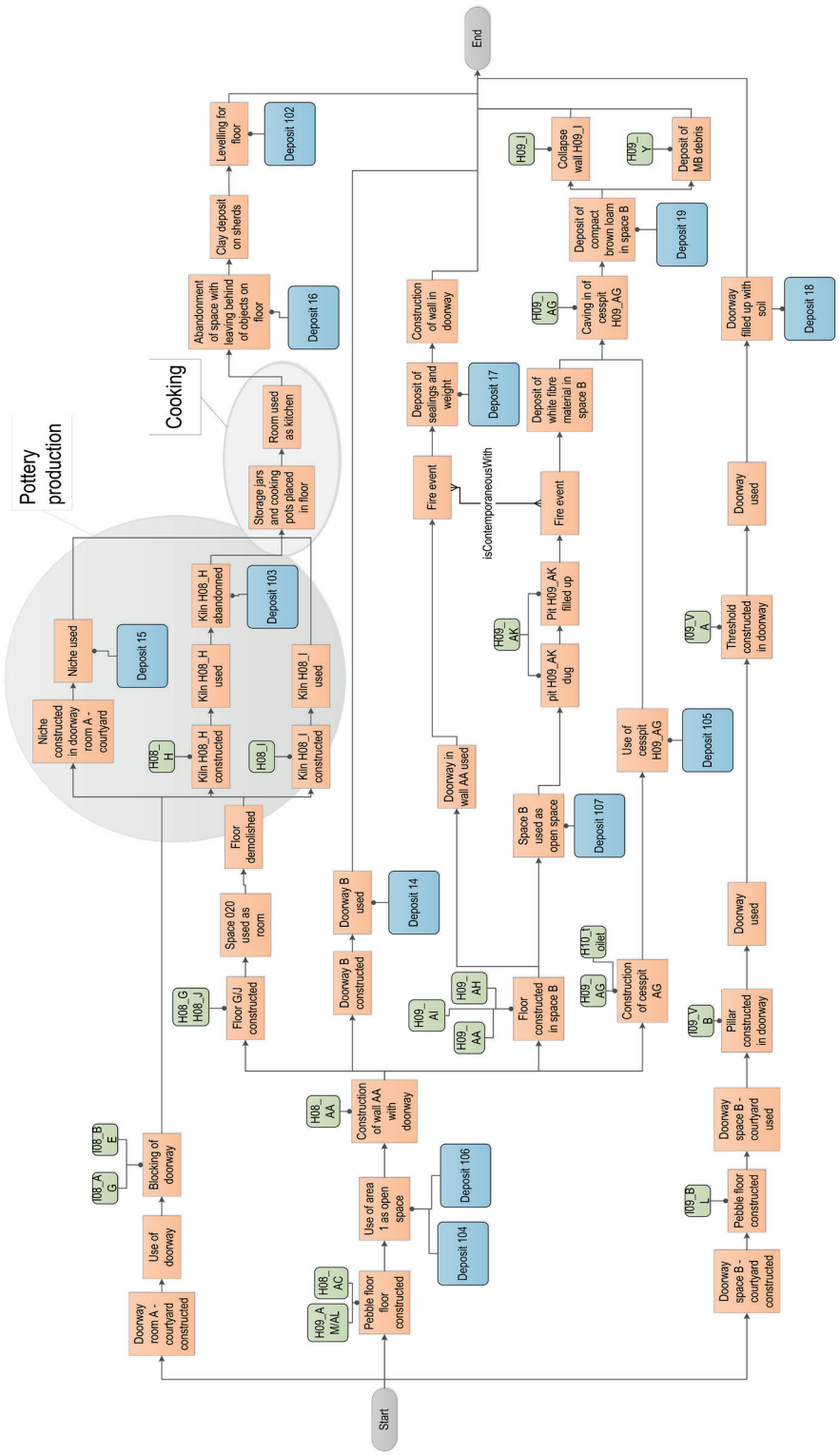


Fig. 3.6: Sequence of Events of area 1 of the north-western sector.

3.2.3 The central courtyard (area 2)

Area 2 of the northwestern sector is better known as the central courtyard, a large open space measuring 17 x 12 metres, serving as a connection hub for several areas in this part of the *dunnu* (figure 3.7). The area was probably pivotal for the circulation of people through the *dunnu* at this time (Lanjouw 2016). Importantly, the central courtyard gave access to the monumental residence. As such, it must have had a representative function, which is also indicated by the presence of a floor made of baked mudbricks. However, as with all spaces in the *dunnu*, a great variety of activities has taken place here, denoting a constantly changing function of the courtyard. A particularly significant change of use of the central courtyard is illustrated by the demolition of the baked brick floor (see below).

The floor (AG/CG/BU) was constructed on top of a burnt loam floor (AZ) and was probably originally present in the entire courtyard. The floor most likely continued through the doorway into the monumental residence where the remains of a similar floor were found (see paragraph 3.4). It is therefore assumed that the central courtyard was constructed to function in association with the residence, probably as a reception court but perhaps also to entertain large groups of people. Additionally, the small apartment or office to the west, area 3, was most likely in use by the steward of the *dunnu* while he performed his administrative tasks (see paragraph 3.2.4). The central courtyard could therefore also be used by him to receive guests and deal with tradesmen.

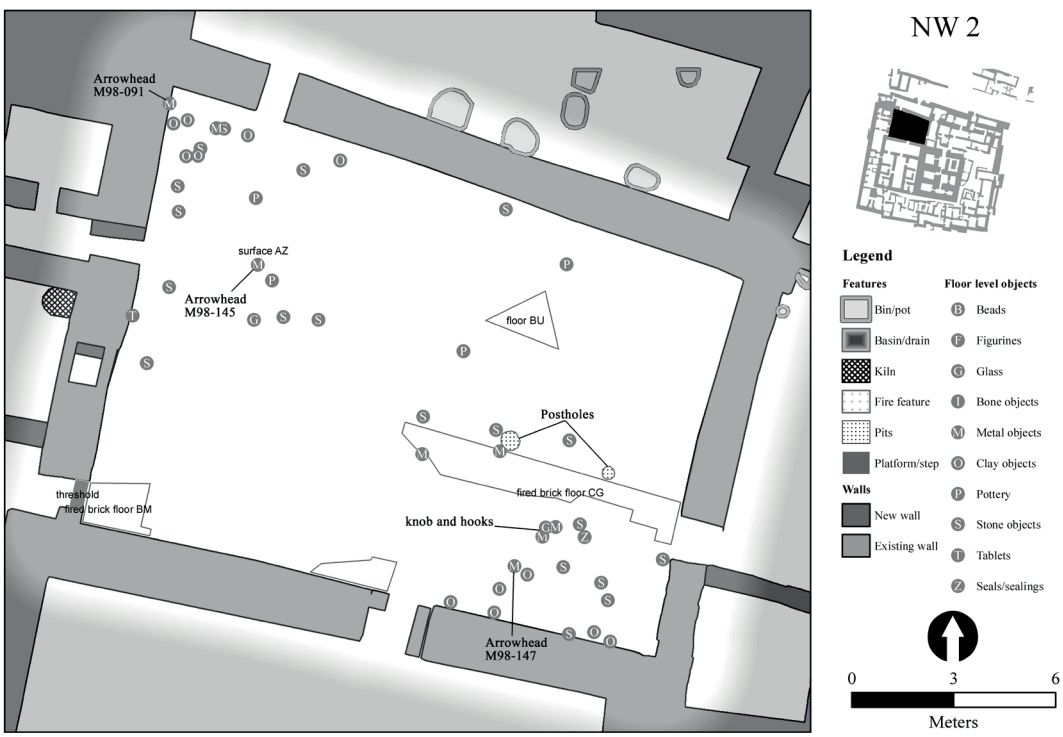


Fig. 3.7: Architecture and floor level finds from area 2 of the north-western sector.

Fig. 3.8: The courtyard, area 2 of the north-western sector, looking south-east. The remains of the baked brick floor are visible in the foreground (photo by P.M.M.G. Akkermans).

At some point however the baked brick floor was largely demolished by the removal of many of the baked bricks. Perhaps these bricks were reused somewhere else, although this location has not been found in the excavation. Many bricks broke during their removal and many resulting brick fragments were discarded in the corners of the courtyard (figure 3.8). Among these piles of debris and on the (remains of the) floor 47 other objects were found (deposit 6). One third of the objects (n=20) consists of broken and fragmented grinding- and polishing stones. Also five ceramic objects were found, only one of which was complete. These stone and ceramic objects are a common occurrence in the deposits of Tell Sabi Abyad and because they are mostly damaged or fragmented it is likely that they were deposited as secondary refuse.

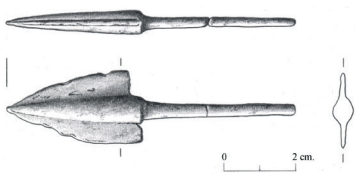


Fig. 3.9: Bronze arrowhead (M98-147) from courtyard area 2 of the north-western sector (fig. by R. Timmermans).

Several other objects however suggest a different mode of deposition. In particular three bronze arrowheads (figure 3.9), ten clay sealing fragments and the remains of a doorknob and associated bronze hooks (figure 3.10) imply that the deposit comprises of a palimpsest, containing at least some primary refuse. In what manner the arrowheads have ended up in the courtyard remains unclear unfortunately. They were found in different parts of the courtyard (see figure 3.7) and may have been accidentally left behind among the refuse on the floor.

The aforementioned sealings, door knob and hooks were mainly found in a concentration in the south-east of the courtyard. These objects were most likely used to close and seal doors. The knob was originally fixed to the wall next to a door. A rope or hook was attached to both the door and the doorknob, and an amount of clay was applied on the knob. This clay was subsequently impressed with a seal. In this way the door could not be opened without breaking the seal. The impression which was left on the clay can in many cases still be recognized on the excavated fragments. A study into these sealings from Tell Sabi Abyad (Duistermaat in prep.) has yielded a catalogue of seals which were found in the *dunnu*. Figure 3.11 demonstrates the spatial distribution of the different sealing types in and around the central courtyard, labelled with their catalogue number. The plot indicates that similar sealings were discarded together, which may indicate that they were discarded close to their location of use.

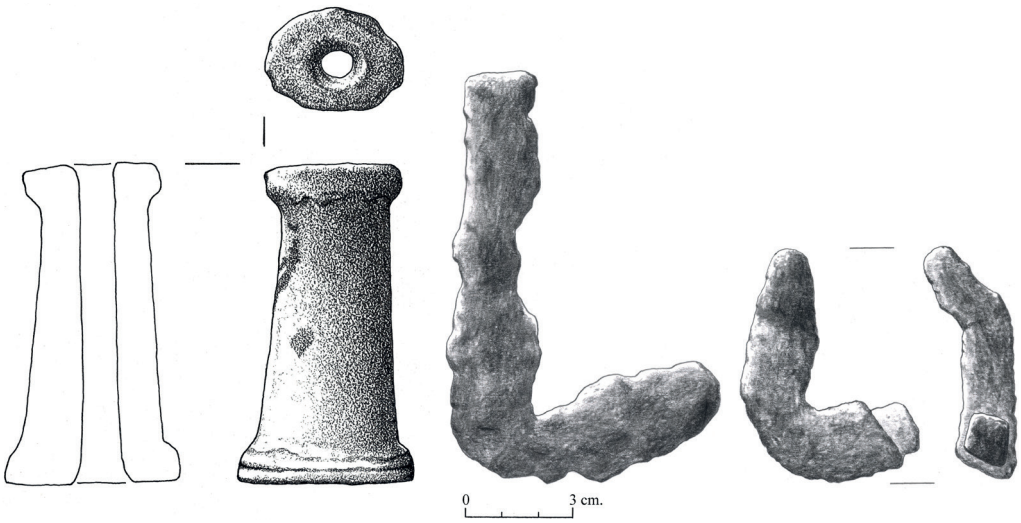


Fig. 3.10: Ceramic doorknob and bronze hooks from courtyard area 2 of the north-western sector (fig. by R. Timmermans).

As a double door was most likely present at the entrance of the monumental residence, it is conceivable that the objects mentioned above were once used to seal these doors. This would indicate that the residence was closed and sealed in some periods, implying it was not used by the regular inhabitants of the *dunnu* themselves. Conceivably, the main user of the residence was the owner of the *dunnu*, the viceroy of the Assyrian Empire.

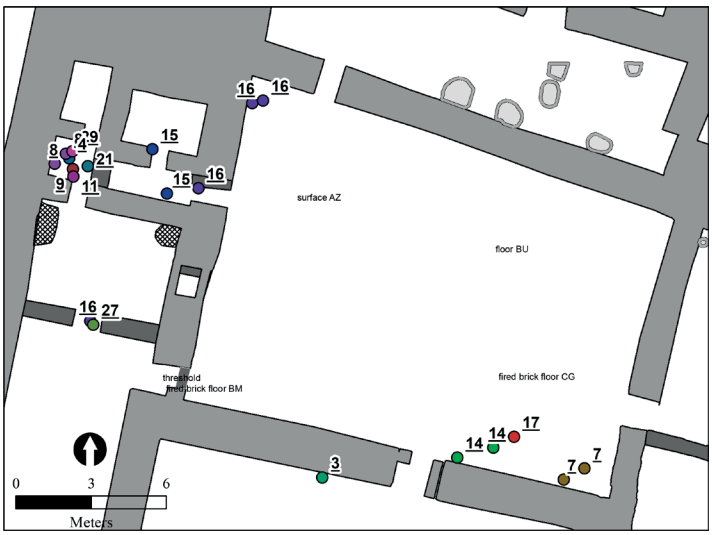


Fig. 3.11: Distribution of sealings in the courtyard and nearby rooms of the north-western sector. The sealings are labelled with the catalogue number of the image which was impressed in the clay.

The double door of the monumental residence was at some point renovated and reduced in width (see paragraph 3.4). Perhaps the removal of the sealings and knobs can be related to this event. Interestingly, although the debris which resulted from the architectural modification was discarded on the floor of the central courtyard, the residence was still in use for some time as is evidenced by finds from the building (see paragraph 3.4.2). This implies that the courtyard was probably also

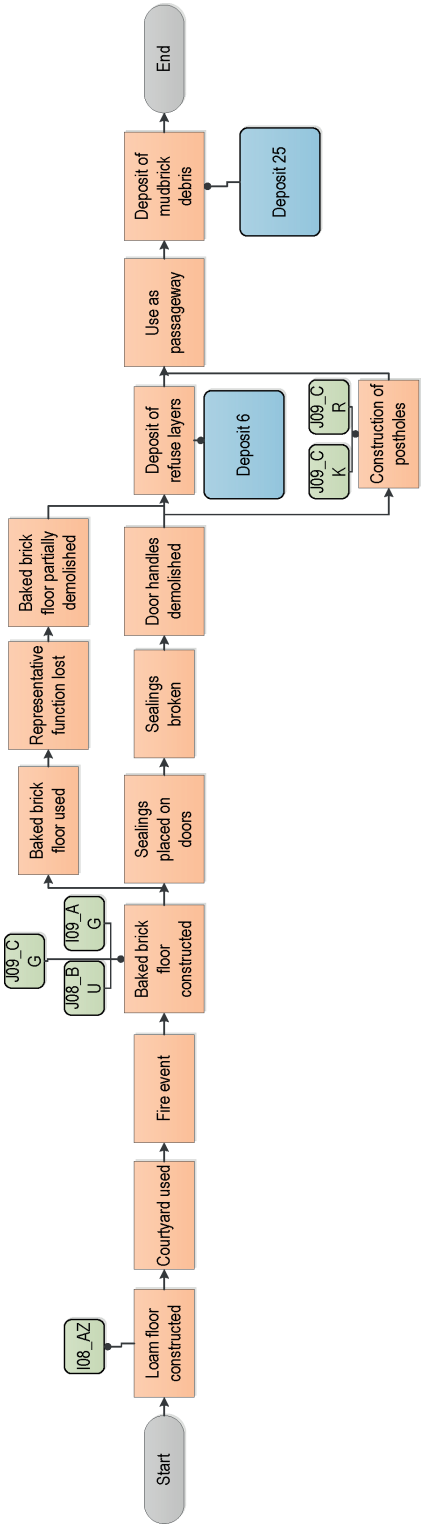


Fig. 3.12: Sequence of Events of area 2 of the north-western sector.

still in use after the demolition of the baked brick floor. Clearly, at this time the representative function of the courtyard was no longer important.

The function and use of the courtyard in this later period is difficult to determine as not many objects are indicative of later uses. Many of the objects which may have ended up on the floor were discarded here as secondary refuse, indicating that the courtyard was used as a refuse dump. As much of the floor debris was also still located in the courtyard, it is conceivable that the area was mostly used as a passageway. Probably during this phase two postholes (CK; CR) were dug in the courtyard, perhaps indicating that there was a need for some roofing. Later yet, the area was covered with a 50 cm thick layer of mudbrick debris and brown soil (deposit 25) for the construction of a new floor higher up.

Because the area consists of a single space, the related Sequence of Events is relatively straightforward (figure 3.12). Many of the activities which were carried out in the area probably did not leave any physical traces. Social interaction for instance, although important in daily life, left virtually no trace in the archaeological record. As the central courtyard was probably a nodal point for the circulation of people through the *dunnu* it is likely that social interaction between people was an important aspect of the courtyard.

3.2.4 "Tammitte's office" (area 3)

To the northwest of the large courtyard a series of connected rooms was excavated (figure 3.13). They consist of a room (B), a bathroom structure (A and C) and a hallway connecting them (D). These spaces have yielded some 135 cuneiform tablets during excavation. As most of these tablets were written by or directed to Tammitte, steward of the *dunnu*, this area has often been called the

Office of Tammitte (Akkermans and Wiggermann 2015). There are however two problems with this interpretation. Firstly, a large part of the tablet concentration was discarded as secondary refuse as is discussed below. Secondly, the area was used in a variety of ways, not only as an office or apartment. The events which have taken place in the area can be roughly divided up into two phases. It commences with the construction of the area and a mudbrick floor. Subsequently, after a use phase the floor is partly demolished and the tablet-rich soil layer is deposited on top. The second phase starts with the construction of a new floor on top of these deposits. Additionally the doorway between spaces C and D is blocked with a small wall and a new doorway is constructed on the southern side of room C. In this new phase rooms A and C were used in conjunction with area 1. Rooms B and D were probably used as storage space.

Fig. 3.13: Architecture and floor level finds from area 3 of the north-western sector.

3.2.4.1 The start of the sequence

The start of the sequence is denoted by the construction of the walls, the toilet (V) in room A and a floor made of baked mudbricks (Q; S; T; U) in the entire area. In the rooms A and D this floor was lined with a water resistant plaster, and a plinth made of baked mudbricks along the wall was put in place to prevent water damage of the walls. In the eastern corners of room B two mudbrick platforms (Y) were discovered. Probably also in the north-western corner of the room such a platform was once present. It has unfortunately been largely demolished by a later pit.

The layout of the area indicates that it was used for either residential purposes, an apartment, or as an office with en-suite bathroom. A similar layout is seen in other apartments in the *dunnu* (see for instance paragraph 3.4 and 3.7.4). Not many objects were found on the floor, relating to this early use of the area. Only in room B, which may have functioned as a bedroom or office, 20 objects were registered. Among this deposit (deposit 20) two damaged stone objects, a damaged carinated bowl and a bronze lump were found. As these objects are very common among the Tell Sabi Abyad find assemblages, they are all damaged or fragmented and they do not seem to have a strong functional relationship with the room they were found in it is possible that they were deposited here as secondary refuse.

The remaining objects are fourteen tablet (fragment)s and two envelopes. Most of these objects were found in a concentration in the north of the room on the floor in between two mudbrick platforms. As all the objects are related to administration this group is highly structured and probably was deposited as either primary or provisional refuse (see table 2.1). This in turn would indicate that the tablets were used in this room, implying that the room was indeed an office of the steward. However, as other concentrations of tablets and envelopes in this area are interpreted as secondary refuse (see below), this interpretation should be taken with caution.

3.2.4.2 The tablet concentrations

After the use of the area as either apartment or office a part of the baked brick floor was removed. In particular in the hallway, space D, all bricks were taken out. After this event a layer of brown soil was deposited on top of the floors. In rooms C and D this soil layer contained 153 registered objects, consisting of clay tablets (n=84), envelopes (n=9), sealings (n=21), tokens (n=16), weights (n=7) and other objects (n=16). 50 percent of the objects was fragmented, 22 percent was damaged and 28 percent was complete.

During the excavation it was supposed that the objects from this deposit, and in particular the tablets, were deposited in a rushed event (personal communication P.M.M.G. Akkermans and F.A.M. Wiggermann). A sealing which was discovered in room D which displayed the negative of a box further directed the interpretation of the deposit towards a scenario in which a wooden case full of tablets was dumped in the hallway during rapid abandonment. In the current study this interpretation is questioned. The spatial distribution of the objects and several refits between them, as well as the overall content of the deposit point toward an interpretation of the deposit as secondary refuse (see below). It is important to note however that, unlike other examples of secondary refuse, the location of this deposit is probably closely linked to the location of use of the objects.

If the tablets and associated artefacts were deposited on a floor level during a catastrophic event, they would be present on one horizontal plane and would be concentrated on the location of deposition. Post-depositional processes could have altered their position somewhat but other floor contexts at the site have demonstrated that this did not occur very much. The tablet-rich deposit in area 3 was found mainly in spaces C and D, as well as in the doorway

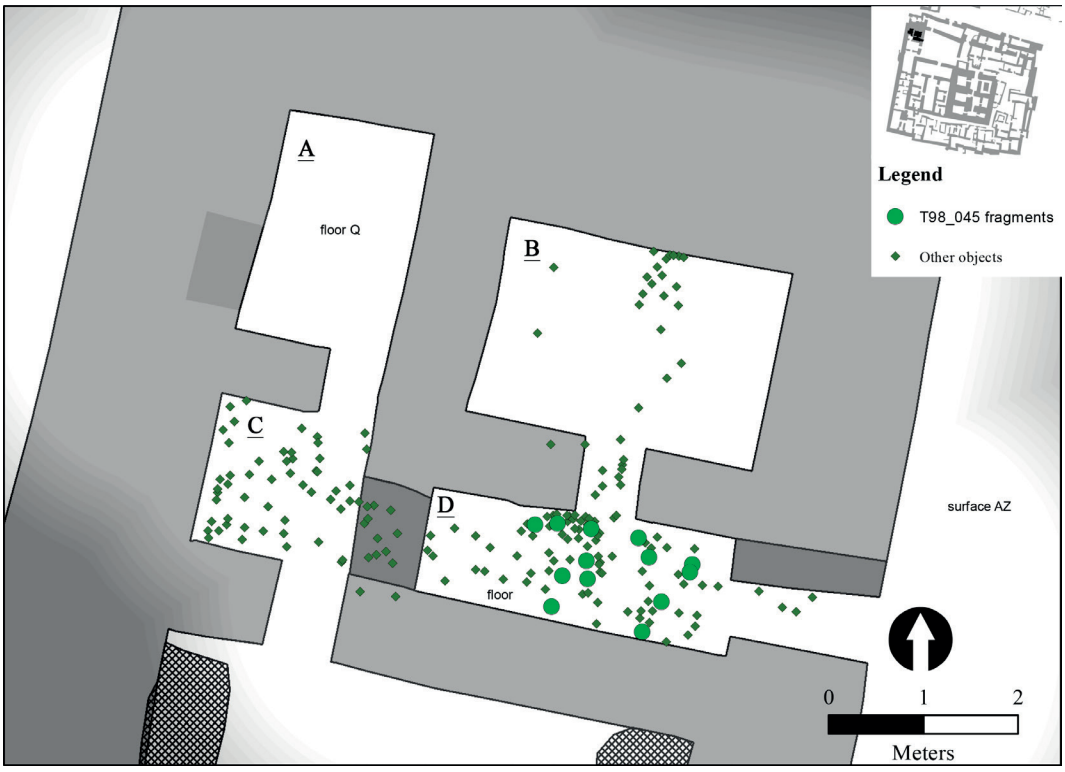


Fig. 3.14: Distribution of all finds from area 3 of the north-western sector. The large green circles indicate the location of fragments of tablet T98-045.

between these two spaces (see figure 3.14 and 3.15 for the distribution of all objects and figure 3.16 for the distribution of tablets). From the spatial distribution it seems unlikely that the tablets were deposited as one catastrophic event. Rather, they appear to be spread out throughout the rooms.

Additionally, the objects were found in a layer of soil of approximately thirty centimetres thickness (figure 3.15 and 3.16). The objects appear to be mixed-in with the soil, rather than being covered by it. This indicates that the objects were deposited along with the soil. Several tablets were apparently fragmented before deposition as many fragments were refitted after the excavation. Of tablet T98-045 twelve fragments were excavated in room D. The horizontal distribution of these fragments is plotted in figure 3.14. Unfortunately of only five of these fragments an elevation is known. These few fragments however already illustrate that the individual pieces were deposited on wide-ranging elevations. Again this indicates that the objects were not simply discarded on the floor of the rooms.

Some aspects of the tablet-deposit are less straightforward. As illustrated in figure 3.16 the vertical distribution of tablets displays a patterns in which most complete objects were located high in the deposit. This could signify that the deposit was gradually built up, and that

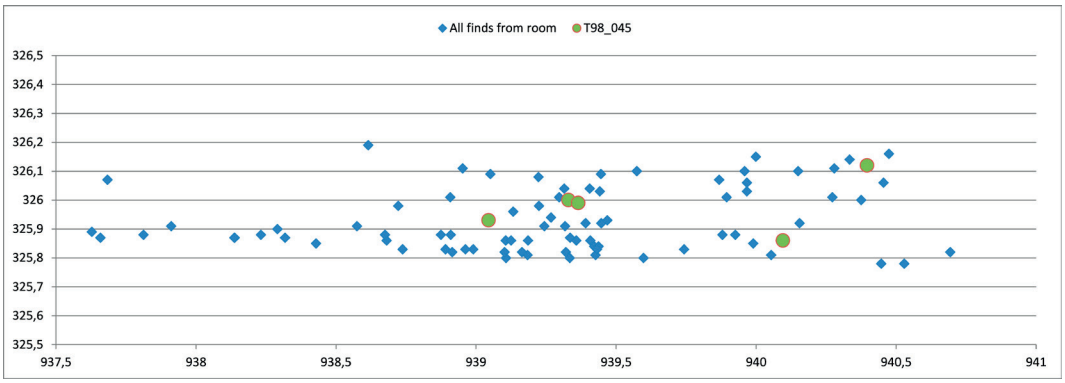


Fig. 3.15: Vertical distribution of all finds in room D of area 3 of the north-western sector. The values in both axes are in metres. Similar to Fig. 3.14 the fragments of tablet T98-045are indicated with large green circles.

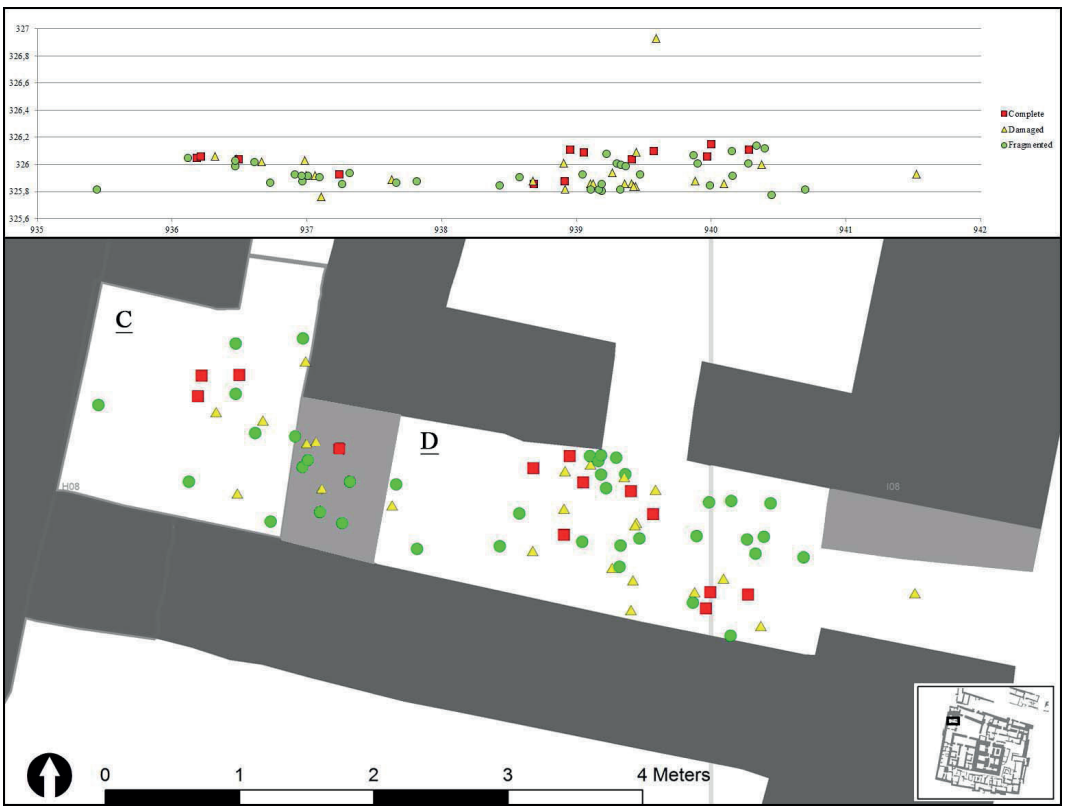


Fig. 3.16: Horizontal and vertical distribution of tablets and tablet fragments in rooms C and D of area 3 of the north-western sector. Red squares indicate complete tablets, yellow triangles are damaged tablets and green circles indicate tablet fragments.

the lower parts of the deposit were trampled, damaging the tablets. In this scenario the tablets which were deposited higher in the sequence were less trampled. The vertical distribution of refitted fragments of T98-045 however indicates that the deposit is not a simple horizontally laminated deposit.

One other refit was found between a tablet fragment in this deposit (T98-040) with a fragment (T99-005) which was discovered on the bottom of the cesspit (AG) in area 1 of this sector (see paragraph 3.2.2.1). It remains entirely unclear why these fragments have apparently travelled so far from each other but it clearly illustrates that the processes which underlie the deposition of cuneiform tablets are far from straightforward.

Analysing the deposit using the methodology set out in chapter 2 yields an alternative perspective. Following the deposit characteristics described above it is unlikely that the deposit is the result of a catastrophe. Also, because the deposit is extensive in size and contains mainly damaged objects, the processes of caching and loss can be excluded from the list of potential modes of deposition. As the deposit can be regarded as a dump or pile, it is unlikely that it was left behind during abandonment as *de facto* refuse. According to its context the most likely mode of deposition is secondary discard. However, nearly all finds can be related to administrative activities, indicating a high degree of structuring, typical for primary and provisional refuse.

There is a scenario in which the deposit may be considered to be the result of both provisional and secondary discard. Perhaps the person who worked with the tablets, the steward of the *dunnu*, kept a pile of discarded tablets in or near his workplace, as typical provisional refuse. If at some point this collection was too large, he discarded them as secondary refuse. Unlike other refuse, the documents had to be discarded with care as to ensure that they cannot be retrieved. It is likely that if area 3 was renovated, these objects were deliberately discarded in a soil layer which was deposited to level the area for a new floor. The practice of discarding tablets in construction layers was attested elsewhere in the *dunnu* (see paragraph 3.6.3.3 and 3.7.4) and also, for instance, at the contemporary site of Tell Fekheriye (Pollock 2005; Bonatz 2013). The contexts in which tablets were discovered vary greatly per site and within sites, and most studies into these objects focus on the textural content, rather than the archaeological contexts (Pollock 2005: 311). It is therefore hard to make statements about the comparative significance of the mode of deposition.

If the tablets were indeed deposited as secondary refuse, it is questionable whether the objects were also used in this location. The fact however that several tablets were found on a floor level in the adjacent room B, and that the area can be interpreted as an apartment indicates that a functional relationship between the tablets and the area may still exist. It is possible that this apartment was indeed the residence of the main administrator of the *dunnu*. He may have received guests and done business in the large courtyard in front of this apartment. The hypothesised pile of provisionally discarded tablets would then be in the direct vicinity of this apartment. The renovation of the area perhaps provided the suitable circumstances to purge the objects permanently.

3.2.4.3 A rich cremation burial

On top of the floor in room B a layer of brown soil was deposited. Through this soil layer a small pit was dug in its south-western corner. In this pit a ceramic jar was buried containing the cremated remains of two individuals (Akkermans and Smits 2008). The jar was sealed with a cloth, which was covered with a clay sealing. Why this was done remains unclear. Apart from the two individuals, the jar contained a wealth of personal ornaments and other objects (figure 3.17). Apart from the personal ornaments, also the remains of animals were found, most interestingly the third phalanx of a lion. It was suggested this might have belonged to a lion-skin cloak (Akkermans and Smits 2008: 253).

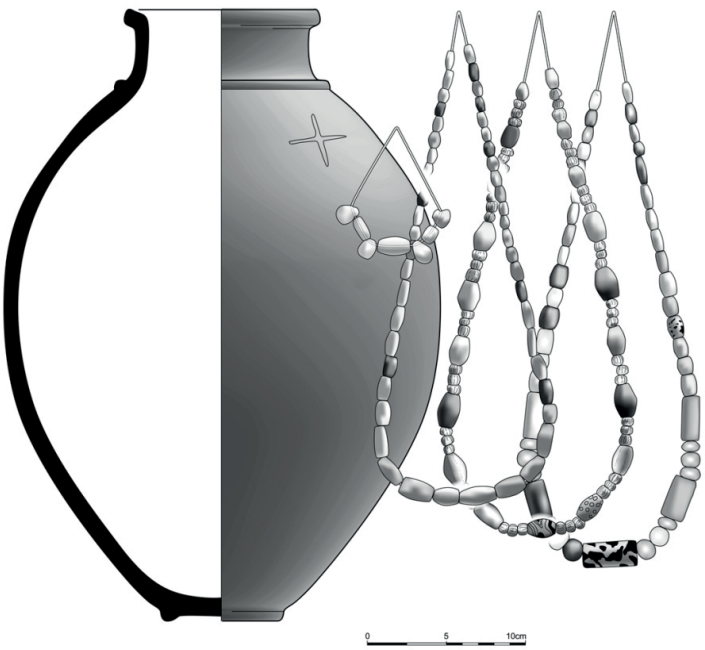


Fig. 3.17: Vessel from room B in area 3 of the north-western sector with several necklaces which were found within (from: Akkermans and Smits 2008: fig. 2).

These valuable items may be indicative of the high status of the interred individuals. As cremating the deceased was considered a non-Assyrian custom (Tenu 2005), it is implied these individuals originated from a different cultural background. As the main administrator of the *dunnu*, the steward Tammitte, bears an Anatolian name, Düring *et al.* (2015: 44) have suggested that this burial could be his. Perhaps the other individual was his wife. If this burial can indeed be equated with Tammitte it is tempting to suggest that he was interred in what used to be his residence or office.

Division of the area

After the deposition of the tablet-rich soil a new loam floor was constructed in all rooms. On top of this floor the function of the apartment seems to have changed completely. The bathroom could not be used anymore; it was buried under the soil deposit. Additionally during or after the construction of the floor the area was divided in two by the blocking of the doorway (P) between room C and D. A new doorway (B) was constructed on the southern side of room C. It is unclear what the function was of rooms B and D in this new phase. In room D only a dug-in cremation jar, supported by two smaller vessels, was discovered. No other objects indicate the function of these spaces.

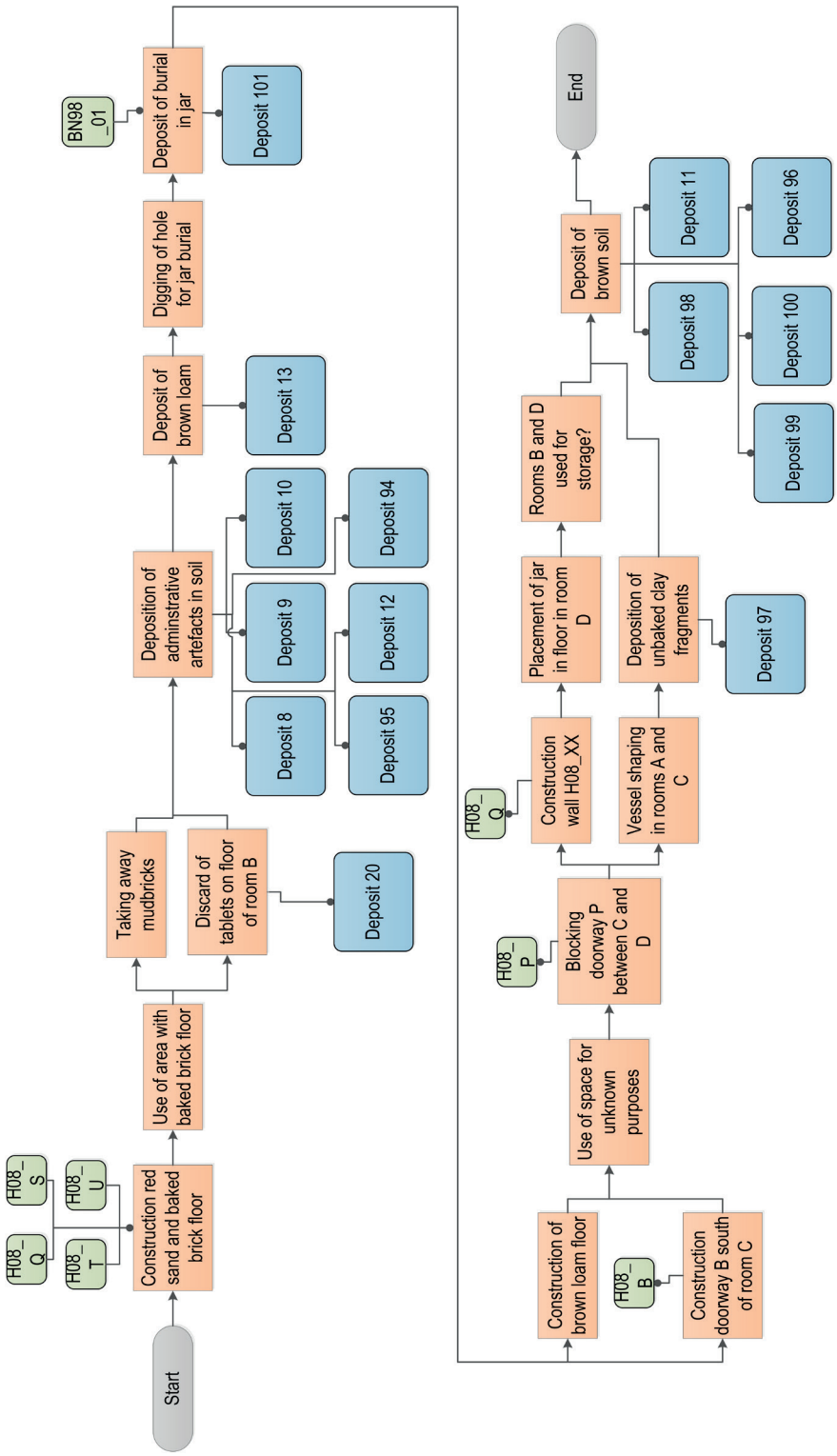


Fig. 3.18: Sequence of Events of area 3 of the north-western sector.

Rooms A and C were entered through the newly constructed doorway leading in from the south. Area 1 was used for pottery production, as evidenced by the presence of two kilns and much production waste (see paragraph 3.2.2.1). Also room C was probably used in conjunction with this process as it was littered with a large number of unbaked pottery fragments (see also Duistermaat 2008: 163). A concentration of production waste on a floor level is indicative for a primary refuse deposit. This suggests that in the direct vicinity of this room ceramic vessels were shaped, prior to being fired in area 1 to the south.

3.2.4.4 Conclusion

The area which was known as the 'office of Tammitte' was used in a large variety of ways. The layout of the area and the presence of the baked brick floor and the toilet suggest that the area was first used as a residence. The discovery of a cluster of cuneiform tablets on the floor of room B indicates that the area was perhaps also used as an office or for the storage of administration.

Later deposits of brown soil with many administrative artefacts such as tablets, envelopes and sealings were interpreted as the result of secondary discard. However, considering the high degree of structuring of the deposit, it is likely that the objects within were discarded near their location of use.

After the deposition of these layers the area drastically changed in function. Room B was used for the internment of a cremation burial, and the western rooms, A and C were used in conjunction with area 1. The pottery production waste in this area indicates that these rooms changed from bathroom to pottery workshop. As is clear from the Sequence of Events (figure 3.18) the activities which could be charted for this area are indeed played out 'in sequence'.

3.2.5 The entrance hall and bathroom (area 4)

Prior to the construction of the walls which make up area 4, this constituted a space outside the *dunnu* wall (figure 1.4: level 6B). The construction of the walls of area 4 was part of a large renovation phase which included the blocking of the main gate directly east of this area. The motivation behind this renovation can perhaps be elucidated from the new layout of this entrance structure. The old gate entered into a narrow passageway which led directly into the heart of the *dunnu*. The new construction consisted of a 16 x 4 metre large courtyard (figure 3.19; room D) and an attached toilet structure (rooms A, B and C). Unlike the earlier entrance structure, this courtyard was constructed perpendicular to the entrance way, making it more difficult to continue walking into the *dunnu*. Possibly therefore area 4 was constructed to better control the flow of people into the *dunnu*. It is conceivable that courtyard D was used to receive people and deal with business, without the necessity of these people entering the *dunnu* proper. The toilet and associated rooms B and C can in this regard perhaps be interpreted as a restroom for visitors to clean up before a meeting or as the apartment of a guard or administrator who dealt with these guests.

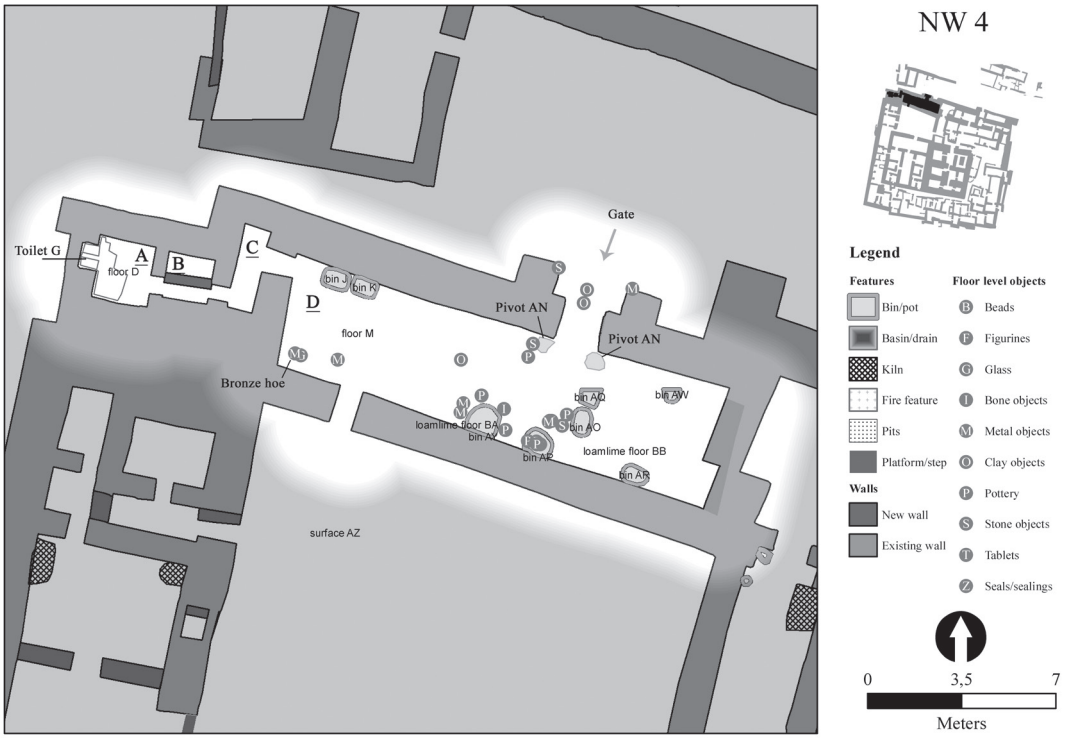


Fig. 3.19: Architecture and floor level finds from area 4 of the north-western sector.

Area 4 was probably used in a variety of ways. Eight bins were constructed in the course of its use, the location of one of these suggests that the doors of the gate were no longer in place (see below). After some time the courtyard was in a dilapidated state, evidenced by piles of debris which were found against the walls. These were possibly the result of the demolition of the floor in the central courtyard located south (see paragraph 3.2.3). The toilet structure was also renovated. The baked mudbrick floor in toilet A was partly demolished and a soil layer was deposited on top. The construction of a new toilet on this higher level however indicates that the function of these rooms did not change.

3.2.5.1 The architecture of area 4

As mentioned above, the sequence which is discussed here commences with the construction of the outer wall of area 4 and the associated gate. The thickness of the outer wall was suggested to represent a second storey on top of parts of it. In particular on the corners some researchers have inferred the presence of towers (Akkermans and Wiggermann 2015). From the archaeological remains, other than the width of the walls, there is, however, no direct support for this reconstruction. Therefore in this report only the ground floor will be discussed.

Both the toilet (G) as well as the floor (E) in room A were constructed of baked bricks, covered with a thick water resistant plaster layer. All other rooms in the area were fitted with a

loam floor. According to field notes the loam floor in courtyard D was repeatedly renovated, resulting in a laminated sequence of loam layers. Near the gate however a fragmented pebble layer was discovered. Perhaps this was originally present in the entire space. Although a large heap of baked brick fragments was discovered in the south-western corner of the courtyard, no traces of a former baked brick floor were found in the courtyard. Therefore it is likely that this relative small amount of debris was in fact part of the destroyed floor in the central courtyard (area 2, see paragraph 3.2.3) or from the floor in room A which was also demolished at some point.

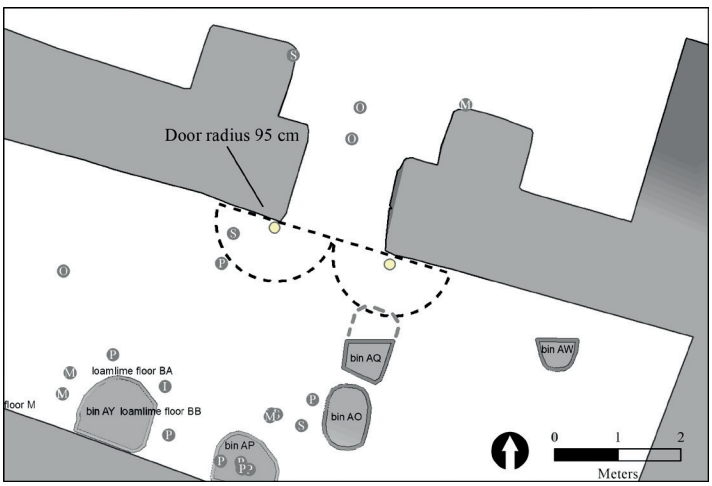


Fig. 3.20: Plan of the entrance of courtyard D of area 4 of the north-western sector. The turning circle of the doors are indicated with the dotted lines.

Two pivots (AH; AN) were found on either side of the entrance gate. These indicate that the gate was fitted with double doors. As the distance between the pivots is 1,90 metre the width of the doors can be reconstructed to be 95 cm wide (figure 3.20).

Other features in courtyard D are eight bins which were constructed in this space through time. None of the bins overlap, which makes it impossible to determine the chronological order in which they were constructed. Only the location of bin AQ perhaps reveals a chronological relationship. Although the northern part of the feature was not excavated because it was located in a section baulk, its shape suggests that it was larger. Its location would probably have conflicted with the radius of the gate door (see figure 3.20). This may indicate that when this bin was constructed, the door was no longer in use. If the gate was no longer in use as such perhaps courtyard D also no longer functioned as a reception court at this point.

A postulated new function is difficult to determine however, due to a scarcity of finds or residue from the bins. They may have been used for short term storage of food, perhaps for the distribution of rations. One bin (AP) did yield several finds. Two carinated bowls, a large jar and a nipple based goblet, all complete, were found in the bin (deposit 22). Their complete state suggests that they have not been deposited here as refuse. Additionally, as the objects are all related to the distribution or consumption of food and drink, the deposit, however small, can be considered to be highly structured. As the objects do not seem to be of high economic value, the deposit is interpreted as *de facto* refuse. This in turn indicates that the objects were probably used in conjunction with the bin. A possible interpretation is that these objects were used to scoop out and distribute food or drink from the bin. Another interpretation however could be that not food but the ceramics themselves were stored in the bin.

Fig. 3.21: Toilet G in room A of area 4 of the north-western sector looking west (photo by P.M.M.G. Akkermans).

On the west side of courtyard D a series of rooms were constructed which comprised of two small rooms (B and C) and a toilet or bathroom (A). The toilet itself was constructed with two brick platforms as feet rests and a gutter leading out of the wall (figure 3.21). A small jar was placed in the ground next to the toilet. This was probably used in association with the toilet, perhaps to clean oneself after defecation. Considering the size of room A (2 x 2,3 metre) it is conceivable that it was used for both washing as well as defecating. Rooms B and C were possibly used for resting or as changing rooms. The sequence of rooms leading up to the bathroom is attested for most lavatory structures in the *dunnu* and also for instance at contemporary Tell Fekheriye (Bonatz 2013; Migchelsen 2013).

3.2.5.2 Objects from the floors

Apart from the ceramic jar no objects were found on the floors of rooms A, B and C. The floor of the reception court however yielded eighteen objects (deposit 3). Most of these were broken or fragmented, usually an indication for a refuse deposit. In addition, the floor was littered with fragmented mudbricks, pieces of charcoal and pottery shards. Remarkably however, several bronze objects were found within this deposit, amongst which two arrowheads, a pin and a large complete hoe or adze (figure 3.22).

These objects, in particular the large bronze hoe, are in stark contrast with the debris and broken items left on the floor of the court. Following the probability matrix, a high replacement cost is often indicative of either caching or unintentional deposition such as loss or deposition during a catastrophe. The location of the bronzes on the floor of the court and the lack of indications for a catastrophic event therefore suggest that the items were lost or left behind at abandonment. The large hoe was discovered under a pile of broken baked bricks, which possibly derive from the central courtyard to the south. Perhaps the tool was left after it had been used to remove bricks from the courtyard. Subsequent burial under some wall or roof debris may have prevented people from retrieving the object.

Fig. 3.22: Complete bronze hoe from courtyard D of area 4 of the north-western sector (fig. by R. Timmermans).

Interestingly, three arrowheads were also found in the central courtyard, area 2, due south of this space. Perhaps their presence in these areas indicates that the courtyards were often frequented by armed soldiers, either as guards of the *dunnu* or as visiting soldiers.

After courtyard D was no longer in use a renovation was carried out. A 60 centimetre thick deposit of dark soil, mudbrick debris and burnt mudbricks (deposit 23) was deposited on top of the old floor, levelling the area for a new floor higher up. As was mentioned above, this also occurred in rooms A, B and C (deposits 1; 2; 126-9). However, in room A, a part of the mudbrick floor was first removed. These were perhaps reused for the construction of a new toilet higher up. This however is assigned to a new phase which is beyond the scope of this study.

The Sequence of Events (fig. 3.23) clearly illustrates that the features in the area were assigned to the earlier phase and the finds relate more strongly to the later phase. It demonstrates that the interpretation of the function and use of the area is heavily dependent on the available evidence.

3.2.6 Conclusion: function and use of the NW sector

At the start of the sequence described here, most rooms and floors were newly constructed. The presence of two bathrooms and an extensive baked brick floor point to an official, representative function for this general area. In addition to these features, a large collection of cuneiform tablets was found in area 3. Although these objects have probably been discarded as secondary refuse, based on the structured composition of the deposit and its location in an apartment, it is argued in paragraph 3.2.4 that they probably were used in the direct vicinity.

The general picture which emerges from the architecture and objects from this phase is one of a representative area in which visiting tradesmen and officials could be received by the administrators of the *dunnu*. Two levels of access were present, the first was the courtyard in area 4. The second was the central courtyard which is area 2 of this sector. It is conceivable that these levels of access indicate a level of importance. The first courtyard in this sense was used for day to day administrative tasks by a low ranking official, while the central courtyard was the domain of Tammitte, steward of the *dunnu*. A third tier of importance could be perceived to be the courtyard of the monumental residence, which was reached from the central court.

At some point this representative and administrative function of the sector disappeared. The baked brick floors in the courtyard, the apartment (area 3) and the toilet in area 4 were partly demolished. In all areas except for the central courtyard a layer of soil was deposited. In the apartment this deposit contained a large amount of tablets, envelopes, sealing and other administrative artefacts. During this renovation phase the doorways which led to and from the central courtyard were remodelled by the construction of small walls inside them. This indicates that the sector was still in use despite the dilapidated state of the floors. Finds and features from area 1 indicate that the sector was used for first, the production of pottery and, second, food preparation.

The sector underwent significant use changes within the period discussed here. Most importantly, the loss of the representative function can probably be related to the decline of the condition of the monumental residence (see paragraph 3.4). Considering the central position of the building in the architecture of the *dunnu*, this perhaps signifies a change of the role of the *dunnu* in the local society, and perhaps in the Assyrian empire. These issues will be discussed in more detail in paragraph 4.4.2.

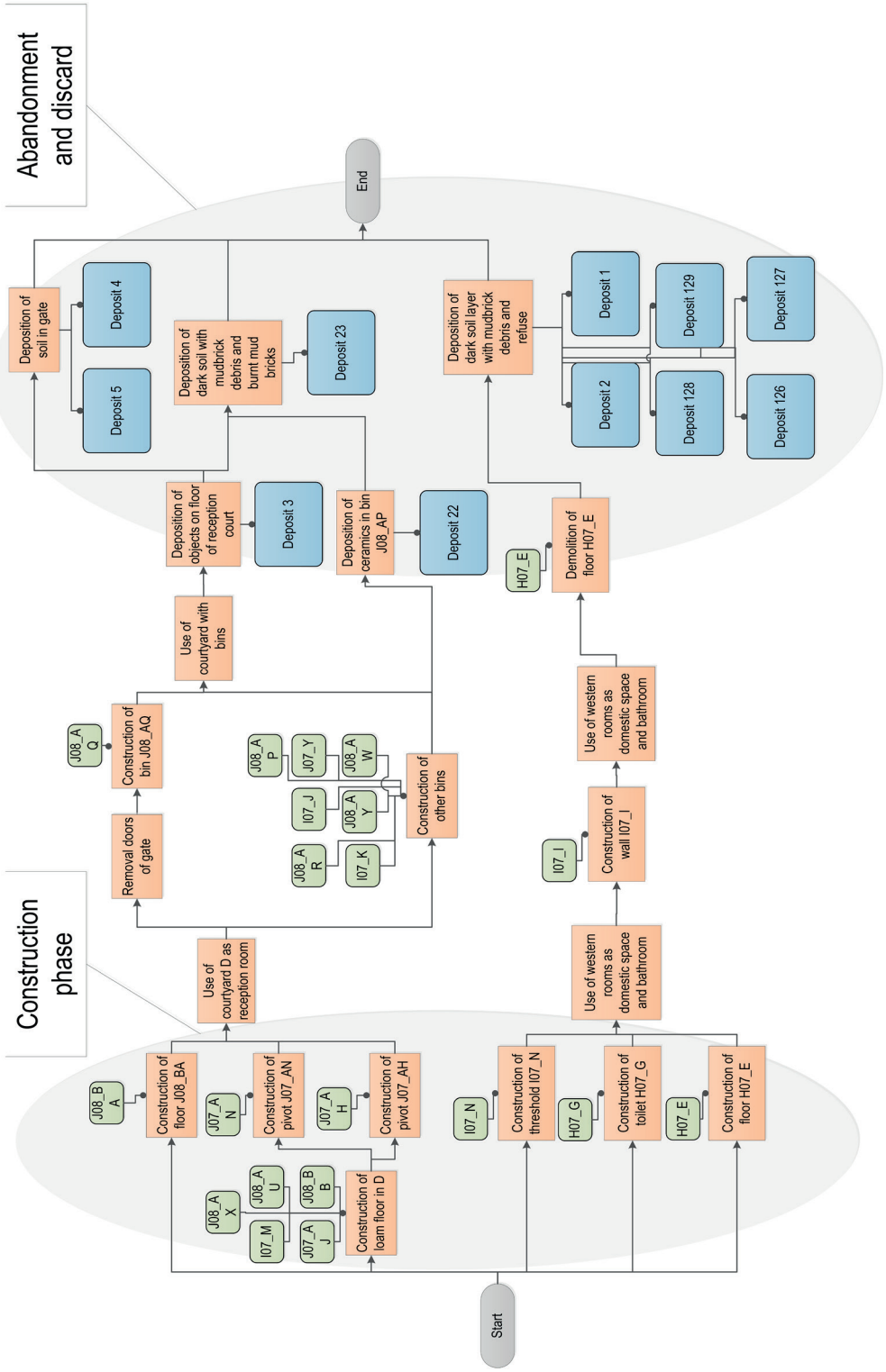


Fig. 3.23: Sequence of Events of area 4 of the north-western sector.

3.3 The north-eastern sector

3.3.1 Introduction

Fig. 3.24: The areas in the north-eastern sector.

The north-eastern sector of the *dunnu* consists of five areas (figure 3.24) in which many features and objects were found. The northern part of the *dunnu* was quite well preserved in general and has yielded the clearest architectural modifications through time. An interesting example of these is area 1. This area used to include the main entrance gate of the *dunnu*. During renovation this gate was closed off and a new gate was constructed in area 4 of the north-western sector (see paragraph 3.2.5). After renovation the old gate was used by the brewer of the *dunnu*, possibly as a tavern (see below). The renovation therefore involved a significant use change of the area.

Other areas in this sector (2, 3 and 5) were most likely mainly used for residential and administrative purposes, as well as for storage. In addition, area 3 yielded the extensive remains of a kitchen structure in which large meals could be prepared. Lastly, area 4 is characterized as a connecting area, consisting of an alleyway along the central building and a large open courtyard towards the south-east. The sector is connected to the north-western sector by a doorway in area 1. The courtyard in area 4 has an open connection to the south-eastern sector. Also the central building is reached from this sector. Because area 5 is closely connected to area 3, these are discussed in sequence. Area 4 is therefore discussed after area 5.

3.3.2 Pints and pottery (area 1)

As mentioned above, in the previous phase of the *dunnu* the main entrance gate was located in the north of area 1. The construction of walls AQ/AS/CD transformed the area in front of the former gate into a closed room (room A; figure 3.25). South of room A the former hallway was also converted into a room (B), measuring 7 by 3 metres. Further south in this area space C is located. This space, measuring 3 by 3 metres, originally consisted of only the two side walls. In the phase discussed here the space was closed off with wall N. Because of the lack of

Fig. 3.25: Architecture and floor level finds from area 1 of the north-eastern sector.

a clear doorway into the space it was interpreted as a silo (Akkermans 2006: 204). Although this interpretation is questioned in the discussion below, a different probable function of the space has not been found.

Room A has also been the subject of earlier studies and was dubbed the "office of the brewer" due to the discovery of several tablets which were concerned with the distribution of beer (Wiggermann 2010: 33; Akkermans and Wiggermann 2015: 100). From the current study it appears that also the find material from the floor of this room can be related to the production and consumption of beer. This might therefore corroborate the earlier interpretation of the space. This was however not the only function of the space during the sequence discussed here. At some point a small pottery kiln (V) was constructed in space B. This feature indicates that the use of the area underwent a significant use change. The features and finds from space A and B will first be discussed below. Space C will be discussed separately afterwards.

3.3.2.1 Spaces A and B

After the construction of the northern walls at the start of this sequence, a loam floor was constructed in rooms A and B. The layout of these rooms was determined largely by the pre-existing walls. In the northern part the buttresses and two benches which were part of the gate construction were still in place. This suggests that the use of the spaces did not require a specific alteration of their layout.

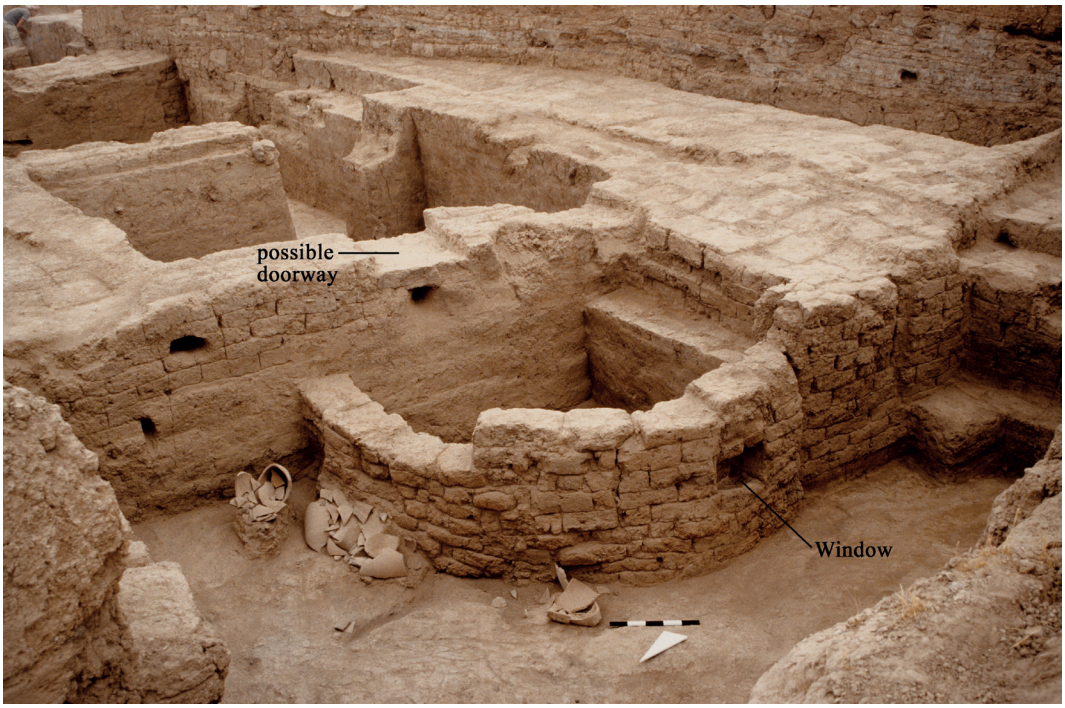


Fig. 3.26: Room A of area 1 looking south-east (photo by P.M.M.G. Akkermans).

In room A an additional rounded wall was constructed up to a metre in height. This was probably done to create a large bin structure in the south-eastern corner of the room (bin BC). A small rectangular 'window' was constructed in its wall, some 40 centimetre from the floor (figure 3.26). This window was plastered on the inside, but the rest of the wall was not. The northern part of the rounded wall has subsided a bit in the past, indicating a lack of upkeep during the last phase of its existence. What the bin structure was used for is unclear, no parallels are known for the structure and no finds from within hint at particular activities. Considering its shape and location in the corner of the room however, it is likely that it was used as a storage space. Objects which were found on the floor of room A also indicate that storage of beverages and food may be an important part of the function of the space (see below). Perhaps the function and use of the bin can also be associated with this.

In the eastern wall (AS), at an elevation of approximately 1,5 metre above the floor a doorway or window was found (see figure 3.26). If this was indeed a passageway it connected room A with area 2. Similar to room A, the objects in area 2 also relate to beer production and it is suggested in paragraph 3.3.3 that this was in fact a brewery. Perhaps the passageway indicates that the function and use of bin BC was related to area 2. It could be postulated for instance that the bin was the storage space for the brewed beverages from area 2.

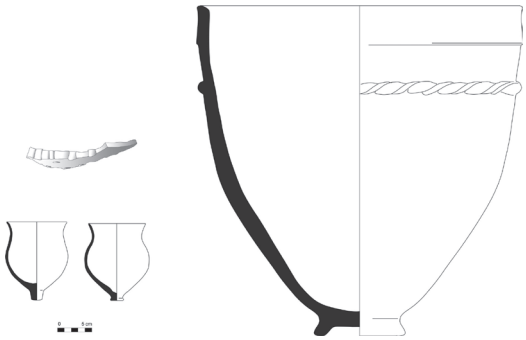


Fig. 3.27: Goblets, strainer and large pot from the floor of room A of area 1 of the north-eastern sector (from: Duistermaat 2008: Fig. IV.91L; IV.91Q; IV.57).

Fig. 3.28: Pottery concentration in the south-western corner of room A (photo by P.M.M.G. Akkermans).

3.3.2.2 Finds from the floor

The objects which were found on the floor of room A were assigned to deposits 116, 118 and 444. The objects were divided into different deposit types based on their spatial distribution. Firstly, deposit 444, a collection of small objects, consisting of two small, complete carinated bowls, a broken jug, two fragmented clay jarstoppers and a clay envelope and damaged tablet, was found in the north-western corner of the room. The location of the objects is striking, they seem to be deposited in a cluster in this corner of the room, in an out-of-the-way location. Although this could suggest that the objects have fallen from some furniture or a wall, a large amount of charcoal and other small debris around the objects indicates that a designation as provisional refuse is more likely.

Another important aspect of deposits, the degree of structuring, is often difficult to assess. Although the objects in a deposit were perhaps used together in some activity, this cannot always be determined based on their shape and formal function. For the current deposit, it also cannot be established beyond a doubt that the objects were used in conjunction with one and another. Most of the objects however relate to consumption in general and drinking in specific. Also the tablet from this deposit describes the issuing of beer to personnel (T99-004; Wiggermann 2010: 33). It therefore seems plausible that this group of objects represents a provisional refuse deposit containing items which were used in this space.

The reference to beer drinking appears to be present in deposits 116 and 118 as well. Located in the middle (118) and the south-western corner (116) of the same room, the combined deposit consists of a large number of broken but complete ceramics. These ceramics are related mostly to activities surrounding serving and consuming of drinks. A large plate, akin to a serving dish, as well as five goblets were deposited as complete objects (figure 3.27). Several other ceramics, however, can be related to the process of beer brewing. Among many ceramic shards, two large containers and a fragmented strainer were discovered in the south-western corner of the room (figure 3.28). Additionally, at least three large jars were discovered standing against bin BC (see figure 3.26). All these objects are relevant to the process of beer production as will be discussed in more detail in paragraph 3.3.3.

The position of the objects against the wall of the bin and in the corner of the room suggest that they were placed in an out of the way location. The complete state of many of the objects from this deposit furthermore indicates that the objects were left on the floor after use. As nearly all objects can be related to beer production and consumption, the structuring of the assemblage can be considered high. Therefore the deposit should most likely be viewed as abandonment stage refuse.

Although the goblets and serving tray, as well as the jars could indicate that the space was mainly used for the consumption of beer, a number of finds are more strongly related to the production of the beverage. Perhaps, therefore, the room can be interpreted as a space in which the brewer stored his tools and the end product. Additionally, perhaps beer was also distributed and consumed here. In this sense, perhaps space B functioned as a drinking location.

Space B yielded no objects to indicate a strong relation with room A. Two bins (CP and CR) were however constructed here, indicating that the room was in fact in use. Bin CR was constructed of several baked bricks and was lined with bitumen on the inside. Bin CP was made of clay and was simply plastered on the inside. Next to this bin a depression in the loam floor was discovered which would have probably held a large round based jar (CO). It is conceivable that thirsty travellers were given the opportunity to consume their beverages in the immediate vicinity of beer distribution. The bin and basin against the western wall can in this sense perhaps be interpreted as a wash basin. Jars full of beer could have been set in the floor and drunken from by the guests reposing along the walls of room B. This scenario could explain the lack of furniture and finds from the room. As an example, figure 3.29 illustrates a modern gathering of people in a mudbrick house. People are sitting on carpets and the only piece of furniture which would survive in the archaeological record is a wash basin in the corner of the room. Perhaps a similar situation can be suggested for room B.

Fig. 3.29: A recent example of consumption in a mudbrick house, with just one wash basin as imperishable furniture (from: Coockson 2010: Fig. 94).

3.3.2.3 Pottery workshop

After abandonment the rooms were no longer kept clean. In room A layers of waste gradually accumulated on the floor. In space B waste material was deliberately dumped for the creation of a new floor 50 centimetres higher than the old floor. In the north-eastern corner of this space, against the former gate, a pottery kiln (V) was built with its fire chamber dug into the floor. Peculiarly, the entrance to the fire chamber was in the north, which means the kiln had to be fuelled from room A (figure 3.30). No evidence was found which indicates that the pottery shaping process also took place in these rooms (see also Duistermaat 2008: 368). The presence

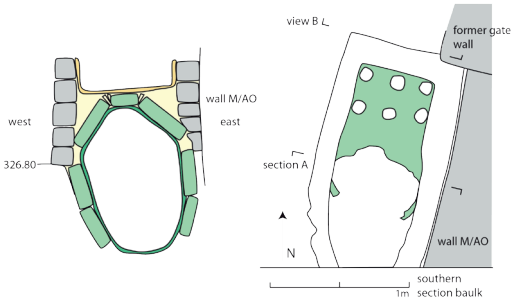


Fig. 3.30: Section and plan of kiln V in room B of area 1 of the north-eastern sector (from Duistermaat 2008: Figs. B.21 and B.22).

of the kiln in the area might also suggest that the room was already in ruined state and was considered an outside area. A thin layer of mud plaster on the inside of the kiln might be taken as an indication that the kiln was not reused often and was therefore not in use for a long period of time. Although it has not been attested how often such a plaster layer needed to be replaced, it is significantly thinner than the plaster layers in other kilns from the site (Duistermaat personal communication).

3.3.2.4 The 'silo'

Room C, in the southern end of area 1, was originally constructed of only its two side walls. As these were in line with the former entrance gate of the *dunnu*, it could be postulated that the space housed a guard or administrator to receive visitors in. At the start of the sequence described here, this space was closed off with an abutting wall (N). Because no entrance to this structure was found at ground level, it was assumed that the space was entered from the top, similar to a silo. Consequently the space was interpreted to have been used to store barley or other foodstuffs (Akkermans 2006: 204). The size of the inside space of the silo was however not sufficient for the amounts which were probably stored in the *dunnu*. Texts have suggested that approximately one million litres of barley was stored at one point (Wiggermann 2000: 195). The whereabouts of this grain heap is unfortunately not specified in cuneiform texts. One interpretation is that the roof or second storey of the central building was used for this purpose, as it would provide the necessary space (Klinkenberg and Lanjouw 2015: 172). This does not however mean that the space under consideration here was not used for this purpose, albeit on a smaller scale.

To be able to use the space as a silo for grain sacks or loose grains there is one precondition which has to be met – the walls should be able to hold the weight. The amount of barley which could be stored in this space was largely dependent on the stability of the structure. With a floor plan of twelve square metres every one metre high layer of barley with a specific weight of 650 grams per litre would have weighed 7,800 kilos. Although it is beyond the scope of this research to make detailed calculations of the side pressure this would generate in the space, it will suffice to mention that if the space was filled up for three metres, it would have contained the weight equivalent of nearly five large Asian elephants (each weighing 5000 kilos). Given that the northern wall of the 'silo' was merely abutted and not bonded to the side walls it seems unlikely that it could resist such pressure.

Despite these structural arguments against the use of the space as silo, finds from the space are indicative for a use in the realm of storage or food distribution. On the floor of the space four nearly complete ceramic vessels were discovered (deposit 445). These are a large jar,

two carinated bowls and a slightly damaged goblet. The objects were found in a burnt layer on top of the floor, which was covered with charcoal and burnt seeds or grains. As the objects were complete at deposition and relatively low in replacement cost it seems most likely that they were left as *de facto* refuse. This means they were left behind after the last use of this space. The large jar was perhaps used to serve as storage vessel. Perhaps the smaller ceramics were used for the scooping of grain from a bag or jar.

Given the evidence presented here, the space which was commonly known as the 'silo' was probably not used strictly as such, and particularly not for very large quantities of food. Possibly however it was used for temporary storage during the distribution of rations outside the central building. The end of use of space C is indicated by the burnt remains on its floor. Possibly a large fire destroyed both the content and the construction. Later yet, layers of loam and mudbrick debris were deposited on top of the floor (deposit 195).

3.3.2.5 Conclusion

In conclusion, in the preceding phase area 1 was a pivotal node in the flow of people into the *dunnu*. At the start of the sequence described here the area was transformed into an elongated series of rooms, deep inside the *dunnu* layout. The fixed features such as the large bin (BC) and the objects which were found on the floor of room A suggest that the area was strongly related to the production and consumption of beer. One possible interpretation could be that the room A was used to "store and pour" and room B to "clink and drink". The discovery of a tablet which describes the issuance of beer to personnel further indicates that the head brewer of the *dunnu* was at work here.

Distribution of food may have also occurred in this area. In the southern side of the area a large storage facility, space C, was constructed which was perhaps used to hand out rations of grain. The thick layer of charred grain which was found on the bottom of the space indicates that indeed several bags of barley must have been present. However, the space had not been purposefully constructed for the bulk storage of foods.

At some point rooms A and B were no longer used as a tavern. Many of the items which had been used before were discarded on the floor. At this time the area had lost its role for social gathering and was primarily used as a dump. When about half a meter of soil and refuse had been deposited on the original loam floor, a new floor and a sunken pottery kiln were constructed. The presence of this kiln further suggests that this had turned into an out-of-the-way area.

Also space C lost its function at some point. A thick layer of burnt grain on the bottom of the structure indicates that this was either caused or ensued by a large fire. How this relates chronologically with the use of the north of the room is unclear from the stratigraphy (figure 3.31) but if the distributive function of the area was present in the north and south simultaneously, perhaps the termination thereof was as well.

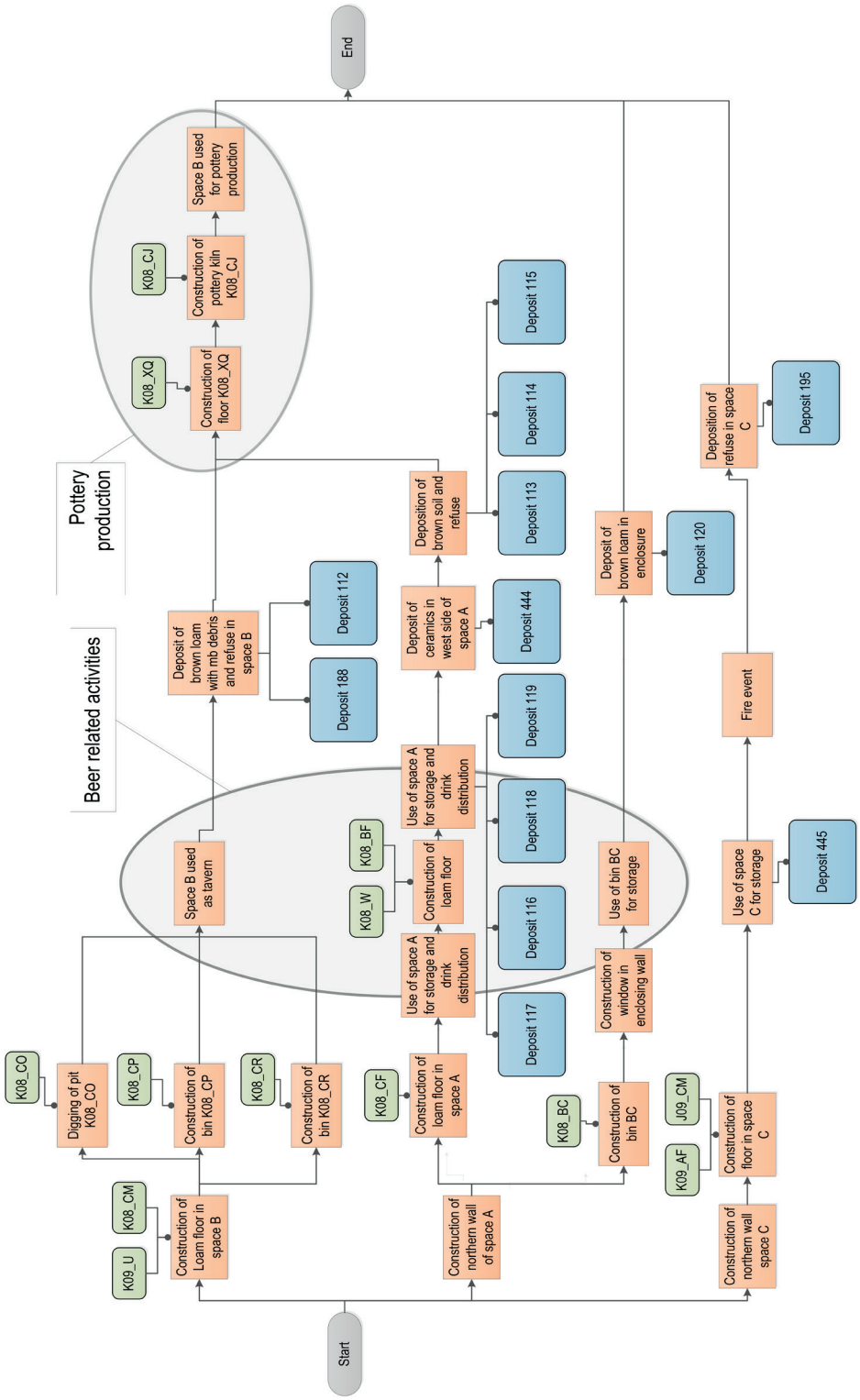


Fig. 3.31: Sequence of Events of area 1 of the north-eastern sector.

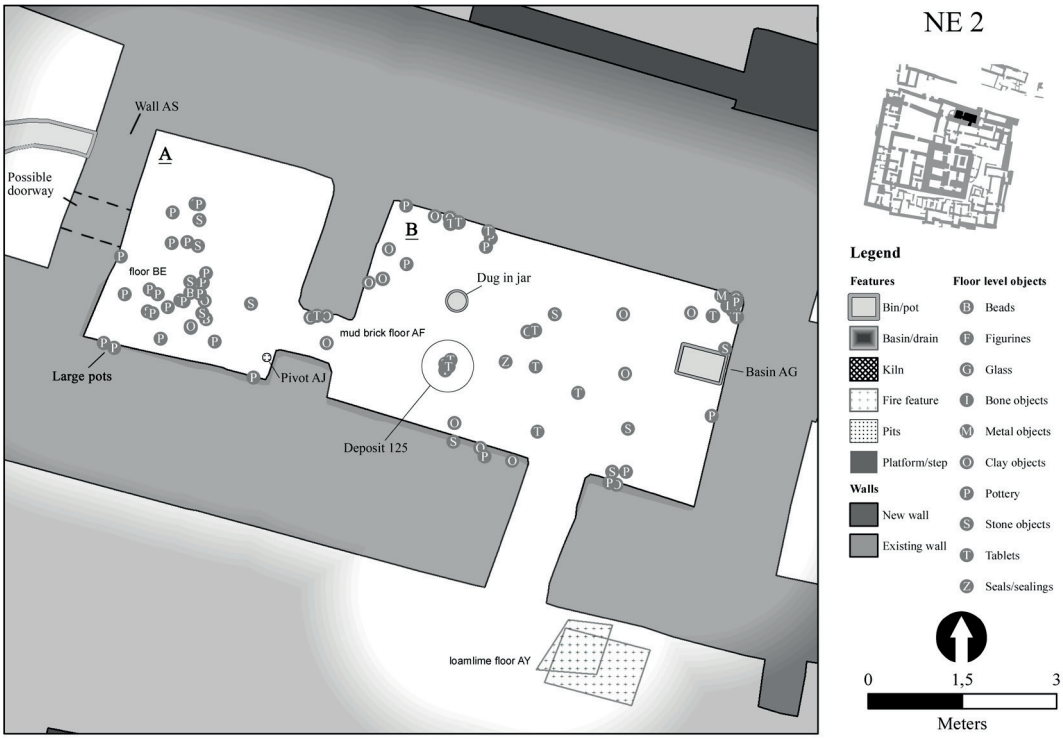


Fig. 3.32: Architecture and floor level finds from area 2 of the north-eastern sector.

3.3.3 Brewery and office (area 2)

Area 2 of the north-eastern sector is composed of two rooms, labelled A and B (figure 3.32). The area could be entered through a doorway in space B. As mentioned above however, the area may also have been connected to area 1 through a doorway in wall AS some 1.5 metre above the floor (paragraph 3.3.2.1). In previous research mostly the presence of several tablets in the room B was highlighted (Wiggermann 2010; Akkermans and Wiggermann 2015). The finds from the rooms are however of a more varied nature. Most notably a collection of ceramics from room A indicates that the area possibly was used for beer production. The tablets which were found in both rooms were deposited later than the use of the area as brewery, indicating that these relate to a later use of the rooms. The sequence of activities which were carried out in this area therefore indicates that the area transformed from production area to a residential or official area.

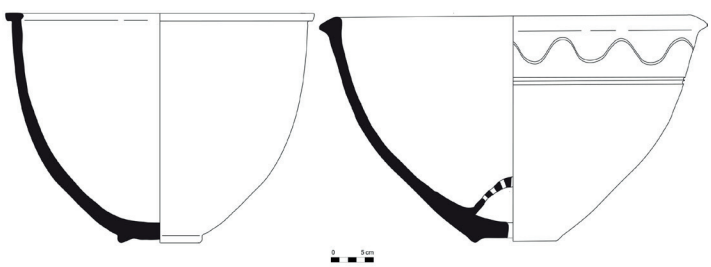


Fig. 3.33: The large pot and strainer, or *nazzittu*, from room A of area 2 of the north-eastern sector (from: Duistermaat 2008: Figs. IV.69b and IV.59a).

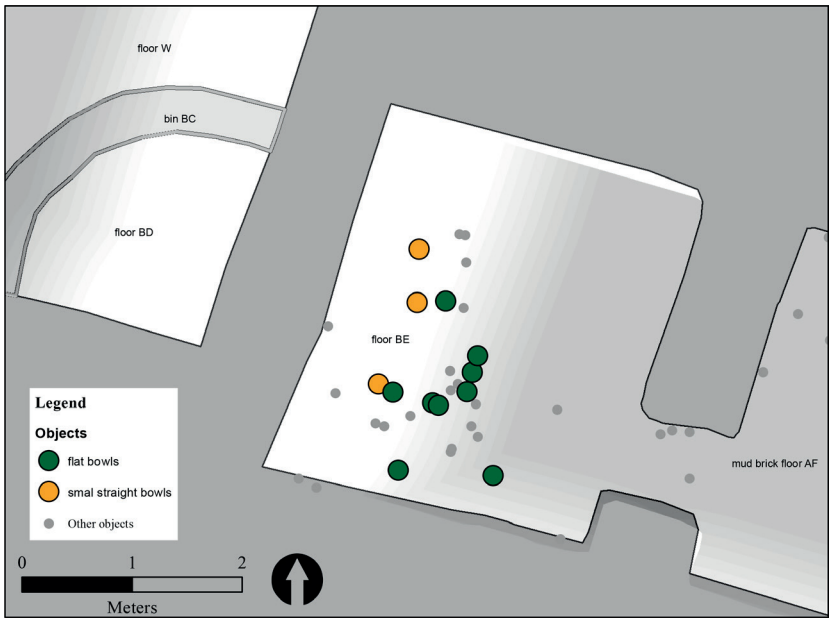


Fig. 3.34: Distribution of carinated bowls on the floor of room A of area 2 of the north-eastern sector.

3.3.3.1 Room A

As mentioned above, room A was connected to the adjacent area through a door or window high up. Apart from this throughway, the only route into the room was through the doorway from room B. A pivot hole in the inside of the doorway (AJ) indicates that the room could be closed off and, if necessary, locked from room B.

33 objects were registered on the floor of room A, most of which were found in the southern part of the room (deposit 121). The deposit contained twelve large carinated bowls, seven potstands, two large pots (one of which is fitted with a small strainer; figure 3.33), seven stone tools, two beads and three clay objects. The damage pattern of the objects in this deposit is remarkable. 66 percent of the objects was complete, 12 percent was damaged and 22 percent was fragmented. This indicates that the deposit was most likely not discarded as primary or secondary refuse. Additionally, the size classes are unusual. Nearly 60 percent of the objects are considered large in size. Unfortunately, due to the multi-functional character of most ceramics in this deposit, a determination of the degree of structuring cannot be easily determined. The large amount of complete and large objects is however strongly indicative of a *de facto* refuse deposit, left behind during slow abandonment.

Among the deposit twelve carinated bowls were found. Three of these were small, cup-shaped bowls and nine were large, straight-sided bowls. Curiously, all straight-sided bowls are of a very similar shape and size, suggesting that they were produced together. The three small bowls were found in the west of the room while all the straight-sided bowls were found eastward of these (figure 3.34). Their clear spatial organization might be indicative of their untouched position on the floor of the room. Again this indicates that the objects on the floor were left at abandonment.

If the objects from the floor level deposit of room A were left behind as *de facto* refuse, it means that the objects were once stored or used in this room. Interestingly, based on parallels from Tell Bazi (Otto 2006; Zarnkow et al. 2006), the large pots mentioned above were interpreted by Duistermaat (2008: 459) as germinating vats for beer brewing. Consequently, room A may have functioned as brewery or as storage space for the brewer. In order to understand the group of artefacts from this deposit in the context of beer brewing, this process is shortly introduced below. The recipe which is used by the authors cited below is based on the "Hymn to Ninkasa", a Sumerian tablet from approximately 1800 BC (Prince 1916; Black et al. n.d.; Sallaberger 2012). This Sumerian text describes in a poetic manner in honour of goddess Ninkasa the process of beer brewing and has been recently revaluated by Sallaberger (2012). By approaching the issue of beer brewing in the ancient Near East in an interdisciplinary fashion, Sallaberger attempts to understand the Sumerian text with knowledge of the technological aspects of beer brewing and archaeological evidence for the necessary tools for the process. His reconstruction of the beer brewing process includes the preparation of two main products, sourdough (fermented barley) and malts (germinated barley), which are, in a second step, combined to brew the end product through further fermentation.

To produce the malt large amounts of barley were soaked in a large pot with a base hole, a vessel with the Akkadian name *nazzittu* or *namzittu* (Duistermaat 2008: 459). After soaking, the barley was drained by letting the water out through the hole in the bottom. Subsequently, the barley was dried in the sun to stop the germinating process (Zarnkow 2006a; Zarnkow 2006b). After drying, the malted barley was mixed with water and the sourdough into large jars. According to brewing experiments, after approximately 36 hours the beer could be consumed (Zarnkow et al. 2006a). Because the end product contained all the malted barley it had to be consumed using filters and straws. The amount of beer which was produced was approximately eight times the volume of the initial germinating vat (Duistermaat 2008: 459). The volume of the germinating vat therefore indicates the volume of beer which could be produced in one brewing event.

Fig. 3.35: The western part of the floor of the western room of area 2 of the north-eastern sector looking south. Several pot stands are on the floor as well as the remains of large vessels in the back corner (photo by P.M.M.G. Akkermans).

The germinating vat (or *namzittu*) which was found in room A of area 2 has a maximum capacity of 18.91 litres (Duistermaat 2008: 214). The other pot from the same de-

posit was slightly smaller. This pot had a maximum capacity of 13.79 litres (Duistermaat 2008: 234). Possibly, the *namzittu* was placed on top of the smaller pot when straining the barley. Because most of the volume of the *namzittu* was taken up by soaked barley, the amount of strained liquid would probably not exceed the volume of the smaller pot.

Large jars which were found from the same phase in the *dunnu* have yielded volume measurements of on average 16 litres, only slightly less than the volume of the discussed *namzittu*. It could therefore loosely be stated that one brewing event with this *namzittu* would have resulted in approximately eight full jars of beer. Unfortunately no jars were found in room A. However, the room did yield ceramic stands which could be used to hold jars, seven in total, a number close to the hypothesized yield (figure 3.35). Although entirely speculative, perhaps the jars which held the end product were taken away, leaving behind only the ceramic stands to reveal their earlier presence. Although the proposition that the room was used as storage space by the brewer cannot be rejected, it is appealing to suggest that this room was indeed used for brewing beer. If the amount of stands from the room are indicative of the yield from the discussed *namzittu*, it could even be proposed that the resulting beer was relatively strong.

A connection between the carinated bowls from this deposit and the brewery can be postulated on the basis of their regular shapes. The fact that there are two groups of similar looking bowls (cup-shaped and straight-sided) might indicate that the bowls were obtained from the potter directly after firing. A letter from grand vizier Ili-pada to the steward of the *dunnu*, Tammitte, indicates that certain potters were in fact employed by a brewer (Wiggermann 2008). Therefore, perhaps the brewer ordered not only his specific beer vats but also some 'ordinary' bowls. This could strengthen the interpretation of this find assemblage as the brewer's toolkit.

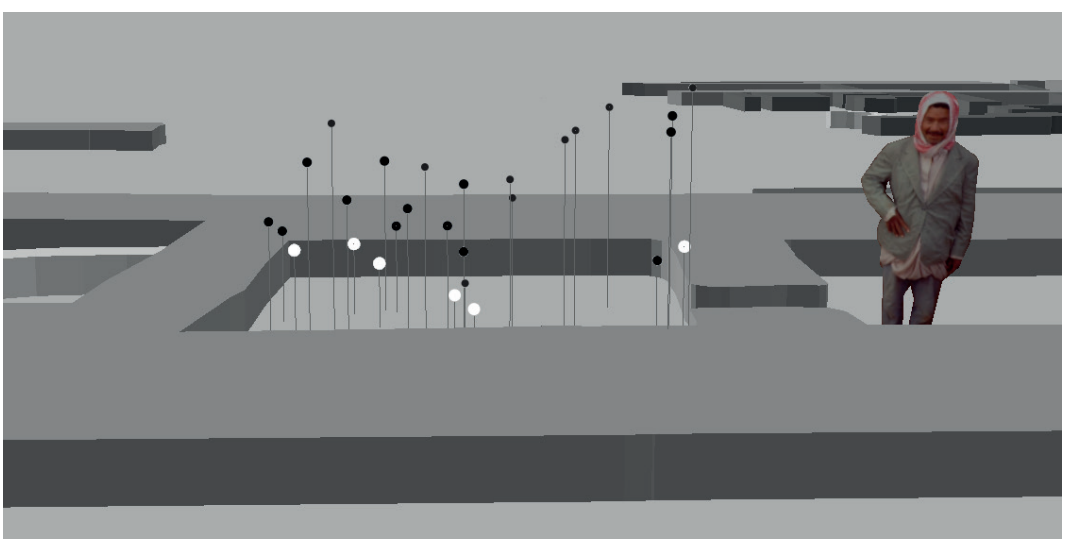


Fig. 3.36: 3D view of room A of area 2 of the north-eastern sector, looking north. The white dots indicate the location of tablets and tablet fragments. Black dots are other finds from the soil layers in the room. The vertical lines indicate the elevation of each object. The individual standing to the right is 1.60 metre tall.

3.3.3.2 A subsequent refuse dump

Some time after the room was in disuse a fire occurred, burning the floor and much of the pottery on it. Also the pivot hole in the south-east of the room contained much charcoal during excavation. This means that the conflagration must have been quite extensive, but whether the fire was intentional or accidental cannot be stated. After this fire occurred several layers of soil and refuse accumulated on top of the floor assemblage. Three-dimensional visualization of the distribution of the objects suggests that the soil layers and therefore also the objects within were deposited in separate layers, with distinct object types per deposited layer (figure 3.36). The lowest, first deposited, layer contained (fragments of) cuneiform tablets. Above this layer, a large number of ceramic objects were found on top of which soil with stone artefacts was found. This stratification of object types is indicative of a structured deposition process in which specific waste deposits were discarded. Perhaps the tablets in the lowest layer were discarded after use in room B, in which numerous tablets were discovered in floor-level deposits. If this was the case, it suggests that room B was in use after the fire occurred in room A. Perhaps therefore room B was in use longer than room A.

3.3.3.3 Room B

Room B measures approximately 6 by 3 metres. The room was fitted with a loam floor in which two features were dug. Against the east wall of the room a small plastered basin (AG) was constructed and in the western side of the room a large jar was dug in the ground (see figure 3.32).

36 objects were registered on the floor of the room. These objects probably ended up on the floor through several different modes of deposition. Four clay tablets which were found together in the centre of the room for instance were probably deposited during rapid abandonment or during a catastrophe (deposit 125; see below). Concentrations of objects in the corners and against the walls on the other hand suggest that these were discarded as primary or provisional refuse. Other objects, located in the middle of the room are however very similar to the items which were present along the walls. It is therefore very difficult, if not impossible, to separate this floor level assemblage into different modes of deposition. Consequently, the objects were grouped as one deposit (109) which should possibly be considered to represent a combination of primary and provisional refuse.

Of the 32 objects in deposit 109, five are tablets and twelve are clay sealings. This means that a substantial half of the objects are related to administrative activities. Other objects are seven damaged carinated bowls, five stone tools, two goblets and one small clay stamp. Although a large portion of the objects can be related to administration, this is not sufficient to consider the deposit highly structured.

Additionally, half of the objects are fragmented, possibly indicating that the objects were discarded as refuse. However, along the walls of the room, several tablets were found together with their envelopes, indicating that these tablets were opened, read and discarded in this very room. These objects therefore indicate that at least a part of the object assemblage was discarded as primary or provisional refuse. This in turn indicates that the room was used for administrative activities.

Fig. 3.37: Section of collapsed wall Z in room B of area 2 of the north-eastern sector. Visible on the photograph is that 50 centimetre of soil and refuse had accumulated on the floor before the collapse occurred (photo by P.M.M.G. Akkermans).

Fig. 3.38: Section through room A of area 2 of the north-eastern sector, looking west (fig. by R. Timmermans).

Another four tablets from this same deposit (109) were found spread over the floor of the room. Perhaps these were deposited as primary refuse, shortly before abandonment. It could also be postulated however that the objects were discarded during abandonment, as *de facto* refuse.

Another four tablets were grouped in a separate deposit (deposit 125; see figure 3.32). These objects were found lying directly next to each other. Additionally, textual analysis of the tablets has shown that these tablets consist of unbroken debts, which means they were part of an active administration, in contrast to the broken envelopes and discarded letters in the rest of the room (Wiggermann personal communication). Their remarkable concentration together has led some to think that they were left behind here in a wooden box (Wiggermann 2010). Although a possible container cannot be reconstructed beyond a doubt, the concentrated position on the floor does indicate the objects were deposited together. A likely scenario is that the objects fell from a shelf or container on the wall after abandonment.

After the room was abandoned a large amount of burnt material accumulated on top of the objects on the floor. Remains of burnt reed, grain and wood indicate that at some point the roof had caught fire and collapsed down. Later yet, even the walls of the building collapsed into the room. A part of the collapsed northern wall was found lying on top of a 50 centimetre thick soil deposit (figure 3.37). This may indicate that remains from an upper storey of the building had fallen on the floor before the walls collapsed. A large amount of fragmented objects from within these layers may however also indicate that the space was used as a refuse dump for some time before structural collapse. Whatever the case, these destructive events mark the end of use of area 2 of the NE sector.

3.3.3.4 Conclusion area 2

Although the processes which occurred in area 2 are similar in both rooms, it is unclear how they were chronologically related. Room A was used as either a brewery or as a storage room for the tools of the brewer. After the room was no longer in use as such a fire broke out and subsequently the room was used as refuse dump. Several layers of soil containing discarded objects were deposited in the room. A section drawing of the deposits in this room is offered in figure 3.38. It clearly demonstrates the horizontal layering of these refuse deposits. Several clay tablets were located in one of the lowest refuse deposits.

Room B was used for either residential or official purposes. Many tablets were found in contexts which indicate that the objects were in fact used in that room. Perhaps the discarded tablets from room A are related to this use phase of room B (figure 3.39). At some point also room B was abandoned and a fire broke out. Afterwards, some soil and refuse accumulated in the room but not to the degree witnessed in room A. After the accumulation of 50 centimetre of deposits on top of the floor the northern wall collapsed into the room. Perhaps this wall was deliberately demolished to prepare the area for a new construction.

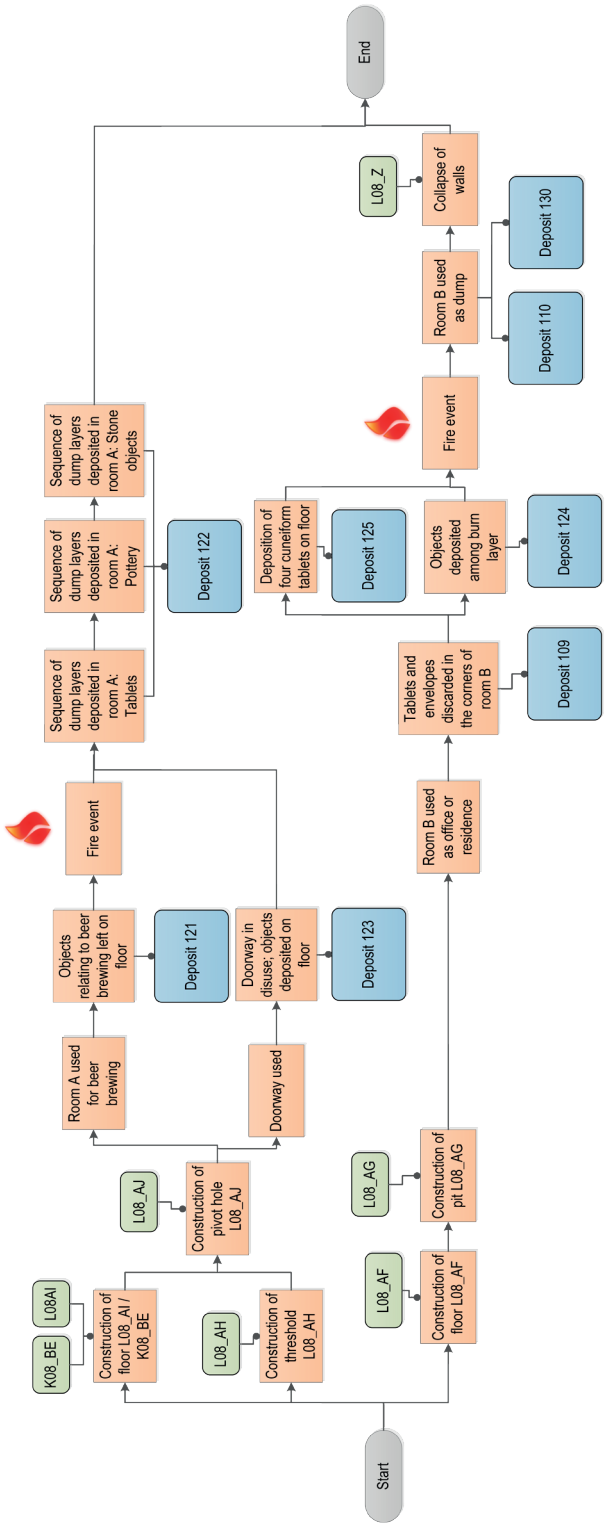


Fig. 3.39: Sequence of Events of area 2 of the north-eastern sector. The two separate fire events are emphasized by small flames.

3.3.4 Residential spaces and a kitchen (area 3)

Area 3 consists of five spaces (figure 3.40). These spaces (A-E) are closely related to each other in function and use. The northern spaces (A, B and C) were mainly used for domestic purposes. For spaces B and C it is suggested that they constitute the apartment of a high official of the *dunnu*, perhaps the main steward. In the south of the area, space E was a courtyard, perhaps used by this same administrator to receive guests. Space D, in the south-west of the area, is a kitchen structure in which large meals could be prepared. Many objects were found on the floor of this structure. How these objects ended up on the floor is uncertain and discussed below. Because the area is quite large, the discussion below is divided up into the different rooms or spaces. First the northern room A and B/C are discussed. Subsequently the related courtyard is reviewed. The kitchen D is dealt with last.

3.3.4.1 Room A

Room A of area 3 consists of a long, rectangular space, measuring 14 by 3.5 metres. The room was fitted with a loam floor (AV/AY) which was renewed multiple times. In the north the room has a doorway which is connected to area 2 of this sector which is discussed in the previous paragraph. To its east, the room gives access to room B of this area and to the south rooms D and E could be reached.

One fixed feature was discovered in room A. In the north-east of the room, next to the doorway leading into area 2, a hearth (BO/AZ) was constructed. The hearth consisted of a mudbrick platform with a central depression. In its corner a small ceramic jar was dug in, perhaps to serve as an ash pot or to store tinder. It seems to be an integral part of the hearth structure since it had been kept in its place until abandonment.

Although the floor of this large hall was covered with pottery fragments, hardly any complete objects were registered. One main find concentration in this room was located in the south-western corner of the room (deposit 131). This cluster consists of six ceramic bowls, a tablet with its original envelope as well as a bronze object interpreted as a razor, fitted with tweezers on one end. The object assemblage bears close resemblance to the deposits in the other rooms of area 3. Particularly striking is that in all rooms one corner was used to discard objects amongst which cuneiform tablets and clay envelopes. This may indicate that these rooms were used and abandoned simultaneously.

The location of the deposit in the corner of room A suggests that it concerns a provisional refuse deposit. Perhaps the objects were part of the 'sweepings' which ended up in the corner. Five of the ten objects from this deposit were however complete, which may indicate that the objects were left behind at abandonment. Perhaps their presence in the corner of the room indicates the former presence of a cupboard or shelf in this location.

Aside from the cluster of objects in the south-western corner, hardly any objects were registered in room A. This suggests that at abandonment the space was left in a rather clean state. As no evidence was found for production processes or storage in this room, it is likely that the room was used for domestic activities. Another option is that the space was used as a dining room, in conjunction with the kitchen to its south, room D.

Fig. 3.40: Architecture and floor level finds from area 3 of the north-eastern sector. The inset in the lower left zooms in on room D including the oven structures which were found there.

3.3.4.2 Rooms B and C

As an extension of room A, to the east two other elongated spaces were present. Spaces B and C together measure 10 metre in length and 3 metre in width. These spaces were once a single hall but this was split in two by the construction of a wall G at the start of the phase discussed here. If and how room C was accessed after the construction of wall G is uncertain. Room B was connected to room A in the west and to a corridor and toilet in area 5 in the north.

The layout of the rooms, in particular the connection between room B and the toilet in area 5, indicates that room B was used for domestic activities. Because several tablets were found in the room it was suggested by Frans Wiggermann (personal communication) that this space may have functioned as the private residence of the steward of the *dunnu*. How the majority of objects ended up on the floor of the room is however not straightforward as is discussed below.

Fourteen objects were registered on the floor of room B. These include a fragmented bronze bracelet, a lead slag, two clay sealing fragments, two ceramics and seven clay loom weights. The loom weights are perforated clay spheres, measuring on average 4 centimetre in diameter. They were found in a concentration in the north of room B. Their clustered distribution indicates that they were deposited together. Perhaps a loom was located at this location, which would fit the interpretation of the space as domestic structure.

Fig. 3.41: Pottery on the floor of room B looking east (photo by P.M.M.G. Akkermans).

In addition to the registered objects a large amount of ceramic shards was found on the floor of rooms B and C (figure 3.41). Because most of the ceramics on the floor were fragmented only a few were registered as objects. Post excavation refitting has however yielded many complete shapes which were analysed by Kim Duistermaat for her PhD research (Duistermaat 2008). These analyses demonstrated that many of the ceramics from the room were small and large storage jars. Additionally, many of the ceramics from the rooms were repaired in the past by the application of gypsum on cracks and breaks. The storage jars could have been used to store food stuffs and drink in these rooms. The large amount of repaired ceramics from this room may however also indicate that the rooms were in fact used to store and mend ceramics.

Among this ceramics-rich deposit four cuneiform tablets (deposit 205) were found in room C. Two of these are letters regarding Ili-Pada and Tammitte, the other two relate to the issue of beer by the local brewer Baligunaya (Wiggermann 2010: 19). Interestingly, this brewer is also mentioned on tablets which were found in area 1 of the NE sector. Because the tablets were found close to the wall of the room, it could be postulated that they were discarded as provisional refuse. The objects were however found on varying elevations, indicating that they were not deposited simultaneously.

The large amount of complete objects suggests that the deposit was the result of either a catastrophe or abandonment stage refuse. The concentrated location of the clay loom weights indicates that these were left behind at this location. Also the particular location of the tablets

in the east of room C is indicative of a structured spatial distribution of objects. This in turn could be indicative of *de facto* refuse. The objects were however deposited on varying elevations. The soil in between the objects contained burnt reeds and charcoal. This might indicate that the ceiling and perhaps higher storey of the structure had burned and collapsed. Consequently, perhaps a portion of the floor level assemblage of these rooms is the result of this collapse. This would explain the presence of objects on the floor of room C, which was probably not accessible due to the construction of wall G.

In conclusion, the most likely explanation for the deposits in rooms B and C appears to be a combination of abandonment stage refuse and structural collapse. Whether the objects which have fallen down from the second storey were left there as *de facto* refuse or were still used is unclear. Whatever the case, it is likely that the objects were once part of the activities which were carried out in the general area. Therefore while room B served as a domestic structure, as apartment, the higher storey was used for repair and storage of ceramics. Unfortunately this does not explain the presence of the tablets in room C. Conceivably, these were discarded in the room after the collapse of the upper storey of this house.

3.3.4.3 Space E

Less clear in architectural layout than other spaces in area 3 of the NE sector, space E is interpreted as an open courtyard, because the clay floor (BG) was compacted by rain water (Brüning and Plug 2016). The space was entered from the large courtyard of area 4 and gave access to rooms A and D. Four pits were found in the east of the courtyard. Remarkably, these pits yielded large quantities of animal bones, possibly the result of cooking activities in room D.

Similar to rooms A, B and C the courtyard yielded a small amount of registered objects. In the west two pot stands were found and a cluster of objects was discovered in the south-eastern corner. Similar to room A, it is suggested that either the space was regularly cleaned or that the activities which were carried out in this room did not result in the accumulation of objects. The two pot stands can still be interpreted as abandonment stage refuse but these do not indicate a specific function or use of the courtyard.

The cluster of objects in the south-east was probably deposited in another manner. The cluster consists of 27 envelope fragments, 3 sealings and a fragmented ceramic bowl. The similarity of the objects indicates that they were discarded as a group after use. The fact that the deposit is composed of fragmented objects and their location in the corner of the room further suggest that the deposit is either primary or provisional refuse. Either way, this suggests that the envelopes were opened in this space. Use of the courtyard in the administrative domain ties in well with the notion of the adjacent room being the private residence of the *dunnu*'s main administrator, the steward (see above). The courtyard could have been used to receive guests and to handle day to day business. In a later stage, the courtyard may have functioned in conjunction with the adjacent kitchen (see below), as is indicated by the large amount of animal bone waste.

3.3.4.4 Room D, the kitchen

Archaeologically by far the most intriguing space in this area is room D. This small space has yielded extensive remains of cooking structures as well as vast amounts of finds (figure 3.42), some related to the kitchen function, others definitely not. The text below first describes the architectural layout of the space, after which the finds are discussed.

Before the southern walls of area 3 were built, the space was a large courtyard in front of the central building. By the construction of the walls, the passage along the central building was made much narrower. Room D was rather small, measuring 2.5 by 4 meters. The room had two doorways, one to its north and one in the eastern wall, towards courtyard E. The room contained a small niche in the north-western corner, possibly used as a cupboard.

Fig. 3.42: Southern part of the kitchen, room D of area 3 of the north-eastern sector, looking west (photo by P.M.M.G. Akkermans).

After the construction of the walls an extensive cooking structure was built in the room. Both on the northern as well as on the southern side of the room several fire places were constructed. Curiously, the cooking installation in the south was constructed while leaving some 25 centimetres of space between it and the southern wall. Perhaps this was done to prevent fire damage on the wall. This southern installation consisted of five separate fire places next to each other. The northern cooking installation was badly damaged by a later pit dug through it but there was evidence for at least two fire places in this structure. It is likely that during the use as a kitchen the space was not fully roofed, so that light could come in and smoke could get out. This is however not a required feature. A roof or second storey on top of this kitchen cannot be excluded as a possibility.

The cooking installations were composed of several small mudbrick walls which created niches in which a fire would burn. The niches would function as braziers on which pots could be placed. The fire places have a considerable width between 40 and 50 centimetres with one exception of a small fire place in the west measuring 20 centimetres in width. The fire place walls were preserved to a height of 40 centimetres, the surrounding walls were preserved to a higher elevation which suggests that the fire places were preserved completely. The considerable width of the fire places indicates that large vessels were used in this kitchen. This in turn indicates the considerable size of the meals which could be prepared in this room.

3.3.4.5 Finds relating to the kitchen

49 objects were registered from the floor and fire places of room D. 13 of these objects could be related to preparation and serving of food (figure 3.46; deposit 108). Many ceramics which were deposited in this room were however fragmented and therefore not registered. The original number of kitchen-related objects was therefore probably higher. Several of the registered ceramics stand out because of their unusual appearance or distant provenance (figure 3.43). Most exceptional is the presence of one large broken but reconstructable pot which was deposited in the middle of the room (P93_308). This pot is a large cooking pot with a rim diameter of 43 centimetres and a blackened base, indicative of its use on a fire. The pot had a capacity of over 40 litres and was produced of clay from Ugarit (Duistermaat 2008: 546-7). Its size indicates that it could have easily stood on the fire places in this kitchen and therefore most probably has.

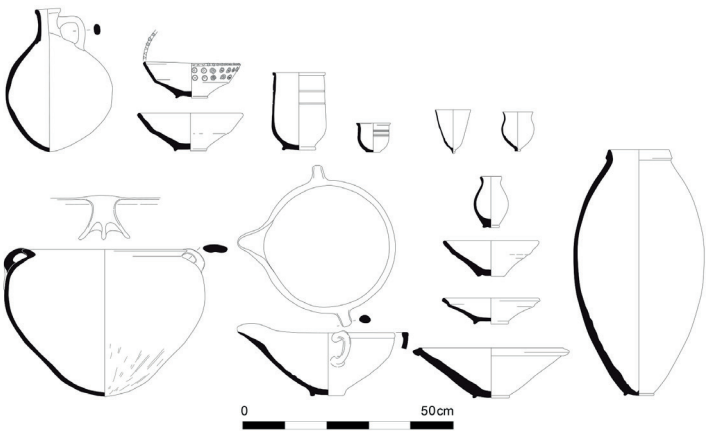


Fig. 3.43: Pottery from the kitchen, room D of area 3 of the north-eastern sector (from: Duistermaat 2008: Fig. VI.2). The pot in the lower left is cooking pot P93-308.

The ceramic assemblage however yielded more unusual items. Several spouted bowls which were also found on this floor probably originate from the Jezira region (Duistermaat 2008: 532). A number of black ceramics yielded remarkable decorations not seen anywhere else in the *dunnu*. Thin section analysis of these ceramics has however shown that they were made from local Balikh clay (Duistermaat 2008). The pottery assemblage which was deposited on the kitchen floor therefore is composed of a large variety in shape, function and provenance. The objects comprise pots for food preparation, and serving.

3.3.4.6 Administrative artefacts and special finds

The majority of objects which were registered in this space did not relate to cooking activities. These objects have probably been deposited after the space was no longer in use as a kitchen. But how and why these objects were deposited here is unclear. The objects comprise of a large concentration of administrative artefacts (tablets and envelopes; deposit 194) and a selection of objects which can only be grouped with the term 'special' objects (see below; deposits 136-40). These special objects were discovered in the fire places of the kitchen. None of the tablets or other 'special' finds exhibited fire damage so they must have been deposited after the use of the space as kitchen.

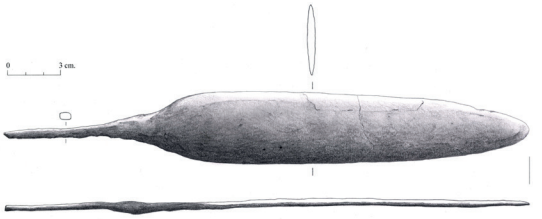


Fig. 3.44: Bronze spearhead from the kitchen of area 3 of the north-eastern sector (fig. by R. Timmermans).

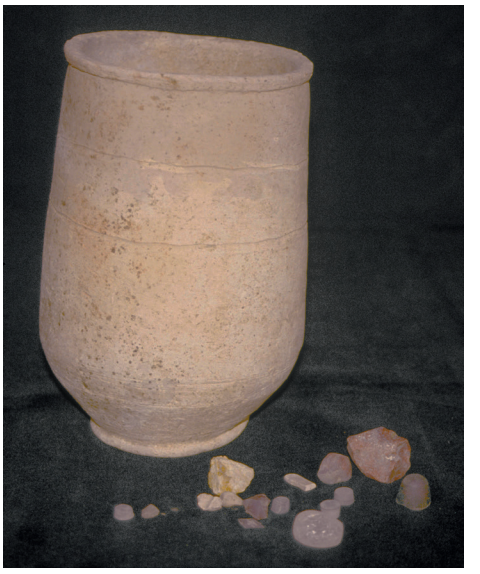


Fig. 3.45: Ceramic grain measure with bead maker's toolkit from the kitchen of area 3 of the north-eastern sector (photo by P.M.M.G. Akkermans, adapted by author).

The group of administrative objects consists of one sealing, about four envelopes and twenty tablets. They were deposited mostly against the western wall of the kitchen, partly lying on the western part of the cooking installation, partly on the floor. Their spatial distribution seems to indicate that a collection of objects has fallen against or along the west wall. Some tablets were totally fragmented. These fragments were however located very close to each other, indicating that they were broken at the spot and not transported. Their concentration against the west wall could indicate that the tablets were stored overhead in a cupboard or in a bag and fell down after abandonment. It was suggested before (Akkermans and Wiggermann 2015) that the tablets had fallen down from a higher story. The peculiar presence of administrative objects in a kitchen could indeed be explained by this notion. It is however completely unclear how the upper structure of the space was constructed.

The tablets were not simply deposited on top of the rest of the floor material, as one tablet was found lying on a shard which in turn was lying on top of a tablet. The process by which the tablets and associated objects were deposited on the floor of this room could therefore have been both a catastrophic event including the collapse of the walls as well as an act of secondary discard. As the soil in the room covering the objects was described as loose brown soil and not full of complete mudbricks, the possibility of secondary discard is more likely. The discard of large amounts of tablets was attested for in many places in the *dunnu*. Often the discarded collections were part of a layer which was deposited to fill a room for a new floor (see for instance paragraph 3.2.4). Perhaps the tablets in the kitchen area were deposited just prior to the deposit of soil which covered them.

There is one group of additional finds however which complicates the understanding of the abandonment of this space, the above mentioned 'special objects'. Two bronze objects (a long pin and a spearhead; figure 3.44), two bone objects (a comb and a piece of inlay) and a so-called ceramic grain measure containing the toolkit of a bead maker were found. The toolkit

consisted of several semi-precious stones, some flint implements and a bronze item (figure 3.45). These five finds were located in the fire places. The objects however neither relate to the cooking activities nor to the administrative objects attested in the room. Additionally, these objects appear to have no functional relationship with each other, except that they are all 'special' or apparently 'valuable' items.

The long bronze pin (24 centimetres long) and the spearhead (28 centimetres long) were undamaged and undoubtedly of a significant practical and economic value. Equally, the ceramic container with the implements and unfinished beads must have been of considerable worth. Considering the replacement cost of these objects it would be expected that an unintentional process underlies their deposition. However, as the objects are relatively large it seems unlikely that they were casually lost in the kitchen. There is however also hardly any indication for a catastrophic event to have occurred, other than the occurrence of the valuable items. This leaves us with one alternative explanation – that the objects were deposited in an act of caching. In this process valued objects are deliberately deposited into the ground for ritual reasons (ritual cache) or to be picked up later (banking cache). As the location in which the items were deposited is not suited for reclamation, the latter however seems unlikely. A ceremonial deposit of valuables is however also not strongly supported by other evidence. The objects are of a highly varied nature, both in material characteristics as well as functionally. The lack of clustering in the deposit also suggests that this was not the result of a structured deposition.

In the discussion above the artefacts which relate to cooking are interpreted as primary refuse. The tablet concentration is however considered secondary refuse, and most of the 'special' objects are believed to have been deposited in a different manner yet. Perhaps, if the 'special' were deposited during a catastrophic event such as a fire and subsequent collapse, then the deposition of the tablets should also be interpreted in this vein.

In conclusion, the few bronze objects and the bead maker's toolkit illustrate the complexity of deposition processes in abandoned structures. While the artefacts which relate to cooking are easily associated with the space, other objects, which would seem intrusive, are harder to link with the general narrative of the space. The presence of the tablets and 'special' objects is interpreted to represent either a deliberate discard process related to the construction of a new floor level, as the result of a catastrophic collapse or a complex process in which valuables were deposited deliberately with a ritual connotation. The most likely interpretation seems to be that the objects were left behind in the structure and perhaps forgotten and simply left behind. Their location in the oven structures is perhaps due to an accidental drop from a shelf of cupboard.

3.3.4.7 Conclusion

The north of area 3 of the north-eastern sector consists of two large rectangular rooms (A and B) which were interpreted as domestic spaces. Room A may have been used to accommodate groups of people for large dinners. Room B was more likely used as a residence. It is connected to a toilet structure in the north and yielded several finds which are indicative for domestic activities such as a group of loom weights. The vast majority of finds from this room may however be related to the collapse of an upper storey. It is suggested that this upper storey was used for the storage and repair of ceramics.

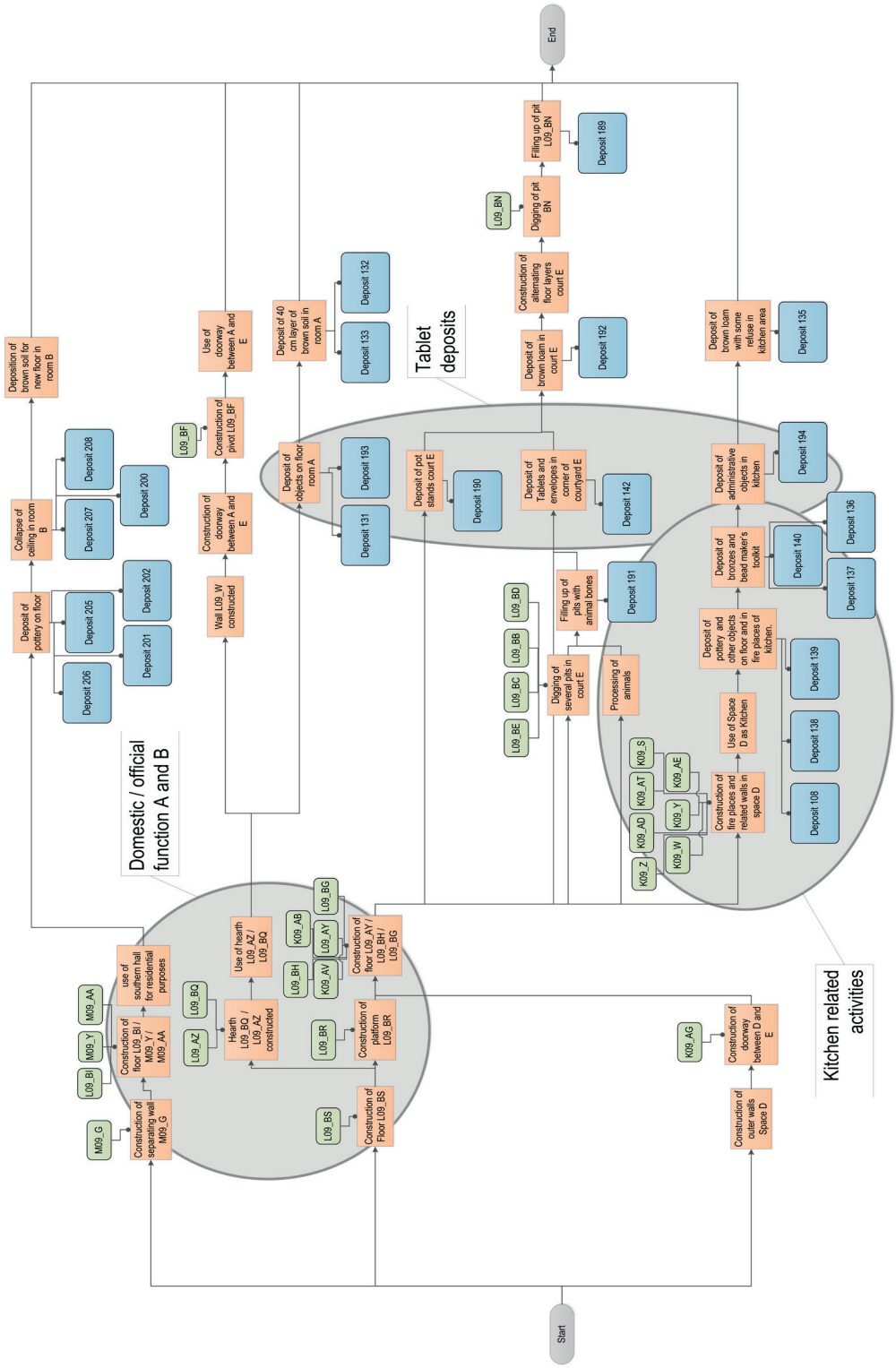


Fig. 3.46: Sequence of Events of area 3 of the north-eastern sector.

South of these rooms a kitchen (D) and courtyard (E) were present. The courtyard did not yield many finds, except for a collection of clay envelopes in its eastern corner. These objects indicate that the courtyard was used by an official during administrative activities. At some point however the court was also used for the discard of kitchen related refuse. This perhaps signifies a new use phase of the courtyard (figure 3.46).

The kitchen, room B, was composed of at least six fire places which had been constructed at the same time. Because these fire places were probably constructed simultaneously, and nearly all of them were of considerable size, the kitchen was probably constructed to produce large quantities of food. A large cooking pot which was found in the room was probably used on one of the fires. Its capacity was approximately 40 litres. This volume can be used in the calculation of the amount of food which could be prepared in this kitchen. If four similar pots were used simultaneously, filled for three quarters, 120 litres of food could be prepared in this kitchen. Taking into consideration the possibility that the cooked food was part of a larger meal, a maximum amount of intake per person would have perhaps been half a litre. The total amount of people who could be fed would then be 240, quite a large group indeed. The unusual pottery which was used and deposited in the kitchen indicates that this was not a common practice in the *dunnu*. The resulting interpretation for this kitchen could be that it was constructed only for the preparation of one or several large banquets. Particularly the presence of luxurious serving dishes could be an indication of a high profile dinner.

After the kitchen was no longer in use as such, many objects ended up on its floor and within the fire places. Many cuneiform tablets and other administrative documents indicate that these were perhaps discarded as secondary refuse. However, the presence of a number of objects with an apparent high replacement cost imply that other processes may have been responsible for the deposit. It is therefore possible that the large amount of objects have ended up in the kitchen after a catastrophic event such as a fire and subsequent collapse.

3.3.5 A residential corner (area 5)

Area 5 is closely connected to area 3 (figure 3.47). The area consists of a corridor (E) which leads to a toilet (D), a small room in which a cesspit was placed (G) and a long court which may have been used as stable or public space (H). Space F was closed off at the start of the sequence discussed here.

In the north-eastern corner of the area an abutment was constructed of five metres wide. This large construction was characterized before as one of the corner towers of the fortress (Akkermans and Wiggermann 2015: 98). Also in the North-east thick walls seem to illustrate the presence of a second storey and perhaps a corner tower (*ibid.*). Additionally, a set of stairs was located in corridor E in the phases preceding the sequence described here. Although these stairs were removed at the start of the sequence, an upper storey was still in use as is discussed below. The military connotation which is related to towers is in stark contrast with the internal layout of the area. the layout and finds from the area indicate that it was used mainly for domestic use.

3.3.5.1 Corridor and toilet

Corridor E was remodelled several times. The most noticeable adaptations occurred just prior to the sequence described here. In a previous phase a long stairway had run along the wall. The bottom part of these stairs was cut to make way for the entrance. Additionally, two small

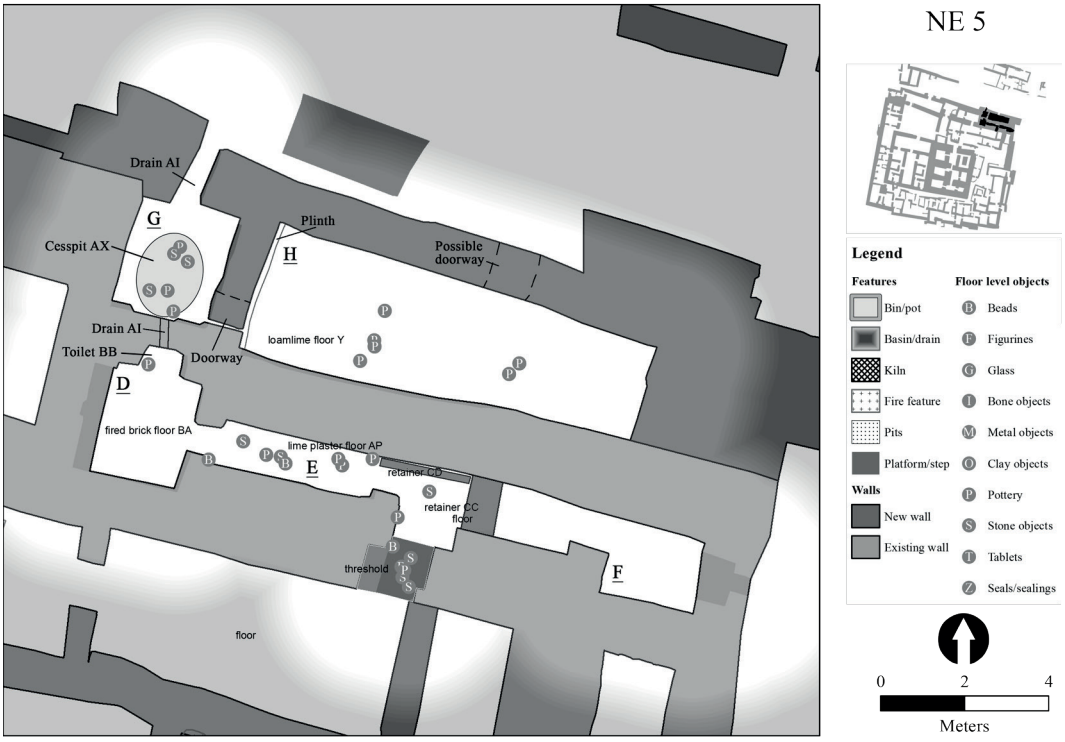


Fig. 3.47: Architecture and floor level finds from area 5 of the north-eastern sector.

Fig. 3.48: The toilet in Room D of area 5 of the north-eastern sector seen from the top (photo by P.M.M.G. Akkermans).

retaining walls (CC and CD) were constructed inside the corridor which blocked the eastern part of the original hallway (space F). After these alterations the corridor led to the toilet at its end (D). A loam floor was constructed in the corridor (AP/AB). The toilet was fitted with a bitumen-lined mudbrick floor (BA). Additionally, the lower parts of the walls in the toilet were lined with a mudbrick plinth running all along the room. The toilet itself (BB) was constructed of two raised platforms in a niche and a drain (AI) running through the wall into a cesspit (AX) on the other side (figure 3.48).

Finds from the corridor and toilet consist of eight damaged ceramics, seven stone tools, twenty beads and one broken cuneiform tablet (deposits 200, 201 and 202). More fragmented pottery shards were found on the floor of the corridor but because of their fragmented nature they have not been registered as objects. The large amount of ceramics in this deposit is similar to the situation in the room to the south. This large room, room B of area 3, was covered with large pottery fragments which have probably fallen from a higher storey (see paragraph 3.3.4.2). Possibly this was also the origin of the deposit in the corridor.

The large amount of beads in the deposit is striking. The assemblage consists of seventeen glass beads, one bone bead and two pendants. Of these pendants one was made of obsidian and the other of shell. The beads and pendants were found in various places in the corridor and in the toilet, displaying a wide spatial distribution. This distribution suggests that the objects perhaps fell from an upper storey as well.

In conclusion, spaces D and E were constructed to function as corridor and toilet. No other use of these spaces can be deduced from the objects which were found on the floors as these probably fell down from an upper storey (see figure 3.49). The finds do indicate that after abandonment the upper storey of these spaces was littered with objects, amongst which, a collection of beads and pendants. Perhaps this indicates that this object assemblage was left in a hurry.

3.3.5.2 The Northern courtyard and cesspit

The spaces in the north of the area consist of a small room containing a cesspit (G) and a courtyard which could possibly be accessed from outside of the *dunnu*. In the preceding phase the cesspit was located in an open space. At the start of this sequence the northern walls were constructed. A gutter (AI) was constructed which ran from the cesspit through the outer wall. In courtyard H a loam floor (Y/V) was constructed and a mudbrick plinth against the western wall. Additionally, a doorway between G and H was constructed.

Cesspit AX yielded four carinated bowls, two grinding slab fragments and a hammer stone. Because the objects are fragmented, low in apparent value and are not clearly structured, the deposit is most likely a secondary refuse deposit. Therefore, after the cesspit was no longer in use, the pit and the room were probably used as refuse heap.

Only six damaged carinated bowls were found on the floor of courtyard H. Because these objects could be used for a large variety of activities their presence on the floor of the courtyard does not aid in the interpretation of the space. Because the doorway into courtyard H was located on the outside of the *dunnu* proper, in its northern wall, the space may have functioned as a stable or public space. Perhaps the courtyard was used as a market stall or as a tavern. The entrance into space G would in that case have been convenient for those guests who needed to relieve themselves.

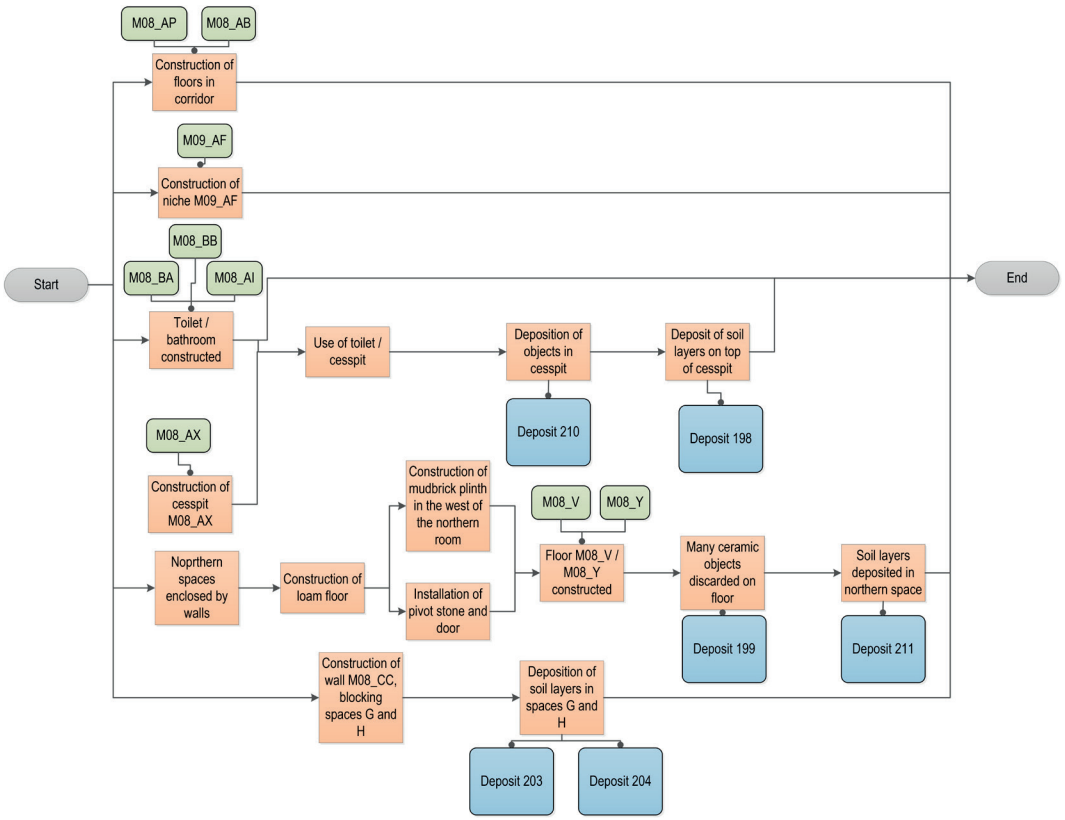


Fig. 3.49: Sequence of Events of area 5 of the north-eastern sector.

3.3.6 A courtyard and ephemeral structures (area 4)

Area 4 of the north-eastern sector is composed of a large courtyard and corridor along the central building (figure 3.50; A). Additionally, three small structures were present in the area. Structure B measures 7.5 by 3 metres and may have functioned as small domestic structure. Structures C and D are more ephemeral in nature and appear to have functioned as storage space.

The area, and in particular the courtyard, was important for the circulation of people through this part of the *dunnu*. It would have served as the connecting space between the south-east and the northern sectors of the *dunnu*. In earlier phases of the *dunnu* also the central building was reached through this area. The construction of walls to the north of the central building however complicated this route. It is therefore possible that during the phase discussed here, the courtyard of area 4 was not used to access the central building.

Unfortunately this part of the settlement was not excavated to a great depth, and within the few excavated deposits not a single floor layer was recognized. The courtyard, corridor and the structures were therefore probably fitted with a simple loam walking surface. Only in structure B were two features excavated. In its north-western corner an oven was constructed (oven V; figure 3.51). Adjacent to this oven a pit was found which was filled with animal bones (pit X; figure 3.52). These features suggest that the room was used for food preparation. This may indicate that the structure was domestic in nature.

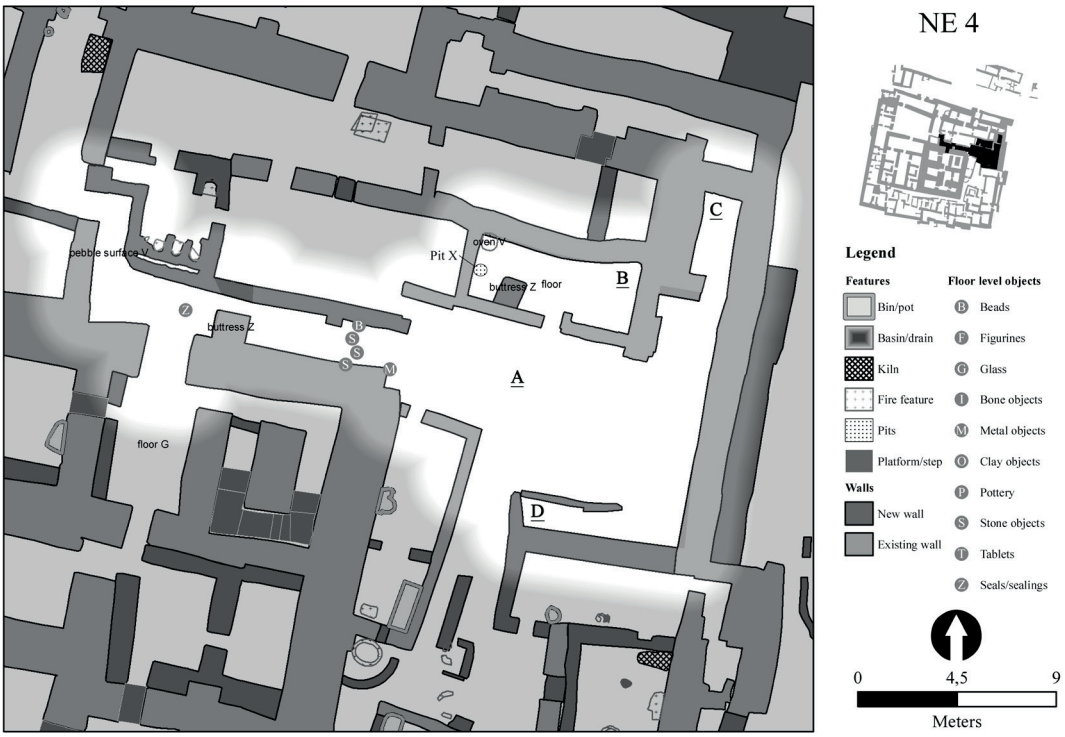


Fig. 3.50: Architecture and floor level finds from are 4 of the north-eastern sector.

Finds from area 4 are very sparse. Although excavation reports mention that many ceramic shards were found on the floor of the courtyard and corridor, only six objects were registered as object, all in the corridor. Apart from one large complete grinding slab all of these objects are fragmented and damaged and were probably discarded as secondary refuse (deposit 196). One complete object however, an Assyrian cylinder seal, was found right in front of the entrance to the central building (deposit 197). Possibly one of the officials who worked in the *dunnu*, after administrating and sealing certain goods in the central building, lost the item at departure.

Fig. 3.51: Oven V in room B of area 4 of the north-eastern sector (photo by P.M.M.G. Akkermans).

Fig. 3.52: Pit X filled with animal bones in room B of area 4 of the north-eastern sector (photo by P.M.M.G. Akkermans).

As mentioned, the location and layout of the area indicate that it served an important role in the circulation of people in this part of the *dunnu*. This function was however more prominent in previous phases. The large open space in the middle of the area probably functioned as open courtyard in which goods could be stored and traded. Equally it could be regarded as the meeting place for men and women working in the *dunnu*.

Space B was interpreted as a domestic structure, used for the preparation of food. Perhaps it was also used to house some people. Other structures in the area (C and D) appear too ephemeral in construction and size to have functioned as residences. Perhaps these structures were used for storage in conjunction with the courtyard.

As a consequence of the small amount of data about the activities in this area the Sequence of Events (figure 3.53) is quite straightforward. It is assumed that the area has served a multitude of functions in the public sphere, as marketplace, meeting point and for ad hoc storage of goods. At some point the courtyard and surrounding spaces were abandoned, and they were filled with rubble and soil with many objects such as ceramic shards and broken grinding stones.

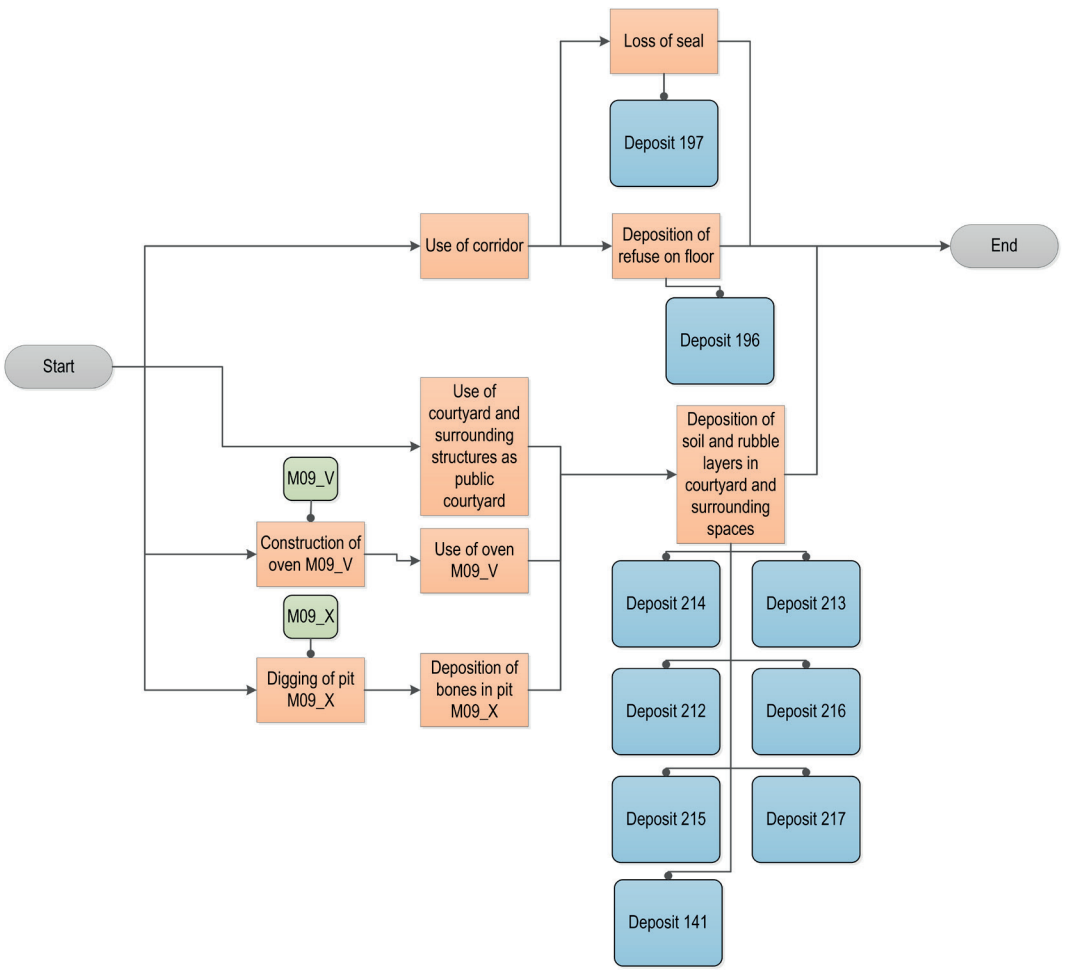


Fig. 3.53: Sequence of Events of area 4 of the north-eastern sector.

3.4 The monumental residence

3.4.1 Introduction

Two buildings very prominently stand out in the overall *dunnu* architecture: the so-called "central building" or "tower" and the "monumental residence" or "palace". This residence was subject to much interest because of its apparent demise and downgrading to a mere barn (Akkermans and Wiggermann 2015). For the discussion here the area is divided into four parts, largely based on the route one would take upon entering the structure: first the front (northern) courtyard and associated doorways are discussed (area 1; figure 3.54). Next, the central hall and the eastern rooms (area 3 and 4) are considered, after which the western rooms including the associated bathroom outside the original walls (area 2) are discussed. Finally, an attempt is made to merge the chronologies from these separate areas and establish what the changing function and use of the building through time was.

Fig. 3.54: The areas in the residence.

3.4.2 Front courtyard (area 1)

The entrance to the monumental residence at the start of level 5 was quite grand: the outer wall was reconstructed to an imposing height of four or five meters (Lanjouw 2016) and the entrance was fitted with double doors. Also, the baked brick floor of the large courtyard in front continued through the double doors into the inner courtyard (figure 3.55). Apart from a representative function, the architecture was also of a more mundane practical nature. The high walls might have for instance provided added privacy and security to high officials working and reposing inside. Also the baked brick floor of the inner courtyard (AD/W) may have been constructed in part to be resistant to weathering. It sloped towards the entrance, for the efficient drainage of rain water. Two doorways led from the courtyard into the rooms of the residence. The middle doorway, leading to the central hall, has probably remained the same throughout the use of the residence. This doorway was probably fitted with double doors as two pivot stones (Y and Z) indicate. The second doorway was constructed to its west, leading into the western apartment (area 2). This doorway, like the main entrance into the courtyard, was remodelled extensively throughout the use of the residence.

The main entranceway into the courtyard was renovated at least twice before the residence was abandoned. The first renovation consisted of the addition of a wall (CH) on the eastern side of the doorway, a development seen in many doorways around the central court-

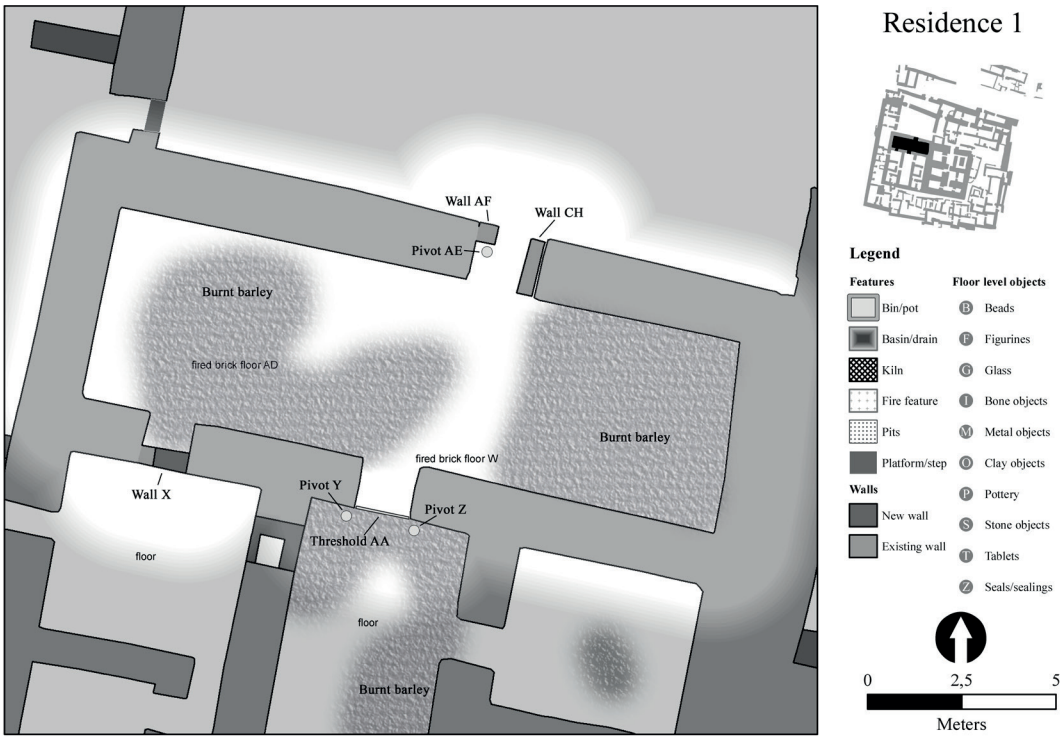


Fig. 3.55: Architecture and floor level finds in area 1 of the residence.

yard. This wall was probably put into place to buttress the doorway structure. On the western side of the doorway also an additional wall (AF) was placed, this time only a single mudbrick wide and long. Behind this wall a pivot hole (AE) was constructed to serve as the swivel point for a single door. The two separate walls in the doorway do not make sense as a single renovation and therefore imply two renovation events. A plaster layer on the inside of the western wall (AF), which continues along the residence walls, indicates that these renovations were not provisional, ad-hoc alterations but were purpose built for a longer time.

As mentioned above, also the doorway from the courtyard into the western apartment (area 2) was altered significantly through time. Initially the baked brick floor continued into the doorway and the door was used as passage. Later, a blocking wall (X) was constructed in the doorway. This wall was plastered on the side of the apartment, obscuring the former presence of this doorway. On the side of the courtyard a niche was created which may have been used for storage. Later the mudbrick floor which was present within this niche was taken out.

The changes to the architecture of the residence were not restricted to the doorways. In large parts in front of the residence, as well as inside, the baked brick floor was demolished. It is conceivable that these tiles were reused somewhere else and that the spaces described here simply lost their function for the time being. Many activities were still acted out however both inside and outside of the residence despite the squalid state of the floors.

3.4.2.1 Abandonment and conflagration

The end of use of the front courtyard of the residence is indicated rather dramatically by the presence of large heaps of burnt barley on its floor. As the floor under the barley as well as the walls of the inner courtyard were burnt, it is most likely the cereals burned at this very spot. After the fire had ended, through time several layers of brown soil with refuse (deposit 146) were deposited on top of the burnt grain. Additionally, the heaps of charred grain were affected by wind and rain, visible as lenses of charred grain in the sections through the room. Among the deposits of refuse and other layers 27 objects have also been registered.

The objects from within these dump layers are characterized by a large variety in find categories, and low structuring. Seventy percent of the finds are pottery and stone objects, the remaining thirty comprising of clay objects, a bead, two small bronze items and one tablet fragment (see below). 85 percent of objects are broken or fragmented, the few complete objects are grinding slabs and one carinated bowl. Only two registered objects were described as being burnt. Two carinated bowls were burnt on the inside, possible through the use of them as an oil lamp, and are therefore not necessarily related to the conflagration in the courtyard. All characteristics of the deposit indicate that the objects were deposited here as secondary refuse and therefore do not relate strongly to the activities which were carried out in the courtyard. Interestingly however, the tablet fragment was found only eight centimetres above the floor level. The tablet describes a census of personnel, listing about 200 dependents and their rations. The presence of this tablet indicates that in the vicinity of the courtyard, despite the dilapidated architecture, the central administration was still at work.

3.4.2.2 Conclusion

The analysis of the front courtyard indicates a strong difference between two distinct types of use; initially the residence was used for representative affairs and later, after the dilapidation of the architecture, for grain storage. However, the tablet which was found among the refuse layers may indicate that the building was also in this phase still in use by the administration (see below).

During the initial use of the area the entrance was probably an imposing double door. Also the baked brick floor was in use in this early phase of the building. It is highly probable that during its representative phase, the residence was not constantly in use, possibly it was only opened at the arrival of the owner of the *dunnu*. Broken sealings and faience doorknobs which were found in the large courtyard in front of the residence (see paragraph 3.2.3) may indicate that for a large part of its existence the residence was closed and sealed. This would explain the limited amount of damage and finds which seem to relate to this initial function.

For some reason the residence lost its representative function and the building was renovated several times. These events may were rather violent and harsh as it would seem from the destruction of the doorknobs and related elements of the central entrance. The objects were simply discarded on the floor of the outer courtyard and the baked brick floors were partly demolished. The entrance was reduced to a single door passage by the construction of several walls inside the doorway. These renovations included new layers of plaster on the walls which continued on the new additions, indicating that these were plastered in the same event. The building

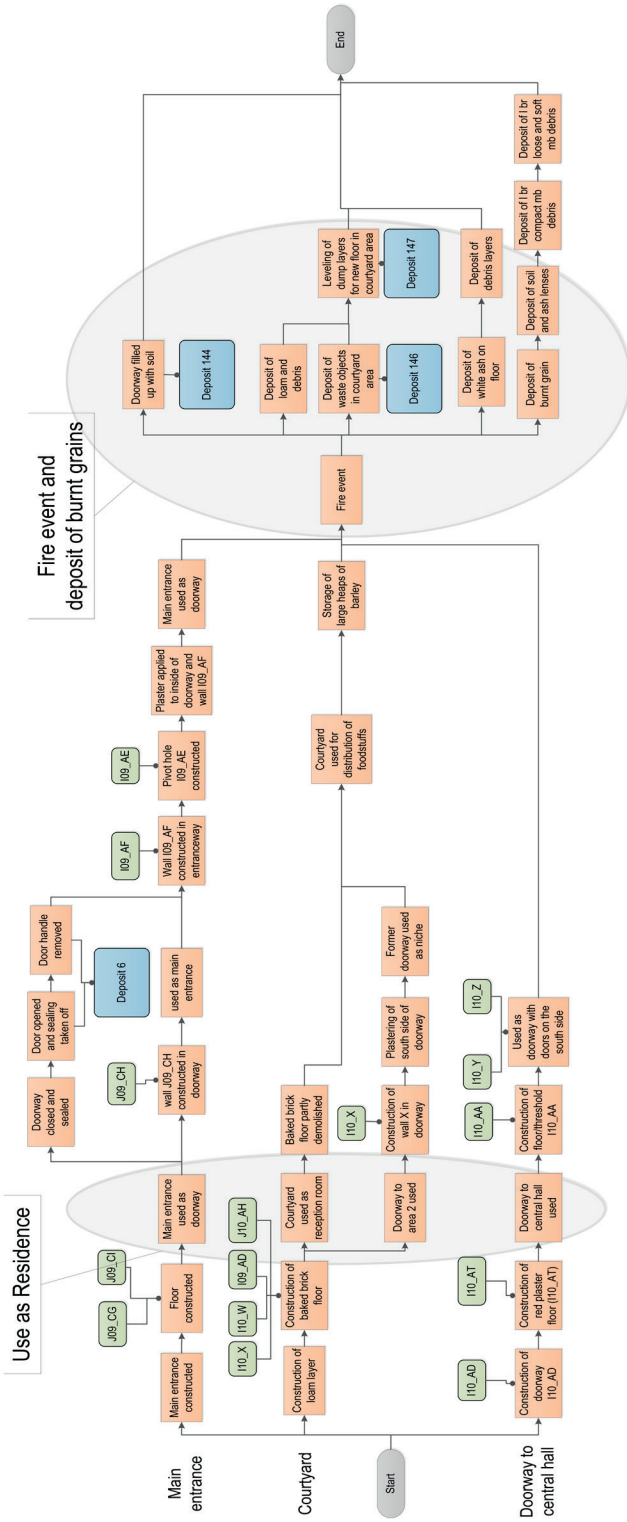


Fig. 3.56: Sequence of Events of area 1 of the residence.

in this phase was therefore not simply crumbling and deteriorating as is suggested by other scholars (Akkermans 2006; Akkermans and Wiggermann 2015), but was being kept up, albeit in a state of diminished grandeur. During this phase the doorway into the western apartment was also blocked and plastered over. This suggests that the apartment was still in use despite the altered state of the architecture.

What the residence, and in particular the front courtyard, was used for in these last phases (see figure 3.56) is only indicated by the burnt remains of large amounts of barley which were apparently stored in the courtyard. This was taken to indicate that the residence had turned into 'a mere barn' (Akkermans and Wiggermann 2015). The single tablet which was found in the courtyard may specify the use of the space slightly more. Although perhaps the object was only discarded here, not necessarily used, it does indicate that an active administration was still present at this time. The tablet describes the distribution of rations amongst numerous workers which perhaps indicates that the large heaps of barley were located here for distribution. Although the building had lost some of its symbolic appearance, it was still in use by the local administration.

3.4.3 Central hall and eastern rooms (area 3 & 4)

The front courtyard of the residence (area 1) gave access to the central hall (area 3), which in turn gave access to the two apartments (area 2 and 4) in the residence (figure 3.57). In this paragraph the central hall and the eastern apartment, areas 3 and 4, are discussed. The entrance into the central hall was constructed with a double door. The hall was fitted with a loam floor. After entering the imposing fifteen metre long hall, the eastern apartment could be entered on the left side. This doorway was constructed with a single door and pivot (AQ). The apartment was composed of a room in the north (A), with a connected corridor (B). This corridor led to a small room (C) and a toilet structure in the south. This toilet structure consisted of two rooms with a baked brick floor. The first room (D) was perhaps used as dressing room while the second room (E) was used as a toilet and perhaps as bathing room. A toilet was constructed against the southern wall, consisting of two raised mudbrick platforms and a gutter which led through the wall into a cesspit located outside the building.

One renovation phase was attested in this area of the residence. The door to room C was originally located in the north of the room. This was closed off at some point and a new door was constructed from the corridor. Perhaps this was done to provide more privacy for the residents.

Fig. 3.57: Architecture and floor level finds from areas 3 and 4 of the residence.

3.4.3.1 Finds

Only one object was registered on the floor of area 3, the central hall. In the south a fragmented bronze ring was found. Due to its fragmented state it is difficult to assign a function to this objects. Consequently, the floor yielded no obvious indications for activities which were carried out there.

In the eastern apartment six objects were registered. In room A three bronze pins were found on the floor and a fragmented clay sealing was found in pivot hole AQ. One large clay jar stopper was found on the floor in corridor B and a clay tablet was discovered in room C. Perhaps the pins in room A were once part of a garment which was left here. The single occurrence of a tablet in room C may indicate that the apartment was visited by an official shortly prior to the abandonment and collapse of the room.

3.4.3.2 Abandonment and conflagration

In the courtyard many indications were found that the residence changed function through time (see paragraph 3.4.2). The architectural modifications of area 3 and 4 were however limited to the blocking of a doorway and the construction of a new doorway in room C of the apartment. Interestingly, although a considerable effort was taken to demolish the baked brick floor in the front courtyard, the floor in the bathroom was untouched. It seems therefore reasonable to assume that the apartment was in use until the onset of the large fire which destroyed the building.

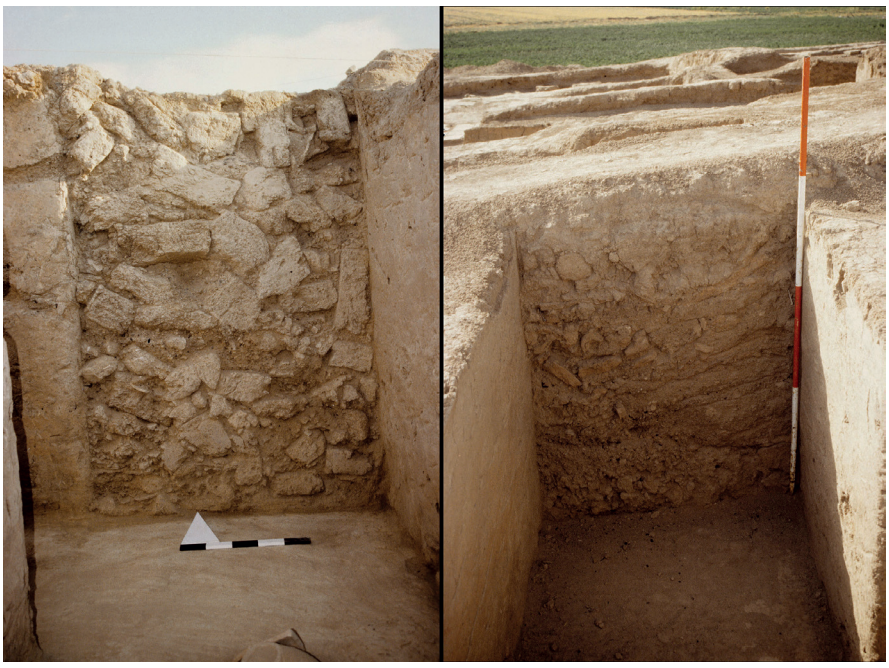


Fig. 3.58: Section 1 (left) and 2 (right) in area 4 of the residence. Section 1 displays a large amount of mudbrick debris, possibly the result of collapse. The deposits in section 2 are layered, perhaps these were the result of a slower process of accumulation (photos by P.M.M.G. Akkermans).

A large amount of charcoal was found in pivot AQ, suggesting that the entrance door of the apartment was still in place. Also fierce burn marks in the south-western corner of the room suggest that the door burned down here. Large pieces of charcoal were found on the floor, possibly charred roof beams, suggesting the roof may have burned and collapsed on the floor. In contrast to rooms A and C, walls and floors in the bathroom were less affected by fire.

Also the walls of the central hall of the residence were affected by fire damage. Additionally, large heaps of charred barley were found along the walls. It is therefore possible that this was the main fuel for the fire which blazed through the building.

After the conflagration the building was abandoned. The burnt remains were left inside the building and in room A there is evidence that walls collapsed into the building. A profile section through the deposits in the north of corridor B (figure 3.58; section 1) reveals that at this location much mudbrick debris was deposited directly on the floor. A second profile section through this corridor further south (3.58; section 2) however illustrates that at this location different processes occurred. The lower deposits are laminated soil layers. Mudbrick debris, indicative for collapse, is present only in the higher layers in this section. Also in room C the deposits consist of numerous horizontally deposited soil layers containing damaged objects. This suggests that at this location the building was used as a refuse dump before structural collapse occurred.

3.4.3.3 Conclusion

The central hall of the residence was most likely used for the reception and entertainment of guests. Additionally it was probably used as dining room for high officials residing in the building. The lack of finds from the floor of the hall indicates that the room was not used for many other activities. Equally, the apartment was kept clean throughout its use. It is likely that it was used for domestic purposes until the large fire occurred.

At the moment of the fire a large amount of barley was present in the central hall. This was probably stacked in bags along the wall and was caught in the conflagration. It was suggested for the front courtyard of the residence (see paragraph 3.4.2) that the building had turned into a barn. The evidence from the central hall and eastern apartment suggest that the function and use of these areas however hardly changed. Only the presence of these large amounts of barley in the central hall indicates a use different from domestic activities, albeit to a dramatic degree. Perhaps therefore the use change of the residence occurred only shortly prior to its abandonment. The use of the residence as barn was therefore not as significant as it was supposed from the evidence from the front courtyard.

The fire which occurred in the building was concentrated in the northern part of the residence. In room C and corridor B evidence was found that the area was first used as a refuse dump before the walls collapsed. Therefore the building must have remained standing in its ruined state for some time before later building activities levelled the area (see figure 3.59).

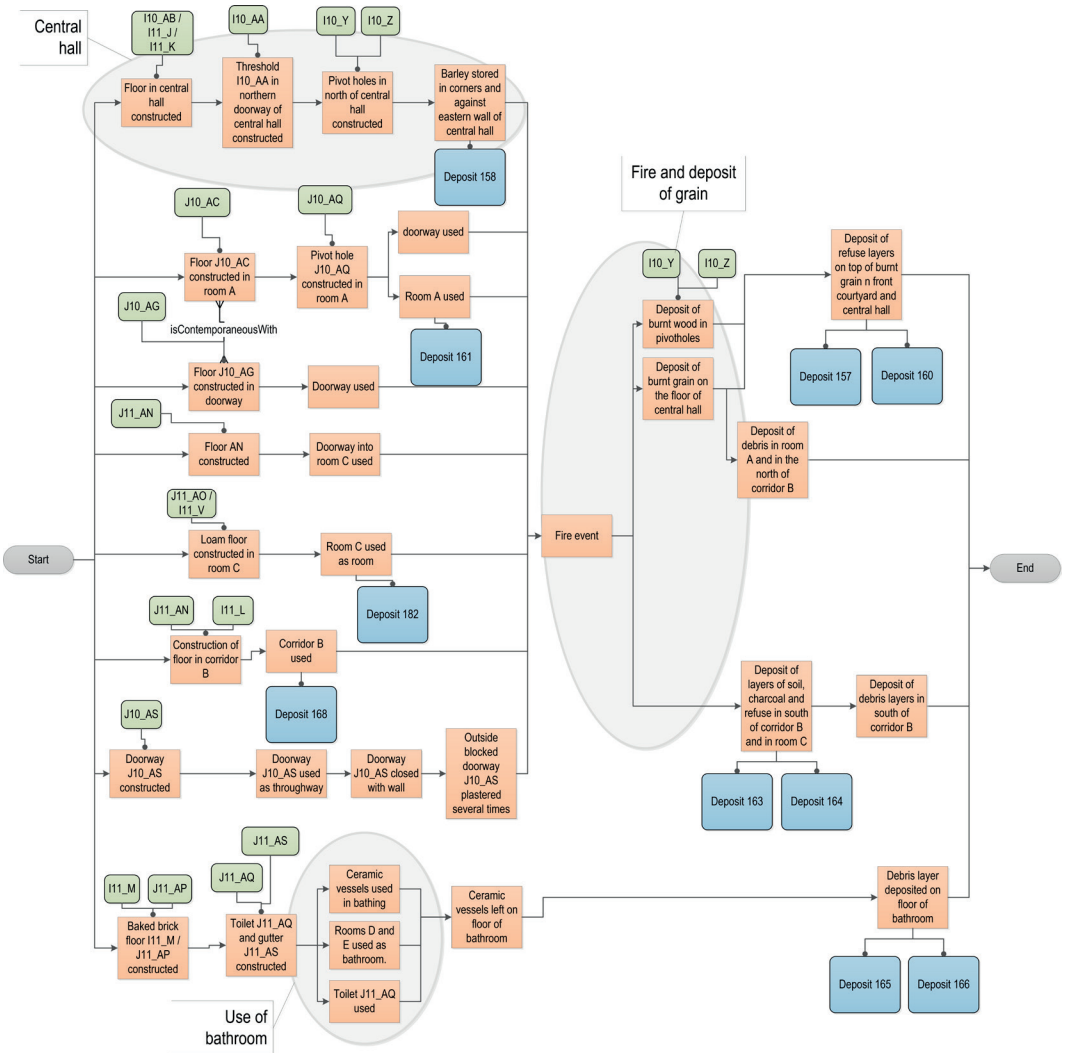


Fig. 3.59: Sequence of Events of area 3 and 4 of the residence.

3.4.4 Western rooms and additional bathroom (area 2)

Area 2 of the residence consists of the western apartment and an added toilet structure (figure 3.60). The layout of the apartment is very similar to that of the eastern apartment. Area 2 however was renovated a number of times during use. In particular the construction of the new toilet and the application of imprinted plaster on the walls of the apartment are indicative of several renovation moments. Additionally, three different doorways into the apartment have existed. The end of use is, similar to the rest of the residence, indicated by fire damage.

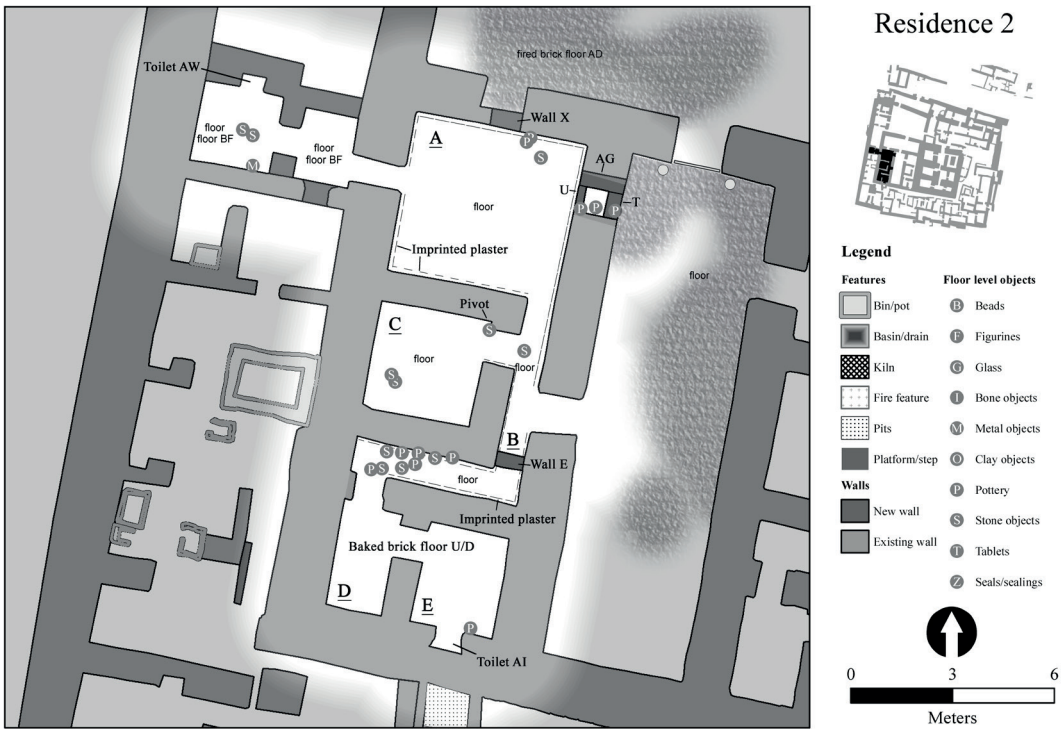


Fig. 3.60: Architecture and floor level finds from area 2 of the residence.

3.4.4.1 Layout and renovations

When the residence was constructed the western apartment was composed of practically the same layout as the eastern apartment. A doorway from the central hall gave access into room A which was connected to a corridor (B) in the south. This corridor led to room C and a bathroom structure. This bathroom consisted of an anteroom (D) and a toilet room (E). Both these rooms were fitted with a baked brick floor. The rest of the apartment was fitted with loam floors. Perhaps at the onset of use of the apartment it could also be entered through a doorway in the north, from the front courtyard. The chronological relation between these doorways is however difficult to assess.

At some point, for unknown reasons, the southern bathroom structure was blocked off by the construction of wall E. A new toilet was constructed outside the building which could be reached from room A. Other renovations included the blocking of both doorways into the apartment. A new doorway was constructed from the central hall, which led, through corridor B, first to room C and then to room A. Because the new toilet was accessible from room A, the order in which rooms were accessed was thereby reversed. It is difficult to assess whether these renovations occurred simultaneously. However, because the resulting layout of the area consists of the same access pattern it does seem likely that this was the intended end result of the renovations.

The renovations did alter one important aspect of the apartment. Although the doorway from the front court was completely bricked up and plastered over, the entrance from the central hall was blocked with two small walls on either side of the door (U and T), creating a bin (AE) within the wall. The room was therefore not completely closed off from the central hall. It is unclear why this was done, as it would have resulted in a lack of privacy in room A.

3.4.4.2 Finds

A total of 22 objects were found on the floors of area 2 of the residence. Three objects in the new toilet structure in the west are fragmented objects which were probably discarded in this space as secondary refuse. In the corridor in the south, nine objects were discovered. Also these were fragmented and should probably be related to secondary discard.

The remaining ten objects have probably been deposited as abandonment stage refuse. Firstly, a ceramic jar was set in the ground in the toilet in the south. This was originally probably used for sanitary purposes. In room C one stone mortar was found dug in the floor, probably placed there to function as pivot stone. Two other finds from the room are a complete stone grinding slab and an associated grinder. These objects were discovered on the floor lying next to each other. This may indicate that the objects were once used in the room. In room A two carinated bowls and a grinding slab, all undamaged, were found in the vicinity of a small pit in the north of the room. Additionally, two complete carinated bowls were found on the bottom of bin AE, as well as one on top of wall T of this bin. Because all these objects are complete, a catastrophe or abandonment stage deposit is implied. In either case, the objects were originally probably used in this room. Possibly in the last phase of use of the residence, room A and C were used for the processing and distribution of grains.

3.4.4.3 Imprinted plaster

Another remarkable feature of the western apartment is the presence of deep imprints in the plaster of a number of walls (figure 3.61). The imprints were created in soft plaster probably with a wooden implement, diagonally from above. The imprints were made with a cylinder shaped object with a blunt end measuring some 2.5 cm in diameter. It is conceivable this was for instance the handle of a plastering tool. The reason behind the application of the plaster is unclear, it was interpreted as decoration but also as a base layer on which a second plaster layer should have been applied which would have hooked into the imprints. The interpretation as a base layer for a new plaster layer seems the most likely explanation, as the technique is known from contemporary mud architecture (Lanjouw 2016 and references therein). If this explanation is correct it means that the job was left unfinished, which implies a hasty departure or sudden change of function of the spaces.

The imprinted plaster was found along the walls of the northern room, the corridor and near the bathroom (see figure 3.60). It was applied before the doorways and corridor were blocked. This means that it occurred relatively early in the chronology of the area. Also, this means that the apartment was extensively used while the imprints were visible. Apparently, the representative, monumental nature of the residence was no longer present at this point.

Fig. 3.61: Imprints in plaster in corridor B (photo by P.M.M.G. Akkermans).

3.4.4.4 Use and the end of use of the western apartment

After the residence was constructed, it was most likely indeed used as a residential structure. Also the western apartment was used in this way. Curiously, through time the layout and appearance of the apartment changed (see figure 3.62). The imprinted plaster on the walls of the area indicate that the area was no longer in use as an imposing example of residential architecture. Architectural modifications however indicate that the layout of the apartment, and the presence of a toilet, were important aspects of the area. Following this, it could therefore be concluded that the area was still in use as a domestic structure.

Finds from the floors indicate that the rooms were perhaps used for the processing and distribution of foodstuffs. The presence of multiple carinated bowls and grinding tools indicates that the rooms may also have served a different function. Perhaps the area was used to process and distribute barley. It is unclear whether the function of apartment and gran distribution could have existed simultaneously. For instance, the construction of bin AE caused room A to be less private.

The end of use of the western apartment is just like the other parts of the residence marked by a large conflagration. Floors and walls in many places are burned and burnt grain, charcoal and ashes were deposited throughout the apartment. Curiously, burnt grain and charcoal have even ended up on the floor of the southern bathroom too, despite its blocked entrance. Perhaps these layers were deposited after the large fire. Similar to the eastern apartment, the southern spaces were not so badly affected by the fire and other refuse layers accumulated in these spaces as well.

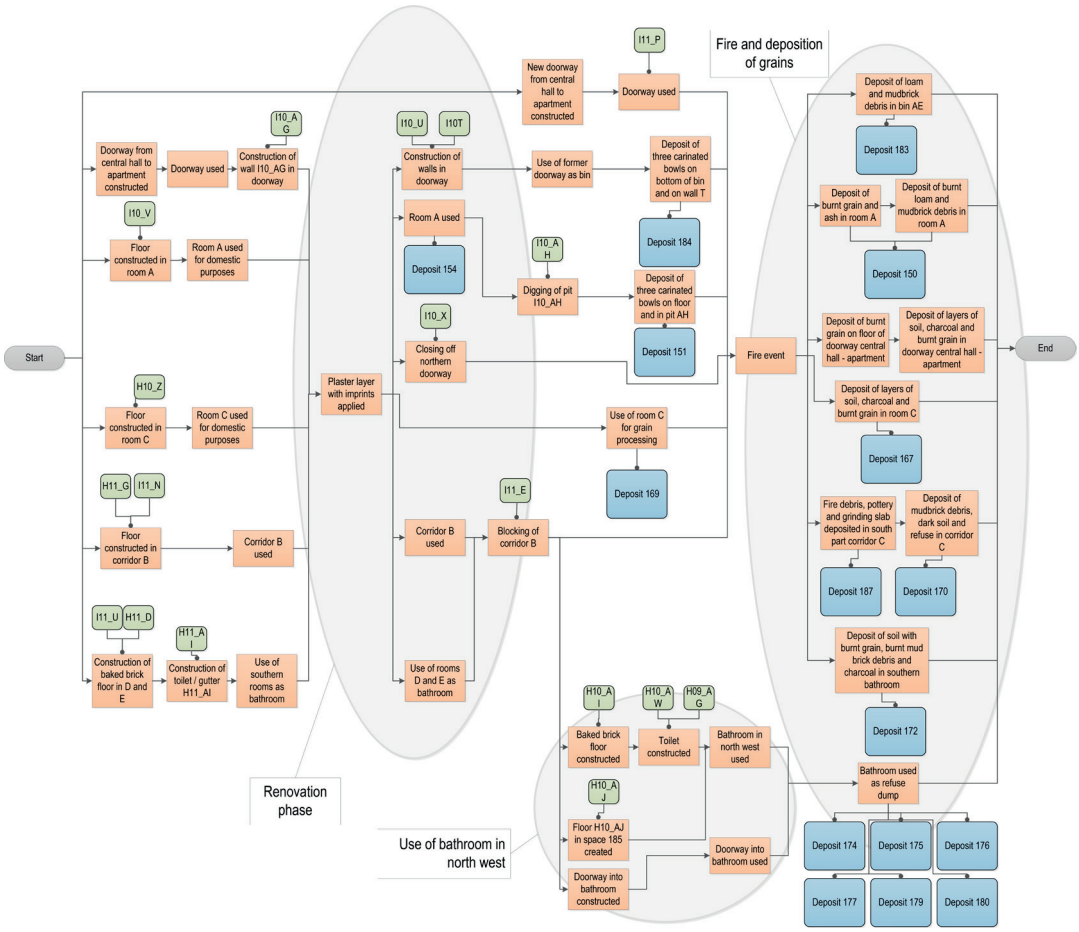


Fig. 3.62: Sequence of events of area 3 of the residence.

3.4.5 Function and use of the monumental residence

In its initial phase, the residential structure discussed here was most likely indeed used as a residence. The building was probably used only by the owner of the *dunnu* and perhaps other high officials during their visits. In the intervening time the structure could be locked and sealed as is evidenced by the broken off doorknobs and sealings outside the residence. The occasional use of the residence is also illustrated by a near absence of finds on the floors of the building and few alterations to the architectural layout during this phase. The building was constructed with a large front courtyard and a central hall with two apartments on either side. The front courtyard was paved with baked bricks, as a continuation of the larger outer courtyard. The patio was most likely used for receiving guests and performing administrative tasks. From this courtyard one could enter the central hall, probably used for "wining and dining". From this central hall the two apartments could be reached. Largely similar in their layout, both apart-

ments are entered in the north into the first room, from which the second room was reached as well as, through a bent corridor, the bathroom. As an exception to the general emptiness of the floors, a couple of jars were found on the floors of the southern bathrooms, which were probably used for sanitary purposes in the bathrooms.

During the use of the building as residence, every once and awhile renovations took place and small changes were made to its layout. In the eastern apartment (area 4) the doorway into room C moved from the north to the east, making it more private. In the western apartment (area 2) a start was made with applying a new plaster layer on many of its walls.

The half-finished state of the plaster layer in the western apartment might be indicative of a sudden and rapid abandonment. However, despite the rough and irregular wall finish, the apartment was in use for a long time after this assumed abandonment. In first instance the rooms may have been used for largely the same domestic purposes. A major change occurred when the southern bathroom was blocked by a small wall and a new bathroom was constructed to the north-west of the building. The reason for this change in layout is not clear, the southern part of the building has not been preserved as high as other parts, obscuring potential structural problems with the walls and roof. During these later use phases the eastern apartment was largely unchanged, while the west wing now had three entrances, two of which were eventually blocked by walls. In the final construction of the western apartment its overall arrangement of rooms remained the same as the original layout which might therefore indicate a continuation of the residential function. The unfinished state of the wall plastering however suggests that the grandeur which was obvious in the first phases of the building had gone. Apparently through time the guests staying in the house were less accustomed to and in need of luxury. It could be postulated that rather than a high ranking figure such as the owner of the *dunnu*, in these last phases the residence was used to house the steward and his family.

The end of habitation of the residence is marked by a large transformation of its apparent function. Large heaps of charred barley on the floors of the courtyard and several rooms of the building attest to a use in the realm of grain storage, processing and distribution. Also the remains of a grinding installation on the floor of room C in the western apartment attest to the use of the spaces for the processing of agricultural produce. It is unclear for how long the rooms were used in this manner. It is highly conceivable that if the fire had not occurred, the presence of the large amount of grains would not have been visible in the excavation. Perhaps therefore this was a common occurrence in the 'residence' simply invisible to the excavators' eye. The low amount of objects which are related to processing and distribution of grains however indicates that these activities were not carried out on a regular basis.

3.5 The central building

3.5.1 Introduction

Among all the architecture of the *dunnu*, the central building stands out because of its size and solid construction (figure 3.63). The structure is large, it measures 23 by 20 meters, but two thirds of its surface area is composed of walls. These thick walls, measuring up to 3,5 metre in width, were interpreted in the past to have supported several building levels. The structure was therefore, understandably, dubbed "the Tower" in many publications (Akkermans and Wiggermann 2015: 91). In a recent paper about the central building (Klinkenberg and Lanjouw 2015) this interpretation is questioned and a new explanation for the width of the walls is given. In this publication the structure is also considered to have carried a heavy load, albeit not of many storeys but the weight of a large barley supply on the second floor.

The functional interpretations of the building reflect the variety of its potential uses, they include the use as a watchtower, a tablet archive (Akkermans *et al.* 1993: 9) and a jail (Wiggermann 2000: 175; Akkermans and Wiggermann 2015: 98), a prostitutes' workplace, (Wiggermann 2010: 55), a treasury (Wiggermann 2000: 175), as a storage facility and for domestic activities (Akkermans and Wiggermann 2015: 98). Wiggermann (personal communication) has also tentatively identified the building as a bit halani, a 'workhouse', which was mentioned in several texts from the *dunnu*. Although all the activities indicated by these interpretations most likely took place in the building, it remains unclear what the main function or character of the building was. In the description below the naming of the rooms (numbered 1-9 in reading order) is used to better relate to earlier publications.

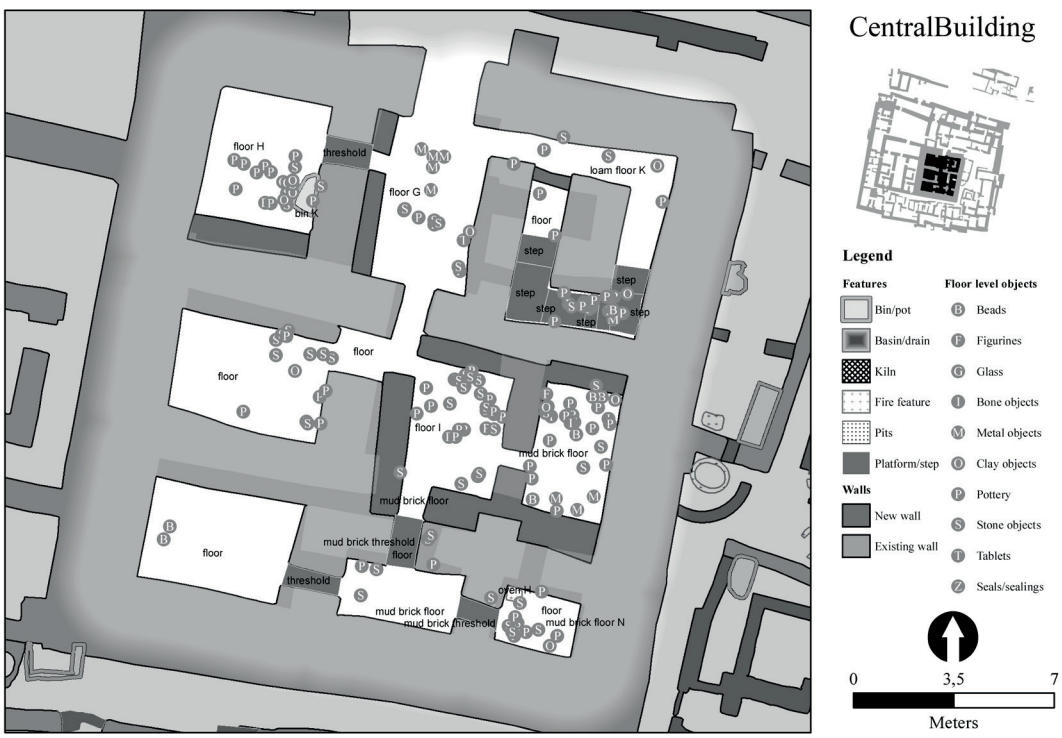


Fig. 3.63: Architecture and floor level finds from the central building.

3.5.2 The first construction

The first construction of the central building was ascribed to Level 7. Previously, this first construction has been attributed to Mittani presence at the site (Akkermans 1997: 243; Akkermans and Wiggermann 2015: 90; Brüning and Plug 2016). Its overall layout however did not change in the later phases which are clearly part of the Assyrian settlement. Also the function and use of its rooms display striking continuity. The building was therefore either constructed by the Assyrians or reused by them in the same way it was used before. Because the building may have been part of the earliest Assyrian presence at the site, its architectural sequence described here starts with this earlier phase.

At this early stage the building was constructed with a roughly square ground plan with sides measuring approximately 20 meter (figure 3.64). 12 rooms were constructed within, which are numbered according to the generic 9-room layout of later phases. The structure was entered from the north into room 2. From here, one could enter room 1, travel upwards along the stairs in room 3A or go deeper into the building through room 5. From this central room practically all surrounding rooms of the building could be reached. All doorways were between 1 and 1.6 metre high and constructed with arches (Akkermans *et al.* 1993: 14). The ceilings of the rooms was constructed with large wooden beams or they consisted of mud brick arches, this is not clear from the archaeological remains. The technique of mudbrick arches has at least been used for the doorways and also for the small vaulted room 3B, which could be entered from room 2. Two rooms, 7a and 9, were fitted with a mudbrick floor, room 1 and rooms 6a and b had a lime plastered floor and the remainder of floors were simply made of loam.

Fig. 3.64: The level 7 central building with finds and features.

Several features were found in the rooms of this early building. In room 1 two small dug-in basins were discovered (AG and AE). The lime plaster of the floor continued into these features. Because of this, they were perhaps used for either water or food related activities. Fourteen objects were registered on the floor of this room. This deposit includes one bead, one damaged pendant, a mudbrick mortar, two pestles, one grinding stone fragment, four complete carinated bowls and four complete ceramic grain measures. The objects were found among a thick layer of charcoal, ashes and burnt mudbrick debris which had fallen on the floor. This burnt layer may indicate that a catastrophic event ended the use of this room. Another interpretation may be that the room was already abandoned at the time of the fire. The object assemblage from the floor consists of mainly complete objects but also three damaged items. Therefore an interpretation of the assemblage as abandonment stage refuse is also possible.

Particularly interesting in this deposit is the presence of four complete 'grain measures', cylindrical ceramic containers with horizontal line decorations, possibly used for measuring set units of food or drink (Mallowan 1936; Duistermaat 2008: 237). Although the shape of these objects does not necessarily indicate their function and use, their clustered presence is conspicuous and indicates that they represent a certain functional group. If these objects were indeed used as grain measuring tools, perhaps they were used as such in this room. In turn, this may indicate that the objects were left behind because they belonged to the room they were found in.

In the central room, room 5, a large amount of grinding tools were found. The grinding tools are large slabs and smaller grinders, which would have been used together. In the room the artefacts are found in sets, nearly always one large slab and one smaller grinder together. This remarkable structuring suggests that the objects were deposited in their location of use as either primary or provisional refuse. The concentration of a large number of the grinding tools in the north-east corner of the room suggests that they may have fallen from a shelf on the wall. However, some grinding stones have also been found in other parts of the room, and, although this is hard to ascertain, possibly on different floor levels. The concentration of grinders and grinding slabs in the north-eastern corner should therefore perhaps be understood as part of a continuous process of use and discard in this room.

The continuous use of spaces is also indicated by several hearth features in rooms 2 and 5. These features were used for a considerable amount of time as they are related to subsequent floors constructed on top of each other. These features, together with large amounts of grinding tools among them, indicate that these rooms were mainly used for grain processing and possibly bread baking.

Room 4 also yielded a hearth but in addition a long row of niches were constructed in the southern wall of the room. These niches were interpreted as a possible tablet storage space (Akkermans *et al.* 1993; but see also Klinkenberg and Lanjouw 2015: 158). The hearth in this room was perhaps used to bake tablets.

Other rooms in the building have not yielded much evidence for other activities, it is conceivable that these were used for domestic purposes or that they were emptied before abandonment. Interesting in this regard is that the rooms which are located the deepest in the structure, rooms 7a and 9, were fitted with a mudbrick floor, possibly to serve as a more comfortable floor for a place to sleep.

3.5.3 The extended building

At some point an extensive renovation of the building was performed, this is allocated to level 6B. Although the southern part of the building was largely left standing, the northern part was demolished to a height of 50 centimetres above the ground. The new façade was constructed two meters further to the north (figure 3.65). Additionally a long wall was constructed along the outside of the building, encasing it (see also Lanjouw 2016). Also several small walls were built inside some rooms, perhaps to strengthen the floor on top or for the construction of new arched ceilings.

In this new construction, the function of most rooms was similar to the previous phase. The niches in room 4 were still present and visible and in room 1 again a large basin was constructed. Also the vaulted room (3B) under the stairs was still accessible in this time, although it was closed off at the end of this phase. A constant sequence of loam floors in rooms 2 and 5 reveals that also this area was used in much the same way as before. In room 2 also a cuneiform tablet (T93_001) was discovered, which referred to the distribution of food to local workmen, *šiluḫlu*, if this reflects the function and use of the building it also indicates continuity of use and function of the rooms.

Two remarkable contexts deserve to be mentioned in a discussion about this phase. Firstly, in the south of room 6 in a small pit a large amount of beads were found. The beads were clearly strung as a necklace or bracelet when they were deposited, multiple beads were found in a state of articulation. Their location in a pit in the corner of the room suggests that they were

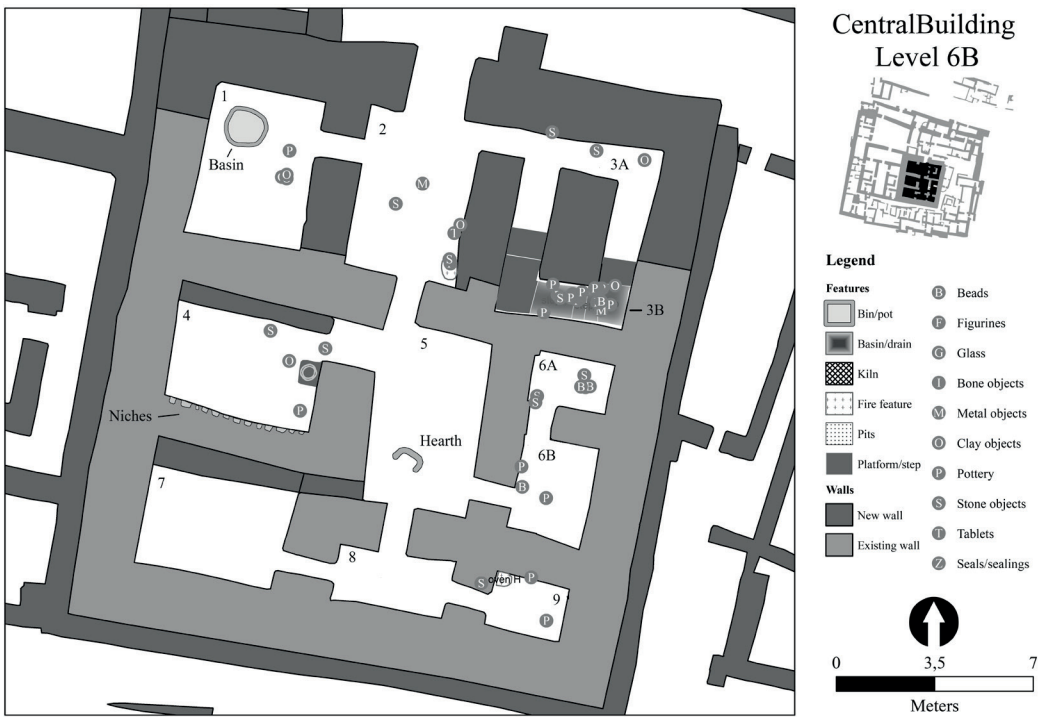


Fig. 3.65: The level 6B central building with finds and features.

deposited intentionally, however not as refuse discard. The objects therefore were most likely deposited as a cache, and since the location in a pit makes it unlikely that they were meant to be picked up later, perhaps the explanation for their deposition should be sought in the realm of ritual behaviour. In other words, this deposit should probably be considered a ritual cache.

The second context of interest entails the vaulted room under the stairs in the north-east of the building. As mentioned above the room was closed off at the end of this use phase. Curiously, no less than 24 complete objects were left on the floor of the space when it was bricked up. Amongst these were a large number of carinated bowls, some jars and a large bronze blade (figure 3.66). Although the function of the blade is uncertain, a close resemblance to a tool used in the construction of a mudbrick building (Etbul 2010) may indicate that it was used to shape bricks. The deliberate leaving behind of the objects may indicate that also this context represents a ritual act (Klinkenberg and Lanjouw 2015: 162). However, the spatial distribution of the objects within the space is far from structured and although the bronze blade may have been of considerable economic value, this cannot be said of the mass produced carinated bowls. Because several bowls were stacked on top of each other it is unlikely that the bowls contained any food or drink. Concluding, it remains unclear why all these items were left behind here, the lack of spatial organization among the objects suggests a certain degree of carelessness which may indicate that the objects were deemed not worthy to be re-used. In that vein the context should be cautiously interpreted as abandonment stage refuse.

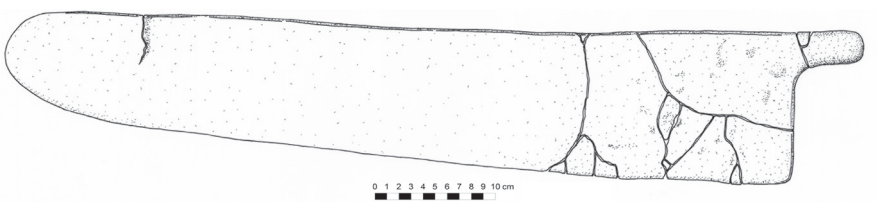


Fig. 3.66: Bronze blade from niche 3B in the central building.

3.5.4 Further renovations

After some time the large building was in need of renovation, and several walls were constructed inside many of the rooms (level 5; figure 3.67). These were probably constructed either in order to strengthen the roof or to create new arched ceilings. Their construction inside the building illustrates that the amount of floor space in the ground floor was not deemed very important. Remarkably, after the construction of the new walls, of the 475 m3 space that the building covered, only 150 m3 was floor space, less than a third.

These alterations in the architecture were limited to the architectural layout of the building. The function and use of the rooms apparently hardly changed. Again in room 1 a large basin was constructed, this time ceramic in material, resembling a bath. Another recurring feature is a large hearth feature in the centre room, room 5. The niches in room 4 were however not visible anymore.

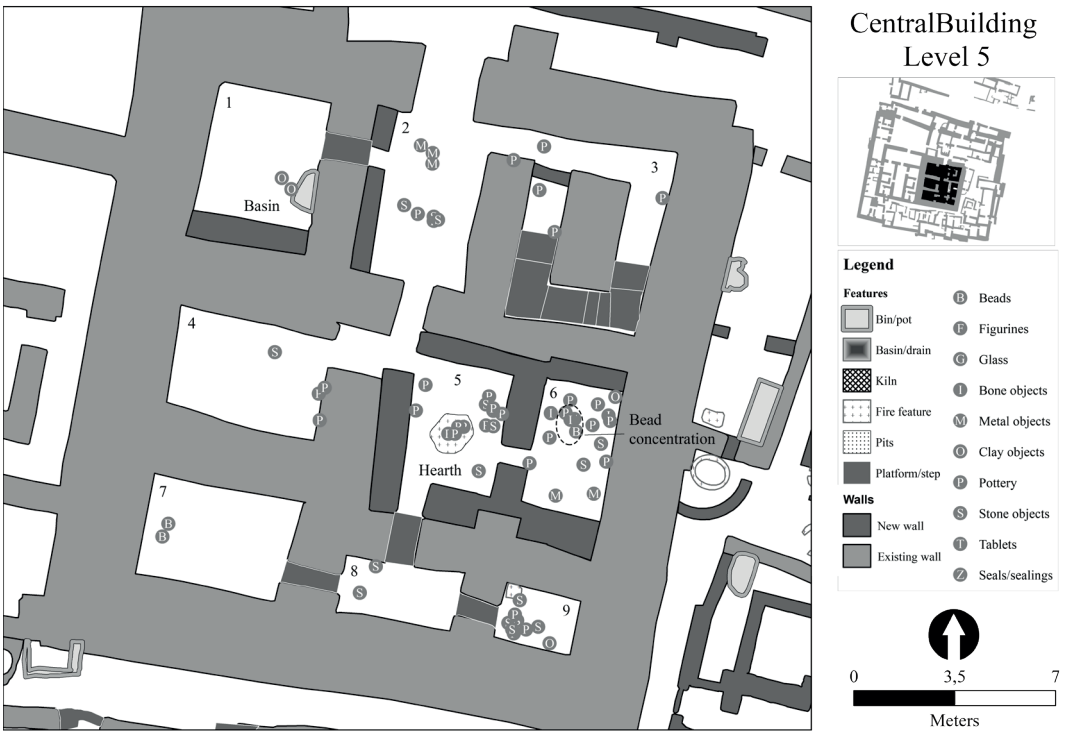


Fig. 3.67: The level 5 central building with finds and features.

Unique to this phase of the building is the large amount of finds from two rooms, 5 and 6. In both rooms large amounts of objects were deposited on the floor among much evidence for a large fire and structural collapse. In room 5 eleven pottery objects and two stone tools were found. Seven of these are large in size. Of these large objects, three are ceramic pots with a rim diameter of 28 to 36 centimetre. These pots and the discovery of a ceramic strainer in the deposit suggest that the objects were perhaps used in beer production (see paragraph 3.3.3). Because more than half of the objects from the room is considered large in size, it is conceivable that the deposit is *de facto* refuse, left behind during abandonment. Large scale fire damage in the room however indicates that a catastrophe may have struck the room and that the deposit is the result of this event.

Adjacent to this central room, room 6 was fitted with a mud brick floor and was also covered with finds. Seven ceramic vessels were registered on the floor. Three of these were tall storage jars, additionally one large pot, two carinated bowls and a rectangular ceramic box were found. The large storage jars were found along the walls of the room, they were probably placed in a slight depression in the floor in this location as was evidenced by the remains of several still standing jars (figure 3.68). In the middle of the room the smaller vessels were found, possibly fallen from shelves along the wall, higher up.

Another interesting discovery from this room is a large concentration of beads and pendants. The collection consists of approximately 425 spherical and oblong beads, five perforated shells, two perforated bone combs and six phallus shaped beads. Wiggermann (2010:

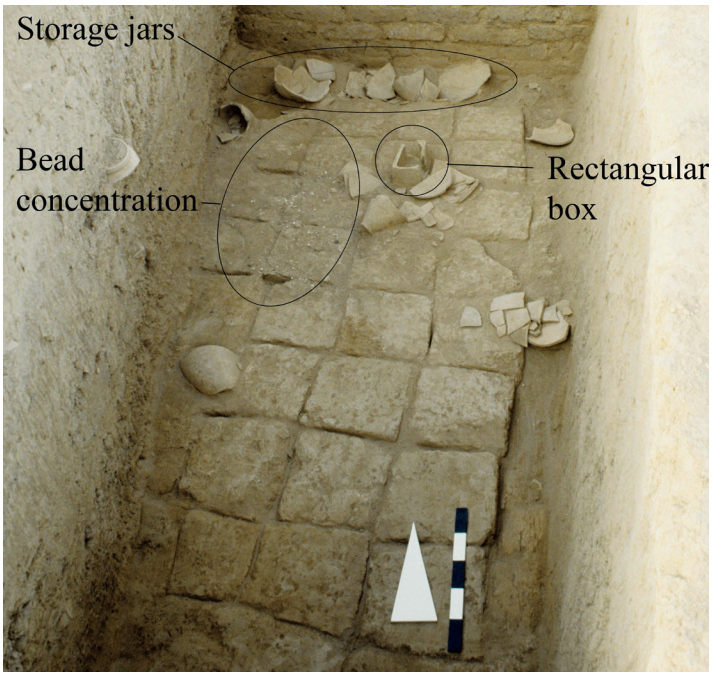


Fig. 3.68: The eastern part of room 6, looking north (photo by P.M.M.G. Akkermans).

49) interprets these items as part of the attire of prostitutes and consequently assigns a brothel-function to the building. Whether the objects were worn and used in this room or building is however entirely unclear. Their location on the floor of the room among the pottery seems to indicate mainly that the objects were stored here. The objects were found spread out over the floor, whether the beads were tied on strings at deposition is unclear. Although earlier publications do state this to be the case (Akkermans *et al.* 1993: 19; Klinkenberg and Lanjouw 2015: 167), photographs

Fig. 3.69: Beads on the floor of room 6. For scale, the rectangular box in the lower right is approximately 20 centimetres wide (photo by P.M.M.G. Akkermans).

of the floor deposit (figure 3.69) are not in accordance with this notion. In any case, the objects must have fallen from a shelf or container from the wall higher up.

From the undoubtedly valuable nature of the beads, pendants and the (content of) large storage jars, it seems that the room was abandoned in great haste. Burn marks on the floor and the objects indicates that a large fire has blazed through the room, probably together with room 5. All these factors combined indicate that the floor level deposits in these rooms are catastrophe deposits. In turn this suggests that the objects were indeed used or stored here.

The floor level deposits clearly indicate that the rooms were at least used to store food and drink, as well as beads or necklaces. The presence of the ornaments may suggest that the room was used by the central administration as a strong room for valuables. What the content of the jars was has not been demonstrated but perhaps these contained some of the more scarce food stuffs or perfume.

3.5.5 Function and use of the central building

As the most imposing building in the *dunnu*, the central building must have played an important role for the people who worked and lived in this settlement. Its size and robustness are indicative of its central position in the workings of the *dunnu*. In general, throughout its existence, the building has not changed dramatically in function or use. Its architecture was altered somewhat through time but the general layout has remained the same. Also, despite the constant architectural adaptations, features such as the basins in room 1 and the hearths in room 5 were consistently refashioned.

Apparently, the building fulfilled several roles at once, close to its entrance public spaces were used for the distribution of rations while the less accessible spaces were reserved for domestic use. A more official function could however also be attributed to some rooms, considering the presence of a (tentative) archive room and large storage facilities in room 6. Additionally, other functions, such as one of the rooms as a prison (Wiggermann, personal comment; Klinkenberg and Lanjouw 2015, 173) are harder to identify using archaeological remains.

Particularly invisible in the archaeological remains is what has occurred upstairs, on the roof or higher storeys. In line with the interpretation offered by Klinkenberg and Lanjouw (2015), it is assumed here that the massive construction of the walls of the building was put in place to support a large weight higher up. As evidenced by the large amount of grain processing and distribution activities in the building, and the *dunnu* in general, it is likely that the top storeys of the building were also in use in the agricultural sphere. The large weight which is implied by the (constantly renovated) walls of the central building is therefore interpreted to have comprised of agricultural surplus, barley.

The consistent use of the building through time ends with the large fire which is particularly evidenced in room 5 and 6 (see figure 3.70). In many rooms thick layers of debris were deposited, probably as the result of collapse. The northern three rooms seem to have been reused later, but probably while the building itself was in ruins. During this time the rooms were probably used as a sheep or goat pen (Klinkenberg and Lanjouw 2015: 171).

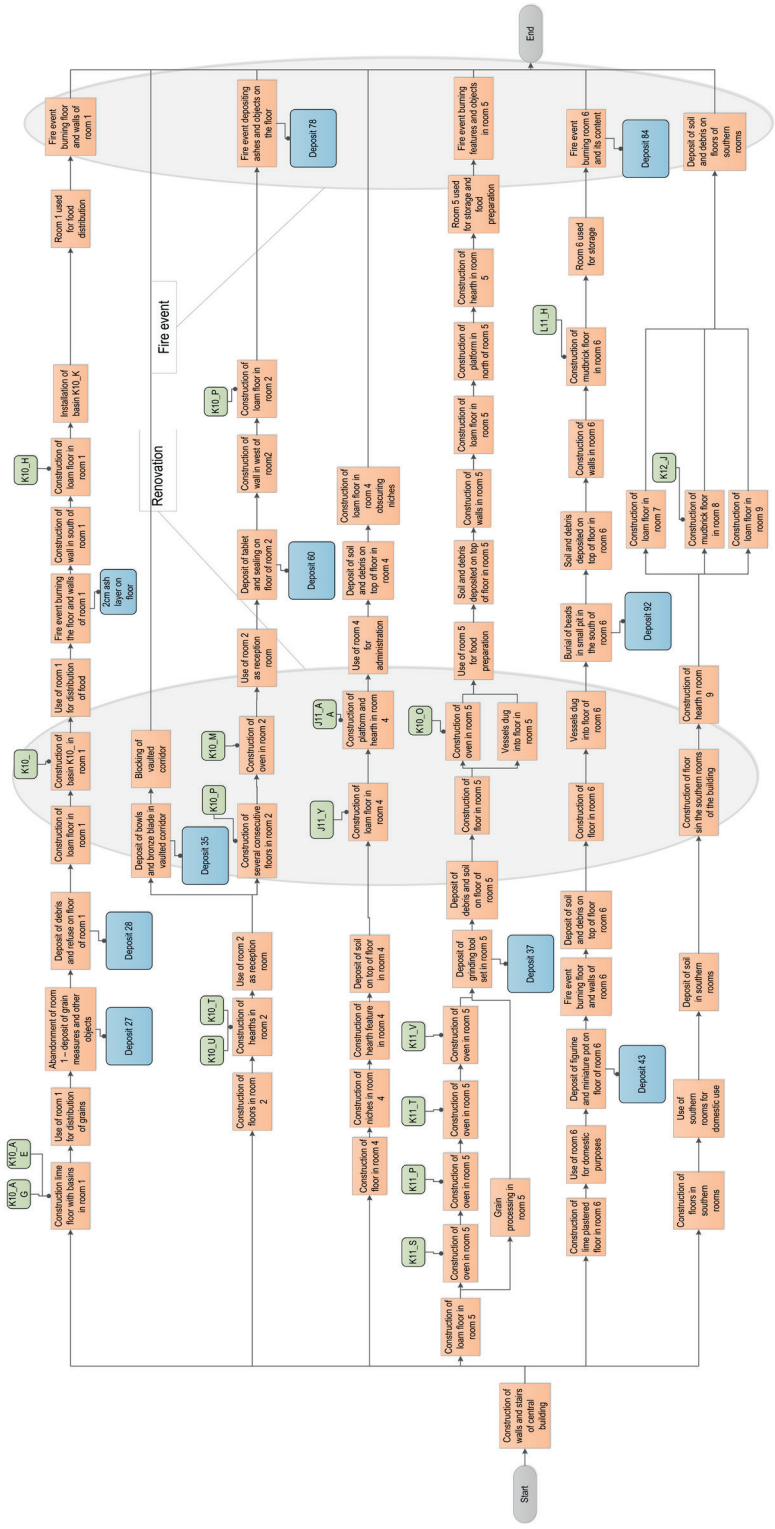


Fig. 3.70: Sequence of Events of the central building.

3.6 The south-western sector

3.6.1 Introduction

The south-western sector comprises a large part of the western flank and the majority of the southern part of the *dunnu* (figure 3.71). The extent of the sector is defined on the basis of clear access patterns. The sector can only be entered on the ground floor through one doorway in the east. Because the area was much used perhaps other entrances were present higher up. The locations of these however remain unidentified. This may partly be due to the state of preservation of walls, which due to erosion is quite limited in this part of the *dunnu*. Overall the general impression which is obtained from the finds and features from this sector is one of large scale food processing. This is in line with earlier interpretations in which the (south part of the) sector was dubbed 'Paya's bakery' (Wiggermann 2010: 22; Akkermans and Wiggermann 2015: 100). Although the majority of finds and features are in agreement with this notion, the sequence described here shows that a larger variety of activities occurred in this sector.

Fig. 3.71: The areas in the south-western sector.

The sector was divided into eight areas, each defined by grouping together spaces which had easy access to each other. As the different areas also had easy access to the surrounding spaces, the areas do not necessarily define the functional layout of the sector as it was used or perceived in the past.

3.6.2 On the grind (area 1)

3.6.2.1 Introduction

The south-western part of the *dunnu* was severely affected by erosion. Additionally, although in some places the Bronze Age remains occurred in deeper strata, the excavations were halted before reaching the lowest level 5 layers. The Bronze Age remains in the area west of the residence, area 1, were excavated to a depth of about 60 centimetres. This has resulted in a poor stratigraphic correlation with the general stratigraphy. It is however clear that the main floor levels which were discovered preceded the construction of the outer toilet of the residence (figure 3.72).

Fig. 3.72: Architecture and floor level finds from area 1 of the south-western sector.

The oldest remains in this area were found in a small trench which was dug though the floor of the bin (space D; bin Y) which was set against the residence wall. Although these finds and features predate the other floors and features known from the area, it is unclear what the layout of the area was at this point in time. The layout of the area in the period which is discussed here consists of two main parts. Small walls were constructed in the north of the area, creating spaces A and B. The southern part of the area consisted of a long open space (C) with one large bin (D) constructed against the wall of the residence. The discussion below starts with bin Y, and is followed with the objects and features which relate to the floor levels of area 1.

3.6.2.2 Bin Y (space D)

Because of its size, excavators have interpreted bin Y both as a room and as a bin. No door was found in the walls of the space so it was most likely entered from above. Because the floor of the bin was difficult to recognize, the space was excavated deeper than the surrounding area. In fact, the trench which was dug in the space was eventually deeper than the bottom of the walls of the bin. The floor which was reached at the end of this undertaking probably related to a different structure such as an earlier house.

The elevation of the floor of the bin was probably the same as the surrounding area. This notion is supported by the fact there is a large difference between the composition of the find assemblages above and below this elevation. The higher assemblage (deposit 290) is mainly composed of (fragments of) grinding stones while the lower assemblage (deposit 295) is characterized by a high number of clay objects (figure 3.73). Because in the surrounding floors also many grinding stones were found, the higher object assemblage from bin Y seems to be related to it.

The lower layer of soil and finds (deposit 295) consists of brown soil layer with mudbrick debris, lime spots and charcoal. The soil layer also yielded nineteen objects. Among these objects is one bone awl, a small corroded piece of bronze, one glass bead and sixteen clay items. The clay items consist of seven sealings, five tokens and four tablets.

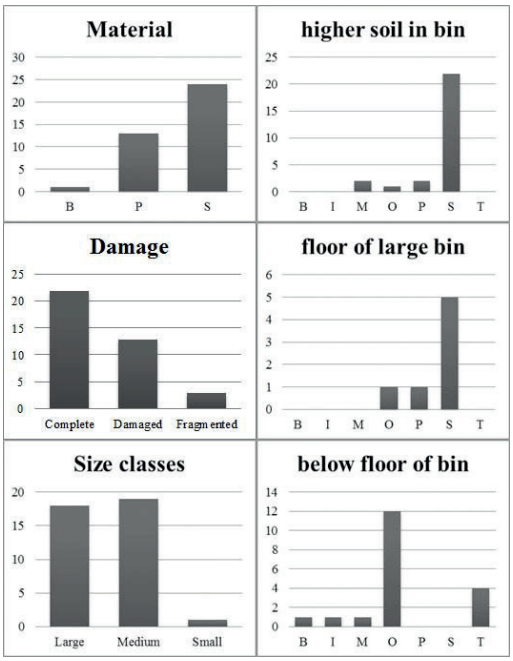


Fig. 3.73: Characteristics of objects from bin Y (B beads and pendants; I bone objects; M metal objects; O clay objects; P pottery; S stone objects; T tablets).

Only the bead and the awl were complete, the remaining items were damaged or fragmented (figure 3.73), characteristic of a refuse deposit. A soil layer containing mostly broken objects is usually characterized as a secondary refuse deposit. The few tablet fragments from the deposit were however all found in the top part of the deposit, indicating a certain degree of structuring. Perhaps these items were discarded in an area which was being built over. Also in other parts of the *dunnu* tablets were discovered in such contexts.

Interestingly however, also other objects relating to administrative activities were found in this deposit. Seven fragments of sealings were found, one of which still bears the imprint of a stamp seal. Other sealings show the imprint of ropes and ceramic vessels, so-called jar stoppers (figure 3.74). Four other clay objects from this deposit are interpreted as tokens (figure 3.75), which, although they are often dated to earlier periods, were used alongside the cuneiform administration (MacGinnis *et al.* 2014).

The location of the deposit and the state of the objects suggest that we are dealing with a secondary refuse deposit. However, considering that nearly all objects are made of unbaked clay and relate to administrative activities, the deposit is highly structured. In other words, the objects were probably discarded near their location of use. The deposit would in that case indicate that administration was carried out nearby in this early phase.

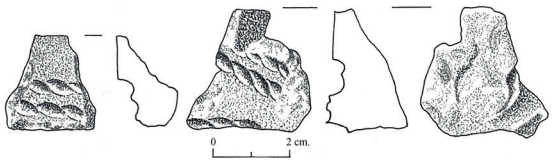


Fig. 3.74: Clay sealing fragments from the lower deposits of bin Y (fig. by R. Timmermans).

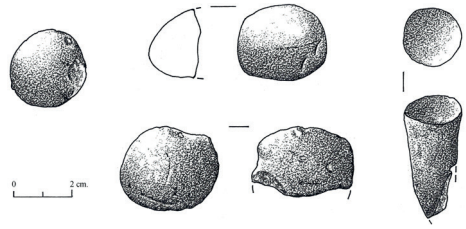


Fig. 3.75: Clay tokens from lower deposits of bin Y (fig. by R. Timmermans).

3.6.2.3 Two levels of grain processing

As mentioned above, the area was separated into a northern and a southern part. The northern part is constituted of rooms A and B. In the earliest phase, these rooms were reached from the north through a doorway in wall C. The doorway in wall U did not exist yet at this moment. From the floor of rooms A and B of this early phase seven complete carinated bowls were recovered, perhaps indicating that these spaces were used for domestic purposes. No other objects or features were discovered here.

The southern part of area 1, space C, was a large open space, divided into four separate niches by small walls which were set against the outer wall of the *dunnu*. The ground plan of space C suggests that this space could only be accessed from the south. Other entrances may however have been present higher up, using ladders or stairs. On the floor many ovens and bins were placed. Also some dug in vessels were recorded on photographs, further expressing the abundance of (semi-) fixed features in this area. Although the features were probably not all used at the same time, they were probably all used for food processing, in particular bread baking. The large amount of features indicates that the space was used for large scale for processing.

The niches mentioned above were created by the construction of several abutments against the outer wall of the *dunnu*. What the function was of these abutments and niches is uncertain, but the regular interval in which they were placed indicates that their functions were related. They were constructed either to shield the area from wind or to serve as a base for a construction on top. The latter could imply the presence of either a roof over the area or a wide walking surface on the outer wall. A different interpretation may be that, as is indicated by the presence of a large amount of grinding stones close to the abutments, they may have served as the bases of grinding installations. The pattern in which the bricks were laid underscores this last interpretation.

The largest feature in the area is the aforementioned bin Y, which was constructed against the residence wall. Its inside space measures 1 by 1.8 meters and it was at least a metre high. No entrance was found into the bin so it must have been accessed from the top. Therefore the space perhaps functioned as storage space, perhaps for grains. Finds from the floor level of bin Y (five stone tools, a ceramic bowl and a clay spindle whirl) are similar to those which were found on the floor of space C and are therefore probably deposited in the same manner.

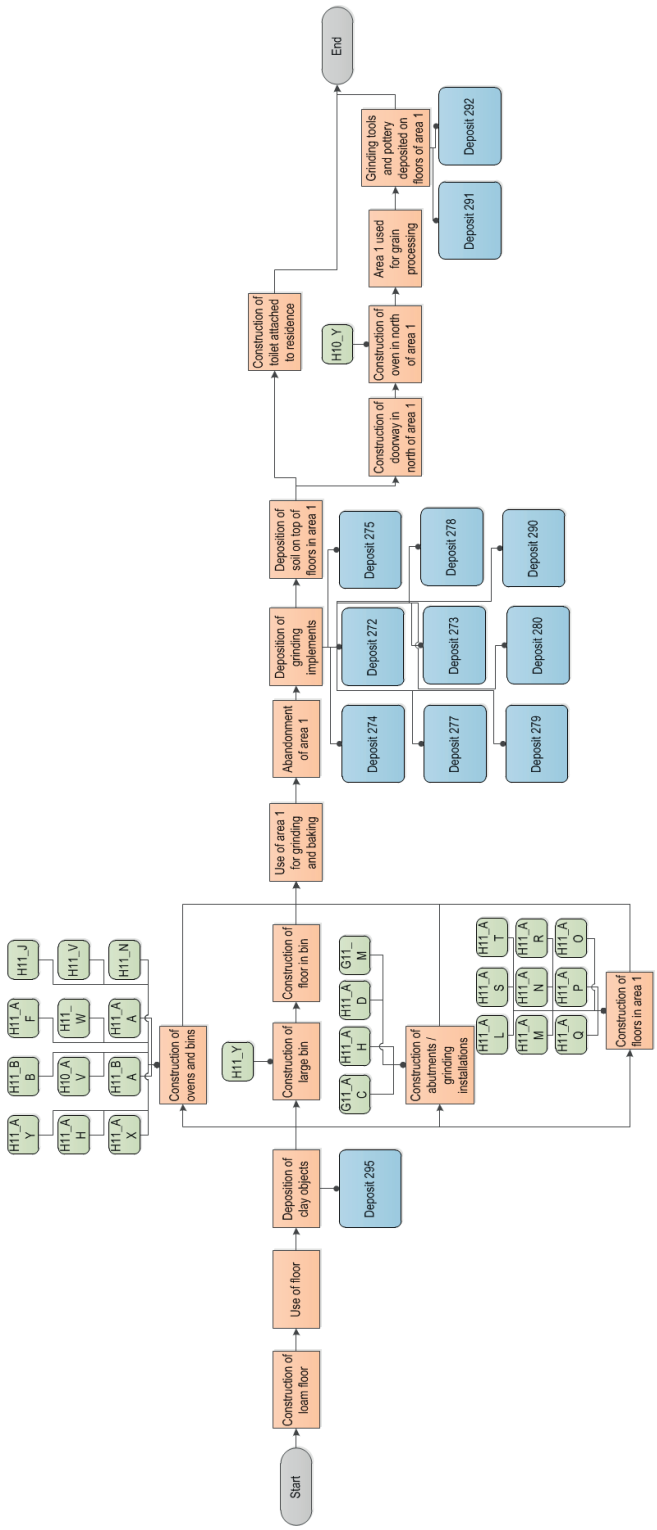


Fig. 3.76: Sequence of Events of area 1 of the south-western sector.

The floor of space C yielded a very specific and homogeneous find assemblage. The vast majority of finds are stone objects, a large portion of which are (nearly) complete grinding stones (figure 3.73). As the objects were probably used in grain processing they relate well to the functional interpretation of the features which are present here. Many of the objects were considerably large and most were complete. These factors combined indicate that the assemblage was deposited here as an abandonment stage, or *de facto* refuse, deposit. Consequently these objects must have been used in this location. They underscore the interpretation of the open space as large scale grain processing and bread baking site.

3.6.2.4 Continuation

At some point the area was abandoned and renovated. Several architectural adjustments were made to this part of the *dunnu*. Chiefly, an entrance was made through the wall of the residence, and a part of the western area was made into a toilet. The doorway in wall C was closed off at this point. The southern area was enlarged slightly by the construction of a doorway in wall U. Rooms A and B which were previously associated with the north were now accessible from the south. On the floors of these rooms in this later phase one bin and five large grinding stones were found. This indicates that the rooms perhaps changed function into a grain processing space.

Unfortunately no floors from this phase were preserved in space C making it difficult to draw accurate conclusions about its function and use. In consequence, the Sequence of Events which was created for this area is remarkably straightforward (figure 3.76). It is conceivable, however, given that the newly associated rooms are so clearly demonstrating their function as grain processing location, this practice was still performed in the other spaces as well. In this case the southern space retained its original function and was even slightly enlarged. The presence of large and heavy objects on the floor of a structure is often taken as an indication of *de facto* refuse, left behind at abandonment. Similar to the previous phase, the area was probably slowly abandoned.

3.6.3 The corner rooms (area 2)

3.6.3.1 Introduction

Area 2 of the south-western sector consists of four rooms in the south-western corner of the *dunnu* (figure 3.77). In the far corner room A is located which is connected through hallway B to room or open space C. Space C in turn gives access to room D and the connected room E. This area was heavily affected by erosion, leaving only a shallow horizon of architectural remains dating to the Late Bronze Age. This has made linking these archaeological strata to the overall chronology of the site difficult. Moreover, the area has suffered from substantial levelling activities in the past, further complicating the stratigraphic correlation.

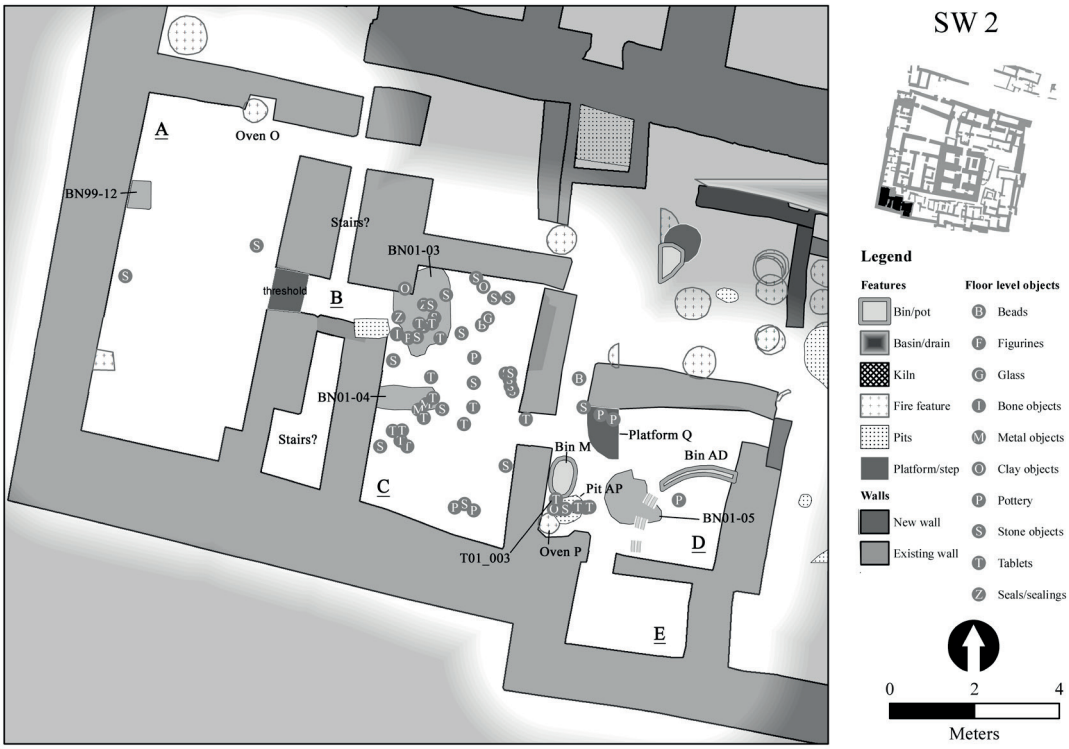


Fig. 3.77: Architecture and floor level finds from area 2 of the south-western sector.

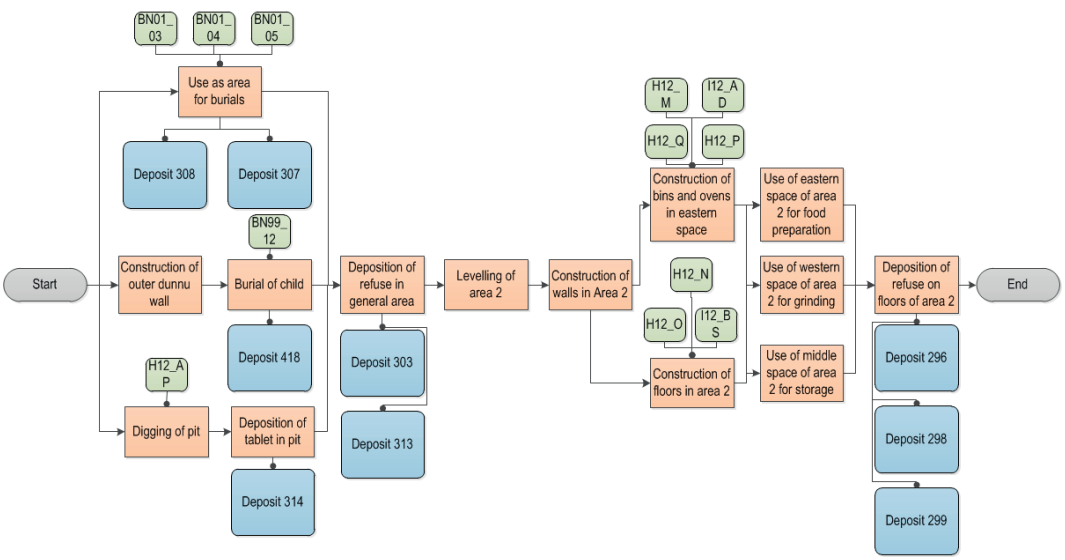


Fig. 3.78: Sequence of Events of area 2 of the south-western sector.

A general Sequence of Events was established for this area however (figure 3.78). After the outer wall of the *dunnu* was constructed the area was used as an open space, providing room for burials and outdoor activities. Some structures were perhaps present but these were obliterated by levelling activities. After the levelling of the architecture in this area, new walls were erected and the area was used as a residential space, possibly inhabited by baker Paya, whose cuneiform tablets were discovered on top of this floor level. At some point the area was in disuse, refuse accumulated on the floors of the spaces and it was built up again. Remains from the ensuing phases have unfortunately not been preserved.

3.6.3.2 Phase 1: outside activities and burials

As mentioned above, the earliest phases of Assyrian habitation of the southern areas has not been preserved well, mainly because of levelling activities in this area. The abrupt top boundary of the Neolithic layers suggests that these were levelled to provide a horizontal surface for the Late Bronze Age construction. It is therefore difficult to reconstruct the layout of the area in this period. The fragmentary information indicates that after the outer *dunnu* wall was constructed some structures were built in the area. Refuse layers on the ground however indicate that the area was used as an outside space. Also several burials from this period were found. At least three of these burials predate the later constructions which are described below as they were found clearly underneath some of these constructions. One of the burials (BN99-12) was discovered lying parallel to and at the same depth as the outer wall in the west. As this is a common pattern at Tell Sabi Abyad, this could indicate that the wall predates the burial. In turn this indicates that the use as burial ground occurred within the walls.

Evidence of other activities in this area is scarce due to later erosion and demolition. One find should be mentioned however. In an oven structure or fire pit (pit AP) which was dug deep into the Neolithic layers a large cuneiform tablet was found (T01_003). The tablet was dated by its eponym Kastiliasu to the year 1209 BC (Wiggermann personal communication). The tablet contains a census of personnel and describes in detail large quantities of food products, produced around the *dunnu*. It is therefore an indication of the substantial nature of work which took place in and around the *dunnu* before the main architectural layout of the southern part of the *dunnu* was constructed. Also, it provides us with an absolute date post quem for the deposition of the higher lying soil and construction of the architecture on top.

3.6.3.3 Phase 2: Paya's realm

After and during the use of the area as outside space a number of refuse and soil layers accumulated on top of each other. After some time the whole area was renovated, the surface was levelled, many walls and new floors were laid out. This new phase is most likely to be correlated with the construction of the residence and the renovation of the central building (level 6B). The corner of the outside wall in area 2 was constructed with very thick walls. This has led the excavators to interpret the corner as the base of a tower (Akkermans and Wiggermann 2015: 98). The size of the walls does suggest that a higher storey was present, but in what shape or form this was remains uncertain. In hallway B perhaps stairs were once present (Brüning and Plug 2016).

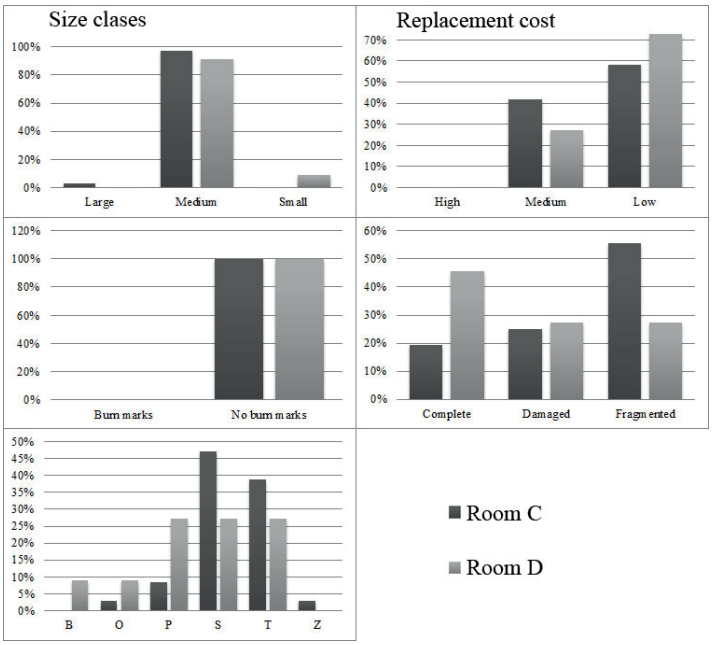


Fig. 3.79: Characteristics of objects from the floors of rooms C and D of area 2 of the south-western sector (B beads and pendants; I bone objects; M metal objects; O clay objects; P pottery; S stone objects; T tablets). Note that the Y-axis is set to percentages.

Room A of area 2 is poorly preserved due to erosion. Rooms C and D however were better preserved and yielded a substantial find assemblage from their floors. In addition, in room D a number of features were constructed on the floor. Two bins, an oven and a mudbrick platform could be recognized during excavation. Room C however was free of features. The features in room D suggest a function of the room in the realm of food production. The finds from room D however do not relate directly to this activity. Three stone polishing stones, two carinated bowls, a ceramic jar, a pierced ceramic disc and three tablets were found on the floor. In room C a comparable assemblage was found on the floor, albeit including a large number of grinding stone fragments. The deposit contains three ceramic bowls, a spindle whorl, four flat stones interpreted as polishers or anvils, one stamp seal, fourteen cuneiform tablets and twelve grinding stone fragments (see figure 3.79).

In addition to the registered objects a large collection of storage vessels may have been present on the floor of the middle room, indicated by the concentration of shards on the floor which is visible on photographs (figure 3.80). However, most striking amongst the find material from both rooms is the presence of cuneiform tablets. Apparently, many of the items relate to a certain baker named Paya (Wiggermann 2010: 22). The tablets represent small receipts of flour and bread on a day to day basis. It should be considered that in antiquity many hundreds of these small receipts must have existed, and that we are dealing with a small subset of surviving elements (Wiggermann, personal communication).

How the objects ended up on the floors of room C and D is not completely evident. The objects are varied, mostly damaged or fragmented, and medium sized. These characteristics suggest that the deposits in both rooms are the result of secondary discard. The location of the objects on the floors of the rooms however directs the interpretation towards *de facto* or primary refuse. Also the presence of the tablets in both rooms suggests that perhaps multiple processes were responsible for the composition of the final assemblages.

The presence of the tablets can perhaps be understood in relation to the levelling layer which was deposited on top, in order to construct a new floor. Similar to other tablet-bearing contexts in the *dunnu*, perhaps the objects were discarded there deliberately to bury them in the construction.

Fig. 3.80: Pottery concentration in room C of area 2 of the south-western sector. Many tablets were found underneath this shard cluster (photo by P.M.M.G. Akkermans).

The tablets could indicate that an office was located in the direct vicinity of these rooms. However, none of the rooms in this area can be identified with certainty as an office or residence. It is conceivable that this office was located on a higher storey. Another interpretation yet may be that because the tablets are all fragments of receipts, these rooms were merely used for the distribution of foodstuffs by baker Paya. In that case the objects should be considered primary refuse.

In conclusion, area 2 of the south-western sector was badly eroded in the past. This makes it difficult to ascertain the function and use of room A and hallway B. The layout of B however suggests that stairs were once located there, indicating that a higher storey could be reached from there. The objects and features from the floors of rooms C and D hint at several activities. Bins and an oven in room D were probably used for food preparation. Possibly this room must be viewed as a small apartment in concordance with room E. Equally this small space could be used as storage space. The function of room C is unclear, despite the large amount of registered objects from the room. Pottery shards which are visible on the photographs of the room indicate that the room was left with many ceramics located on the floor. This could indicate that they were left there at abandonment. The presence of many tablets in this same context however designates the deposit as refuse discard. The rooms were most likely used for domestic purposes and may have functioned, from time to time as office of baker Paya.

3.6.4 Many ovens (area 3)

3.6.4.1 Introduction

Area 3 of the South-western sector is a large area consisting of eight interconnected rooms (figure 3.81). The area consists of four rooms in the south (A, B, C and D) and four spaces abutting these to the north (E, F, G and H). The area is located along the corridor which runs around the two large central buildings of the *dunnu*. Because of the discovery of a large amount

of ovens and related grinding implements the area has often been dubbed the bakery of Paya (Akkermans 2006: 208; Wiggermann 2010: 22). The rooms described here give good evidence for the use of the area as bakery. However, it should be stressed that the related structures and artefacts were perhaps used only for a relatively short period (Akkermans 2006: 207). Other uses of the area may be simply invisible to the archaeologists' eye. In addition to the complexity of such sequences, unfortunately the stratigraphic analysis of this area was not yet available during the current research. Therefore the results presented here are a rather simplified representation of the actual archaeological remains.

The rooms in the south were constructed first, followed by the construction of the northern spaces. Rooms E-H contain a large amount of ovens while the southern rooms A-D are largely lacking in these or other features. Also the finds concentrate particularly in the north. Among the assemblages found on the floors in these spaces many ceramic bowls were found but most strikingly, an abundance of grinding stones. The difference in amount of ovens might indicate that the northern rooms were mostly used for bread baking and other outside craft activities, while the southern rooms were used in a domestic manner. The difference could however also be partly caused by erosion of the architecture in the south. Below first the four southern rooms and subsequently the northern spaces will be discussed.

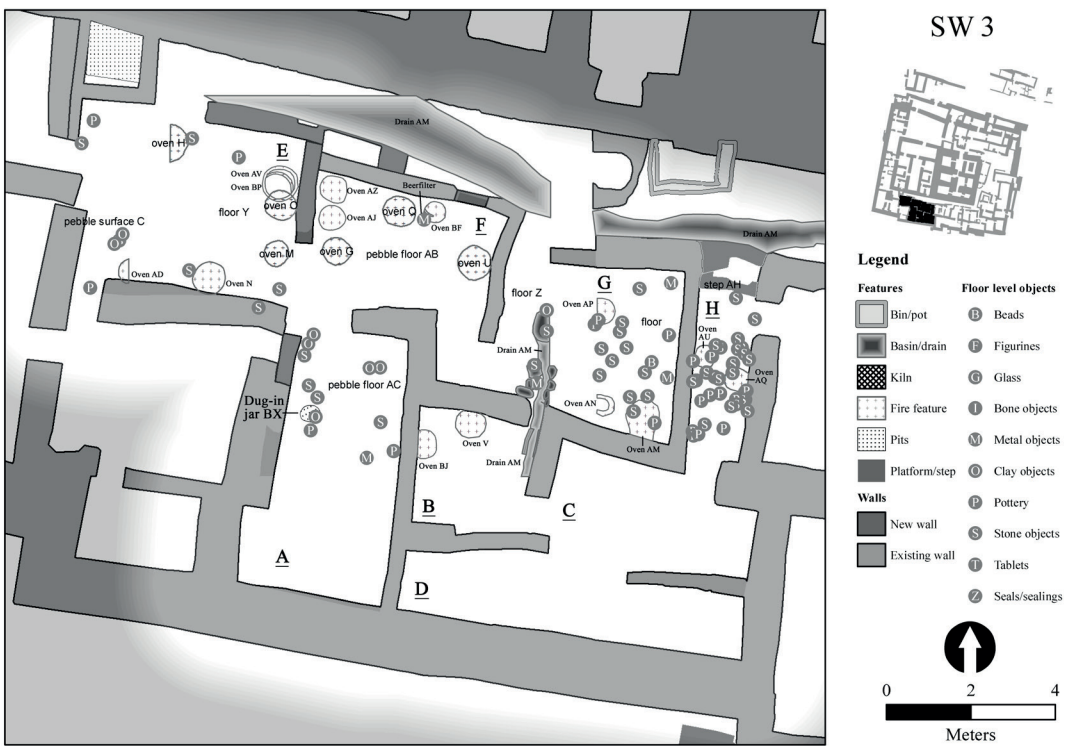


Fig. 3.81: Architecture and floor level finds from area 3 of the south-western sector.

3.6.4.2 Rooms A, B, C and D

In the layout of this part of the area room A is separated from the other rooms. This room could be entered from rooms E and F in the north through a doorway. Two floors were discovered in the room, the lowest being floor BT. On this loam floor two fragments of jarstoppers and two damaged stone tools were found (deposit 380). Additionally, a large ceramic jar was dug into the floor (BX). The jar was in a complete state and was therefore left behind at abandonment (deposit 382). The damaged state of the other objects indicates that they were discarded as refuse. In view of the lack of features on the floor it is conceivable that the space was used for domestic purposes.

After the deposition of approximately 20 centimetre of soil on top of floor BT a new floor was constructed. On this loam floor (AC) also four objects were registered (deposit 381). One bronze fragment, a clay jarstopper, and two grinding stones were found. Also these objects were mostly damaged, and were therefore probably discarded refuse. It is however remarkable that this deposit is very similar to the deposit on floor BT. Perhaps this indicates that the use of the room did not change through time.

Room B yielded no finds but there were two ovens constructed in the corner of the room. This perhaps indicates that the space was unroofed for ventilation. Additionally, a small gully or drain (AM) ran from the north through this space. This drain probably continued into room D and from there through the outside wall of the *dunnu*. Unfortunately, both room C and D were so badly affected by erosion that apart from the walls no architecture or objects could be retrieved from there. The function of these rooms can therefore not be established with great certainty. It is however reasonable to assume that also these spaces were used for domestic purposes. Perhaps space B functioned as a small courtyard for the preparation of food.

3.6.4.3 Spaces E, F, G and H

The northern four spaces were constructed abutting the southern rooms. The walls of spaces E and F were possibly free standing. They indicate that this part of the area was most likely used as courtyards. A number of ovens were excavated in these spaces, corroborating this notion. Most of these features were constructed in spaces E and F. in contrast, the majority of finds were found in spaces G and H. Four bowls and five grinding stones were found in room E. Except for one small complete carinated bowl all objects were broken or damaged. The objects however strongly relate to the features in the space. All the evidence indicates that the space was used primarily for food processing.

One find in space F does however not relate to the function of food production. A large bronze beer filter was found in oven Q of this space (deposit 384). Beer filters were used at the end of straws to filter the malt from beer while drinking (see paragraph 3..3.3). Because the objects were made of bronze it could be assumed that they were relatively high in replacement cost. Why it was deposited in an oven is therefore unclear. Perhaps this item is more related to the domestic nature of the spaces in the south.

Fig. 3.82: Drain AM (photo by P.M.M.G. Akkermans).

In spaces G and H two phases could be recognized. A floor (AV/BD) was constructed in both spaces in which several ovens were constructed. In space G three, and in space H two ovens were found. Additionally in space G a large drain was constructed (figure 3.82). This drain led water from the corridor in the north towards the south of the area.

At some point a layer of soil was deposited in these spaces. New floors (AI/AL) were constructed on top of this layer. Interestingly, no features were found on these higher floors. In both spaces however a large number of objects were registered. In space G sixteen objects were left behind on the floor (deposit 390). The deposit consists of seven grinding stones, four other stone tools, one fragmented stone bead, two carinated bowls, a ceramic jar and, remarkably, a complete large bronze spearhead. Four of the grinding stones were large and three were complete, this could signify that they were left behind at abandonment. Most of the other objects were damaged or fragmented which suggests that they were discarded as refuse. The bronze spearhead however is an extraordinary item in the assemblage. It is unclear how this object relates to the other items in the room. Its location in the corner of the room perhaps suggests that it was stored there. A spear perhaps stood in this corner against the wall and was left behind at abandonment.

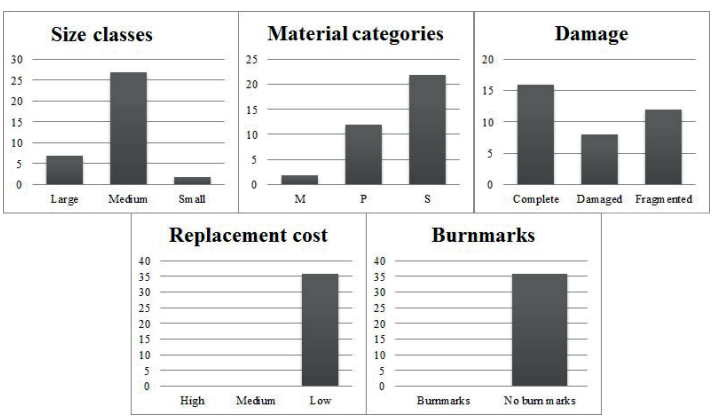


Fig. 3.83: Characteristics of objects from room H, area 3 of the south-western sector (M metal objects; P pottery; S stone objects).

Fig. 3.84: Object concentration on the floor of room H (photo by P.M.M.G. Akkermans).

The floor in room H yielded 36 objects (deposit 398). This deposit consists of seventeen grinding stones, four other stone tools, nine carinated bowls, three ceramic jars and two small bronze fragments. Nine of the stone tools and seven of the bowls were in a complete state (figure 3.83). Additionally, many broken ceramics were found in the space which were perhaps complete during deposition (figure 3.84). This large amount of complete items in the assemblage indicates that the objects were deposited either as abandonment stage refuse or during a catastrophe. Because no clear fire damage was found in the room it seems most likely that the objects were left behind during abandonment. Because the space is only 1.3 metre wide it seems unlikely that all the objects were used in this space. More likely is that the objects were stored in space H. Perhaps a large cupboard was located along the wall.

3.6.4.4 Conclusion

Area 3 was used in a variety of ways (figure 3.85). A lack of features and finds from the southern spaces (A, B, C and D) indicate that these were probably used as domestic structures. Erosion processes however obscured much of the evidence for these spaces. The northern spaces were built up with many ovens. In particular in the two western spaces E and F many ovens were constructed. although this also occurred in spaces G and H in the initial phase which was discussed above, subsequent use of the spaces focussed more on grinding and storage of grinding tools.

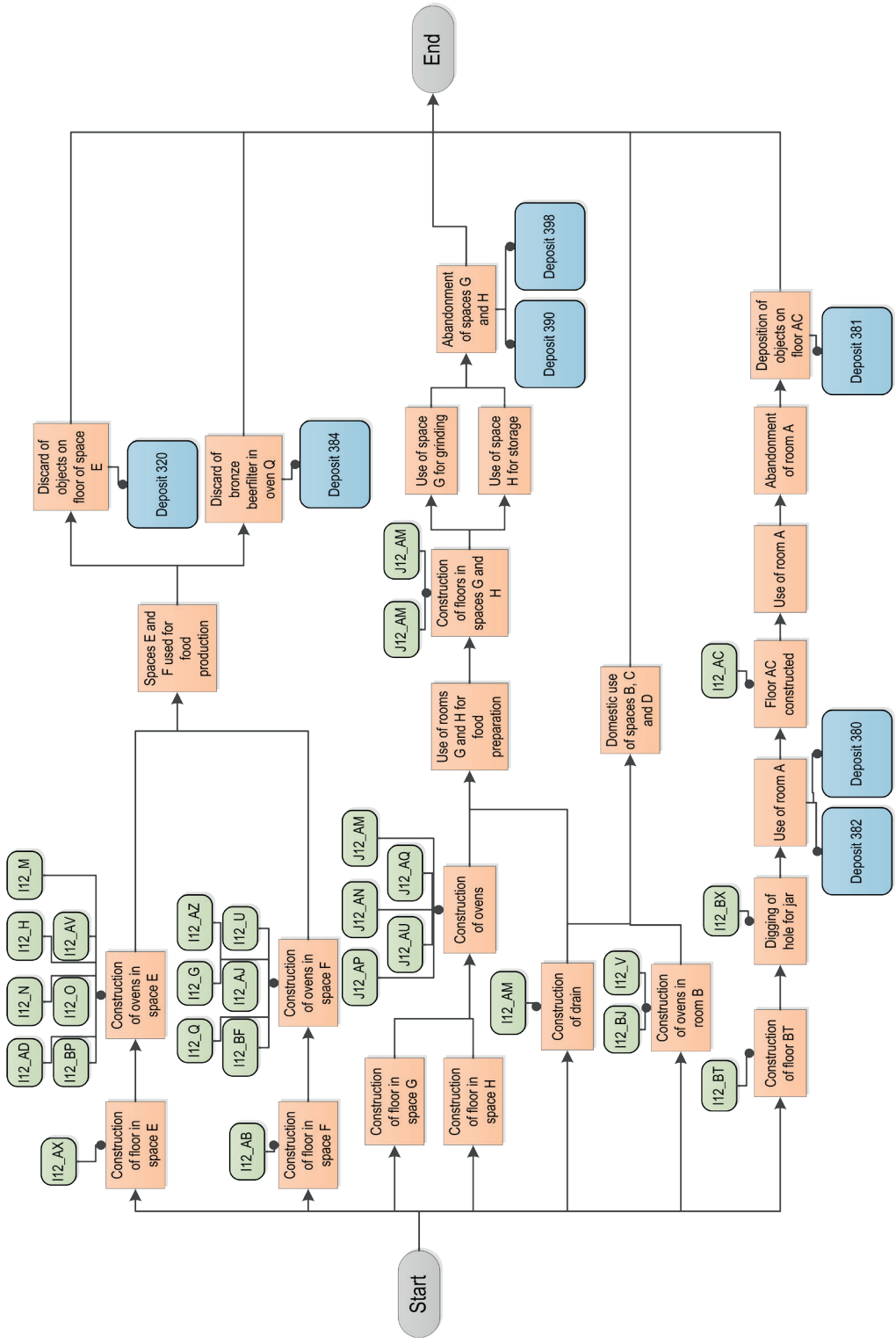


Fig. 3.85: Sequence of Events of area 3 of the south-western sector.

3.6.5 The corridor along the central buildings (area 4)

3.6.5.1 Introduction

Area 4 consists of the long corridor along the south side of the central building and the residence, it also includes two rooms, on either end of the passageway (figure 3.86). The area was considered an important route through the *dunnu* as it connects all southern spaces to each other. Also it seems from the ground plan of the *dunnu* that the south-western part of the *dunnu* could only be reached through this corridor. Despite its apparent function for the movement of people through the sector, through time many ovens and bins were constructed in the passage. These structures must have hampered the circulation of people. Therefore, perhaps additional routes were available for people to reach the western parts of this sector. The brief discussion below includes a more detailed description of features and finds from the area as well as the changes which occurred through time.

3.6.5.2 Features and finds from the corridor

In the early phases of the *dunnu* area 4 consisted of a large open space south of the central buildings. As buildings were constructed in the south of the *dunnu*, this space became progressively smaller. The final layout of area 4 is similar to a corridor or alleyway along the central buildings of the *dunnu*. The corridor could be entered in the east around the corner of the central building. It gave access to most of the spaces of the south-western sector.

Fig. 3.86: Architecture and floor level finds from area 4 of the south-western sector.

A large gully (BG/AW) formed in the corridor at some point. This was probably the result of rainwater runoff from the roofs of the central buildings. The water was collected in the gully and directed to the centre of the area where it was channelled through a drain (AM) southwards (see paragraph 3.6.4). Many ceramic shards were found on top of the gully, perhaps these were deposited here to prevent the floor from getting muddy. Of course, the shards may also have been deposited here by the flow of water.

On top of the floor level through which the gully ran several features were constructed. Firstly, attached to the residence, two cesspits (X and AR) were dug in to the ground. Small walls were constructed around these pits. Drains connected the toilets in the residence to the cesspits. Perhaps the pits were covered with lids to keep smells inside. East of cesspit AR a large bin and several ovens were constructed (figure 3.87). Some of these ovens were constructed overlapping other ovens. This indicates that they were not used at the same time. Perhaps one oven was in use at a time. The sequence of ovens from the corridor is then a result of a process in which these structures were built next to each other, one at a time.

Fig. 3.87: The corridor along the central buildings, area 4, looking east. The shard pavement in the corridor indicates the location of a gully (photo by P.M.M.G. Akkermans).

The room which is attached to the east end of the corridor was fitted with a bin and an oven. Although this space gave access to several rooms in this corner of the sector, it is possible that the space itself was also used for domestic purposes and for the production of food. Additionally, it may have functioned as an anteroom for the spaces it gave access to. No objects were registered in the space.

In the gutter in the corridor nineteen objects were registered (deposits 322 and 379). One grinder, three beads and fifteen fragments of a bronze pin hafted in ivory were found. These fragments consist of fourteen small fragments of bronze and one ivory fragment which contains a small fragment of bronze (figure 3.88). Possibly these fragments were once part of one object which ended up in the western part of the gully. Through time it may have disintegrated and the fragments were taken along by the water. This would explain the spatial distribution of the objects. The object was perhaps a hair- or clothing pin. Similar to the beads which were found in the gully, the objects may have been accidentally lost in this area.

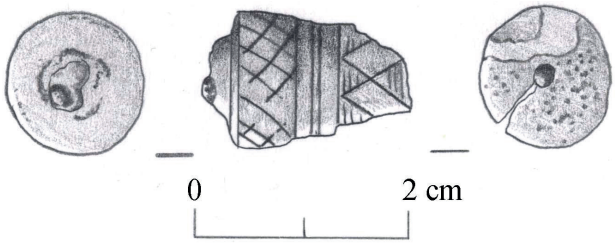


Fig. 3.88: Fragment of an ivory object with a bronze pin stuck inside (fig. by R. Timmermans).

3.6.5.3 Conclusion

The area south of the central buildings was gradually built up. While at first it consisted of a large open space, used for burials and haphazard oven construction, in due course buildings were erected in the south against the outer *dunnu* wall. As time progressed more structures appeared in the area. The final constructions resulted in a corridor or alleyway of approximately one metre in width.

The corridor has always been considered important for the circulation of people through the *dunnu*. However, several features such as ovens, bins and a large gully were constructed in this area. These features may have hampered the movement of people. Therefore, it is very likely that other passageways were also present, for instance along the roofs of the sector or on top of the outer wall of the *dunnu*.

In this view the corridor may be interpreted both as a passageway as well as an area for food production (figure 3.89). Perhaps the corridor was used in a time when all other spaces available for bread baking were occupied. In this sense the constructions in the corridor may be viewed as a final stage in the building up of the south-western sector. The first constructions were set against the outer wall, later buildings were constructed abutting these and the last spaces left for the construction of ovens was the corridor along the walls of the central building and residence.

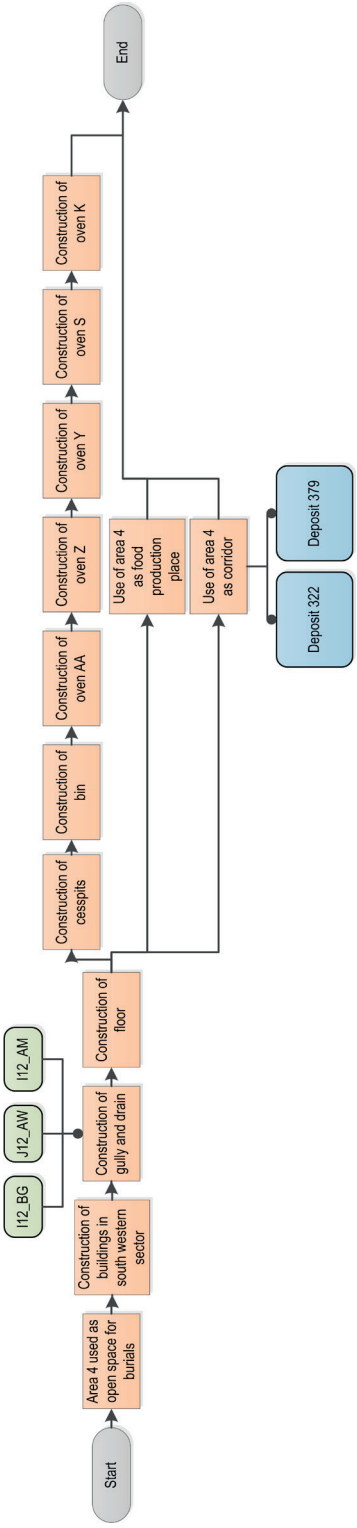


Fig. 3.89: Sequence of Events of area 4 of the south-western sector.

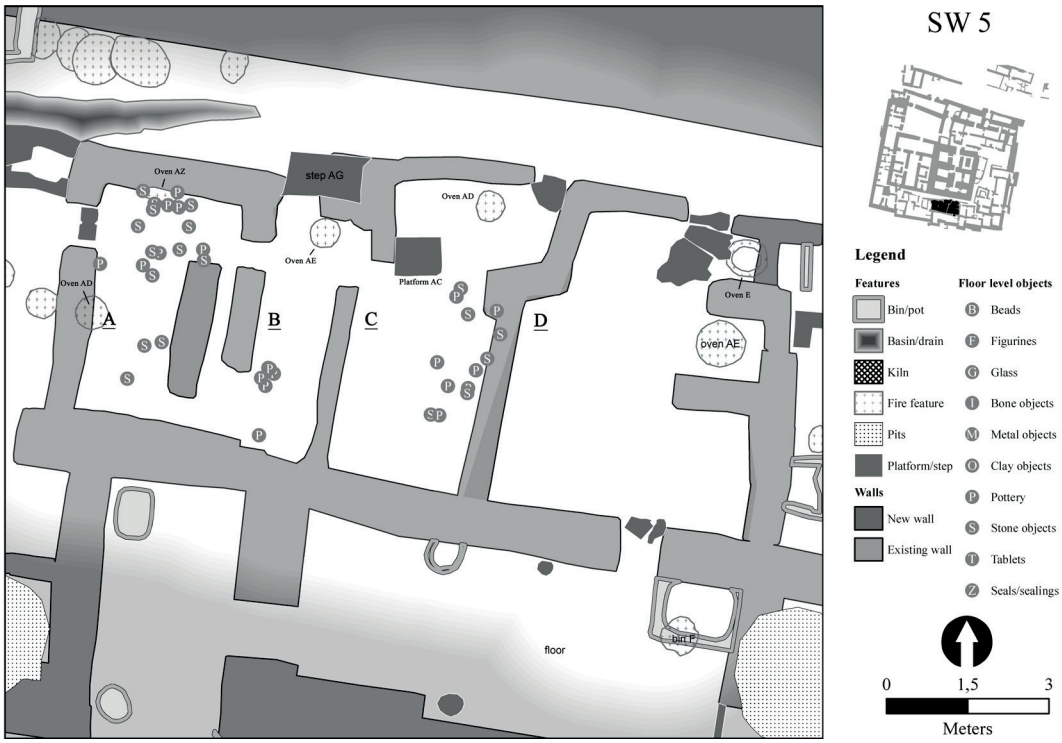


Fig. 3.90: Architecture and floor level finds of area 5 of the south-western sector.

3.6.6 Domestic architecture (area 5)

3.6.6.1 Introduction

Area 5 consists of four spaces named A, B, C and D (figure 3.90). rooms A, B and C were connected to each other by doorways, in addition rooms B and C could also be accessed from the corridor of area 4. Room D could only be accessed from this corridor. All rooms were situated a bit lower in elevation than the corridor, which meant small steps had to be constructed to pass into the rooms from the north.

The presence of several ovens and many grinding stones on the floors of the rooms indicates that the spaces were probably used for food processing. This interpretation is in line with the surrounding areas which yielded similar results. The area is discussed in two parts, first the two western rooms (A and B) are discussed after which rooms C and D are examined.

3.6.6.2 Rooms A and B

Rooms A and B were fitted with a baked brick floor and a brick plinth along the wall, reminiscent of bathroom structures seen in other areas. However, no toilet construction was found in this area. The floor was badly damaged at some point so its exact function is unfortunately not clear. During the construction of room A a niche was left in its western wall, in which an oven (AD) was constructed. Clearly, the room was designed with this construction in mind, signifying that the space was intended to be used for food preparation. Also in room B an oven was constructed, albeit simply on the floor in the north.

During the use of room A a second oven (AZ) was constructed, this time in the northern wall. Instead of the procedure employed before, in which a large niche was constructed for the placement of the feature, in this case the oven was cut out of the wall (figure 3.91). Why this was done in this manner is unclear. Also the question remains whether this difference in construction signifies a difference in function. In any case, the room was clearly in use for the preparation of food.

Twenty objects were registered on the floor of room A. Thirteen of these were stone implements, mostly grinders and pestles. The remaining seven consist of four carinated bowls and three ceramic jars. Of the ceramics, only two carinated bowls were intact during excavation. Six of the stone objects were complete when excavated. Interestingly, the adjacent room to the west (room H of area 3), yielded large amounts of complete stone tools. That room was interpreted as a storage space for these objects. Conceivably, in room A these tools were put to use in food preparation.

The objects which were found in room B are five carinated bowls. Interestingly, the objects were found in a small cluster in a complete state on the floor of the room (figure 3.92). Their complete state suggests that the objects were not discarded as refuse. Their low replacement cost may indicate that the objects were left as abandonment stage refuse. The objects are unfortunately a commonplace appearance among the archaeological remains of the *dunnu* and do not aid in the interpretation of the activities which were carried out in the room. Probably also this room was used for the preparation of food.

Fig. 3.91: Oven AZ in room A (photo by P.M.M.G. Akkermans).

Fig. 3.92: Carinated bowls on the floor of room B (photo by P.M.M.G. Akkermans).

3.6.6.3 The two eastern rooms

Rooms C and D of area 5 were accessed from the corridor in the north down some steps. These stairs were renovated through time after the construction of new floors. This indicates that the elevation difference was simply taken as a fact and not deemed problematic. Both room C and D were divided internally in compartments and niches. Room C was paved with shards and stones and was divided into two parts by the layout of the room and by the construction of platform AC. This platform may have been used to hold a grinding slab, as was suggested for the buttresses in area 1 of the SW sector.

Room D was constructed with three niches built against its eastern wall. The middle niche was used to contain a large oven (AE). This oven was 80 centimetres in diameter, it was dug 45 centimetres into the ground and its top was 20 centimetres higher than the floor. White burnt fibreous material was found in the oven, perhaps indicating that in this oven different fuel was used than usual. Consequently, perhaps the oven was used for a specific purpose such as smoking of food. In time, also in the northern niche of room D an oven (E) was constructed. this oven was however smaller in size and was perhaps used for bread baking.

Finds from the floor of room C consist of six stone objects and seven ceramics. The stone objects are grinders and pestles and the ceramics comprise of carinated bowls and one small jar. Most of the objects were incomplete at excavation but, because a large amount of shards were present on the floor during excavation, perhaps several complete ceramics were deposited and fragmented post-depositionally. The size (medium and large), the low replacement cost and low amount of complete objects indicate that the assemblage was probably *de facto* refuse. Similar to other rooms in this area the room was probably used for food preparation. It is however unclear whether food was prepared for large groups, in a communal effort, or that these rooms were used by small families. Because room C is not suitable for large groups, it is conceivable that the latter interpretation of domestic use is the most probable.

Room D however is much larger in size and yielded large features which were perhaps used for the preparation of food. Unfortunately, due to later digging activities in this area, no finds were recovered from the floor of this room. Its large-scale food preparation features however indicate that the function of the room was probably similar to the other rooms in this area.

3.6.6.4 Conclusion

Area 5 of the south-western sector consists of several rooms which were constructed against the houses which abutted the outer *dunnu* wall. The architectural layout, as well as the features and finds from the area point towards a continuous use of the area in the realm of food production (figure 3.93).

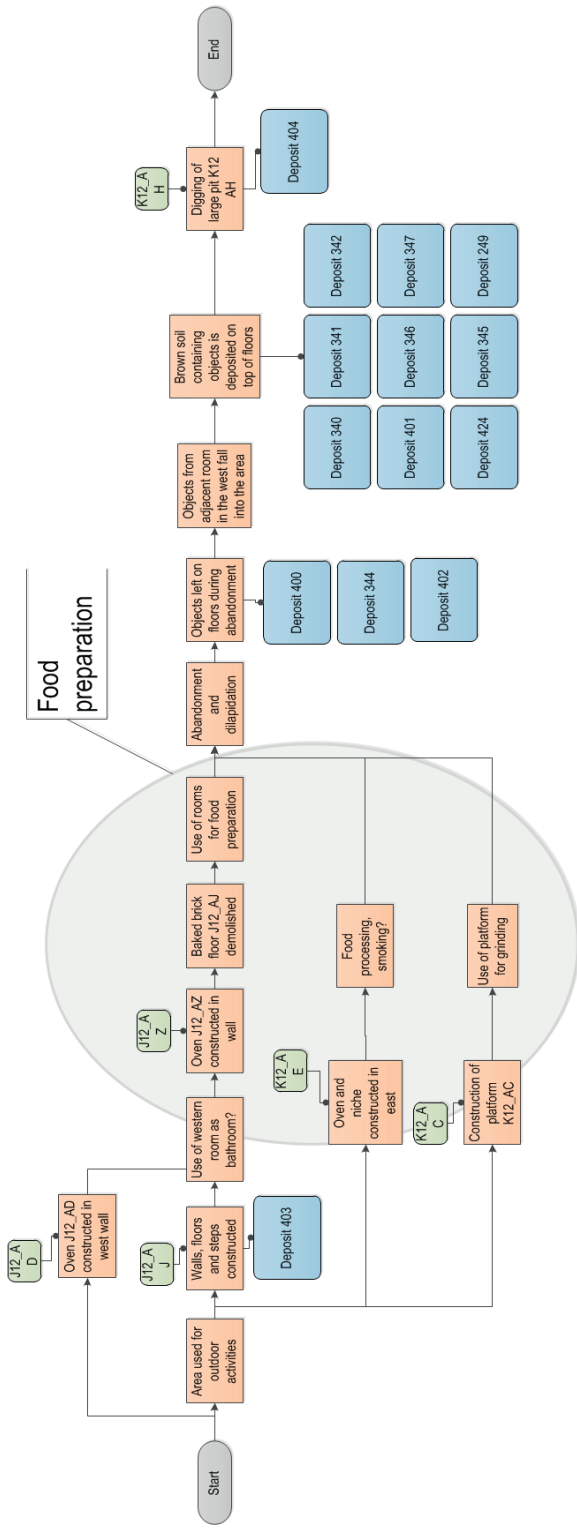


Fig. 3.93: Sequence of Events of area 5 of the south-western sector.

The previous interpretation of the area as the domain of baker Paya may still be applicable. However, the area may well have functioned to prepare a large variety of foods, not just bread. In particular the large ovens in room D were perhaps used to smoke and dry meats. Additionally, the grinding stones which were found may also have been used to grind a large variety of products, not only grains. From textual evidence from the *dunnu*, Wiggermann (2000: 197) has for instance found evidence for the production and use of chick peas, fennel, sesame, cumin, coriander and pistachio. Obviously a plethora of other foodstuffs such as vegetables, meats and poultry may have been prepared here too.

Additionally, perhaps the area was used in a domestic manner. Although no clear domestic spaces were identified, it is conceivable that this area was used by several families living in this part of the *dunnu*. These people may have had their residence on the higher storey or in the spaces closer to the outer *dunnu* wall.

3.6.7 A bakers' residence? (area 6)

3.6.7.1 Introduction

Area 6 consists of three rooms: A, B and C (figure 3.94). Room A is a narrow space, which perhaps contained stairs to an upper storey. From room A, down some steps, room B could be reached. This rectangular room contained many bins and ovens and was probably used for food processing. Room C could be accessed from room B and from a corridor to its east. Also in room C a bin was present, but no ovens were found here. Interestingly, in a niche in the southern wall of room C a collection of tablets was discovered. These indicate that the room was used for official or administrative purposes. The layout of the rooms further suggest that the area may have functioned as a residence. The discussion below first describes rooms A and B and is followed by an assessment of finds and features from room C.

3.6.7.2 Rooms A and B

Room A is a narrow room which was built along the façade of area 6. The size and layout of the room suggest that it could not be used for many activities. The space was probably used as a storage space or it contained a set of stairs which could lead to the roof or an upper storey. Against the western wall of the space a bin was constructed. Perhaps this was used in conjunction with the entrance into room B. Perhaps the bin contained water and was used as a wash basin for people entering or exiting room B.

Fig. 3.94: Architecture and floor level finds from area 6 of the south-western sector.

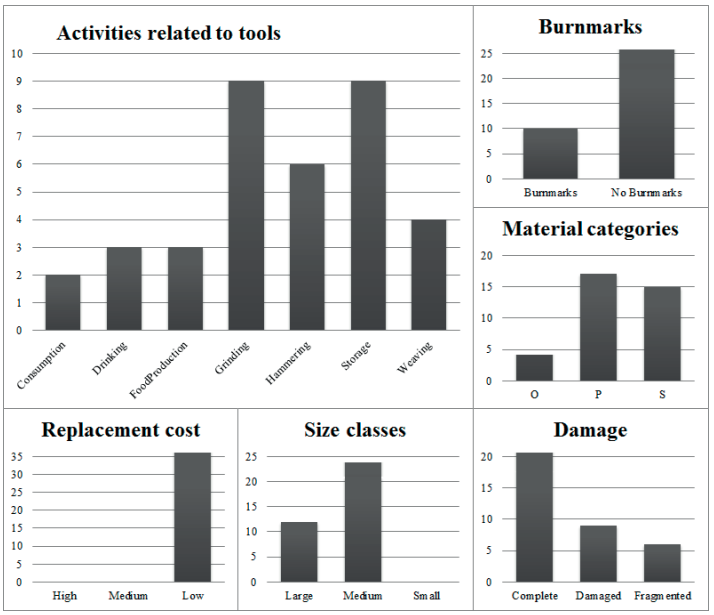


Fig. 3.95: Characteristics of objects from floor of room B (O clay objects; P pottery; S stone objects).

however also have been used to prepare the dough for bread baking. Subsequently, bread could be baked in the ovens which were present in the room.

36 objects were found on the floor of room B. Seventeen of these were ceramics, fifteen were stone tools and four objects were made of clay (figure 3.95). Nine ceramics were complete, and seven of these were large in size. This could indicate that the objects were part of a *de facto* refuse deposit. However, one third of the objects were burnt, which indicates that the deposit may also be the result of a catastrophe. Also in bin H four objects were found, two complete pestles and two ceramics. The ceramics are a damaged flask and a complete nipple based goblet. Both ceramics show traces of fire.

The ceramics from the floor are mainly bowls and large storage jars. The stone tools are predominantly grinding stones. These ob-

Room B was entered down some steps from room A. The room measured 4.3 by 2.6 metres and contained four ovens, two bins and a grinding installation. All features indicate a use of the space for food preparation. The grinding installation could be used to grind barley, which could be stored in the bins along the walls. Remains of charred grains in the large bin in the west (H) suggest that this feature was indeed used for the storage of grains. The bins could

Fig. 3.96: Floor of room B, looking north. In the foreground the four clay balls are visible. The shard pavement in the background is located in space A (photo by P.M.M.G. Akkermans).

jects indicate that the room was used for the preparation of food. This interpretation is in line with the suggestion offered by the features which were found in the room. One group of objects however seems out of place. Four perforated clay balls were found lying among the floor level assemblage (figure 3.96). They are interpreted as loom weights, implying that weaving was carried out there or in the vicinity.

The presence of the charred grain in bin H, together with the ovens and other features suggests that the room was mainly used for processing grain and baking bread. The storage jars and loom weights indicate that the room was used in a diverse manner. Perhaps the room was used as the private or specialized kitchen for one of the administrators of the *dunnu*.

3.6.7.3 Room C

While many features were constructed in room B, only a single bin (K) and a niche in the southern wall were discovered in room C. Also much less objects were found in this room. Eleven objects were recorded on the floor and six from the niche in the wall. The floor level assemblage (deposit 428) contains seven ceramics and four stone tools. All objects in the deposit were damaged or fragmented and three show traces of burning. Among other, non-registered, objects on the floor are goblets and storage vessels (figure 3.97).

Six tablets were found in the niche in the southern wall of the space. In figure 3.97 the location of the tablets is indicated behind bin K. The tablets were in a poor state of preservation at the moment they were excavated. Nonetheless, the project philologist Frans Wiggermann was able to read them as being administrative lists and a letter, mostly dealing with the issue of grain and flour to personnel. Some of the documents were written by or at least relate to Paya, the baker who is also attested in the western part of this sector.

Fig. 3.97: Floor of room C, looking south. In the background the niche which contained tablets is indicated (photo by P.M.M.G. Akkermans).

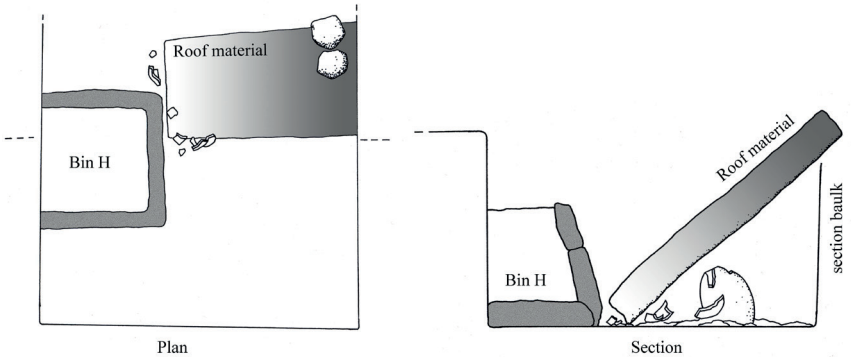


Fig. 3.98: Sketch of the plan and section of the collapsed situation in room B. Apparently a large part of the roof collapsed into the room, crushing several ceramics. The distance between the section baulk and the wall is approximately 1.5 metre (fig. by R. Timmermans).

The excavators interpreted the niche in which the tablets were found as a vault, and therefore the room as an office or residence of an administrator. Whether this interpretation of the context is valid remains unclear. Erosion processes and later digging activity have obscured much evidence. The concentration of the tablets in the niche and the lack of other such objects in the vicinity do however suggest that they were deposited here deliberately as a group. Considering that the tablets concern the work of the main baker of the *dunnu*, it can be stated that the objects relate well to the space they were found in. Therefore the objects can be understood as being part of either a catastrophe or an abandonment stage refuse.

Fig. 3.99: Plan of the Level 5 *dunnu*. Darker shade indicates a higher density of burnt objects.

If the objects were indeed kept in a small vault here it seems probable that the rooms represent the residence or office of baker Paya. Although several finds such as the goblets and clay balls indicate that this area is slightly different in nature than the other areas from this sector, the spaces have also yielded several features which are similar to the surrounding spaces. It is likely therefore that the area described here was also used for food production. An interpretation of office should therefore not be taken to indicate a 'clean' space.

3.6.7.4 Abandonment and conclusion

At some point the area was abandoned, with a large fire as either the cause or an ensuing event. Particularly room B, with many burnt objects on the ground was clearly part of a large conflagration. As mudbrick structures are usually hard to catch fire, it has either been the content of the room, for instance wicker baskets, wooden furniture or oil based products, which accidentally caught fire, or the room was purposefully burned down. After this fire had occurred the roof probably collapsed into the building. Figure 3.98 illustrates that large structural elements of the building collapsed onto the floor, crushing ceramics which were located there. This indicates that the collapse occurred directly or shortly after abandonment.

Curiously, although large fires were attested in several spaces in the *dunnu*, in none of these spaces so many burnt objects were found as in the rooms under investigation here (figure 3.99). Perhaps this is an indication of an accidental nature of the fire, the fire would then indicate a catastrophic event which ended the use of this building (figure 100). Many objects from this context were large in size and complete during deposition. This also suggests that it was a catastrophe deposit. Additionally, the spatial distribution of some objects seems in line with a rapid abandonment of the structure. In particular the striking assemblage of the clay balls (figure 3.96), whatever their function may have been, should be noted in this regard.

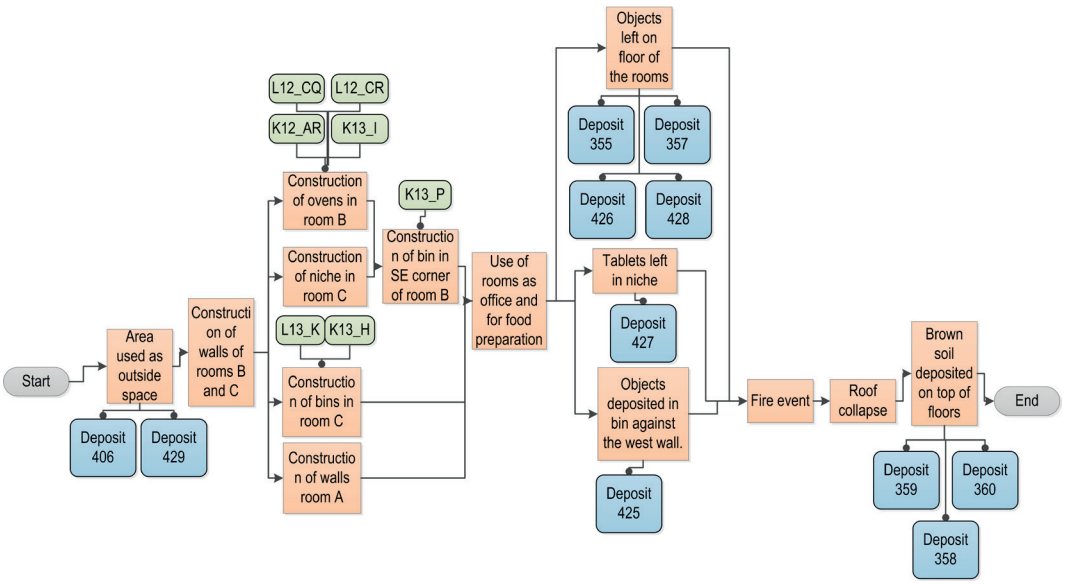


Fig. 3.100: Sequence of Events of area 6 of the south-western sector.

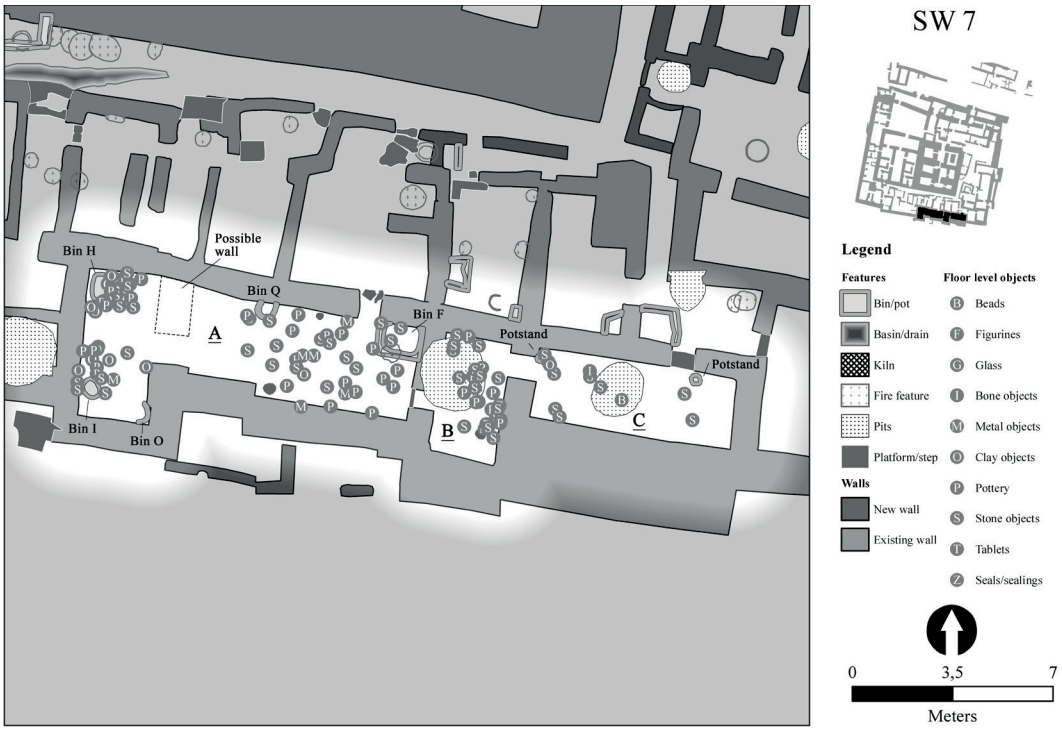


Fig. 3.101: Architecture and floor level finds from area 7 of the south-western sector.

3.6.8 Structures along the wall (area 7)

3.6.8.1 Introduction

Area 7 of the south-western sector consists of three rooms, A, B and C, which were constructed along the southern outer wall of the *dunnu* (figure 3.101). The area suffered somewhat from erosion but still yielded many objects and features. During the earliest Assyrian phase the area was an open space, used for burials and small structures. At the start of the sequence described here the area was built up. The rooms were used for some time until a renovation was carried out. New floors were constructed 50 centimetre higher up. The function and use of most rooms however remained the same. In the discussion below, first large space A is discussed, after which rooms B and C are considered.

3.6.8.2 Room A

Room A consists of a long hall along the outer *dunnu* wall. It is possible that the space was divided in two rooms in the past by a wall. However, a large pit was dug in the location of this possible wall making it impossible to reconstruct this with certainty. Because of this large pit and because space A was located in two different trenches, the middle part of the space is poorly known. Both the western as well as the eastern part of the space have yielded many finds and features however.

The first phase of use of the space is indicated by loam floor J. This floor level was recognized in both the west and the east of space A. In the west three bins were constructed. Two bins (O and I) along the southern wall were 60 centimetre wide, the northern bin (H) measured 90 centimetre. In the east of the space a bin was constructed against the northern wall and an oven was constructed near the entrance.

44 objects were found on the lower floor of the area. Among these objects were fifteen stone tools, fifteen ceramics and three bronze pin fragments. Additionally, in the west of the space eleven jarstoppers were found. All of these items are fairly large, measuring between fourteen and twenty centimetres in diameter. One of the jarstoppers is notably smaller, some 5 centimetre in diameter. Although all these objects are damaged, the damage is limited to the edges of the objects. This is the typical damage which is expected when a jarstopper is removed from a vessel. As most of the jarstoppers from this room were not fragmented more than this stage and the objects are relatively fragile, it seems reasonable to assume that they were taken off their vessels in this room.

These objects might reveal that the space was used as storage space, however, they could also be taken as signifying that many storage jars were opened here, and not stored. The space could therefore probably have been used to process food, as is also indicated by the bins. Another possibility is that the content of the jars was redistributed in smaller containers in this space.

Among the finds in the east of the space a large complete grinding stone and a large complete pot with a hole in the bottom were found. These large and complete items may indicate that they were left behind during abandonment as typical *de facto* refuse. This in turn suggests that the objects were used in this room as tools. This part of the space was therefore perhaps used for food processing and consumption. The large pot with the base hole may indicate that beer brewing was carried out in this space or in its direct vicinity.

Fig. 3.102: Bin H in room A. The bin was constructed in three tiers, stacked on top of each other (photo by P.M.M.G. Akkermans)

After the space fell in disuse, a layer of soil and refuse was deposited on the floor. This could be the result of refuse accumulation after or during abandonment or it could be a deliberate levelling of the room for the creation of a new floor some 50 centimetres higher. Due to erosion in the south this floor (K) was recognized only in the two northern corners of the space. In both corners a bin was present in this phase. Interestingly, the bin in the west (H) was in use in the previous phase too. During the renovation the wall of the bin was simply enlarged (figure 3.102). Around this bin three jar stoppers were found, as well as six complete carinated bowls. The fact that the bin was in use during both phases and that the find material from both phases is similar indicates a strong continuation of use.

In the east of space A also several objects were registered. Due to erosion the context of the objects is difficult to ascertain. Finds which were excavated in this layer are mostly grinding tools and ceramic bowls. This might indicate that the activities which were carried there were unchanged compared to the previous floor level. However, also a broken clay mace head was found, probably related to fighting. Like other rooms in this sector, weaponry was apparently present within domestic and craft related activity zones.

3.6.8.3 Room B

Many objects were found in room B but unfortunately, due to poor preservation of floors in this room it is unclear whether these belong to one or more floor levels. However, during the excavation a concentration of pottery and other objects (deposit 408) was considered to represent a floor level. Within this context many complete objects were found. It is therefore conceivable that this indeed represents a floor. This deposit consists of fourteen stone tools, twelve ceramic objects and one bronze needle (figure 3.103). The complete state and the apparent high replacement cost of the pin make it improbable that the object was discarded. Furthermore, eleven of the twenty seven objects in this concentration were complete. This also indicates that the deposit was not the result of refuse discard. Interestingly, only two objects are considered large in size. If the objects were left behind during slow abandonment a higher amount of large objects is expected. Therefore, possibly, this deposit was the result of rapid abandonment or even a catastrophe.

The objects in the deposit are related to food processing and consumption. Interesting is the presence of a damaged strainer among the pottery concentration found in the room (figure 3.104). This object, together with some of the large pots from the other rooms of the area, could be used in the process of beer brewing. It shows that the find complexes from these rooms are probably strongly related to each other and that the entire area therefore was used in the process of food and drink production.

Fig. 3.103: Bronze needle from room B of area 7 of the south-western sector (fig. by R. Timmermans).

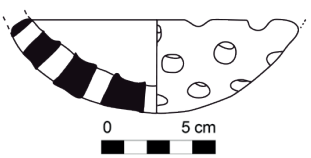


Fig. 3.104: Damaged strainer from the floor of room B of area 7 of the south-western sector (from: Duistermaat 2008: Fig. V.58).

3.6.8.4 Room C

Room C of area 7 is a long rectangular room with two doorways, one from the west and one coming from the north. The latter doorway was fitted with a doorstep because of an elevation difference. Because of erosion processes not much of this part of the area is preserved. Additionally a large pit was dug through the room, destroying parts of the architecture. Two features did survive, next to each doorway a ring of stones was discovered. Perhaps these were used to hold a jar or pot. Their position next to the doorways suggests that they relate to entering and exiting the room. What they were used for is however unclear.

Ten objects were registered on the floor of the room. These include a bone plaque, a clay jar-stopper and eight grinding stones. Two of these grinding stones were large and complete. They were perhaps used in this space for food processing. All other finds from this room are damaged or fragmented and are likely deposited in the room as secondary refuse.

The function of the room is not easily explained due to the erosion and digging activities which have taken place. The relative low amount of objects in the room may however indicate that the space was left clean. Maybe this indicates that the room was used for domestic purposes.

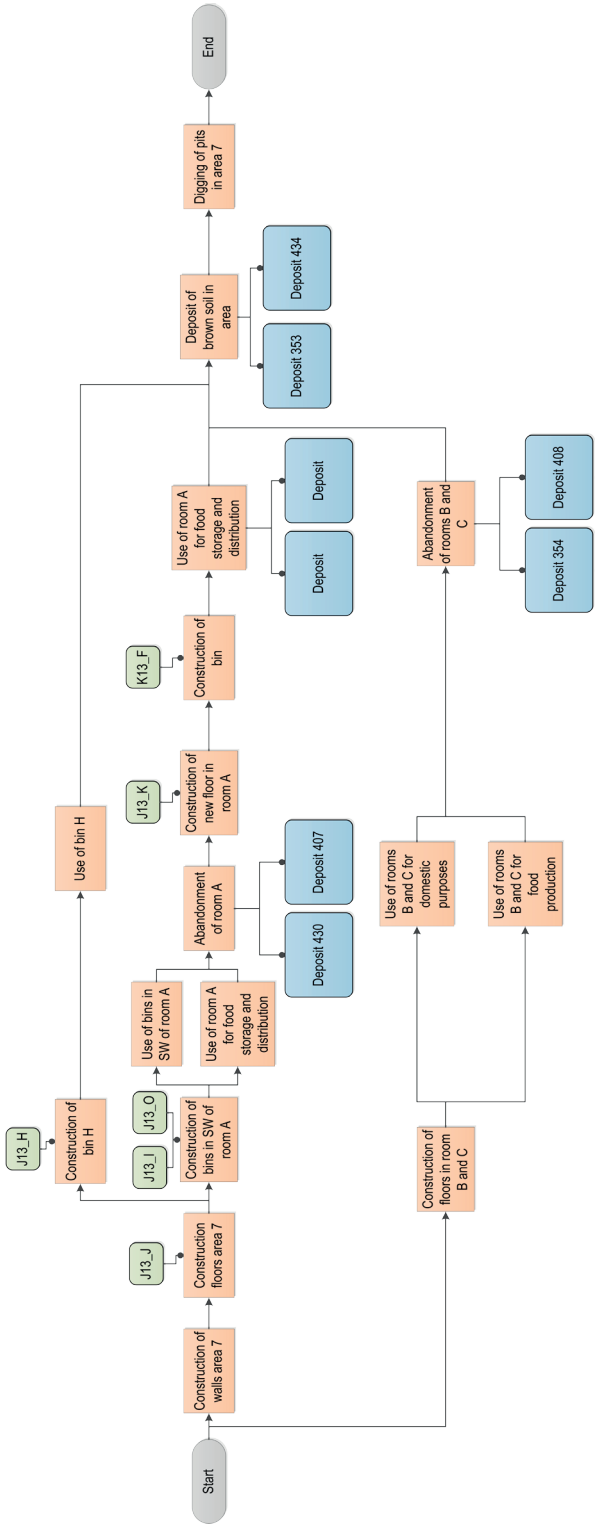


Fig. 3.105: Sequence of Events of area 7 of the south-western sector.

3.6.8.5 Conclusion

Area 7 of the south-western sector can perhaps be divided into two parts of equal size and layout. Space A may have consisted of two rooms, similar to rooms B and C. Erosion processes and digging activities unfortunately destroyed much of the architecture in the area. Therefore it is uncertain if this was indeed the case.

Two phases were reconstructed in this area (figure 3.105). Both phases yielded evidence for production and perhaps distribution of food. A continuity of use of the spaces is illustrated by bin H in the west of room A. This bin was constructed on the lower floor but was still in use after the area was renovated.

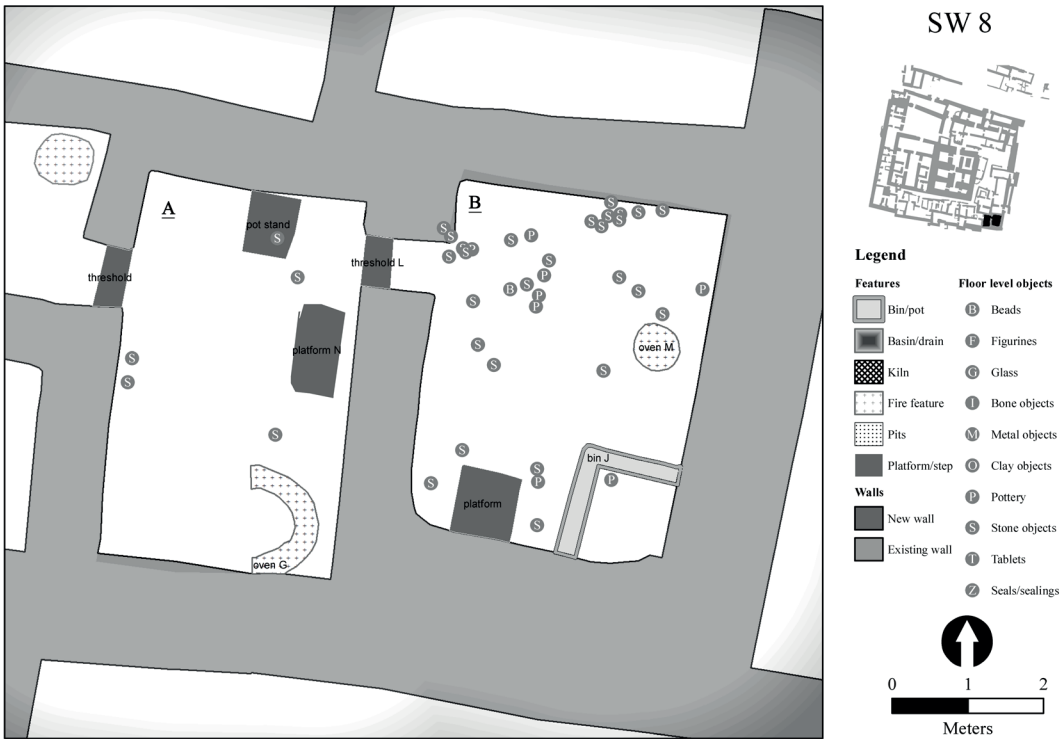


Fig. 3.106: Architecture and floor level finds from area 8 of the south-western sector.

3.6.9 Corner rooms (area 8)

Area 8 is located in the south-eastern corner of the *dunnu*. Because the area was connected to the corridor of area 4 it was grouped in the south-western sector. The area consists of two connected rooms, A and B (figure 3.106). The rooms are both rectangular and measure approximately 5 by 3 metres. Both rooms yielded a mudbrick platform and an oven. In room B also a large square bin was constructed. The platforms were constructed of mudbricks and perhaps supported a large grinding slab. If that was the case the rooms contained all features necessary for bread baking.

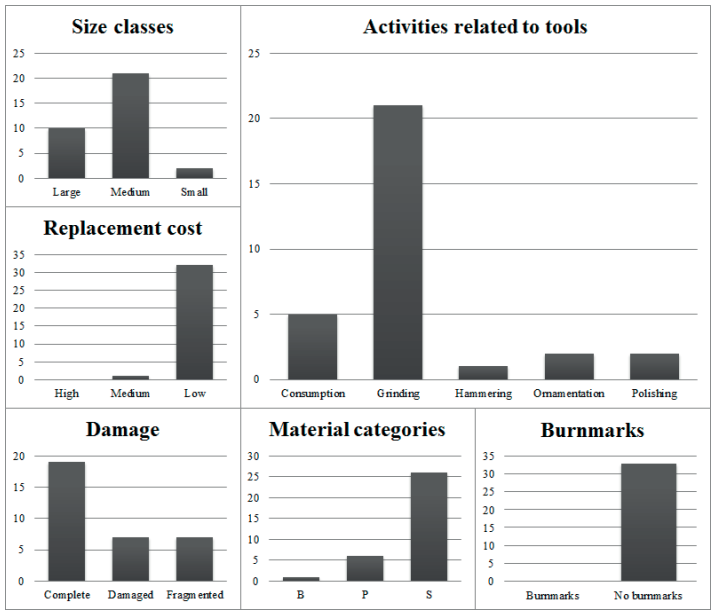


Fig. 3.107: Characteristics of objects from the floor of room B of area 8 of the south-western sector.

Finds from the rooms also indicate that food preparation was carried out there. In room A five objects were registered on and slightly higher than the floor. All of these objects are grinding tools, three of which are complete. Because two of the grinding tools are large in size, perhaps the objects were left behind during abandonment. However, considering that the other objects are fragmented, an interpretation as refuse deposit is also possible.

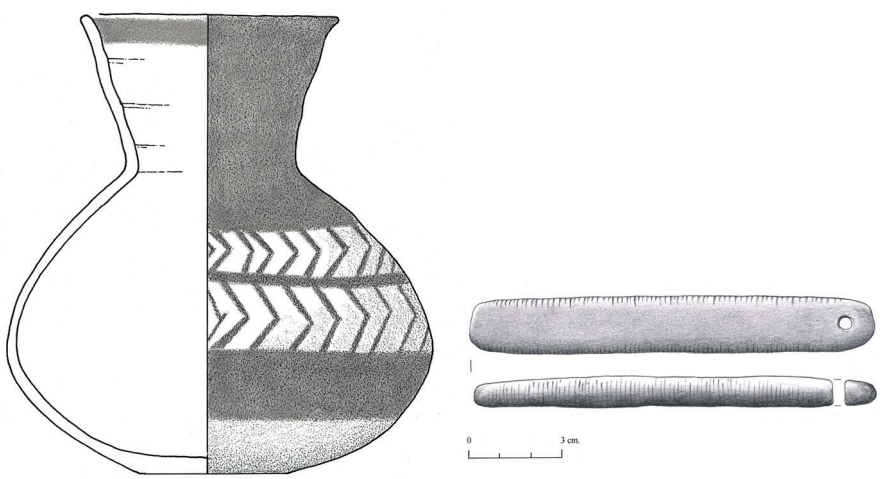


Fig. 3.108: Prehistoric (Halaf-period) jar and whetstone from room B of area 8 of the south-western sector (fig. by R. Timmermans).

In room B 33 objects were registered. Of these objects 26 are stone tools, five are fragmented ceramic bowls, one is a complete Halaf period Prehistoric jar and one is a perforated shell (figure 3.107). The stone tools consist of eighteen grinding stones, six pestles, a pivot stone and a whetstone. Nineteen objects are complete and ten objects, all grinding stones, are large in size. This large amount of large and complete grinding stones indicates that these objects were probably left here as *de facto* refuse. Therefore these objects were either stored or used in this room. Their concentrated distribution in the north of room B indicates that they may have fallen from a shelf.

The complete Prehistoric jar and the whetstone (figure 3.108) are rare among the find assemblages of Tell Sabi Abyad. The jar was probably found in the Neolithic deposits of the site by the inhabitants of the *dunnu*. It was excavated between the bin (J) and the mudbrick platform. It was therefore probably used as a container for food or water during food processing. The whetstone which was found in the room is an elongated smooth stone with a perforation at one end. The tool indicates that originally metal tools, probably knives, were used in this room, which required sharpening. Similar to other objects and features in this room, these were most likely also used in food processing.

Area 8 yielded a complete set of features and objects from one floor level. These objects and features appear very useful for the reconstruction of the activities which were carried out in the area. However, due to erosion not much area could be excavated. Therefore there is no information about the changes through time. Consequently, the Sequence of Events is very straightforward (figure 3.109). It should be noted however that although only a function of the area in food preparation was deduced from the find material, it is possible that also other activities were carried out there. In this vein it is conceivable that the rooms were used for domestic purposes, activities which leave little trace in the archaeological record.

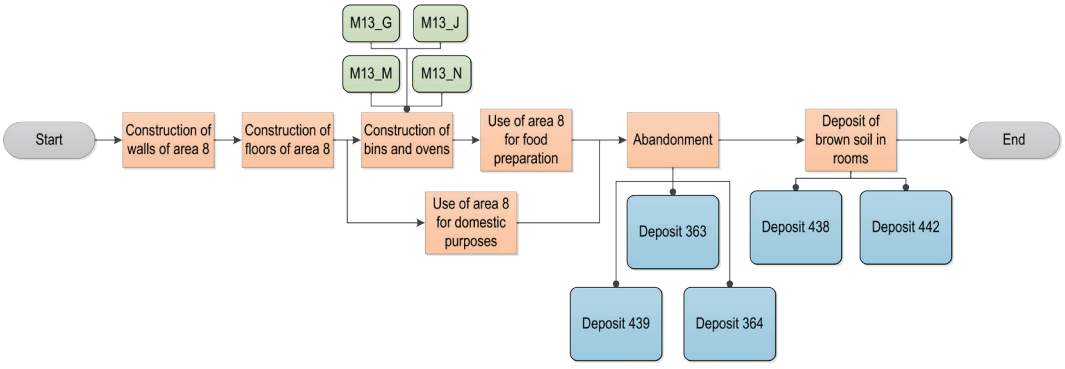


Fig. 3.109: Sequence of Events of area 8 of the south-western sector.

3.7 The south-eastern sector

3.7.1 Introduction

The south-eastern sector is comprised of three areas, each fairly complex in layout (figure 3.110). Area 1 consists of a courtyard and a small structure set against the central building. This area provides access along the central building. Area 2 consists of several structures along the outer wall of the *dunnu*. Much refuse from pottery production was found in this area. Importantly this area includes an entrance through the *dunnu* wall. From area 2 one could also enter area 3, generally characterized as an office or apartment. The architecture is relatively well preserved in this sector and a large amount of finds was discovered in the ruins.

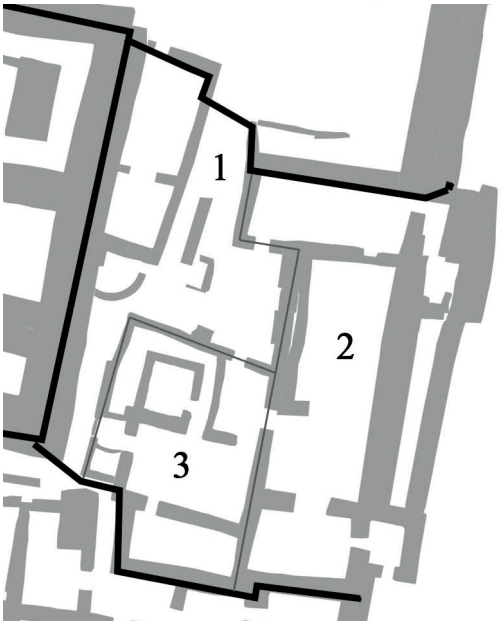


Fig. 3.110: Areas of the south-eastern sector.

3.7.2 Courtyard and small building (area 1)

3.7.2.1 Introduction

Area 1 of the south-eastern sector consist of a courtyard and corridor and a two-room structure set against the central building (figure 3.111). Two spaces, named A and B, were no longer present at the start of the sequence described here (Brüning and Plug 2016). Therefore, the naming of spaces in this area starts with the letter C. Spaces C and D comprise the courtyard and the corridor toward the south. Rooms E and F form the small structure set against the central building. Three phases were recognized within the sequence described here. The discussion below is based on this subdivision. The earliest evidence comes from a small trench inside room F which yielded a collection of beads. The second phase commences with the construction of the floors and features which are visible on figure 3.111. The final phase comprises of the abandonment and destruction of the architecture in the area.

3.7.2.2 The earliest evidence: a cache of beads

At the start of this phase rooms E and F were already constructed. Unfortunately however, only in the south-east corner the earliest phase of the building was excavated. A rectangular

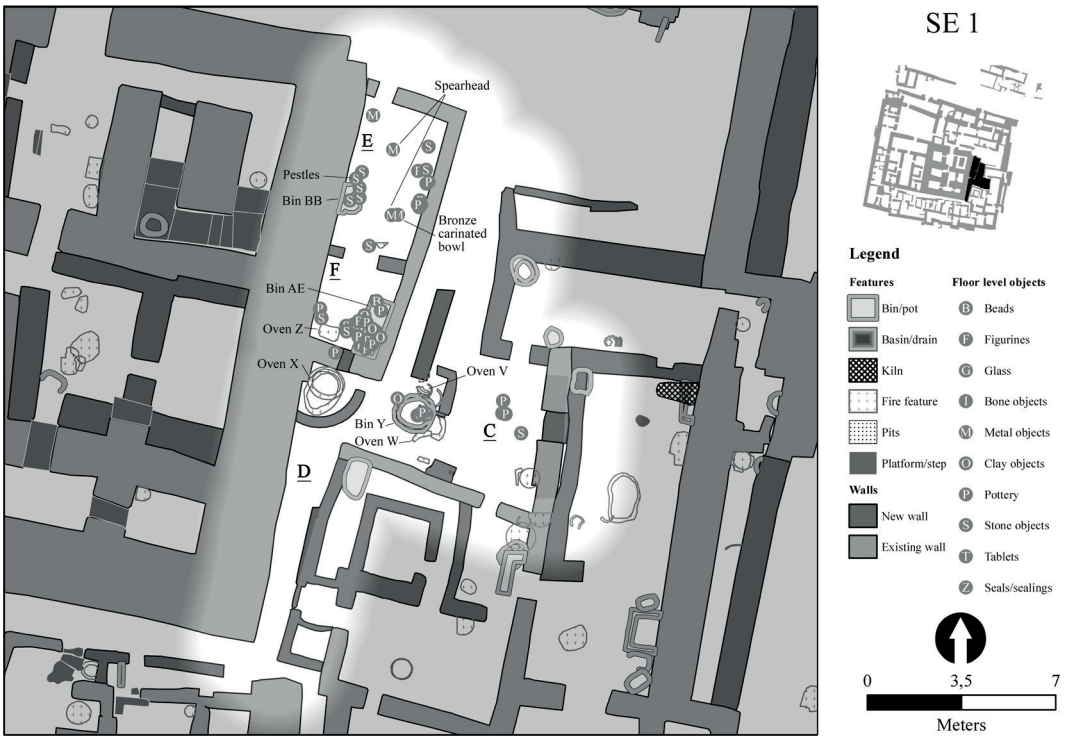


Fig. 3.111: Architecture and floor level finds from area 1 of the south-eastern sector.

bin (AE) was constructed in this corner. Within this bin two circular depressions were present. These probably once held two large jars. The feature indicates that short term storage and processing of foodstuffs possibly occurred in the room. The jars which were kept in this bin were not recovered during excavation. Therefore, at the end of use, the jars from the bin were taken away. Curiously however, inside the bin, in its north-west corner, a group of approximately 120 beads was discovered (deposit 246). How and why these beads were deposited here is unclear. Remarkably however, two clusters of beads were also found in room 6 of the central building, directly adjacent to this building. One of these clusters in the central building was interpreted as intentional deposition, while the other is interpreted as part of hasty abandonment and subsequent collapse (see paragraph 3.5.3). In view of the context of the beads in room F, the deposit can possibly be considered to be a cache. It remains unclear however if the individual who left the items behind meant to reclaim the objects at a later stage.

3.7.2.3 Architecture of the ensuing phase

At some point the area was renovated and new floors were constructed in rooms E and F (floors AY and AD). Also in courtyard C and corridor D a loam floor was probably present, but this was not recognizable as such during excavation. Along the east wall of room F two new de-

Fig. 3.112: Room F, looking east. In the background two depressions are visible which would have held jars, in the bottom right is oven Z (photo by P.M.M.G. Akkermans).

Fig. 3.113: Courtyard C of area 1 of the south-eastern sector, looking north-east. In the middle bin Y with the jar inside is visible (photo by P.M.M.G. Akkermans).

pressions were dug to hold jars (figure 3.112). Additionally an oven (Z) was constructed in the southern side of the room. In room E two ceramic jars were encased in a mudbrick construction (BB) against the western wall.

To the south of the building a quarter round wall (P) was constructed which enclosed an area in which a large oven (V) was constructed. A doorway in the south wall of room F was probably closed off when this oven was constructed. In courtyard C two other ovens (V and W) were constructed as well as a large bin (Y). This bin measured 1.3 metre in diameter and was constructed from mudbricks. Curiously, many of the mudbricks were imprinted with fingers, why this was done is unclear. The bin was dug into the ground for 60 centimetres and extended approximately thirty centimetres above ground. A tall jar with an upturned bowl as a lid was discovered inside the bin.

3.7.2.4 Finds

On the floor of room F fourteen objects were registered. The deposit (220) consists of nine carinated bowls, three grinding stones, a clay jarstopper and a large bronze axe (figure 3.114). The floor of room E (deposit 219) yielded five pestles, three jars, three bowls, a ceramic flask, two large grinding slabs, a bronze spearhead and, from inside one of the jars, a small bronze carinated bowl (figure 3.115). Both rooms have yielded a rich assemblage of objects from the floor. This indicates that the objects were deposited in the same manner in both rooms. The type of objects which were found on the floors does differ per room however. In room F a large group of carinated bowls was found. In contrast, in room E five pestles were found in a concentration next to feature BB. Their clustered distribution next to feature BB indicates suggests a high level of structuring. Possibly the objects were used in this location for the preparation of food. Interestingly, according to the botanist working on the burnt grains (Fantone personal comment), in this building there is evidence for a particular crop (hulled wheat) which requires de-hulling before it can be further processed. This act of de-hulling is done by the use

Fig. 3.114: Bronze axe from room F of area 1 of the south-eastern sector (photo by P.M.M.G. Akkermans).

Fig. 3.115: Small bronze carinated bowl from room E (photo by P.M.M.G. Akkermans).

of pounding the crop with hammer stones or pestles. It is a reasonable assumption that this was undertaken in this room, using the pestles with the dug-in vessels and bins. In turn this suggests that the assemblage which was found here is highly structured and possibly represents a complete toolset.

The three bronzes which were found in the rooms are a remarkable discovery. Interestingly, in the soil deposit on top of the floor an additional spearhead and an arrowhead were found. These objects are probably high in replacement cost and indicate that the deposit was not the result of refuse discard. Rather, these objects indicate that the objects were left behind during rapid abandonment or during a catastrophe.

Fire damage on the floor and the walls of the building indicate that at some point a fire occurred in the structure. Also the presence of a jar filled with charred grain is an indication for this conflagration. Considering this fire damage and that many complete objects were present of the floor, it seems likely that the building was struck by a fire before the objects could be retrieved from within. Therefore the assemblage should be considered a catastrophe deposit. This in turn indicates that the objects which were found in the building relate strongly to its use.

Finds from the courtyard are less numerous. From bin Y seven objects were recovered and four objects were found in shallow pits in the east of the courtyard. The finds from bin Y comprise of the earlier mentioned jar and carinated bowl as well as three clay sealings, a loom fragmented clay weight and a badly damaged cylinder seal. As nearly all these objects are related to storage and they were found in a large storage bin, they appear to be found in an appropriate location. Consequently, these objects can be interpreted as primary refuse. The objects in the east of the courtyard are all fragmented and were probably discarded as secondary refuse.

3.7.2.5 Conclusion

The principal function and use of rooms E and F should therefore be sought in the realm of food preparation and perhaps consumption. The presence of several bronzes however indicate that also other activities may have taken place there (figure 3.116). Perhaps the building, or its second storey or roof, also functioned as the residence of a soldier. The discovered weaponry was perhaps stored there temporarily. Another, more spectacular interpretation could be that the weapons were lost here during a violent raid on the *dunnu* of which also the conflagration could be a result. However, this would have probably resulted in a wider distribution of the weaponry and a higher amount of weapons overall.

The area was probably also important for the circulation of people through the *dunnu*. the corridor and courtyard provided the only ground floor access point into the south-western sector. However, the bins and ovens in the courtyard and corridor indicate that these spaces were frequently used for food preparation. Also food distribution may have taken place there. These activities would probably hamper movement through this area. Therefore either there was not much traffic through the settlement or there were other routes through the *dunnu*, for instance along the higher storeys or rooftops.

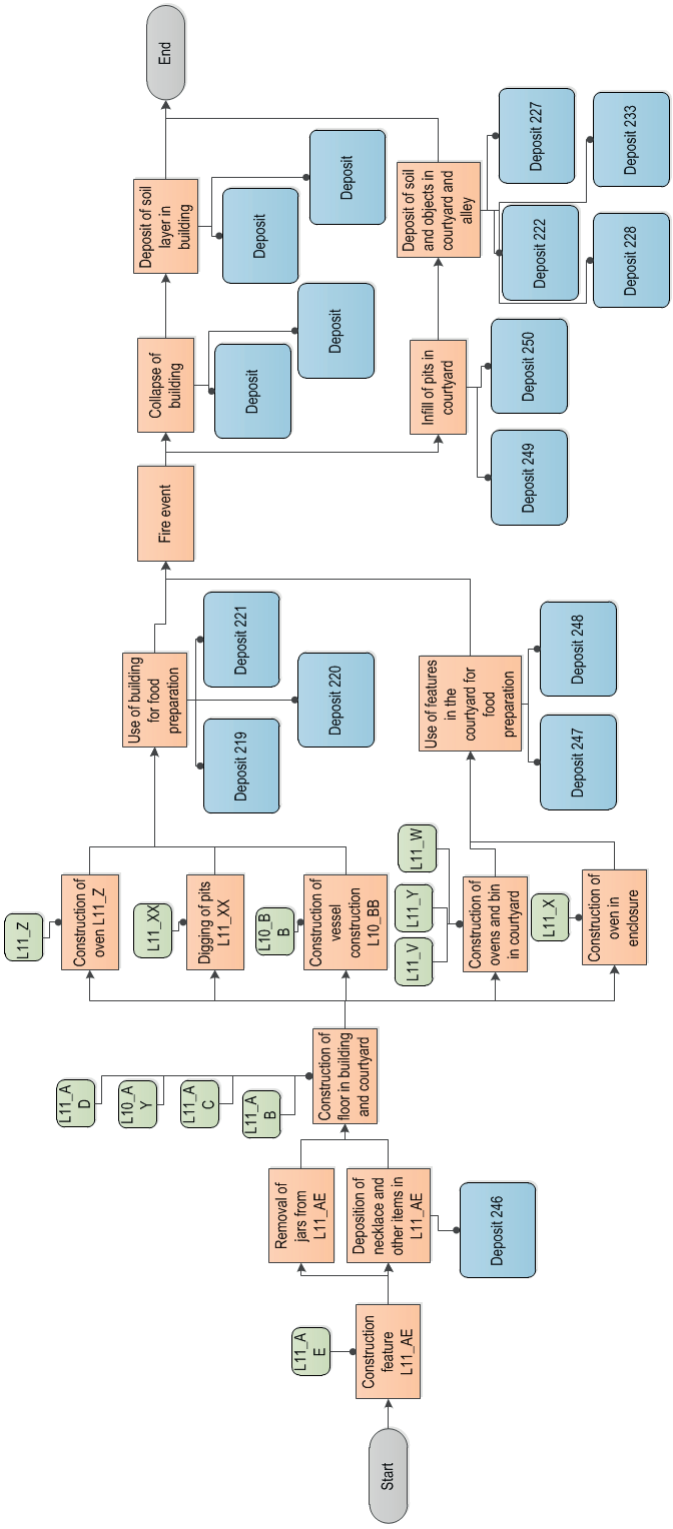


Fig. 3.116: Sequence of Events of area 1 of the south-east sector.

3.7.3 The servant's entrance and pottery workshop (area 2)

3.7.3.1 Introduction

Prior to the sequence described here a structure consisting of two rooms was present in the north of this area. These rooms were dubbed A and B (Brüning and Plug 2016). These spaces were demolished before the sequence which is described here, therefore the naming of spaces below commences with the letter C (figure 3.117).

Area 2 could be entered from outside the *dunnu* through room F. This small space perhaps functioned as a guard room. From here room E could be reached in the south of the area. This room subsequently led to a large courtyard, space D. From courtyard D one could enter an apartment on the western side (area 3) and another courtyard (area 1). Attached to this courtyard to the north was room G, a rectangular space which gave access to a narrow space (C) which was probably a hallway towards a set of stairs which was reconstructed in space H (Lanjouw 2016). These stairs indicate that a second storey or roof was used. In his reconstruction of the architecture Lanjouw (2016) suggests that the outer wall of the *dunnu* was six metres high and that on top of rooms C and F guard posts were present.

In the past, two characterizations of this area were put forward. Firstly it was interpreted as the servant's entrance (Wiggermann 2000). This characterization contrasts the area with the monumental gate in the north of the *dunnu*. The second characterization of the area is that

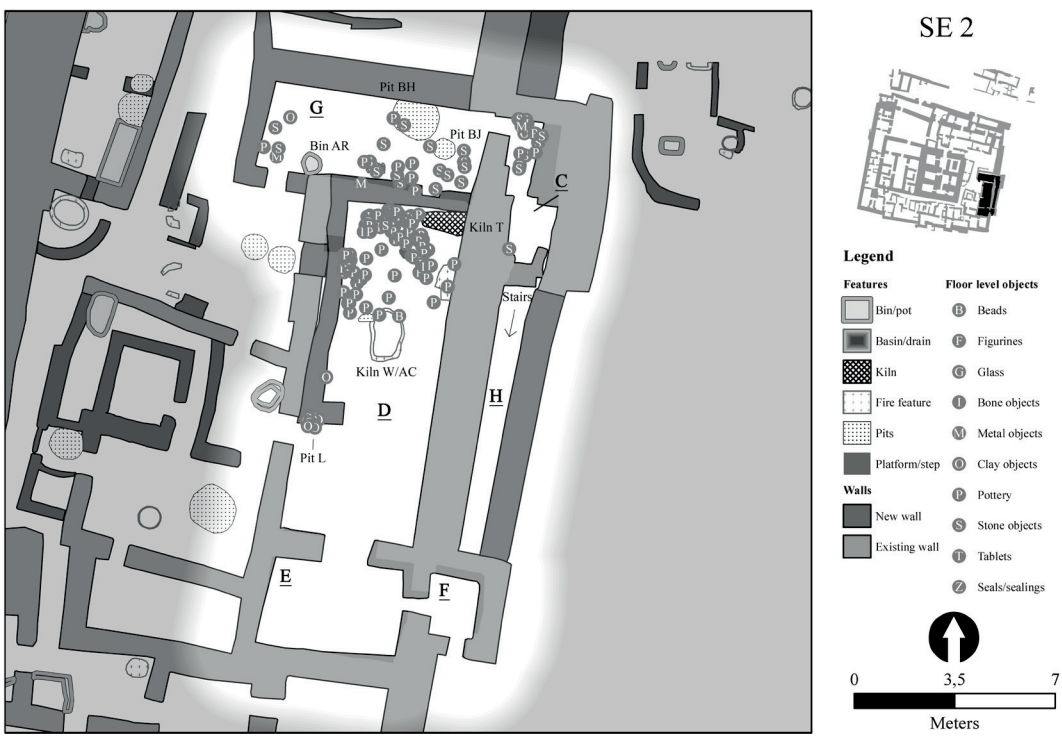


Fig. 3.117: Architecture and floor level finds of area 2 of the south-eastern sector.

of a pottery workshop (Duistermaat 2008: 364) because much pottery production waste was found in these rooms and because of the location of the entrance. Both interpretations may thus be valid.

Unfortunately, erosion in the south has damaged much of the archaeological remains. Consequently, no objects were registered in the south of courtyard D and in rooms E and F. Therefore the discussion below focusses mostly on the northern part of the area.

3.7.3.2 Features and finds

The floors in all spaces of the area were made of loam. Eleven features were registered in the area, these were located in spaces G and D. In room G two mudbrick lined pits (BH; BJ), one bin (AR) and four ovens (X; Y; Z; BI) were discovered. The ovens were constructed in sequence and therefore represent renovation phases of one oven. In courtyard D two pottery kilns (T;

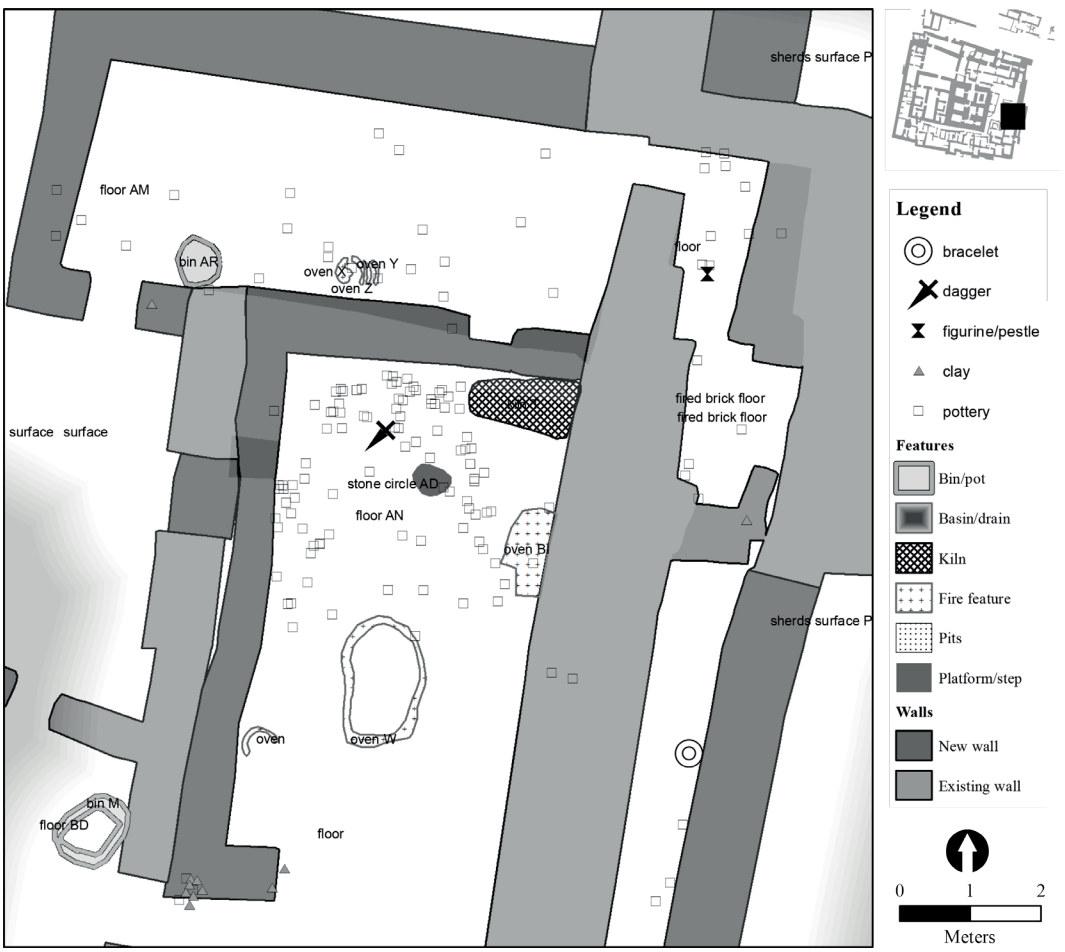


Fig. 3.118: Objects in rooms C, D, G and H.

W/AC) were found as well as a pit (L) and a stone circle (AD). Feature AD was perhaps used to support a large jar or pot. According to the features room G was probably used for food processing. Courtyard D however contains features related to pottery production.

The area was analysed and described before by Kim Duistermaat for her PhD thesis (Duistermaat 2008). To her it seems clear that both courtyard D and room G were used for all steps in the process of pottery production: shaping, baking, repair of broken and misfired ceramics as well as the storage of the finished product. According to her, pottery shaping occurred mainly in room G, while firing of the product happened in courtyard D. Storage took place perhaps in the adjacent house, area 3 (paragraph 3.7.4). The process of pottery shaping is indicated in room G by the presence of the two pits and several stone 'rings' (figure 3.118). The mudbrick lined pits were perhaps used to store clay and to mix clay with temper. The stone rings may have functioned as pivot stones, as part of the pottery wheel. Most stone rings are about 20 cm in outer diameter and have a central hole which measures about three centimetre. One ring, two fragments of which were found, was considerably larger. With an outer diameter of 32 centimetres it may have served a different purpose than pottery wheel pivot. Perhaps it was used as potstand for large vessels when they needed to dry.

After shaping and drying the unbaked ceramics were brought to a kiln in either courtyard D or to another kiln outside the *dunnu* walls. Some fragments of these unbaked vessels were found near the kilns in courtyard D. Unfortunately not many unbaked pottery fragments were recorded as objects in the field. Drawings produced by Duistermaat however indicate that many of these clay objects were located around the kilns in the courtyard (Duistermaat 2008: fig. V.13). Another concentration of clay objects was found in pit L next to the doorway leading to area 3. This concentration (deposit 259) consists mainly of unfired bases of goblets and bowls. Perhaps this is indicating that in their vicinity also pottery shaping was undertaken.

Many of the recorded objects from spaces G and D were found directly on the floors of the buildings. However, also many objects were recorded in the soil layers covering this floor. Often soil layers on top of floors are refuse deposits, a result of discard in an abandoned area. In this case however, the content of these two separate deposits is very similar. Figure 3.119 illustrates this situation by comparing the two deposits from room G. The floor level deposit (223) and the soil and refuse layer (251) which was deposited on top are very similar to each other. Probably this indicates that during the use of the room, the floor gradually was filled up with refuse. The objects from both deposits may therefore have been used in the space.

In the courtyard many waste products of pottery production were found. Many bowls, goblets and pots were found with cracks in their bodies. In antiquity, an attempt was made to repair these objects by application of layers of lime plaster. It seems like the specimens which were recovered from these rooms were beyond repair, although an effort was taken to fix them, they ended up as refuse on the floor of the workshop. The excavated floor of the workshop is illustrated in figure 3.120. Nearly all ceramics visible in this photograph are discarded cracked objects with lime plaster repair attempts. A small number of ceramics from these contexts were found with such a thick layer of lime plaster it is assumed they were used as containers for the emulsion while carrying out the repair attempts.

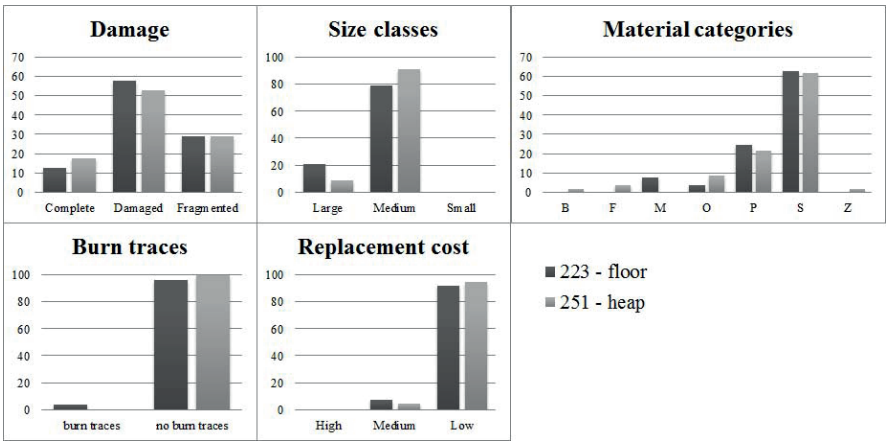


Fig. 3.119: Characteristics of objects from the floor and the higher lying soil heap on top of the floor of room G of area 2 of the south-eastern sector (B beads and pendants; F figurines; M metal objects; O clay objects; P pottery; S stone objects; Z seals and sealings).

Fig. 3.120: Room G, looking north-east. In the background kiln T is visible (photo by P.M.M.G. Akkermans).

Despite the interpretation of room G as a part of the pottery workshop, the find material it yielded is constituted mainly of stone objects such as grinders and pestles. Both the deposits on the floor as the layers which were dubbed 'roomfill' by the excavators yielded a large amount of these objects. Perhaps these signify the use of the room for food preparation. The sequence of ovens in the south of the room can also be mentioned in this regard. At least four phases of rebuilding of a round *tanur* oven were constructed here (oven X, Y, Z), most likely for bread baking (Fantone 2016). It is likely that pottery production did not occur on a daily basis. Therefore the room was perhaps also occasionally used for domestic purposes.

Two other objects form the area appear to be unrelated to the process of pottery production. In corridor C a complete bronze bracelet was found in a sandy layer on top of the floor. Of equal seemingly high replacement cost is a bronze dagger or small sword which was found on top of the pottery concentration in the courtyard (figure 3.121). Neither the bracelet nor the weapon seems in place in a potter's workshop. The location of the objects indicates that there was no clear intention to retrieve the objects later, neither do they seem to have been deliberately hidden from view as they are part of the soil layer covering the floor. It seems therefore likely that the two bronzes were unintentionally deposited, in turn indicating they were used in this area. It is conceivable that for instance during rapid abandonment the bronze blade was lost here by a guard based on the wall.

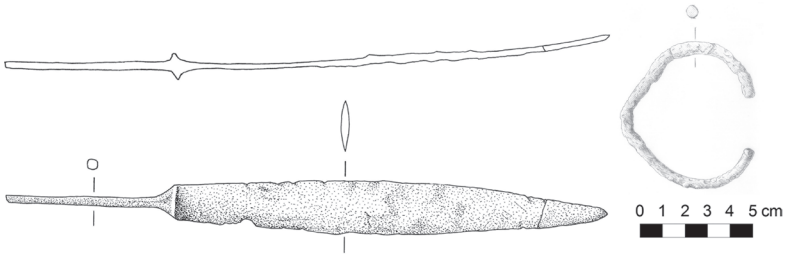


Fig. 3.121: Bronze sword and bracelet from area 2 of the south-eastern sector (from: Tell Sabi Abyad archive).

3.7.3.3 Conclusion

In conclusion it is clear that, despite the lack of data for the southern parts of this area, the walls, rooms and doorways were constructed to provide an entrance towards the courtyard and the rest of the *dunnu*. The spaces in the area were mostly used as a pottery workshop (figure 3.122). Because of the constraints the kilns and pottery production waste provided for passage through the courtyard, it seems unlikely that the area was a pivotal point in the circulation of people throughout the *dunnu*. It is however possible that pottery production did not start until the end of the occupation. This could mean that the area perhaps did fulfil a distributive function in earlier times.

The common subdivision of objects from a floor context and a heap or pile, often called a roomfill deposit, seems untenable in the case of area 2. The objects within the floor- and soil layer deposits are largely identical in function and use. The few items which point at distinctively other activities indicate the importance of the higher storeys, which alongside being a subsidiary space for the potters, to dry their ceramics, was a location where guards could overlook the areas east of the *dunnu*.

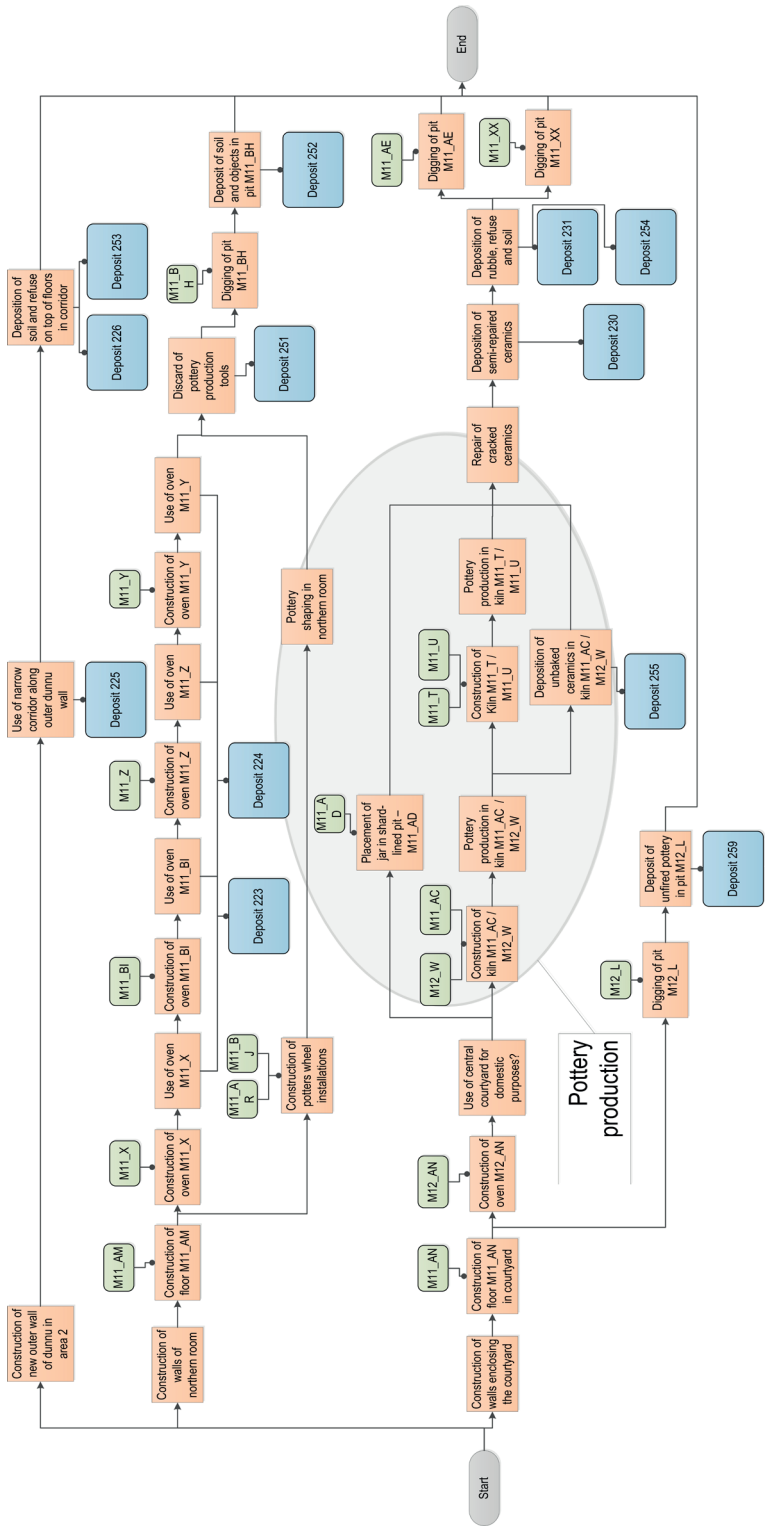


Fig. 3.122: Sequence of Events of area 2 of the south-eastern sector.

3.7.4 An apartment (area 3)

3.7.4.1 Introduction

A singularly well-ordered building, area 3 of the south-eastern sector is made up of four main rooms (C, B, E and F) and a corridor (D) leading towards a bathroom or toilet (figure 3.123). A small cupboard next to a cesspit was considered a separate space and was labelled with the letter G. The building could be entered and exited through two doorways in room F, both leading to small courtyards within the sector. Earlier interpretations of the area were put forward by Duistermaat (2008: 364) and Wiggermann (Akkermans and Wiggermann 2015: 116), both from their own research perspective. Where ceramist Duistermaat sees in the spaces the working and living quarters of a local potter, philologist Wiggermann has interpreted the area as an office or residence of a scribe. Both base their reading on the architecture and specific finds from the rooms. Whereas the general layout and the presence of a bathroom or toilet reflect a residential nature of the complex, the objects on the floors of room B are the consequence of both nearby pottery production as well as the discard of cuneiform texts.

3.7.4.2 The architectural layout

At the start of the sequence described here several walls were constructed. This resulted in the layout of the area which resembles an apartment. Two doorways into the building were present in room F, which served as entrance hall. From there one would enter room B which in turn

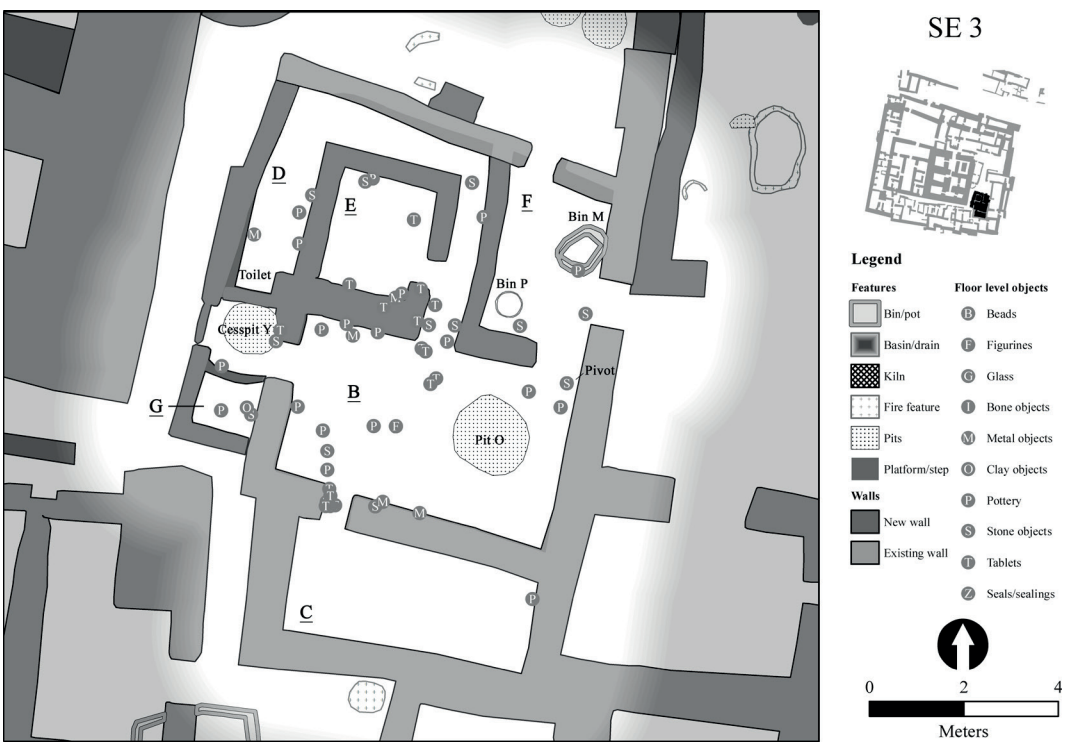


Fig. 3.123: Architecture and floor level finds from area 3 of the south-eastern sector.

gave access to a smaller room in the south (C) and a smaller room yet (E) and bathroom (D) to the north. The bathroom was reached through a narrow corridor, possibly created to provide more privacy. Interestingly, the elongated entrance is a feature frequently occurring in bathrooms and toilets in the *dunnu*. The floor of the bathroom was constructed with baked bricks, as were two raised platforms, which functioned as footrests. A ceramic pipe was placed though the wall, leading to a cesspit (Y) at the other side. This cesspit was placed in a space enclosed by walls on three sides and a doorway leading to room B. South of the cesspit, separated by a thin wall, was another, equal sized space with unknown function (G).

Apart from the actual bathroom, which was fitted with a baked brick floor, the corridor leading towards the bathroom as well as the other rooms were fitted with loam floors. Additional architectural features include a large shard-lined pit (O) in the middle of room B, and two bin constructions (M; P) in room F. These features may indicate that both the entrance hall and the central room or courtyard were used for domestic activities such as food preparation.

A pivot next to the entrance into room B reveals that the building could be closed off. All in all the architecture seems particularly suitable to have functioned as the residence of an important *dunnu* official and his family. Perhaps the northern part of the apartment was used to eat and bathe, the central room was used for general household activities while the southern annex could be used as bedroom or for official, administrative activities.

3.7.4.3 The finds

As mentioned above, its location as well as some finds from the area led Duistermaat (2008: 363) to suggest that the house related to the potter's workshop in area 2 (see paragraph 3.7.3). Some kiln waisters were apparently found on the floor and a large feature in the middle of room B was interpreted as a bin which would have held a large water vat. Room C was suggested to function as a storage place for vessels. Reviewing the objects retrieved from the floor of the central room, however, does not support this proposition. 27 objects were found on the floor of the room, thirteen of which were ceramics. Six objects were stone tools, including the pivot stone, five were tablets and three were small corroded bronze fragments. Among the thirteen ceramics only one overfired potstand was discovered. The assemblage is mostly composed of (both complete and fragmentary) carinated bowls. Also in other rooms no evidence for pottery production activities was found. Although the location of the house adjacent to the potter's workshop implies a strong relationship between the areas, the lack of related objects indicates that the activities did not correspond in the past. A second interpretation was suggested based on the tablets which were found in the area. As indicated by Wiggermann (Akkermans and Wiggermann 2015: 116) the tablets belong to the scribe Belu-eris, and consequently the house is interpreted as his residence.

The depositional history of the tablets however suggests that the objects were not all deposited where they were once used. The cuneiform tablets from this area were found in two separate deposits. Eight tablets were found among other find material in and around room B (figure 3.124). As they have ended up in a wide but thin scatter it is unlikely they were deposited as primary refuse. The objects are part of a larger deposit of much broken pottery and possibly other waste, which indicates that also the tablets were perhaps deposited as secondary

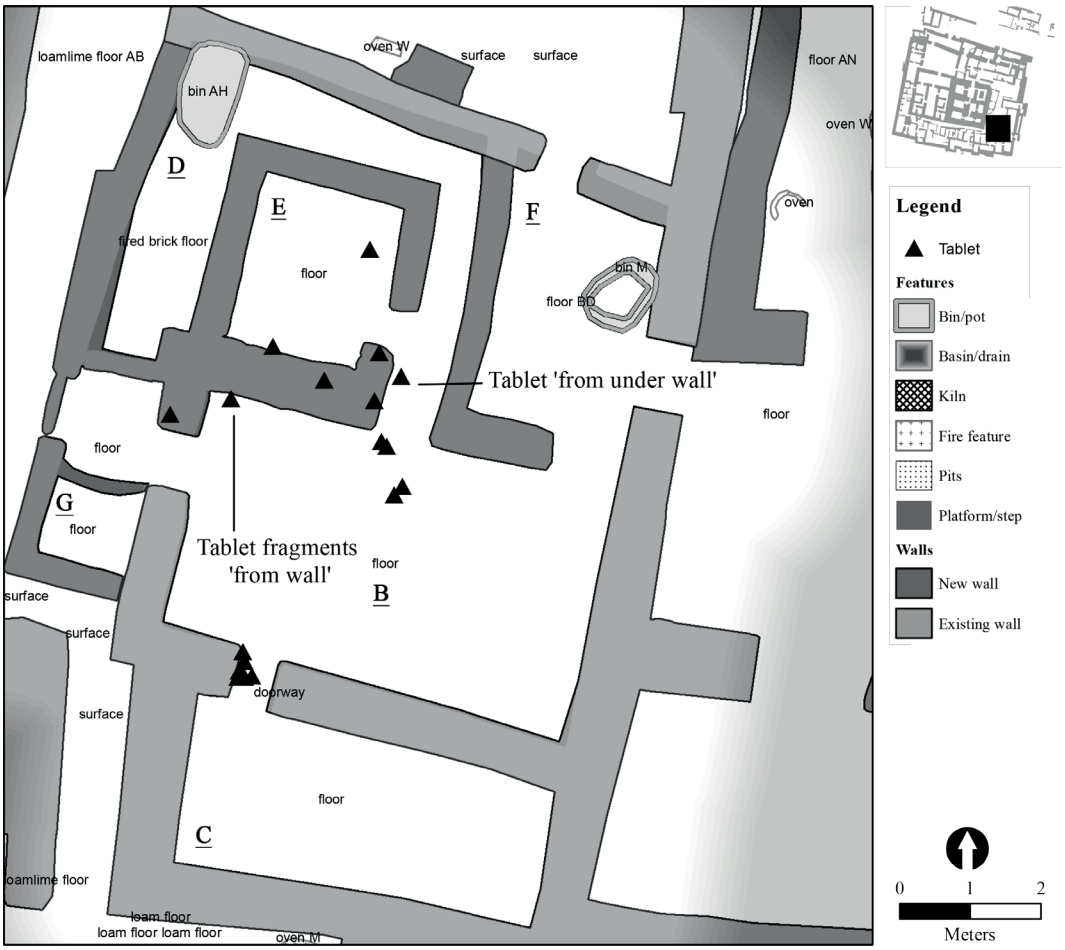


Fig. 3.124: Distribution of tablets in area 3 of the south-eastern sector.

refuse. It was attested before that cuneiform tablets were sometimes discarded among rubble in levelling layers, apparently for their permanent disposal.

A second deposit containing tablets was found in the doorway leading into room C. A concentration of six tablets and several stone pestles and grinders was found here lying in a rubble layer on the floor of the doorway. Unfortunately no details of their precise context are known. It seems likely though, because of their concentrated occurrence, that they were discarded here as a group together with the other objects. It should be noted however that whole group is composed of nearly complete objects. It is therefore possible that a different process was causal to the deposit.

Two tablets were documented to have derived from 'special' contexts, one tablet was registered as coming from within one of the walls and another tablet had been found under a wall. As both tablets were found by workmen during thorough cleaning activities in the trench and no clear context for these tablets was ascertained in the documentation, it is assumed here that the two tablets were in fact part of the larger deposit of tablets.

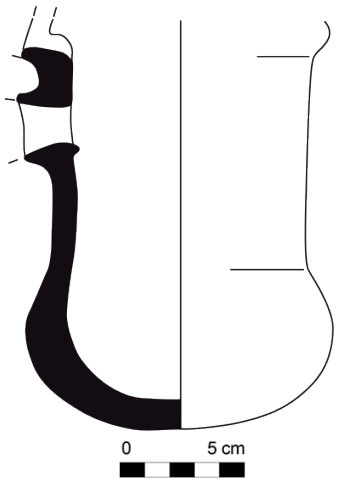


Fig. 3.125: Double spouted jug from courtyard B of area 3 of the south-eastern sector (from: Duistermaat 2008: Fig. IV.95i).

The distribution of the main tablet concentration suggests that the objects were not left behind at the location of use, but were discarded in an attempt to dispose of them indefinitely. Despite this secondary nature of the deposit, the concentration of tablets in the building does indicate a relation between the objects and the house. In other words, it is likely that the secondary discard occurred in or near the location of use. A conceivable scenario is that the tablets were originally discarded as provisional refuse until the area was no longer in use by their owner and they were transferred to a secondary deposit among the rubble on the floors of the area, possibly as part of a levelling layer.

There are several notable finds among the deposits which will be shortly discussed here. Firstly, a bronze arrowhead was found on the baked brick floor of the bathroom in the northern part of the area. Clearly this is not an object one would expect in this space. Other bronze objects include a small ring in the rubble in room E and numerous small bronze fragments in the soil layer in room B. As the latter include production waste they may indicate bronze production nearby. The overall pottery assemblage from the area is characterized by a large number of jars and carinated bowls. One vessel stands out in this regard, P93-176 is a small double spouted jug, possibly used for pouring drinks (figure 3.125). It was found on the bottom of a large jar in the eastern side of room B.

Apart from several large storage vessels most pottery therefore was used in food consumption. It could be argued that the larger vessels were left behind during abandonment of the building as *de facto* refuse while the smaller items should be considered either primary refuse, discarded at the place of use, or secondary refuse.

Based on the layout of the building and the overall character of the finds, the activities in the area were primarily domestic in nature (figure 3.126). The house was used to live, eat and sleep while also food preparation took place here. This household was at least at some point perhaps headed by one of the administrators or scribes of the *dunnu* who, after cleaning out his tablet archive, discarded a number of his documents amongst the rubble which had accumulated during the last phases of occupation of the house. Although also some overfired ceramics were found among the floor level assemblages, there is no strong indication that the inhabitants of the house were directly involved in the pottery production next door. Also, apart from the few bronze lumps in the rubble layer in the central room, no other evidence for bronze casting was found in this area. In the north-western corner of the central room, on the walls near the cesspit, some fire damage was encountered but there is no evidence this was part of such a production process. The majority of objects with burn marks occur along the northern wall of the central room. Excavation diaries also describe a burn layer in this general area. Perhaps this fire damage denotes a final use of the space during which a fire was constructed in its corner.

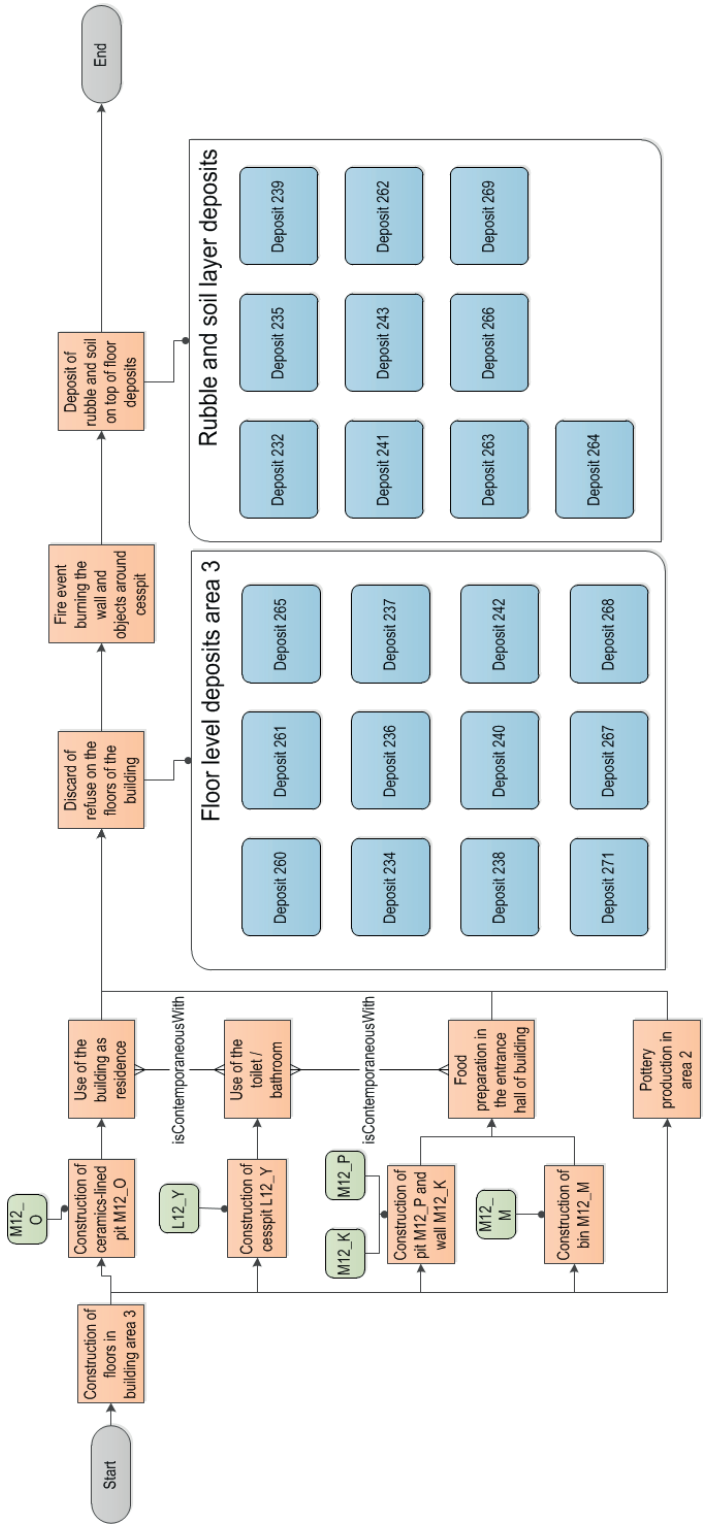


Fig. 3.126: Sequence of Events of area 3 of the south-eastern sector.

Chapter 4. Discussion

4.1 Introduction

In this chapter an evaluation is made of the methodology which was conceived and employed for this project. Both the advantages and limitations of the dataset, the digital approach and the method of determining depositional processes at the site are presented. Following this, the results from the analyses which are derived from the methodology, described in the previous chapter, will be discussed. These results, the activities in the *dunnu* during Level 5, are categorized around the themes of subsistence, food preparation, production processes, administration, war and peace, storage, domestic life and abandonment of the houses in the settlement. This general subdivision is also used in the subsequent paragraph which deals with an examination of the textual evidence which was found at the site. As most of this material has not been published yet, the discussion is limited to those fragments which were published in several articles and book chapters. Lastly, the evidence for the function and use of the Tell Sabi Abyad *dunnu* is discussed in the context of the Middle Assyrian empire. A short description of several analogous sites is given which is compared to the combined archaeological and historical evidence from the Tell Sabi Abyad *dunnu*.

4.2 Reconstructing activities at Tell Sabi Abyad

4.2.1 Introduction

For this research a number of methodological issues were addressed, the 3D spatial nature of the evidence, the large quantity of data, depositional processes and the complexities of relating the objects to activities. Several methods were successfully devised to counter the problems with interpreting the large, complex dataset of Tell Sabi Abyad. In particular the systematic analysis of depositional processes has yielded fascinating results. In this paragraph the advantages and limitations of these methods are discussed.

4.2.2 A digital approach

To be able to work with the large amount of data which was generated by the excavations at Tell Sabi Abyad, it was decided at the outset of this research to convert all the documentation to digital files. A major project was launched to scan all the excavation documentation. This has resulted in a digital archive which is available online. A database was created which aids in searching the vast dataset of the Tell Sabi Abyad excavations. To improve accessibility, the archive was deposited online in open access (Klinkenberg 2014). This project was unique in its scope and outreach for Near Eastern excavations and has proven to be instrumental for the research of the Tell Sabi Abyad excavations.

For the current research the resulting digital archive was used to create large GIS files containing all spatial information, and databases containing information about the architecture and objects from the site. All these data were combined in a 3D GIS model of the settlement which was used to perform the analyses described above. Although the use of 3D models and 3D GIS in archaeological research has been widely applied and discussed before (Wheatley and Gillings 2002; Katsianis *et al.* 2008; Klinkenberg 2014; Smith *et al.* 2014), it is worth mentioning some of the advantages and limitations which are particular to the current research.

There are two main advantages to the approach which was employed here. Firstly, the 3D GIS system enabled the use and accessibility of large amounts of data. The data, such as object forms, photos and excavation plans could be retrieved and visualized in the 3D GIS, making it easy to combine several types of evidence when trying to resolve an archaeological issue. Secondly, the system allowed for the visualization of 3D spatial relationships between features and finds. This has on multiple occasions been central to reconstructing the mode of deposition of certain deposits.

Unfortunately, the 3D visualizations only contain information which was added to the digital dataset, and it disregards other potentially important elements. In the case of Tell Sabi Abyad, only the items which were recorded as 'small finds' were taken into account as the remaining material was not fully available for study. In some cases this has led to the situation where a house floor was considered almost empty according to the database while photographs of the area revealed a floor littered with broken artefacts. Because these broken artefacts were not registered as objects there was no information available about for instance their damage pattern and size classes. This means that the object could not easily be included in the quantified analysis of deposits. The presence of large quantities of damaged objects is however important for the interpretation of these deposits. Therefore the information from photographs, field reports and trench sketches were also included in the final interpretation of a deposit. The presence of non-objects is however not visible on for instance the 3D visualizations which were used in this research. Ironically, although the 3D model is a mere schematic representation of certain elements of the excavated situation, it is often easily taken as 'whole truth' because of its attractive appearance. This paradox should therefore be kept in mind when viewing such visualizations.

4.2.3 Reconstructing modes of deposition

4.2.3.1 Introduction

When excavating large ruin mounds like Tell Sabi Abyad often the remains consist of a sequence of buildings or courtyards. The floors of these structures have, in favourable conditions, revealed large amounts of seemingly *in situ* finds which were covered with thick layers of soil, artefacts and rubble on top of them, so called 'roomfill'. However, both of these hypotheses concerning artefact contexts are problematic. First and foremost, the degree to which the floor level artefacts can be related to the use of that house is questionable; this is discussed below.

4.2.3.2 The problem with 'roomfill'

A characterization of all the layers on top as a 'fill' of the room is an oversimplification of a variety of events which in fact led to the depositional sequences observed at Tell Sabi Abyad. Often, a large variety of layers were deposited in a room, sometimes even containing features, indicating that the spaces were very much in use, rather than being 'filled up'.

Also, to describe these various layers and objects in a room as 'fill' is conceptually rather awkward. From an excavator's point of view, the rooms were indeed filled. The job of the excavator was to empty the room from the top, down layer by layer, keeping the walls in place. The understandable focus was put on reaching the floor levels, contexts which are more clearly reflecting life in the past. This focus however presumes that there is one particular moment in the past which is the most important to reconstruct. All events which are characterized as roomfill however are just as much events in the past and should equally be reconstructed for their own merit.

The notion of a room fill implies that the room was viewed much like a barrel or tank which was purposefully filled up. But in fact the associated deposits were left in this space for their own reasons. In this sense, a refuse layer denotes the discard of refuse, not the filling of the room. Also the levelling layers in a room put in place to ready the room for a new floor should be considered to be part of the construction of the new floor, not to 'fill the room'.

To counter this issue, in the current research all events which are reflected by the objects and deposits from the 'roomfill' are presented in the Sequence of Events models on equal footing with activities which are denoted by floor level objects.

4.2.3.3 Identifying modes of deposition

Many processes are of influence on the location and state of artefacts in an archaeological excavation. Not taking these into account may lead to inaccurate interpretations of the archaeological record. Recognizing these processes can be complicated however and it is often tempting and seemingly reasonable to assume that objects which are located on a floor were used, and simply left, in that space. This so-called Pompeii premise, the notion that everything in the archaeological context is a direct reflection of the original, or systemic, context, has been successfully problematized by many researchers (Schiffer 1972; Binford 1981; Schiffer 1985). In an attempt to identify the manner in which archaeological sites were formed several scholars have presented research specifically concerning processes of discard (Murray and John 1980; Hayden and Cannon 1983; Needham and Spence 1997) and abandonment (Stevenson 1982; Cameron and Tomka 1993; Inomata and Stiver 1998; Inomata and Webb 2003). Many other studies related to households and the reconstruction of activity areas (Savelle 1984; Verhoeven 1999; Milek 2012; Diehl 1998; Müller 2015) have tried to relate the knowledge of deposition processes to archaeological sites. Others (Otto 2015; Pfälzner 2015) have attempted to create a formal methodology for the identification of deposition processes, but unfortunately do not specify which characteristics were used to assign deposits to a certain category.

To investigate the degree of representativeness of deposits at Tell Sabi Abyad, as part of this research project a method was devised in which, based on the work by Schiffer (1987), several types of deposits were characterized. Subsequently several characteristics of deposits relating to its location and content were used to define an 'ideal' signature. Comparing the characteristics of these ideal deposits with the actual deposits from the site has made it possible to attribute every deposit at the site to a mode of deposition with a certain degree of probability. In turn this signifies the extent to which artefacts from the deposit are located where they were once used. The technique has yielded a systematic framework for assessing the manner in which archaeological assemblages relate to activities in the past. The technique proved exceptionally helpful in the current research. However, the technique can be applied to a variety of archaeological sites and may therefore be a valuable addition to the general archaeological toolset.

4.2.3.4 Limitations of the methodology

Two main limitations of the method which was used in this research must be mentioned. Firstly the method implies that a deposit is a single and inclusive entity, in other words it is clearly delineated from other deposits and everything it contains is an integral part of it. Unfortunately, in reality archaeological deposits are not always so clear cut. It may be very difficult to define the border between two deposits. Particularly notorious is the problem of palimpsests. Especially on house floors, but also in other deposits, palimpsests occur when artefacts related to separate activities end up in the same context.

Disentangling these deposits is difficult and in this research mainly based on the different activities which are associated with the artefacts from the deposit. If for instance one part of the assemblage is strongly linked to pottery production while other objects in the same deposit relate to administrative activities, it can be deduced that these originate from separate processes. In other cases it may not be possible to divide the deposit into separate types of activities. Therefore it should be taken into account that in theory all deposits described in this work may be palimpsests.

A further complicating factor for the data from Tell Sabi Abyad is that only a subset of the excavation data could be used for analyses. Only the objects which were recorded as 'small finds' or 'objects' were taken into account for the formal characterization of deposits. Officially all objects from the site, except for pottery shards and unworked animal bones were collected as objects. If ceramic vessels were found in a complete state, or reconstructable from base to rim, they were also registered as objects. However, large ceramic containers for instance were often left behind in a complete state on floors but were fragmented after deposition. It was often very difficult to ascertain their reconstructable state during excavation, therefore these were excavated as a collection of shards and not registered as objects.

It is assumed that the overall picture which has emerged from the analyses presented here will not have been strongly affected by this bias, partially because also other lines of evidence such as photographs and descriptions of the pottery by Kim Duistermaat (2008) were used in the interpretation. Some deposits may nevertheless have been interpreted incorrectly because of this issue.

4.2.3.5 Conclusion

In many cases the critical reassessment of the depositional history of object assemblages has led to convincing new interpretations. In these cases also the relationship between the objects and the space they were found in is therefore altered.

Several contexts for instance, in particular those containing cuneiform tablets, had been interpreted as 'primary' or 'undisturbed' contexts (Wiggermann 2000: 175; Akkermans 2006: 206). At many of these locations however, a critical reassessment of the deposition processes has indicated that the objects were not simply left in the room during abandonment or a catastrophic event, but that they were discarded here as secondary refuse. This new understanding of the way in which the objects came to their final resting place indicates two things. Firstly, the objects were not necessarily used in the room they were found in – they were only discarded here. Second, the collection of tablets which was found does not constitute a complete archive but is a conscious selection of texts which, according to the person who discarded them, could (or should) have been destroyed. Obviously this has major implications for the interpretation of these artefact assemblages and for how contexts are dated.

Another example from Tell Sabi Abyad illustrates the opposite outcome of a critical contextual analysis. It demonstrates the potential of the technique in locating activity areas. In the north of the *dunnu*, area 2 of the north-eastern sector, a lot of pottery was discovered on the floor of a room. The assemblage was quite structured as all items could be related to food related activities. In particular, a large number of items seemed to fit very well with the process of beer brewing. As the assemblage was consisting of large and complete items, it was interpreted as abandonment stage (*de facto*) refuse. This type of deposit commonly contains items which were originally also used at that location. Consequently the main activity which is indicated by the assemblage, beer brewing, most likely was carried out in that very room.

4.2.4 Reconstructing the Sequence of Events

Through time a lot of different activities have taken place in the *dunnu*. The historical subdivision of the *dunnu* as proposed by Akkermans and Wiggermann (2015) consists of three main phases of occupation. According to this periodization, the entire settlement underwent certain major renovation phases, more or less simultaneously throughout the *dunnu*. The archaeological remains from the site have however indicated that the chronology of the *dunnu* is composed of a complex sequence with many diachronic changes in function and use. Unfortunately, this constant changing nature of a settlement is difficult, if not impossible, to plot in discrete phase plans. The most prominent problem with the original periodization for this research was the amount of separate events which could be charted within one phase. The large amount of activities which were carried out within one phase made it impossible to define one single use or function for a space in a given time period. Room A in area 1 of the north-west sector for instance was used for both pottery production as well as food production. Additionally, the room was first part of a larger courtyard.

For this research the main periodization of Tell Sabi Abyad was put aside, and a choice was made to chart all events which could be elucidated from the archaeological remains in a flow chart model which I termed a Sequence of Events. A Sequence of Events is created encompassing the events which could be charted within one Area. These are the largest spatial units in which the general sequence could be reconstructed. The method which was employed parallels that of a Harris matrix (Harris 1979), which presents the stratigraphic sequence of a site in a similar way. The Sequence of Events however highlights the activities that generated archaeological remains and displays the related features and deposits.

The Sequence of Events approach has aided in the understanding and documenting the complex order in which activities have taken place. It has highlighted several interesting phenomena in the *dunnu*. What is immediately clear from every diagram is that a large amount of activities were carried out in every space through time. Additionally, the activities vary widely, even within single spaces. The most dramatic example of a change in function can be found in the monumental residence. The building once must have been an imposing structure, housing the grand vizier and his guests. The end of the sequence is however represented by the burnt remains of a grain storage facility. Other spaces also have undergone dramatic changes, clearly illustrated by their Sequence of Events. For example the rooms which were once determined to be the "steward's office" (Akkermans and Wiggermann 2015: 99) were established to also have been used for diverse purposes. Perhaps at some point it was used as an office but the remains which were found point towards a burial being interred in the area before the main layer of tablets was deposited here. Afterwards the area was turned into a workshop zone, providing space for pottery production first, and food preparation later.

Another interesting result from charting the events in a diagram is that the relationship between the different types of evidence becomes clearer. From nearly every flowchart the features such as ovens and floors which were found in a space seem to relate strongly to the use of a space at the beginning of a sequence and the majority of deposits relate to the later events. It could be argued that the features and other architectural elements are a stronger indicator of the intended function of a space while the majority of finds from the same area are more determinative of its final use.

The straightforward layout and application of the Sequence of Events unfortunately is slightly prejudiced towards change in favour of continuity. As every separate event is charted, it visualizes every event with equal weight, be it a short occasion of the construction of a floor or the repeated act of pottery production in a space. The charts may therefore be somewhat biased to showing the variety in events and activities rather than displaying a time sensitive narrative.

4.2.5 Relating finds with activities by using a *chaîne opératoire* approach

Among the Tell Sabi Abyad dataset a long object list was present which per object described several physical characteristics as well as an interpretative notion which was headed with the term "Designation". This is an umbrella term for how the object should be interpreted. In some cases the field would designate an object functionally ('hammer stone'), in other it was

the material category it belonged to ('piece of bronze'). As all objects had to be investigated in detail for this research anyway, it was decided that a new approach should be sought for the description of objects. This approach would be used later to relate the objects to activities.

In concert with the previous, in order to reveal which activities are represented by the excavated objects, I have tried to determine and record all activities an object was part of. In practice this meant that for every object the processes in which it was produced, used and discarded were determined. In some cases it was also possible to determine a process in which the object was re-used. Additionally, in case an object could be considered to be part of a production process, it was possible to determine the stage of the process the object was from. Three main stages were distinguished: raw material, waste products and by-products. Unfortunately the data quality was such that it cannot be stated that the objects' full *chaîne opératoire* (cf. Leroi-Gourhan 1943) was charted as was planned at the outset of this research. Rather, the few cases in which an object were part of a production process this was recorded in detail. For most objects however it was only possible to crudely determine the processes in which the object was produced and used. For a large grinding slab for instance it could be agreed that it was produced in 'stone working' and used in 'grinding'.

During the analyses surprisingly few artefacts could be related to production processes, possibly, these processes were mostly carried out outside of the *dunnu* walls. Raw, waste, and by-products were scarcely documented as 'small finds'. Only in the case of small fragments of bronze and large misfired ceramic vessels could a determination of waste- or by product be assigned. The focus on describing the related activities has in fact led to a relatively simplified description of the investigated objects. Ironically, during the research it appeared that, although 'conceptually ambiguous', the description which was placed under the heading designation was the most useful for understanding the overall nature of the objects.

Nonetheless the procedure of describing the related processes was consistently applied which has resulted in a dataset which is quantifiable. It enables quantified comparisons between different areas and the plotting of the spatial distribution of certain categories. The results of these analyses are described in paragraph 3 of this chapter.

4.3 Evidence for activities in the *DUNNU*

4.3.1 Introduction

Using the method discussed above numerous activities were recognized in the archaeological remains. The activities were identified based on the tools which were used in these activities. Figure 4.1 illustrates the number of tools per activity which were registered as object in the Level 5 deposits. The graph clearly illustrates the bias of the object assemblage toward the find categories which are well preserved at the site, in particular stone and ceramic objects. The tools for grinding for instance are mostly grinding stones and pestles and the tools for consumption are mainly carinated bowls. However, although 95% of the objects relate to only seven activities, a total of 18 activities were recognized.

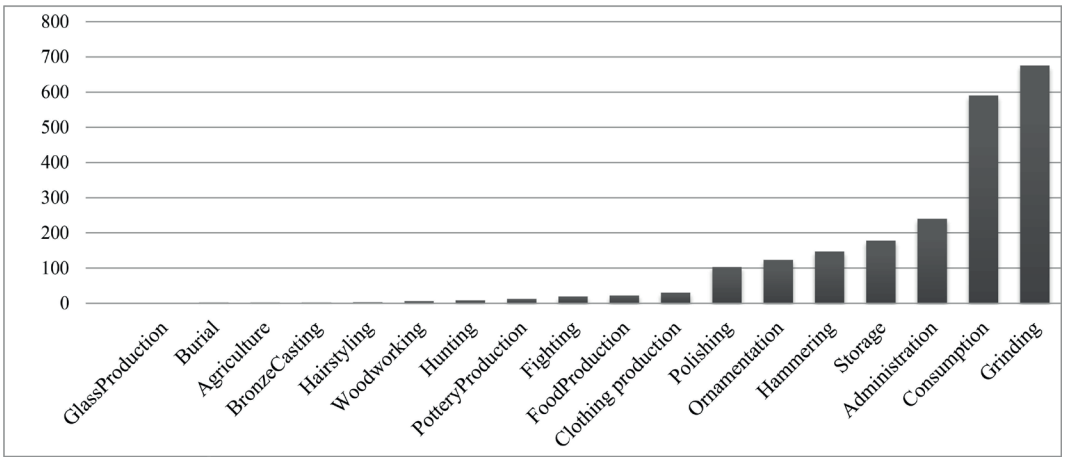


Fig. 4.1: Amount of tools which could be attributed to a specific activity.

In addition, the assemblage of cuneiform tablets from Tell Sabi Abyad is comprised of a rich corpus of documents. The assemblage contains letters, administrative documents and contracts. Although the tablets have not been published in detail yet, a large amount of information was published before by Wiggermann in several newsletters (Wiggermann 2005; 2006a; 2007; 2009; 2012) and articles (Wiggermann 2000; 2008; 2010; Akkermans and Wiggermann 2015).

In addition to the archaeological evidence, in these paragraphs the textual perspective on activities in and around the *dunnu* as it was published thus far is discussed. The aim is to get an overall understanding of the type of evidence this source offers. Ultimately, the combined sources of information, literature and archaeology, are discussed. In some cases themes are particularly clearly demonstrated by one type of evidence. In the paragraph dealing with the workforce of the *dunnu* for instance only textual information is used.

4.3.2 Workforce

Approximately 25 tablets from the site are personnel lists or lists of produce or objects given out to personnel. These have helped Wiggermann to calculate the total of dependant unfree workers, so-called *siluhlu*, to have numbered about 400 (Wiggermann 2000: 186). Among these were probably forced labourers from other parts of the empire and beyond, such as from Assur, Sahlalu and Harran (Wiggermann 2000: 187). One envelop was found which contained a list of possessions of Subareans from Sadikanni. These people were perhaps also put to work in or around the *dunnu*. In addition to these, the workforce was partly made up of a group of free farmers who owned a stretch of land themselves, the so-called alaju, bearing Assyrian names, also numbering about 400. These fields were a necessary addition for their livelihood as these workers did not receive rations, which the *siluhlu* did. Finally, a group of specialist craftsmen, administrators and their families were employed by the *dunnu*, estimated to total about 60. In addition an unknown number of slaves were employed by some families (Wiggermann 2000: 191).

The executive manager of the *dunnu* is the steward. The Assyrian organisation of the workforce was hierarchal in nature and consisted of a subsequent level of so-called ten-men, or rab esarte. These ten-men headed groups of workers in all available fields of expertise. Wiggermann mentions the following list of professions which were present in the *dunnu* at some point: farmers, shepherds, gardeners, builders, potters, smiths, dress-makers, leather-workers, perfume-makers, oil-pressers, bakers, brewers, scribes, merchants, priests, hair-dressers, and singers (Wiggermann 2000: 190).

That the workforce was multi-cultural in nature is best illustrated by one of the main stewards, Tammitte. Considering his non-Assyrian name, he is possibly from Anatolian or Kaska descent (Düring et al 2015: 48). That even a high official could be of non-Assyrian roots could indicate a relaxed attitude to the issue of ethnicity. In some cases however, the local Assyrians were rather belligerent towards other populations. A treaty signed with a clan of local pastoralists indicates that the Assyrians were in the habit of demanding payment from random Suteans if they were owed a sum by any other member of that group (Wiggermann 2010: 55-6; T04-37). One of the paragraphs in the treaty states that the Assyrians and Suteans will exchange stolen goods with each other. Clearly some conflict occurred for which the treaty was set up, in order for the two groups (Assyrians and Suteans) to live harmoniously in the Balikh region.

4.3.3 Subsistence

4.3.3.1 Textual evidence for agriculture

As is obvious from the distribution of the workforce of the *dunnu*, the main function of the *dunnu* estate was in the agricultural sphere. Of the circa 900 people, 800 worked in agriculture. As Tell Sabi Abyad lies at the edge of the region in which rain-fed agriculture is possible, crop yields may vary significantly from year to year. Irrigation is the best solution to this problem and was practiced around the *dunnu* to an extensive degree according to Wiggermann (2000: 178), which resulted in an impressive crop yield. However, among the botanical evidence there are no conclusive indications found for irrigation (Fantone 2016).

Apart from barley, the staple crop, many other foodstuffs were available in the *dunnu*. From the texts from Tell Sabi Abyad Wiggermann (2000: 178; 192) identified wheat, cress, sesame, 'fruit', terebinth nuts, 'vegetables', onions, fennel, chick peas, coriander, black cumin, cumin and 'bark of the kiskanii tree'. In another publication it is mentioned that the steward of a princess borrows 40 litres of sesame oil (Wiggermann 2010: 21), undoubtedly also grown and pressed at or in the vicinity of the *dunnu*.

The agricultural work was headed by chief farmers, each controlling about 50 workers. Some of these chief farmers may have been in charge of specific fields or crops. This is indicated by the differential yields they produced and the number of sickles which are disseminated among them (Wiggermann 2000: 188). The distribution of a total of 434 bronze sickles indicates the extent and the strict organization of the agricultural work around the *dunnu*. Many of

the people working for a head farmer will have been part of the *siluhlu* workforce. In one case it is attested that a head farmer employs a charioteer from the Lands of Alzi, held hostage in the *dunnu*, to help out on his land (Wiggermann 2007).

On the basis of a text from Tell Sabi Abyad, Wiggermann (2000: 179-80) calculated the probable extent of the agricultural lands of the *dunnu*. The text describes the process of the 'dissolution of the grain heap'. This process entails the collection of the grain harvest, the weighing and threshing of these heaps and the consecutive division into separate quantities. First the costs of the upcoming year (seed corn, rations for serfs, and fodder for oxen) are deducted from the harvested grains. The remaining grains constitute the yield of that year. According to the Tell Sabi Abyad text the total harvest consisted of 4873 homer, and 663 homer was kept as seed corn for the next year.

The total amount of agricultural land in *ikû* (ca. 0.36 hectares) is calculated on the basis of the amount of seed corn which was mentioned in the text (Wiggermann 2000: 181). Wiggermann uses a ratio of 0.30 homer barley for 1 *ikû* of agricultural land. Consequently, allowing for bi-annual fallow, the result is 4420 *ikû*, or 1591 hectares of arable land worked by the *dunnu*2. After adding land for substance fields for employees of the *dunnu* and space for woodland and pastures, Wiggermann (2000: 183) concludes that the total catchment area may have equalled 10,000 *ikû* or 3,600 hectares. These numbers, both the yield and the acreage, underline the importance of agriculture for the *dunnu*.[3]

4.3.3.2 Archaeological evidence for subsistence activities

Although the *dunnu* has regularly been interpreted mainly as an agricultural centre (Wiggermann 2010; Akkermans and Wiggermann 2015; Düring 2015a; Fantone 2015; Klinkenberg and Lanjouw 2015), within the Level 5 deposits inside the *dunnu* walls only two objects were found which were tools in agricultural activities (figure 4.2). A large bronze hoe was discovered in a corner of the large elongated courtyard in the north-west of the *dunnu* and a bronze sickle was discovered in a room west of the central courtyard. The presence of the hoe was interpreted as the remains of a collection of tools which were given out here to agricultural workers. Perhaps the bronze sickle was owned by a chef who was responsible for the cooking activities in the room it was found. Other bronze sickles which were found in other chronological levels of the *dunnu* (Akkermans and Wiggermann 2015: 114) were perhaps more strongly related to the large scale harvesting which must have taken places at certain moments in the environment of the *dunnu*.

---

[3] In his calculations, Wiggermann (2000: 181-3) inadvertently multiplied the amount of seed corn by 3, resulting in a *ikû* number of 1989. The seed corn number was supposed to be divided by the number 0.3, resulting in 2210 *ikû*. The result presented here is therefore 11% higher than published by Wiggermann. However, because an estimated number is used for non-arable land, the subsequent calculations for the catchment area can still amount to 10,000 *ikû*.

The absence of large amounts of artefacts relating directly to agricultural activities such as ploughing, sowing, harvesting and threshing may have several reasons. Firstly, the objects were probably not used within the walls of the *dunnu*, they were perhaps located elsewhere. In particular items which were used on a daily basis and objects which were too heavy or inexpensive to bring from the fields into the enclosure for storage were probably kept near their place of use. Secondly, objects with a high replacement cost are likely to have been taken along during abandonment.

Fig. 4.2: Tools related to agriculture and hunting.

Additionally, bronze objects such as the examples which were found, could easily have been recycled. Other objects may simply not have survived processes of degradation. Objects such as wicker baskets or linen sacks may completely decay as they are constructed of organic materials. In some cases the objects have survived partly by charring or as impressions in other materials such as clay, gypsum or bitumen. This is, however, particularly known from Neolithic examples (Berghuijs 2013).

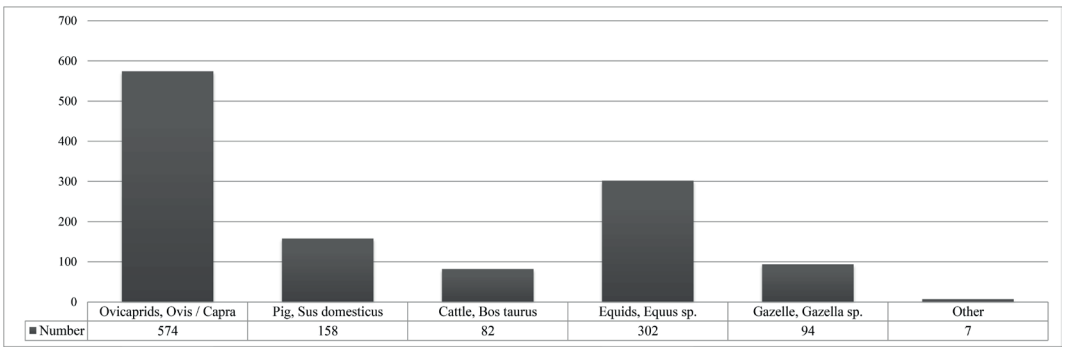


Fig. 4.3: Number and proportion of species among the identified faunal bone material (after Cavallo 2002: 229).

Archaeological evidence for hunting is offered by two sources. Firstly, the faunal bone material discussed below indicates that at least gazelle was hunted. Secondly, eight sling missiles were found in deposits of Level 5 of the *dunnu*. These were perhaps used to hunt small game. Possibly however, these clay objects should be dated to the Neolithic (Verhoeven 1999).

In and around the *dunnu* also many animals were kept for their meat, skin or services. The majority of identified animal bones from a sample analysed by Chiara Cavallo (2002) are sheep/goats (47), followed by equids and pigs (figure 4.3). A relatively high amount of ovicaprids was documented for many contemporary settlements (Berthon 2015: 194). The percentage of pigs is also in concordance with other similar sites. The preponderance of equid remains is however unique to the Tell Sabi Abyad assemblage (Berthon 2015: fig. 10.3). These animals were probably not bred to be eaten but used as beasts of burden, in the case of mules, or to pull chariots, in the case of horses (Cavallo 2002: 235). The overall meat production at the *dunnu* was therefore in concordance with other Late Bronze Age sites (Berthon 2015).

4.3.3.3 Textual evidence for animal husbandry

Although many remains of gazelle were found in the *dunnu* (Cavallo 2002; Berthon 2015), in the text hardly any mention is made of hunting practices. The only hunted animal mentioned in the texts is wild boar, used for their fat, skin and meat (Wiggermann 2000: 199).

Animal husbandry however was widely attested in the documents. The sheep herds owned by the *dunnu* were calculated to have totalled at least 2800 animals. The animals were taken out to graze by herdsmen, who were also organized with ten-men, and who, "if they do not come back at the moment indicated to them by Tammitte, they will receive 100 blows (with a rod)" (Wiggermann 2000: 200).

For food, pork was mentioned as part of a list of foodstuffs in the *dunnu* (Wiggermann 2000: 199), sheep and goat meat was 'always present' (Wiggermann 2010: 23), and, additionally, ostriches were probably kept at the *dunnu*, for their eggs and meat (Wiggermann 2000: 200).

Many animals were kept for their skin. Although sheep were mainly kept for their meat and milk (Cavallo 2002; Wiggermann 2010: 23), it should also be assumed that their wool was used for cloth making. At least the skin of oxen, donkeys and ovids were used for leather workshop as is attested in texts T98-14 and T98-124. According to these documents the final products are used by the chariot makers apparently (Wiggermann 2000: 198).

Finally, a large population of equids was housed in or around the *dunnu*, comprising of donkeys, mules and horses. The donkeys and mules were probably kept here to be used in caravans which left from, and passed by, the *dunnu* en route to Assur. It has also been suggested that mules were actively bred in the *dunnu* for this purpose (Wiggermann 2000: 199; Cavallo 2002; Düring 2015a: 61). Horses were kept in the *dunnu* for the army probably, for chariots, as it was not customary to ride them (Wiggermann 2006b: 96). At some point the *dunnu* has imported 15 horses (Wiggermann 2000: 196), which, because they are costly to maintain and not suitable for agricultural work, were most likely kept for military purposes, possibly to be used with the chariots which were produced in the *dunnu*.

4.3.4 Food preparation

Although not many artefacts were discovered within the *dunnu* walls which directly indicate agricultural activities, the processing of the resulting produce has in many instances been identified. In particular the vast amount of grinding stones is striking.

Many of the tablets from Tell Sabi Abyad speak about food in one way or another. Baker Paya for instance has left us a large number of lists which speak of flour, grain and grain products (Wiggermann 2010, 22; Akkermans and Wiggermann 2015, 100). From the north of the *dunnu*, several documents tally the amount of beer issued to personnel (Wiggermann 2010, 33; Akkermans and Wiggermann 2015, 100). Also many ingredients for the dinner table of Ili-pada are discussed in letters he sends his steward (Wiggermann 2009).

Several dinner parties were held in the *dunnu*, some of which were hosted by Ili-pada, other by the chief steward (Wiggermann 2008; 2010). Surprisingly however, not a single chef is mentioned among the known tablets. Nor are there recipes. However, the dinners must have been large and lavish, and some of these occasions were perhaps ceremonial in nature (Wiggermann 2008: 560).

For these occasions and for other, the process of beer brewing was often attested in the documents, obviously an important subject for the inhabitants of the *dunnu*. Not just because of its taste and potential effect, but beer was much more hygienic than water, and could be kept for a longer time (Zarnkow *et al.* 2006b: 5).

4.3.4.1 Grinding and hammering

Grinding tools are medium to large sized coarse stones which were made into a shape which could rest on the ground, or be used to rub or grind with. This roughly resulted in two major types, which are here called a 'grinding slab' and a 'grinder' (figure 4.4). These main shapes are considered to belong to each other as toolset for grinding of grains and other foods.

Other shapes of ground stone which were found are mortars (cup shaped or with concave depression) and pestles (conical shaped) (figure 4.5). These objects are commonly considered to have been used for hammering or pounding rather than grinding. Pounding is particularly used to de-hull certain grains. This technique has been attested at Tell Sabi Abyad for dehulling hulled wheat (Fantone 2016).

The majority of grinding and hammering stones was found in rubble layers and refuse heaps but still almost 250 grinding stones were found on floors. However, many of these can also be considered refuse, especially the large complete ones were probably left where they were used as *de facto* refuse. The spatial distribution of this subset of the finds shows a concentration of objects in the south-western and south-eastern parts of the *dunnu* (figure 4.6). Also in several structures in the east and in the central building some complete and large grinding stones were found. The north-west of the *dunnu* is conspicuously empty. Possibly grinding was not carried out in this area at all.

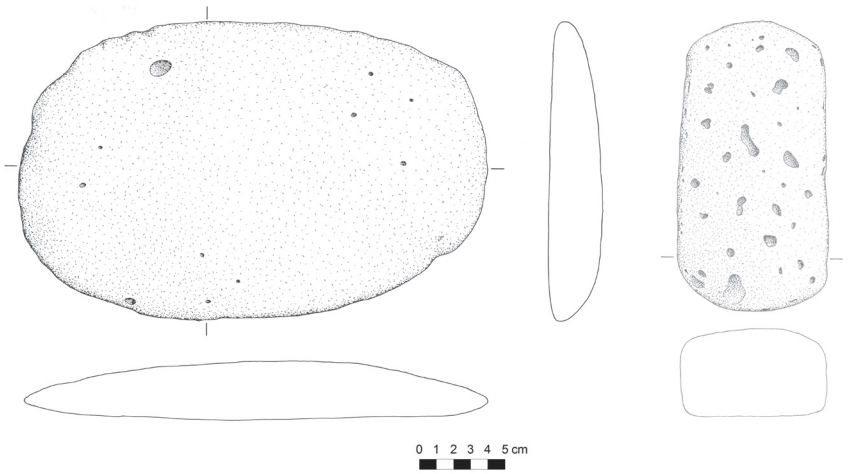


Fig. 4.4: Grinding slab (left) and grinder (right) from Tell Sabi Abyad.

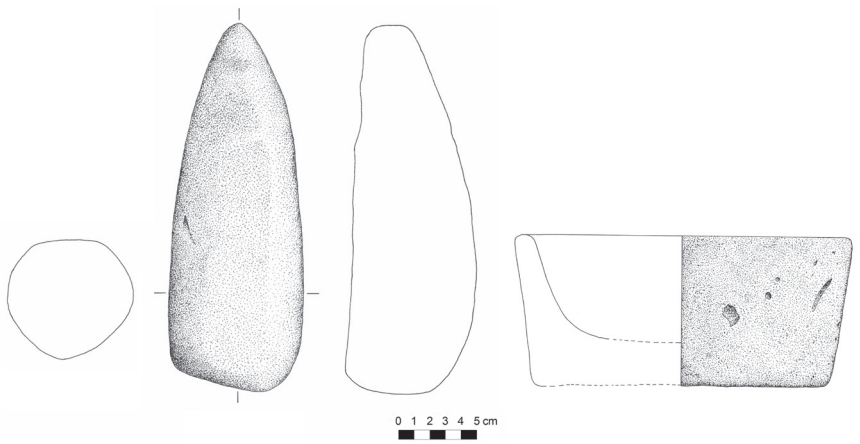


Fig. 4.5: Pestle (left) and mortar (right) from Tell Sabi Abyad.

The enormous amounts of grinding stones which were found among the deposits of Tell Sabi Abyad indicate the importance of this activity for everyday life. Despite the fact that the tools had to be imported from a large distance (Huigens 2011) the objects do not seem to have been used until exhaustion. Although the objects were found nearly everywhere within the *dunnu* walls, a clear spatial pattern can be observed in figure 4.6. These objects were most likely left behind during abandonment as *de facto* refuse and therefore were probably used in the space they were found in. The distribution of these objects indicates that particularly the south and the south-west of the *dunnu* was used for the process of grinding. It should be noted that the large, complete grinding stones which were found in the central building were located in the Level 7 deposits. This may signify that after level 7, the location of grinding activities moved to the south and south-west of the *dunnu*.

As was discussed in the related paragraphs, especially in the south-west of the *dunnu* grinding was probably a communal effort. Possibly dependant workers were allowed to process their grain here after receiving it as rations. As this function was retained after the sector was renovated this was probably not a short term event but a persistent function. To this purpose the required tools were perhaps centrally stored in the storage room in the south of the *dunnu* (figure 4.6).

The distribution of pestles is rather even throughout the *dunnu* (figure 4.7), although there is a preponderance of these tools in the south. Mortars, possibly used in conjunction with the pestles, have a slightly different distribution. Some of the mortars which were found in the *dunnu* were however probably used for different activities. The two examples from the residence for instance were probably used as pivot stones and the item in the east of the *dunnu* may have functioned as the pivot of a potters-wheel (see paragraph 3.7.2).

Pestles could easily be used in combination with other containers such is suggested by the concentration of these next to ceramic bins in the structure set against the central building (paragraph 3.7.2; figure 3.109). Interestingly, in this structure evidence was found for the processing of hulled wheat, a type of wheat which needs to be pounded with pestles before it can be processed further (Fantone 2016). Although at the site as a whole the number of grinding tools far exceeds the pestles, it is clear that grinding certainly was not the only method for processing grains, seeds and other hard foodstuffs.

Fig. 4.6: Distribution of large, complete grinding stones in the *dunnu*.

4.3.4.2 Baking and cooking

To process the ground grains and other foods, numerous ovens and fireplaces were built inside the *dunnu* walls. These, together with a small amount of cooking pots are the only direct indications of the practice of food production.

The majority of these 'fire features' are of a type known as *tanur* or *tabun* (Tkáčová 2013; De Groene 2015; Fantone 2016). The word *tanur* is mostly predominant in the modern Arabian world while the word *tabun* is used often in the Levant and southern Eqypt. Both words literally mean 'bread oven' (Tkáčová 2013: 9). As both types denote the same function and overall appearance, they cannot be distinguished from each other in the archaeological record and are often used interchangeably. Therefore simply the term *tanur* is used here to describe the features which are interpreted as bread oven. It should be noted however that often only the bottom half of the ovens was preserved and that the upper part may have revealed a different function such as that of heat source for grilling, frying or cooking. The features are constructed of clay, are circular in ground plan and were fired on the inside. Usually they are constructed detached from other structures but in some rare cases the ovens are built into a wall. Whether this is indicating a functional difference remains unclear, it could also have been done to provide additional support to the structure.

Fig. 4.7: Distribution of mortars and pestles in the *dunnu*.

The spatial distribution of ovens in the *dunnu* has remained largely the same throughout the sequences described here. Particularly striking is the large amount of ovens which were constructed in the south and south-west of the *dunnu*. Obviously this area was allocated for this use, probably because the area was located in the back of the *dunnu*, away from the representative function which was present in the north. By concentrating these activities in one area it was probably easily controlled by the authorities. Perhaps this was also a reason to cluster the ovens in the south and southwest.

In these spaces therefore, after the processing of grains (see previous paragraph), also bread could be baked. Many of the ovens were constructed next to each other but also in several cases the ovens are constructed on top of each other. How many ovens were used at the same time is hard to assess but it is likely that the whole area could be used at any time, providing space for at the very least ten ovens simultaneously.

One particular different cooking structure was found just north of the central building. Here, in a room measuring three by four meters, at least six large fireplaces were built in one construction (room D, area 3, north-eastern sector; paragraph 3.3.4). The room has aptly been described as kitchen, as the structures were clearly used for cooking purposes. The unusual occurrence of these fire features, and the seemingly short time span of their existence, suggests this room fulfilled a function which was normally not practiced in the *dunnu*. Several cooking pots were discovered in this area as well. These were large enough to be held by the fire features, inferring that they were indeed used here. As an added exceptional element to this cooking structure, the main large pot which was found here was apparently imported from Ugarit (Duistermaat 2008: 546). Additionally a large number of extraordinary ceramics were found here, including serving vessels and decorated bowls.

The cooking structure was constructed in one building effort. Therefore this kitchen was meant to be used in its entirety, or at least provide the possibility to use this many oven structures. Interestingly, the individual fire places of the kitchen were fairly large. The pots which were used on top of them had a volume of 40 litres (Duistermaat 2008: 546-7). Therefore, the use of a single fire place would have already resulted in a large amount of food. At least these are amounts for groups larger than a single family or household. It follows that the kitchen must have been constructed and used for the preparation of food for large groups of people.

Two possible functions for this kitchen are the most apparent. First, the kitchen may have functioned as a communal kitchen to feed the employees of the *dunnu* on a daily basis. This is in line with the suggestion of Akkermans and Wiggermann (2015: 100) that the general area was used to house the *dunnu* staff. A second interpretation is that the kitchen sporadically to prepare large meals, feasts, for large groups of guests in the *dunnu*.

If this kitchen was indeed used as a daily communal kitchen, it is assumed that this was an integral part of the organisation of the settlement. However, the kitchen is a unique occurrence in the excavated architecture of the site. Also the construction of the room appears to be a late addition to the existing layout and may have hampered the flow of people, not a characteristic

one would expect from a central space in the settlement. Additionally, if communal dining was the norm, this would also be reflected in the Level 6 and later level 4 architecture. In these levels however, no similar structure was discovered (Lanjouw 2016). Additionally, it appears that the kitchen was in use for a relatively short period of time. The fire places were constructed on top of a pre-existing Level 5 floor and were therefore probably placed in a room which originally had a different function. The fire places have not been repaired or adapted through time. This may indicate that they were in use for a short time. The end of use of the kitchen is indicated by large scale fire damage, and a vast amount of objects which were deposited on the floor and on the fire places. The presence of several objects with a seemingly high replacement cost suggest that the end of use may have been caused by a catastrophic conflagration. Significantly, the structure was not rebuilt after this unplanned event. In conclusion, it is more likely that the kitchen structure was constructed for the preparation of one or more large meals within the *dunnu* walls. These feasts may for instance have occurred during the visit of the owner of the *dunnu* and his party. Another occasion for a feast was perhaps a meeting with representatives of local tribes which are also documented in textual sources from Tell Sabi Abyad (Wiggermann 2008). Following the departure of these groups the room was reused as a storage space and eventually burned down in an accidental fire.

One other area should be noted in this regard. In the west of the *dunnu*, south of the 'office of Tammitte', in a room which was first used as a pottery workshop, several very large pots were semi-dug into the ground (see paragraph 3.2.2). The large corpus of pottery from the floor of the room, most of which could be refitted into complete objects, revealed a high proportion of cooking pots. These objects, large and difficult to carry along, were most likely part of an abandonment stage refuse deposit and were therefore probably used in the room. Following the interpretation of the room as a make shift kitchen, the large semi-dug in vessels were probably used for storage and the cookpots from the room for cooking. The occurrence of remarkably high quantities of herbs such as coriander in this room (Fantone 2016) underscores that the room was probably also used for the preparation of spiced food. Possibly, this kitchen also functioned for the preparation of large meals, although not in the scale which was attested in the kitchen structure.

If these kitchens were not used to feed the general population of the *dunnu* in a communal effort, the question remains where and how these people normally prepared their food. It follows from the absence of communal food preparation that families must have prepared food within the household. Aptly a large number of solitary ovens and fire places were excavated in the *dunnu* in areas which may have functioned as apartments (see paragraph 4.3.9). Perhaps the residents of the *dunnu* were handed rations of food which could be prepared within the household. Additionally a family may have owned some livestock such as a goat to supplement their diet with milk, cheese and meat. Similarly, the agricultural workers of the *dunnu* were allotted a plot of land to provide in their own subsistence.

In conclusion, the *dunnu* was home to a large number of fire features which were used for the preparation of food. The baking of bread seems the most prevalent, but *tanur*s may have been used in a larger variety of ways, also for the grilling or cooking of other food. The use of cooking pots is very rare at Tell Sabi Abyad, only 0,4% of the pots described by Duistermaat

(2008: 458-9) were cooking pots. However, many additional cooking pots may have been made of metal and may have been taken along at abandonment. Other manners of food preparation such as soaking, grilling, drying, pickling (Duistermaat 2008: 458), could have been performed which left no archaeological imprint.

In addition to the common manners of food preparation in the *dunnu*, at a few rare occasions large scale kitchens were constructed for the preparation of very large meals. Instead of communal kitchens, these are interpreted as purpose built structures for the preparation of feasts. Although the *dunnu* staff was sizeable enough to consume a large amount of food, the exceptional occurrence of the kitchens and several appealing ingredients such as herbs and molluscs suggest that a meal was prepared which was 'fit for a king'. Or at least fit for a grand vizier.

4.3.4.3 Beer brewing

In the ancient Near East beer was not only brewed for the purpose of enjoyable evenings, it constituted an important staple food for many people in the past (Katz and Voigt 1986). Beer was brewed using a different process than today, soaking grains rather than boiling them (see paragraph 3.3.3). The associated pottery such as strainers and large pots was found in several places in the *dunnu*. In particular the assemblage from a room in the north of the *dunnu* (see figure 4.9: 'brewery') is indicative of beer brewing locally. Whether the entire process was carried out in this room or only a part of it cannot be distilled from the remains. Probably at least a large part of the process was carried on top of the roofs of the surrounding buildings as was for instance suggested for Tell Bazi (Zarnkow *et al.* 2006a; Zarnkow *et al.* 2006b). The drying of the germinated grains must have occurred on large surfaces such as the roofs of the adjacent buildings, especially if beer was produced for a large amount of people.

A vessel which can probably be identified as a fermenting vat or namzittu (Duistermaat 2008: 460) is P97_221 (figure 4.8, lower right). The vessel was constructed with a small upturned strainer covering the centre hole in the bottom. It is the only discovered vessel from the site which had been constructed in this way. Other large pots with a hole in the bottom were found but these lacked the addition of the upturned strainer. If the strainer was an important functional element of the vessel, one would expect that this would occur more frequently.

Interestingly, in the vicinity of most large pots with bottom-holes, small sized strainers were found as well (figure 4.9). Five examples of these large pots were registered as objects in the Level 5 deposits. Possibly these pots were used together with the strainers. A large pot with a bottom hole can easily be converted into a namzittu vessel simply by placing a strainer on the bottom of the vessels. Because these large pots were easily fragmented into shards, in many cases the pots were probably collected in pottery lots. Perhaps therefore the strainers which were found in the west of the *dunnu* were also in the company of large pots. If this is the case, beer production was perhaps present in more places than previously assumed. It should be noted however that the process of straining and soaking is not necessarily reserved only for beer production. Strainers could also be used in cheese production and soaking could also be used for the preparation of lentils for instance (Fantone personal communication).

4.3.4.4 Textual evidence for beer brewing and consumption

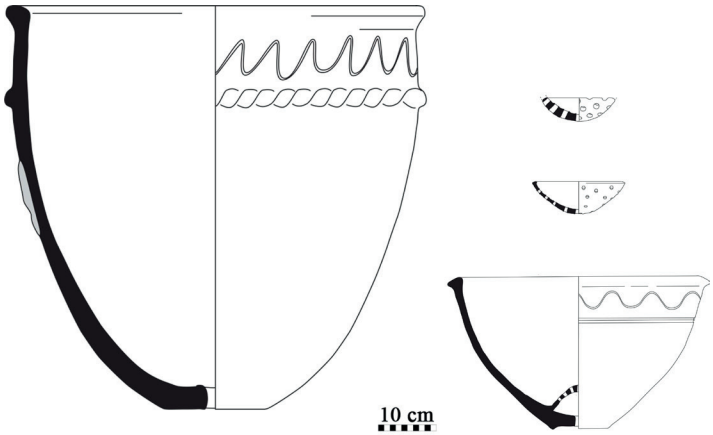


Fig. 4.8: Vessels which may have been used for beer brewing, from Duistermaat 2008: Fig. IV.106f; V.58; IV.91ah; IV.59a.

About ten tablets specify the brewing, drinking and distribution of beer in the *dunnu*. Most fascinating is the treaty which was settled between the local pastoralist Suteans and the Assyrians of the *dunnu* which must have followed from a drunken brawl. In this treaty it is specified that the Suteans are not to drink their beer in the *dunnu* but should go back to their own camp after buying it. The Assyrians on the other hand are summoned not to seize money from just any Sutean when a sum is owed to them by another Sutean (Wiggermann 2010: 55-6). The tablet reads: *"If a Sutean has gone to the town, he [may*

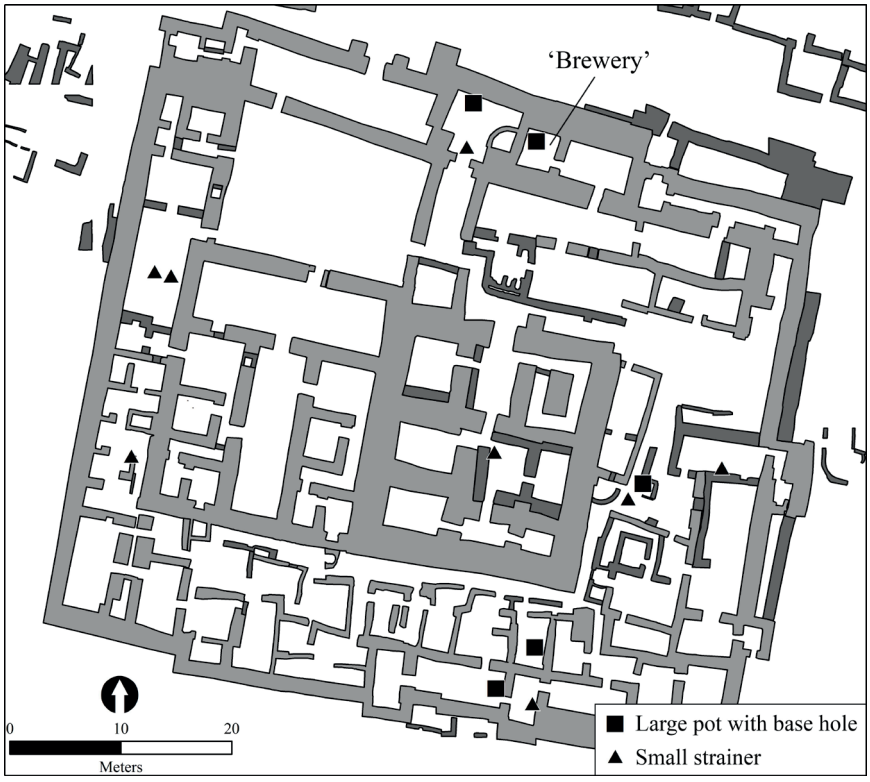


Fig. 4.9: Distribution of strainers and pots with bottom holes in the Level 5 *dunnu*.

not drink his beer] at the brewer's; has he taken the beer with him to the tent camp, he [can drink] his beer (there); they may sell his beer to him, but he shall not [take it with him] without payment." (T04-37; Akkermans and Wiggermann 2015: 119).

From the treaty it follows that in the *dunnu* beer was not just produced but also consumed. This could be done in the local café, the 'house of the brewer' (Wiggermann 2010: 33), or during feasts such as the occasion for which Ili-pada orders 40 litres of the drink (Wiggermann 2010: 19). This was not a one-off order however, records held by head brewer Silli-Istar-Nabula, responsible for ten other brewers, show that at one point a total of 320 litres of beer was delivered (Wiggermann 2010: 32-3).

Also in other cases large amount of beer are provided for official occasions as for instance is chronicled in Tablet T93-3: *"Say to Mannu-ki-adad, thus (has spoken) Mudammeq-Assur: what is this, that you do not follow my orders as I have commanded you to? Why have you not ordered your brewer to send a potter to Dunni-Assur? Have a written command go forth to your brewer in Sahlalu, that he may provide beer and drinking vessels for when the Suteans dine with me. To whom else can I ask this, who could provide me with this? Send your tablets (with instructions) quickly!"* (Wiggermann 2010: 27).

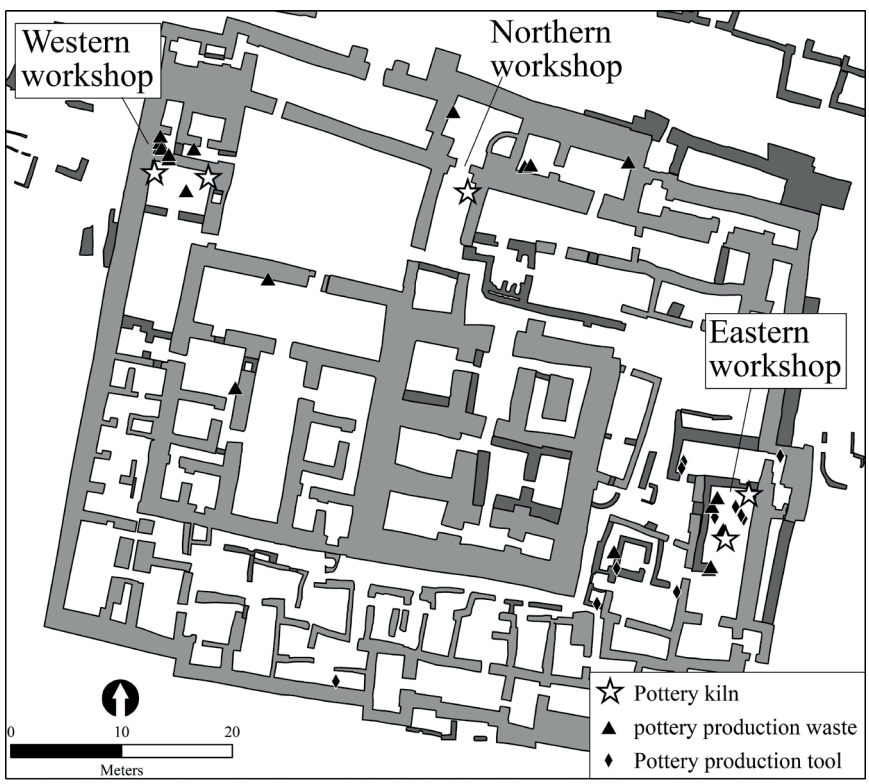


Fig. 4.10: Kilns and distribution of pottery production waste and tools within the walls of the Level 5 *dunnu*.

4.3.5 Production processes

4.3.5.1 Pottery

4.3.5.1.1 Introduction

There is ample evidence for the production of pottery in the *dunnu* of Tell Sabi Abyad. As this was described in great detail before by Kim Duistermaat (Duistermaat 2008; Duistermaat 2015), the discussion below will be brief and focusses on the production centres which were part of the sequences described in the chapters above.

Three main workshops were found, one in the east, one in the west and one in the north (figure 4.10). In every area they were constructed on floors which were used for a different purpose before. It is not clear whether these spaces were completely abandoned or derelict but they certainly were not constructed specifically for pottery production.

The pottery which was produced in these workshops was the typical Middle Assyrian pottery (Pfälzner 1995). The uniformity in shapes of many similar ceramic assemblages has opted Peter Pfälzner (1995) to suggest that the pottery must have been made on a large scale in so-called 'manufactories'. Duistermaat (2015: 127) suggests that at Tell Sabi Abyad pottery was produced in 'individual workshops'. Although the ceramic assemblage is fairly uniform, small variation in rim size of carinated bowls may suggest that there was no explicit attempt at standardization of size or shapes of ceramic vessels (Duistermaat 2015: 136). In turn this suggests a certain degree of autonomy for the potters at Tell Sabi Abyad.

4.3.5.1.2 The western workshop

After the representative function of the monumental residence and the central courtyard had gone, the north-western sector fell into disrepair. The area was still in use however with amongst other activities the start of pottery production in area 1 (paragraph 3.2.2). Although the original activities which were carried out before the start of pottery production are unknown, it is likely that the activities were more in line with the monumental and official character of the adjacent areas during that time. The pottery production probably commenced after the floor of the courtyard was demolished and the 'office' to the north was closed and a thick layer of soil with administrative documents was deposited there (see paragraph 3.2.4). After the closing of the office, its bathroom was joined with area 1 to its south. This former bathroom was now used to shape pottery, although the proper workshop was probably located somewhere else (Duistermaat 2008: 365). Two kilns were constructed in room A of area 1, probably one after the other, although simultaneous use cannot be excluded. Much production waste ended up on the floor of this room and the former bathroom. A large courtyard due south (space B of area 1) was possibly also used during the work. Duistermaat (2008: 367) has suggested that fire damage to its walls were the result of the open air firing of large vessels there.

4.3.5.1.3 The northern workshop

In the north of the *dunnu* the earliest known gate of the settlement was closed off and used as either a brewery or a café (see paragraph 3.3.2). After this use, refuse accumulated on top of the floors and a kiln was constructed in a corner against the former gate. The kiln was awkwardly placed with its mouth towards the north, making it complicated to fuel. Not many kiln wasters or raw material was found in the vicinity of the kiln which may indicate that the workshop was located elsewhere.

4.3.5.1.4 The eastern workshop

The sequence of events which led up to the construction of pottery kilns in the east of the *dunnu* is less well known than for other pottery related areas. It is for instance not clear what the use of the rooms was before the advent of pottery production. As at least one kiln was positioned in the middle of the area, obstructing the movement of people, it was possibly constructed when the area was no longer in active use. The evidence for pottery production is much more extensive in this area compared to other areas. Not only were kilns and waste material found, also a large number of tools were discovered which were probably used for the shaping and scraping of vessels (see paragraph 3.7.3). It indicates that in the rooms where the kilns were situated the full production process was performed. A large amount of stone rings, interpreted as bases for unfired pots, were found in the northern part of the area (room G of area 2). The first stages in the production process were therefore probably carried out there, while the final part, the firing of pots, occurred in the southern courtyard (space D of area 2).

Duistermaat (2008: 360) identifies the house attached to the pottery workshop (area 3 of the south-eastern sector) as a storage room for pottery. Analysis of the finds from the house however (see paragraph 3.7.4), indicate that there is no clear connection between the apartment and pottery production. The few artefacts from the house which are related to pottery production may have entered the house in a different way, particularly as later secondary refuse.

4.3.5.1.5 Textual evidence for pottery production

From the letter from Mudammeq-Assur to the steward of the *dunnu* (T93_003; see above), it appears that potters could be sent to a certain location to produce pottery for that settlement. The same was probably the case at Tell Sabi Abyad, where large scale pottery production probably occurred on an incidental scale (Duistermaat 2008; Duistermaat 2015). Two tablets contain information about pottery. One is the letter described above and the other is a list of pottery vessels which were probably used in a ritual or ceremony of sorts.

The list in this tablet (T98_131) contains the following vessel names: *šapputu* (a container), *ḫuruppu* (a dish), *makkusu* (a bowl), *kukkubu* (a small container), *agannu* (a large bowl), *kallu* (a bowl), *ḫapaltu* (a container), *namzītu*/*nazzītu* (fermenting vat), *pursītu* (a bowl), *saḫḫarru* (a small bowl) (Wiggermann 2008: 559). The interpretation of the list as a list of ceremonial utensils is based on its similarity to a tablet from Assur which, amongst other things, also lists a censer. The number of objects and their functional properties were taken to indicate a cultic use (Wiggermann 2008: 560). Probably many tablets specifying orders for pottery have simply been lost.

4.3.5.1.6 Conclusion

Pottery production in the *dunnu* was undertaken on a significant but incidental scale. In the area within the *dunnu* walls and during the time span covered by the sequences described here (Level 5), five different kilns were constructed which could have been used for a number of firing events. The construction of multiple kilns in one area may suggest that the area was used for a long period of time for the same purpose. However, the fact that kilns are placed in areas which were originally constructed for other activities indicates that the location of kilns should be considered to be opportunistic use of space (cf. Duistermaat 2008: 369). Interestingly several kilns were also constructed outside the walls. Unfortunately, analysis of these areas was beyond the scope of this research.

An explanation for the variety of locations for kilns offered by Duistermaat is that the prevailing winds in this area change per season and that therefore kilns may be located in areas which caused the least smoke problems. This may be highlighted by the fact that although the locations of kilns vary, the shaping of pottery may have remained in place in the east of the *dunnu*.

The presence of such large pottery workshops in the *dunnu* indicates the importance of the products for the *dunnu*. It is conceivable that the workshops also supplied the surrounding villages with ceramics, but the main consumer must have been the *dunnu* itself. As is clear from tablet T93_003, in which a high official orders the steward of the *dunnu* to send a potter to another settlement (Wiggermann 2010: 27), the craftsmen were not only located in a single settlement. The changing location of the pottery workshops can also perhaps be viewed as a result of different potters who worked in the *dunnu* at different moments in time. The production of pottery may in some cases have been in parallel to other events such as large scale beer brewing or the preparation of large meals.

4.3.5.2 Metal work

Among the objects which were analysed for this study, only two damaged moulds and several very small bronze fragments attest to the local production of metal objects (figure 4.11). The small bronze fragments or lumps, were interpreted as the waste material from bronze casting and were all found in refuse layers. Also the two moulds were found in refuse layers. One of the moulds was probably used to produce small ornamental items while the other was perhaps part of a mould for tools such as axes (figure 4.12). The items indicate that bronze production must have been carried out in or around the *dunnu* at some point. The evidence is however so scarce that it cannot be said to what scale this was carried out.

The distribution of bronze fragments is wider than that of the moulds but yields no clear patterns. The only concentration which is evident from the spatial distribution is present in the 'office' in the south-eastern sector (see figure 4.11: 'office'). Here, the secondary refuse deposit on top of the floor has yielded a concentration of bronze fragments, one of which was a 'fluid' shape, indicating that bronze casting indeed took place nearby. The lack of more significant evidence for bronze production among the otherwise rich find assemblage from Tell Sabi Abyad indicates that the location of this activity must be found further away from the excavated remains.

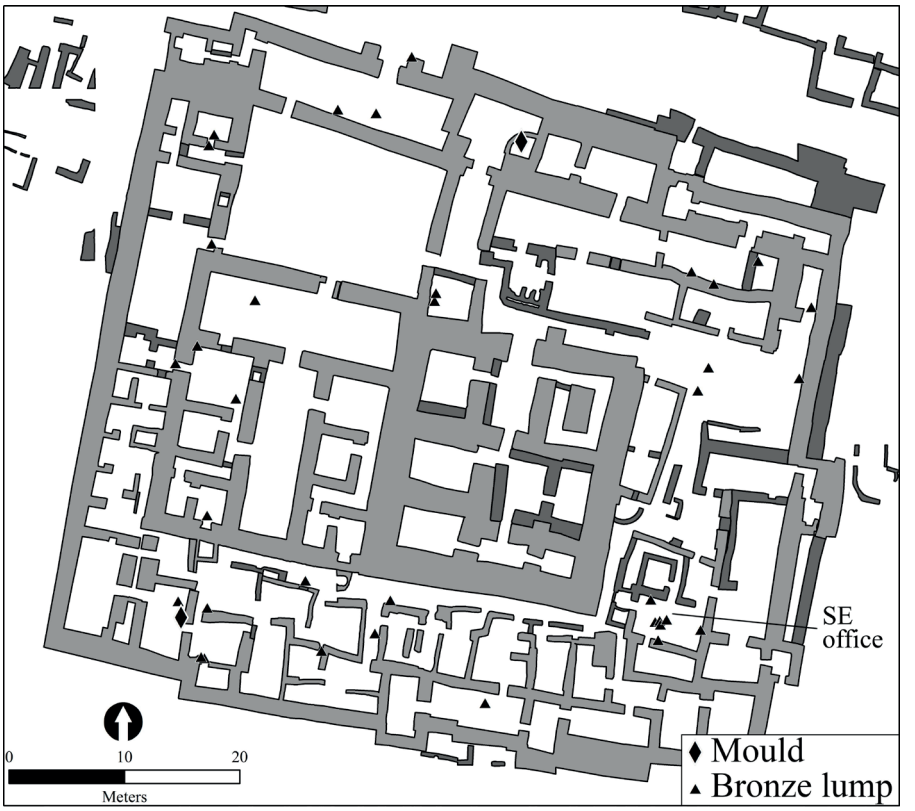


Fig. 4.11: Distribution of objects relating to metal working (moulds and bronze lumps) in the Level 5 *dunnu*.

Also in the tablets not much evidence about metal work in the *dunnu* was found. In one instance (T98_080) a merchant was recorded to receive 405 kilogram of "bark of the kiskanii tree" in return of the same weight in tin (Wiggermann 2000: 198). Although this means that large amounts of metal was available at the *dunnu*, it is unclear whether the material was transformed into tools and ornaments here as well.

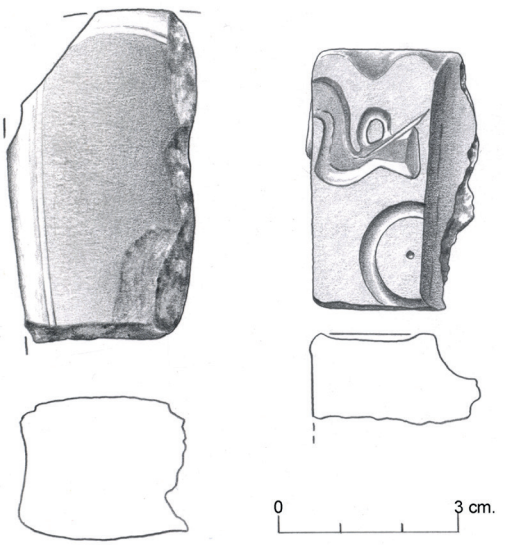


Fig. 4.12: Two damaged stone moulds from Level 5 of the *dunnu* (fig. by R. Timmermans).

4.3.5.3 Clothing

Unlike other production processes, the creation and repair of clothing has perhaps not been undertaken on a substantial scale. Several objects which were found could be associated with the process of clothing production or repair. However, these objects could also be used in different processes. The majority of these finds for instance are bronze needles which could also be used as hair or cloth pins. Also so-called loom weights, perforated clay balls, could be used to serve as weight for other things.

It is expected however, that the *dunnu* was largely self-sufficient and that the production and repair of clothing took place here to some extent. In line with this notion Cavallo (2002: 233) has noticed that although most of the sheep remains from the site indicate that they were bred for their meat, some were probably used for wool as well. This may have occurred in the domestic sphere however, rather than being centrally organized.

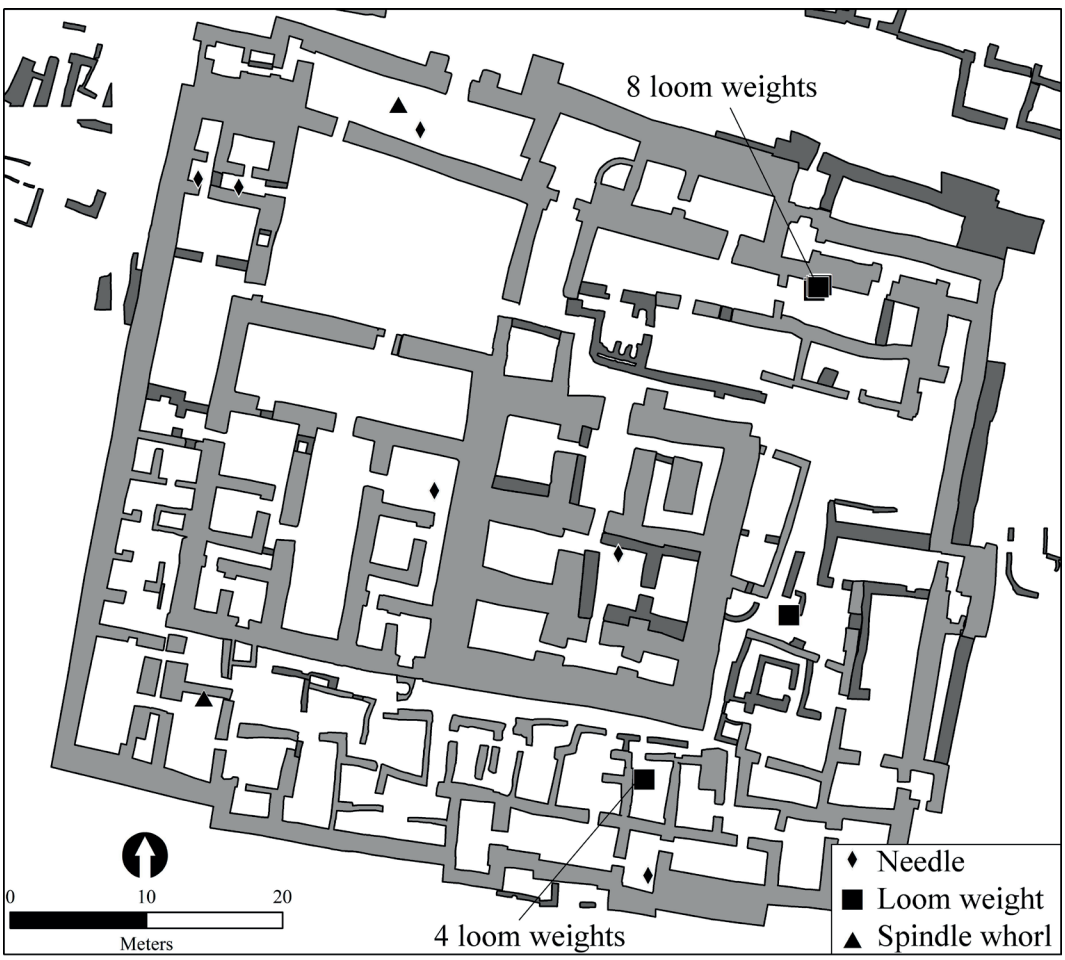


Fig. 4.13: Distribution of clothing related tools from floor level deposits in the *dunnu*.

Many fragments of pin-shaped bronzes were found in refuse layers but it is impossible to attest their original shape and function. The distribution of clothing related tools in the *dunnu* from floor contexts demonstrates that only a small amount of these objects were deposited (figure 4.13). This can mean either that pins and needles were curated and taken good care off, or that the objects were simply not used as much inside the *dunnu* walls. It can be assumed that small needles and pins were easily lost on house floors if they had been used there frequently, but the evidence suggests that this has not occurred. This might be an indication that the spaces within the *dunnu* walls were not often used in the domestic sphere.

Two concentrations of loom weights suggests that some clothing production however did occur within the walls of the *dunnu*. The clustered occurrence of the loom weights indicates that they were most likely used in the particular room they were found in or on a higher storey (see paragraph 3.3.6 and 3.6.7). It is however also possible that the objects were merely stored here.

All in all, evidence for cloth production and repair is limited to small groups of objects inside the *dunnu* walls. Several needles which were found in the deposits described here could also be used for personal ornamentation as hair or clothing pin. It is plausible that clothing was created and repaired within the domestic sphere. This evidence suggests that residential areas were located outside the *dunnu* walls.

The textual evidence does not offer much additional information. From a letter from Ili-pada to Tammitte in which the vice-roy demands new clothes and fresh linen for his bed, we can deduce that these articles were either produced or stored at the *dunnu* (Wiggermann 2000: 173). This is however the only textual attestation of this practice. Wiggermann assumes flax was imported, wool was not used so much and that leather work was probably used mainly for the production of war chariots (Wiggermann 2000: 175; 198; 200).

4.3.5.4 Stone working

Although the majority of objects from the *dunnu* are made of stone, not much evidence exists that these objects were also produced here. It seems that at least the large objects such as grinding stones were mainly produced at their place of origin. Small object were produced in the *dunnu* however. As was published before (Akkermans and Wiggermann 2015: 94) outside the *dunnu* walls a bead production workshop was excavated with hundreds of unfinished and damaged beads. Although this area was unfortunately not part of this research, a small subset of evidence for bead production was found within the walls as well. In a ceramic container which was found in one of the ovens in the kitchen structure in the north a bead maker's toolset was discovered (see paragraph 3.3.4). The toolset consisted of several unfinished beads of colourful stone and some small flint and bronze implements with which to carve and perforate them. Why they were deposited here is not clear, especially since the associated finds in the room seem completely unrelated.

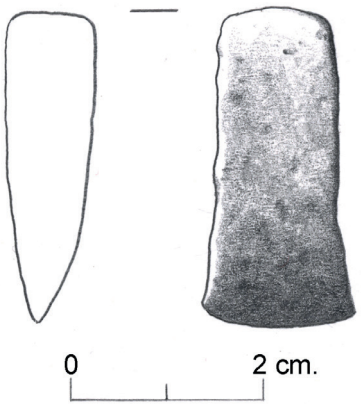


Fig. 4.14: Small bronze axe or wedge from Level 5 of the *dunnu* (fig. by R. Timmermans).

4.3.5.5 Woodworking

Although only five objects were recorded which were probably tools for wood working, it stands to reason that this activity was very important. Much of the architecture such as the roof beams and doors as well as furniture was probably constructed of wood and many tools were constructed of this material or hafted with it. Also the five woodworking tools were probably hafted in wood. The assemblage consists of two chisels, an adze and three axes (figure 4.14). One chisel and one axe were made of bronze, the other objects are made of stone. Unfortunately, none of the objects were found in primary contexts so not much can be said about the location of use. It could be expected however that in many locations in the *dunnu* woodworking may have taken place. Whether this also occurred in specialized workshops has for now not been attested yet.

4.3.6 Administration

To the delight of the excavators of Tell Sabi Abyad a large number of cuneiform tablets were discovered in the *dunnu*. Especially the deposits which were related to the 'office of Tammitte' (Akkermans and Wiggermann 2015: 99), containing some 137 tablets, were mentioned often in this regard. Although this constitutes by far the largest concentration of tablets, other tablets were found throughout the *dunnu* in a variety of contexts (figure 4.15). In this section I will discuss only those contexts which were part of the research at hand, from Level 5. Some tablet contexts are therefore disregarded here.

4.3.6.1 Archaeological issues concerning administration

As discussed in detail in paragraph 3.2.4 the area known as the 'office of Tammitte' has yielded a large amount of tablets which were mostly discarded there as secondary refuse. This is most clearly demonstrated by the spatial distribution of refitted fragments of some tablets. These fragments were widely scattered throughout the deposit. Additionally, the objects were located in a soil layer which was deposited to level the area for a new floor higher up. Therefore it is implied that the objects were deliberately discarded to be gone permanently.

At least two other contexts are very similar. In the south-west of the *dunnu* a large corpus of small tablets belonging to baker Paya were found. Although the area was probably indeed used by this man, the deposit they were found in indicates that they were discarded as part of a levelling layer on top of a floor. The second similar context is found in the 'east office' (see figure 4.15). A number of tablets were discarded in this area which was interpreted as an office or residential space. Also here a large number of tablets were found on the floor. Although the space may have been used for administration purposes, the deposit represents the purposeful discard of the objects, not necessarily their use.

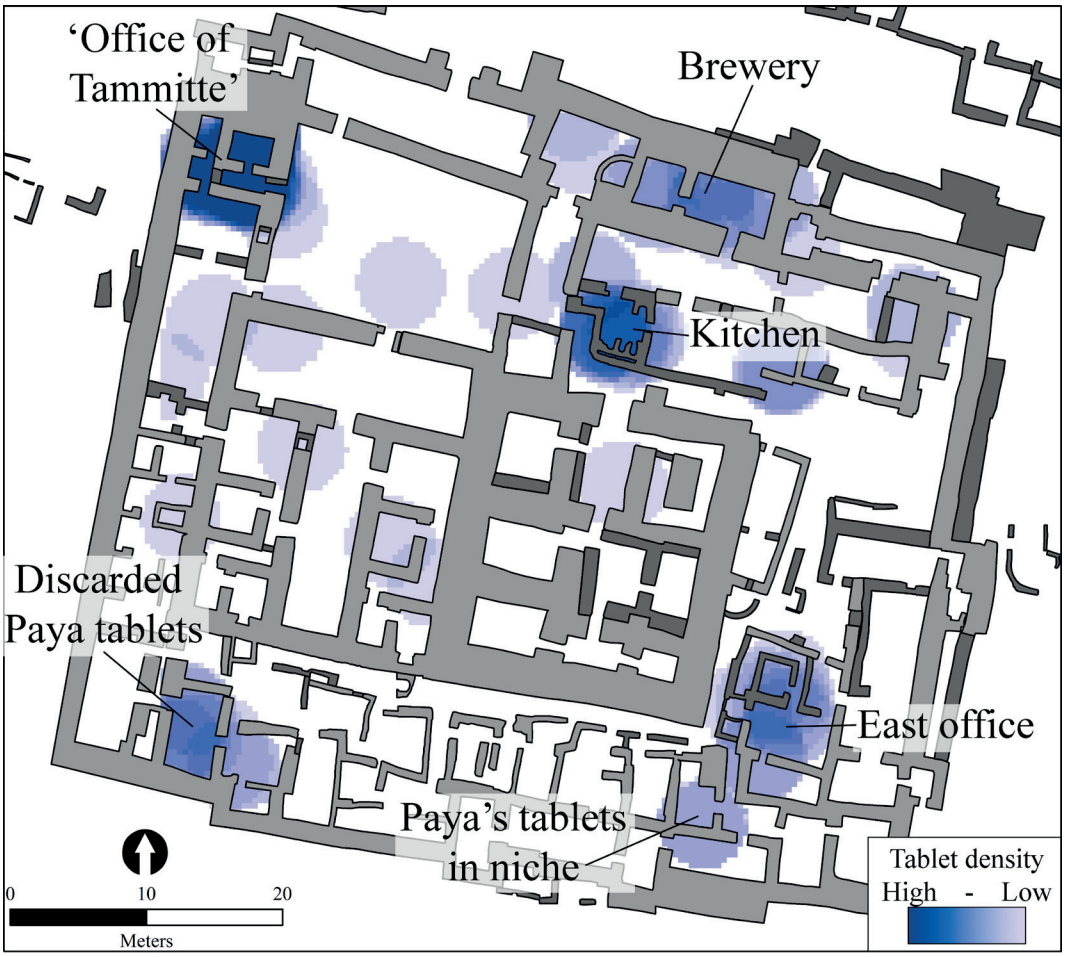


Fig. 4.15: the main tablet contexts from the Level 5 *dunnu*.

Tablets were however also found in other deposit types. In the north of the *dunnu* two main concentrations of tablets were recognized. The first is a large collection of objects in what is known as the kitchen. In this room a number of fire places were constructed along the walls which could be used to cook large meals. The tablets were found among a large collection of artefacts such as pottery vessels but also some remarkable objects such as spear heads and a bead maker's toolkit. The concentration of tablets may have ended up here as secondary refuse but also may have fallen from a higher storey, although the latter interpretation is less likely given the presence of fire places in this room because these suggest that it was an open space.

Due north of the kitchen three rooms were once used by a local brewer and contained tablets in several separate contexts (the 'brewery'; figure 4.15). The first space was located in front of the former entrance (area 1 of the north-eastern sector). The two other rooms were located to its east, and form a small apartment or office (area 2 of the north-eastern sector). The former gate was probably used as a place to distribute and store beer and the two connect-

ed rooms for brewing, storage and administration. Most of the tablets which were found in these rooms were part of refuse deposits but some tablets were considered to be deposited in a different manner. Most notably several small complete tablets which were found in the middle of the office or apartment may have been part of an abandonment or catastrophe deposit (see paragraph 3.3.3).

Almost all smaller concentrations and single occurrences of tablets in the *dunnu* can also be ascribed to processes of discard. In the southern part of the *dunnu* however some tablets, also dealing with Paya the baker, were found in a niche in a wall (see figure 4.15). This context is part of area 5 of the south-western sector which consist of two rooms which were interpreted as the office or apartment of Paya (see paragraph 3.6.6). Extensive fire damage to the floor and features in these rooms seems to indicate that the abandonment of the rooms is correlated to a large conflagration. It could be argued that the fire was the cause for abandonment and that the objects in the rooms were deposited as a catastrophe deposit. The tablets from this context were discovered in a niche in the wall which was interpreted as a wall safe. Whether this means that the objects were kept here behind lock is not sure however, it may have been a simple open niche in the wall similar to the examples from the central building (see paragraph 3.5.2). In both the kitchen and the office of Paya the objects were apparently left in the space they were used.

As follows from the many tablet-rich contexts from the *dunnu*, the vast majority of recovered tablets was deposited as refuse, often as part as levelling layers. A few examples suggest an unintentional deposition process such as the catastrophe deposit in the wall safe.

The deliberate discard of tablets in the *dunnu* is in contrast with the previous interpretations of these contexts. It was assumed that the tablets in the 'office of Tammitte' for instance were left behind during rapid abandonment. It was inferred that a sealing which was discovered in the same area was used to seal a box which would have contained the tablets (Wiggermann 2010: 22). The resulting interpretation of the assemblage as an 'archive' can therefore be considered essentially erroneous. The objects which were discarded most likely represent a carefully chosen selection of tablets from a larger archive which endured.

This new interpretation of many tablet contexts does not only affect the interpretation of the cluster of objects itself. It also means that the buildings they were found in do not necessarily equate to the location of their use. The term 'office' is therefore not a viable interpretation if it is solely based on the presence of tablets. However, in the *dunnu*, many large tablet concentrations are related to buildings with a seeming residential or official function.

Additionally, many large tablet concentrations seems to possess a certain degree of internal coherence. The 'office of Tammitte' for instance only yielded tablet related to Tammitte. The same applies to the concentrations in the south, which are solely the property of baker Paya. This indicates that the tablet concentrations were deliberately discarded by their owner, probably in a space in which they lived or worked. Also, it can be assumed that an administrator would not carry the tablets to a remote location for simple discard.

It is therefore likely that these rooms were indeed used for administrative purposes in concord with the tablets. The presence of at least three 'offices' may therefore be postulated within the *dunnu* walls. The original 'office of Tammitte', the former brewery in the north and the residential structure in the east.

A last potential 'office' is that of Paya. Although the majority of texts dealing with this baker were found in a levelling layer in the west of the bread baking area, the few tablets which were located in the niche in the wall can be considered to be a more secure context. As this location was also interpreted as an office or residential space based on other finds, it is likely that this was the location where also other administrative dealings of Paya were carried out.

4.3.6.2 Textual evidence

From the tablets from the *dunnu* a large variety of administrative practices is revealed. Many documents speak of internal matters such as the amount of available workmen or distributed bronze sickles. Other documents are more formal in nature and detail contracts and treaties between groups and individuals, or deal with customs. These are grouped below under the heading legal issues. The final category of tablets are letters between officials in the Assyrian system.

Many of the internal business documents were discussed above in paragraphs of the themes they deal with such as agriculture or production processes. To elucidate some of the administrative practices which were common in the *dunnu*, a selection is made here. Among the internal documentation, several small receipts, written by chief baker Paya, were found in the southern spaces of the *dunnu*. As these detail day to day transactions with the baker, in the past, hundreds of these documents must have existed (personal communication F. Wiggermann). The same issue was demonstrated for the brewer, who would keep track of daily deliveries (Wiggermann 2000: 175). Although the vast majority of the original documents are missing from the archaeological record, the indication for these practices is sufficient to assume that during their lifetime, the administrators of the *dunnu* were in constant check of what was going in and out of the *dunnu*. The fact that the local brewer and baker were able to keep track of business themselves would suggest that they were an integral part of the bureaucracy. It has been argued before that many people outside of the elite were literate to a certain extent (Charpin 2010a; 2010b). For the brewer and the baker of the *dunnu* this may have been limited to knowledge of a small corpus of cuneiform signs which were required for their administration. They were not proficient enough to read and write complex letters and literature, but could read and write inventory lists and receipts, a level of literacy known as functional literacy (Veldhuis 2011). This is, however, more than sufficient for the day to day dealings and, in turn, indicates that they had a certain degree of autonomy. However, as a letter from Nāsir-Nabû to Tammitte shows (see below), with autonomy comes responsibility. And poor performance may result in severe punishment.

Other internal issues are mainly tallies of people, animals and crop yields. A Tell Sabi Abyad text listing various types of dependent personnel shows that several of them served the administration of the *dunnu* (Wiggermann 2000: 190). Among these were probably at least a number of scribes.

4.3.6.3 Legal issues

In many cases it seems that the *dunnu* was not only a 'home away from home' for the grand vizier but it also served as an 'office away from office'. People would travel to Tell Sabi Abyad, sometimes for hundreds of kilometres, for matters concerning justice, inheritances or help with other cases. At one point a widow from Suadikanni on the Habur beseeches the vice-roy to let her retain the slaves of her deceased husband and that they are not given away to others. In return she offers the king a bearded (uncastrated) slave (T97-2; Wiggermann 2010: 38).

In another case a princess is bribed in an equal way: *"1 male donkey three years of age, owed to Princess Epirat-As[sur] by Sin-u[…], son of Eriba-Assur of Suadikanni. This donkey is the gift; (when) she (the princess) has settled his case, she may take her gift into possession. (Contract settled) in the presence of: Gelzu, son of Alahu, Asiru son of Siniy[a], Bel-ahisu, scribe, son of Assur-Dameq. Month Muhur Ilani, day 6, limu Sunu-qardu."* (T97_005; Wiggermann 2010: 20; translation from Dutch by author).

Other issues which were dealt with in the *dunnu* concerned customs. As the *dunnu* was located along a caravan route, in the settlement many items were cleared and sealed before they continued their journey into Assyria proper. This work was usually the responsibility of the steward of the *dunnu*. That this job should be taken serious is apparent from the following letter steward Tammitte received: *"Speak to Tammitte, thus says Nāsir-Nabû: (react) as soon as you have read my tablet. Earlier I gave you the following instruction: 'caravans which come to me from Karkamiš may not pass without your consent and (I added) seal all wares.' Now I have heard that caravans have (in fact) set out towards me (and I repeat) 'whichever caravans come to me, be they of Ilī-padâ, of the princess, or of the nobles, seal everything.' I have also heard that they are carrying balsam; (if) any balsam is missing, you […] to be executed."* (T93_020; Akkermans and Wiggermann 2015: 120).

Merchants from many foreign countries visited or passed the *dunnu* on their way to the Assyrian heartland. On these occasions sometimes the locals would also do business with these traders: *"a healthy woman […], who Zikkar-Kakke, servant of Abu-Izzan, is owed by Ili-rabi, [merchant?] from Canaan. When he returns from Assur, he shall bring the woman and hand her over, and [then he can keep] his cleared goods. When he does [not] bring the woman, then [his] cleared goods will be kept [as] deposit. (Contract settled) in the presence of Abu-izzani the governor, [and] Ellati, the en[voy] of Emar; Belu-rabi, son of Hanuma; Eriba-Marduk, scribe."* (T93_020; Wiggermann 2010: 33; translation from Dutch by author).

A large proportion of tablets from the *dunnu* concerns the correspondence between the vice-roy and the steward and between the steward and subordinates. In nearly all cases the letters contain orders from superior to subordinate.

4.3.6.4 Conclusion

From both the archaeological as well as the textual evidence it seems that administration was an important aspect of daily life in the *dunnu*. Not only the highest officials were literate but also the brewer and main baker kept a careful administration. When at some point in time a part of the archive had to be disposed of, considerable care was taken to discard the objects permanently in construction layers.

Clearly the work in the *dunnu* was closely controlled by the authorities. Tallies of people, rations and tools indicate that the people in command kept close check on the income and outgoings of the *dunnu*. Perhaps the administrative duties were not carried out by every individual but it did affect the life of every person in and around the *dunnu*.

4.3.7 War and peace

Because of its moat and high thick walls, the *dunnu* of Tell Sabi Abyad has often been termed a fortress or fortified settlement, highlighting the military aspect of the site. Additionally, the conflagration which occurred in the monumental residence was viewed in the same vein. That the *dunnu* was no stranger to violence is evidenced by the discovery of a mass grave containing five adults who were unceremoniously buried in a shallow pit. The exact cause of death of the interred individuals is not clear but the manner in which they were buried suggests that they were either executed or died in combat (Akkermans and Rossmeisl 1990: 23-24; Düring *et al.* 2015: 34).

If military actions were indeed played out here, one would suggest that many finds would corroborate this notion. In contrast, among the registered objects not many violence-related items were found. The textual evidence on the other hand does offer important insight to this matter.

Fig. 4.16: Distribution of weaponry in the Level 5 *dunnu*.

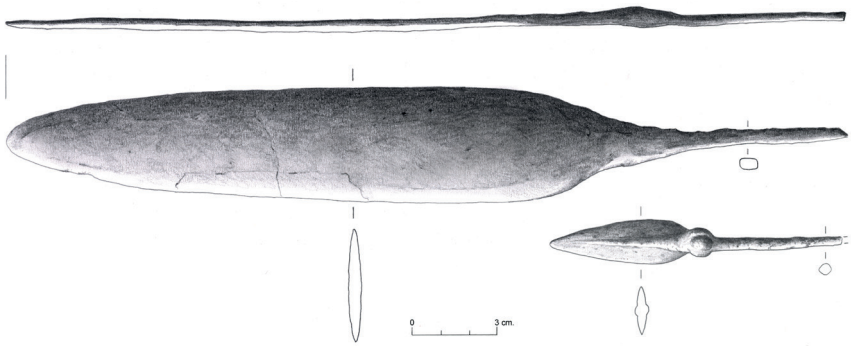


Fig. 4.17: Spearhead and arrowhead from the Level 5 *dunnu* (fig. by R. Timmermans).

4.3.7.1 Archaeological evidence

Four types of weaponry were discovered among the horizons discussed here. 11 arrowheads, four spearheads, two daggers and a possible stone mace-head were found (figure 4.16). Most arrowheads are very alike, on average they measure 7.9 centimetres in length, and are winged with a slight bulge at the convergence of blade and shaft (figure 4.17). Spearheads are longer blades, two of them are 13 and 14 centimetre in length, the two others are longer and measure 24 and 28 centimetre in length. Their width varies from one to two centimetres (the smaller ones) up to four centimetres for the larger individuals.

The two daggers which were found in the *dunnu* differ significantly from each other in shape and size. They are however both long blades which probably served a military purpose. The longer of the two measures 28.6 centimetres in length and 2.5 in width, the shorter 15.7 by 2.5. The shorter blade was broken in the past and may have originally been significantly longer. The daggers would have been hafted with for instance wood or ivory which would have left a blade of slightly over 20 centimetres. Another weapon which was found at the site is a possible mace head. It is made of stone, is largely spherical and used to have to protuberances on either side (figure 4.18). Although it is possible that the mace head is Neolithic in date, there are Middle Assyrian bronze parallels known as well (Curtis and Ponting 2013: fig. XCVI, no. 1195).

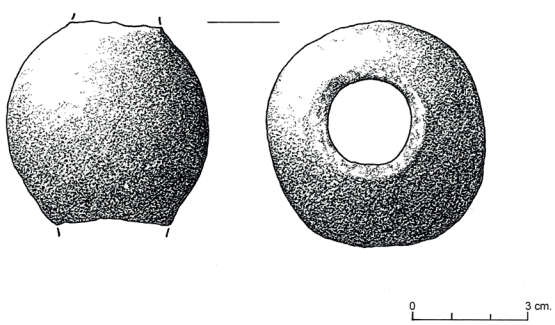


Fig. 4.18: Mace head from the Level 5 *dunnu* (fig. by R. Timmermans).

The spatial distribution of arrowheads throughout the *dunnu* does not indicate clear patterns, it is rather uniform. As most of these small arrowheads were found in refuse deposits, it is likely that they have been lost. This is a far less plausible explanation for the presence of the larger metal objects, the spear heads and the daggers. The contexts of the spearheads are quite uniform, they have all been found in the corner of a small room, where they were probably kept. The objects have therefore probably been left behind at abandonment, which suggests that they were not owned by any individual and perhaps were part of the *dunnu* 'furniture'. The two daggers, as well as the mace head, were found close to the outer wall of the *dunnu* and are suggesting of their role in defence of the settlement. Possibly the weapons were left on the battlements by guards patrolling the wall.

All in all the weapons which were left behind in the *dunnu* suggest that the settlement was well equipped with weaponry. People living inside the *dunnu* possibly possessed their own set which could be taken up in the case of a local violent dispute.

4.3.7.2 Textual evidence

As mentioned above, the leather produced at the site was mostly used in conjunction with the production of chariots (Wiggermann 2000: 198). There were also many horses kept in the settlement, undoubtedly for use by the military. The *dunnu* also serviced armies on the move in other ways, according to text T98_119 Tammitte is owed 164 sheep by the "governors of the land Harran" after he supplied the passing army of Ili-pada with food (Wiggermann 2000: 200).

In some sense the *dunnu* could find itself in the middle of the fray. Many hostages were recorded to be kept in the *dunnu* (Wiggermann 2000: 185) and much of the intelligence work performed by local pastoralists was passed on within the *dunnu* walls before being dispatched to the grand vizier (Wiggermann 2015: 119). A letter to Ili-pada will serve as an example: "To Ili-pada my lord, a notice from Ahu-Illaka, your servant. I obediently kneel before you and put my life in the hands of my lord. The stronghold, the troops and the sons of my lord are all in good order. The Suteans who from (the hills of) Hanigalbat have descended (south) I have questioned, (and they said): 'all (of our permanent) settlements are in good order'. No Assyrian has descended (south), therefore I could not ask anyone for news. Month Sin, 13th day, *limu* Adad-ban-kala" (T04_013; Wiggermann 2010: 38; translation from Dutch by author).

The dispatches apparently did not come often enough according to the vice-roy: "Have you forgotten me, or have you left? (…) News about the Hittite empire, the surrounding lands, and all (other) news you hear, send me at once a dispatch about these; and also send me some fruit" (fragment from T98_034, a letter from the grand vizier to Tammitte; Wiggermann 2010: 39; translation from Dutch by author).

4.3.8 Storage

4.3.8.1 Large scale grain storage

Products which were imported or produced in the *dunnu* had to be stored somewhere before use or export. Several architectural features such as the 'silo' built against the north wall of the central building (Akkermans 2006: 204; Fantone 2015: 224) were interpreted to have stored large amounts of grain. The agricultural yield of the lands surrounding the *dunnu* was estimated at 1 million litres (Wiggermann 2000: 195). This amount would have far exceeded the storage capacity of the known silos from the ground plan of the *dunnu*.

Clear evidence for the storage of grain was found in the residence, where large quantities of charred grain were found in the courtyard. Although this constitutes the most dramatic evidence for storage, it is unlikely that it was the main function of the building. The residence most likely did function as a residential structure in the first stages of its existence and can therefore not be viewed as the main storage facility of the *dunnu*.

In a recent publication it is suggested that the higher floors of the central building would have perhaps carried the weight of agricultural surplus (Klinkenberg and Lanjouw 2015: 172-3). In this article it is argued that the extreme thickness of the walls if the central tower must have carried a large weight. As this thickness is not necessary for additional floor levels on top, the 3D model which was created illustrated the roof of the structure as the main storage space of the *dunnu*. Although the open character of the reconstruction of the top structure should perhaps be reconsidered, the notion of the building as central storage facility remains viable.

Fig. 4.19: Distribution of jars, pot stands and the density of jarstoppers in the Level 5 *dunnu*.

4.3.8.2 Artefact evidence for storage in the dunnu

Other types of storage have also been attested in the *dunnu*. In particular the presence of large jars and the clay jarstoppers which would have sealed them are indicators of storage of liquids and foods. Because large storage jars could not stand on the ground by themselves, so-called pot stands were used to support them. These circular ceramics were positioned on the floor and jars or pots could be placed on them. Their presence in a room may therefore indicate that also large storage jars were present once. The distribution map below indicates a concentration of jars in two areas in the south and in the central building (figure 4.19). Also the location of pot stands is indicated. The density map which is plotted in the background indicates the amount of jarstoppers which were found in the settlement. Only one clear cluster of pot stands is visible. This cluster is located in the north. Other pot stands were found in a wide distribution, mainly in the eastern half of the *dunnu*. Interestingly, the largest cluster of jarstoppers was found in between the two jar concentrations in the south. Additionally, none of the recorded clusters have a spatial overlap with each other. In other words, the three discussed artefact types were not deposited in the same places.

This evidence is not without problems however. Storage jars were fairly large, and their size means they are easily fragmented in the archaeological record. Most of the jars which were deposited in the *dunnu* were therefore probably not recorded as object. Many have been reconstructed during pottery processing post excavation, but their exact location and context was not recorded. Another problem is in relating the presence of jar stoppers with local storage. Although this artefact class does clearly relate to the closing and sealing of storage jars, their (broken) presence in the local context indicates *de facto* that sealings were broken, and conse-

Fig. 4.20: Distribution of bins in the Level 5 *dunnu*. The bins are indicated in black.

quently, jars were opened, not closed. Therefore, the presence of jar stoppers perhaps indicates that a certain space was used for the inspection of imported goods. Perhaps, considering their location in a bread baking area, ingredients which were used for bread baking were received and opened here.

As mentioned above, because of the rounded or pointed bottom of jars it was hard to stand them up straight. Potstands were used to be able to position them in any given location. For the bulk storage of many jars however, they could also have been placed against a wall. In room 6 of the central building a large amount of storage jars were found, probably set in a shallow trench which was dug along the wall (see paragraph 3.5.4). Likewise, the largest concentration of potstands was found in a context in which they are related to the process of beer brewing. In area 3 of the NE sector these objects were thought to have held the jars which contained beer. The most likely destination for the jars is the adjacent room where evidence for beer consumption was indeed found. Not indicated in the distribution maps below are a number of fragmented jars which were found in this "café". These were not recorded as objects unfortunately but clearly visible on photographs (see paragraph 3.3.3).

Another form of local storage can be deduced from the presence of clay and mudbrick bins. These features were constructed throughout the *dunnu*, often in the location of ovens. In a short study by Jachvliani (2015), all bins from the Tell Sabi Abyad *dunnu* were mapped and discussed. In this study two bin types were discerned: standard and non-standard. The standard bin is constructed of loam or mudbricks and has an oval or rectangular ground plan. The standard bins on average measure 100 by 72 centimetre with a probable height of 70 centimetre.

Non-standard bins are those which deviate from this general classification. Some walled structures, measuring up to three metres in width, were called a bin for instance. An example of these is the quarter-round structure in the north of the *dunnu* (see figure 4.20). But also other large and uniquely shaped bins fall into this category. There are therefore numerous shapes and sizes represented among the non-standard bins. It stands to reason that some of these bins which are much larger than the standard size, served a different function. Although all these features may have been used for short term storage, the larger examples were perhaps used for the storage of other containers such as storage jars or sacks of grain.

The standard bins were found predominantly in the vicinity of ovens. Some have however also been found in spaces which are empty of other features. Their function can therefore be found in the realm of food production but it is not restricted to this.

In a practical sense, the standard bins may have been used to temporarily store grain or flour during bread baking or milling. Some may have contained fuel (dung or wood) to build the fire inside the ovens. Other bins, such as the examples found in the entrance court in the north-west of the *dunnu* may have been used to distribute drinks or food to guests. Other interpretations may include that they were used as drinking places for animals such as horses as was suggested for the bins near the entrance gate in the north west (see paragraph 3.2.5; figure 4.20).

4.3.8.3 Conclusion

As mentioned above there is textual evidence for large scale grain storage in the *dunnu*. This was probably kept here to feed passing army groups or tradespeople who travelled along the caravan route which possibly led past the *dunnu* (Düring 2015a: 61). Also locally the harvest revenue may have been used for trade and to feed employees. Lastly, the crops may have been used to feed cattle and equids at the site which seem to have been kept in large numbers, perhaps for breeding purposes (Cavallo 2002).

Both long term and short term storage is attested at Tell Sabi Abyad. Long term storage was possibly carried out in the higher storeys of the central building while short term storage was aided by the large amount and variety of bins within the *dunnu* walls. Additionally many ceramic storage vessels were produced and used in the settlement. Although the standard bins had a volume of about 500 litres, they were not easily closed off and rather crudely built. Therefore these were probably used mostly in conjunction with activities around them. In some cases for instance bins would have held the grain which needed to be milled. In other cases the bins may have contained fuel for ovens and hearths.

The fact that the *dunnu* potentially contained so much foodstuffs perhaps indicates that the settlement was in part a 'warehouse' (Düring 2015a: 60), but, following the archaeological evidence from within the walls, a large part of the storage facilities in the *dunnu* (the bins) were mainly used for local production and consumption.

4.3.9 Domestic life

Apart from work, there was also time for rest and pleasure in the *dunnu*. Several structures in the analysis in chapter 3 were interpreted to have functioned as domestic areas at some point. In particular areas which included a bathroom were considered to be apartments or offices. Traces of activities such as sleeping are however difficult to find, and most identified residential areas were probably inhabited by high officials. The layout of the *dunnu* has in some cases however revealed the possible presence of smaller apartments. Perhaps these were used by staff members and their families (see below).

4.3.9.1 Sleeping and general living

Including the monumental residence, five clear residential structures were found. These could be recognised based on their clear spatial structure and the presence of bathroom facilities. Because of their formal layout and the presence of administrative documents in many of these areas, these apartments have probably been used for official business. This does not exclude the possibility that the family of the official resided here as well however.

The apartments which were found in the *dunnu* were all laid out with a similar pattern. All apartments included a room which could be used for sleeping and reposing, with a hallway attached which lead to a small room which in turn led to a bathroom (figure 4.21).

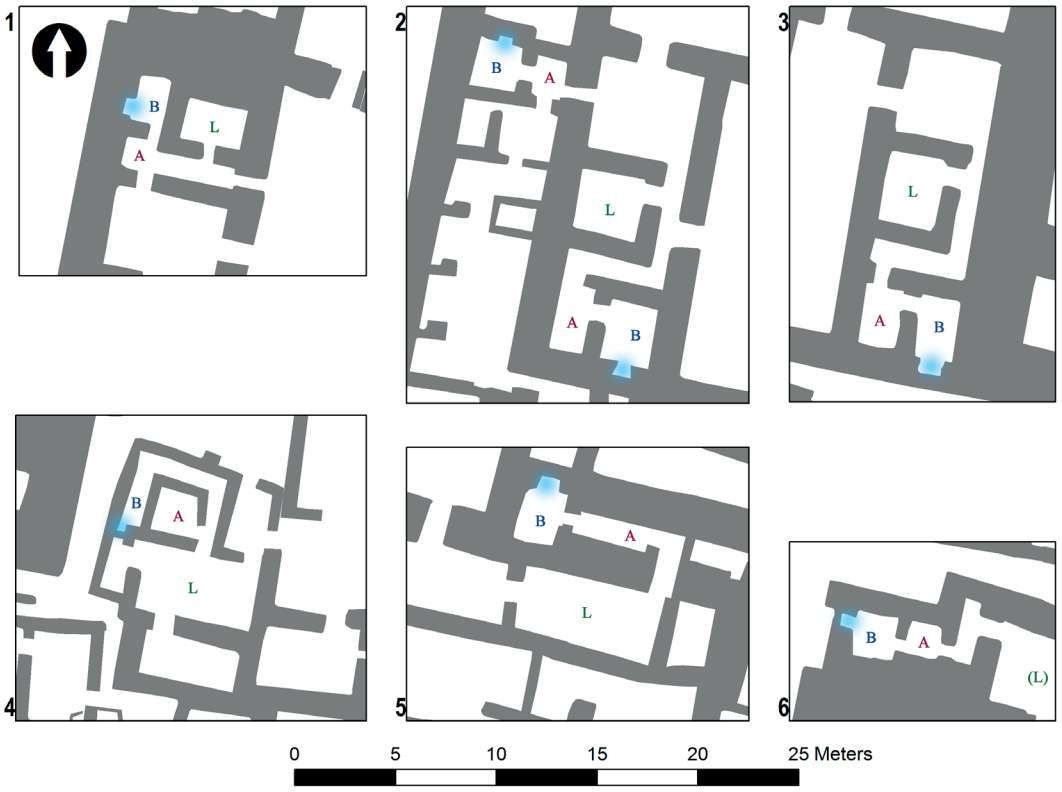


Fig. 4.21: The apartments inside the *dunnu*. 1: The 'office of Tammitte' (area NW 3); 2: the western apartment of the monumental residence (area residence 2); 3: the eastern apartment of the residence (area residence 4); 4: the office/apartment in the south east of the *dunnu* (area SE 3); 5: the bathroom structure in the north east of the *dunnu* (area NE 5); 6: the bathroom structure associated with the entrance court in the north west (area NW 4). The letters indicate the functional characteristic of the room: A = anteroom, B= bathroom, L = living room.

Six apartments were identified in the *dunnu*. Two were located on either side of the monumental residence and had very similar constructions (figure 4.21: 2 and 3). These two apartments were particularly large compared to the other examples at the site. Interestingly, the layout of the bathroom structure was apparently so important that when a new bathroom was constructed for the western apartment, its new construction also was comprised of an ante room and a bathroom.

The area which is often called the 'office of Tammitte' is a much smaller structure (figure 4.21: 1). Although it also consists of a living room, a corridor, an ante room and a bathroom, all these rooms are constructed on a smaller scale. This is possibly due to the fact that it was constructed in between pre-existing walls, restricting the available space. Also the bathroom structure in the north-east of the *dunnu* was constructed using existing architecture. This perhaps explains the extensive length of the hallway which leads to the bathroom (figure 4.21: 5).

The apartment in the south-east is slightly different from the other apartments in layout, in that it does not contain an ante room through which the bathroom is reached but an extra-long corridor to distance the bathroom from the 'living room' (figure 4.21: 4). In every apartment a bend was present in the route from living room to bathroom. This would have provided extra privacy in the bathroom probably. What the ante room was exactly used for is unclear. In some cases it seems like this may have been used to change clothes.

The bathrooms were fitted with waterproof floors, plinths, a toilet feature constructed with mudbricks as footrests and a pipe running through the wall out of the room. In some bathrooms, next to the toilet, a vessel was dug in or placed on the ground. This would undoubtedly have contained water with which people could clean themselves. The sewage ran into a cesspit located on the other side of the wall, except for the 'office of Tammitte' where the sewage pipe ended in the moat outside the walls.

One extra bathroom structure was located next to the entrance court in the north. This structure was also arranged in the order room – ante room – bathroom (figure 4.21: 6), but was significantly smaller than other apartments in the *dunnu*. It was suggested this was used as a place for refreshment for the administrator or guards who were on duty in this courtyard (Wiggermann 2010: 22).

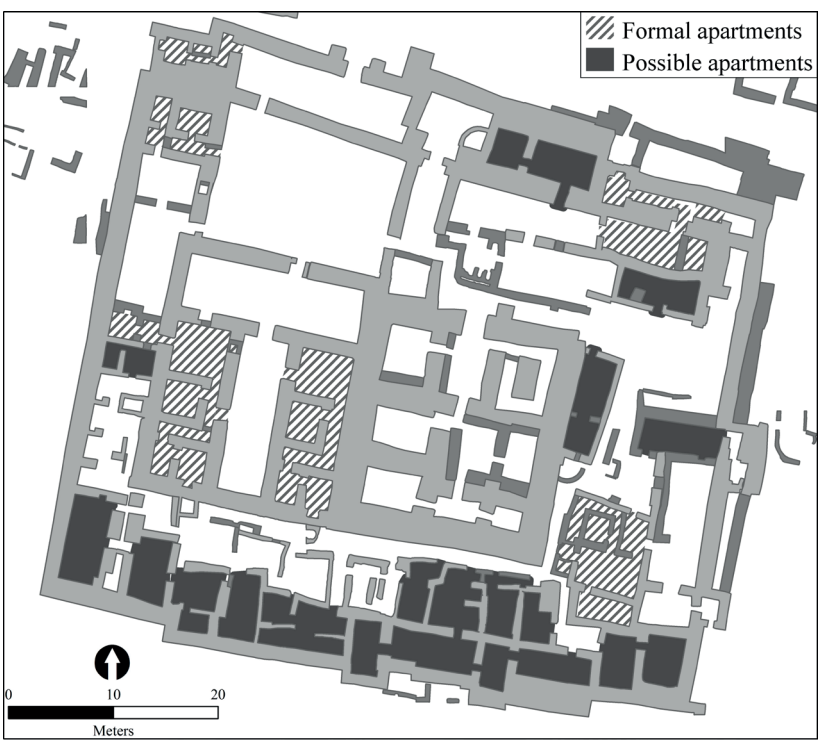


Fig. 4.22: Location of domestic spaces in the *dunnu*. The 'formal' apartments are described before, the 'possible apartments are the spaces which may have functioned as domestic space.

Apart from the few identified apartments, the amount of evidence for production processes in the *dunnu* indicates that the ground floor of the settlement was mostly used for labour activities. Particularly in the south however, several areas could be used for domestic purposes. Perhaps these areas were used as apartments in conjunction with the use of ovens and bins in this area. Figure 4.22 indicates the potential areas which could serve as an apartment. The total amount of floor space from the domestic structures indicated as 'possible' apartments is 400 square metres.

In addition to the domestic structures on the ground floor, also the higher floors and roofs of the settlement could be used for domestic purposes. Taking the probable extent of roofed structures in the *dunnu* as a basis (Lanjouw 2016), approximately half of the area between the outer wall and the two central buildings, more than 1000m2 was available. With an estimated 60 people inhabiting the enwalled precinct of the *dunnu* (Wiggermann 2000: 191) a maximum of 23 m2 would be available per person, or with an average family size of four, around 93 m2 per family. These rather high numbers may indicate that either the original calculated amount of people inside the *dunnu* was too low or that not the entire roofed area of the *dunnu* was used for habitation. Additionally, probably not all of the areas which could be used for domestic purposes were used as such simultaneously.

4.3.9.2 Eating and drinking in the dunnu

The people who lived inside the *dunnu* walls must have consumed the locally produced food and drinks at some point. Pinpointing the location where this happened is difficult for two reasons. Firstly, the location where people ate and drank may have varied through time and secondly, these activities do not necessarily leave many traces in the archaeological record. In fact, if a room was often used for eating and drinking, it is likely that the space was kept clean as well. The central hall of the residence for instance was most likely used to hold large feasts, however, no traces of these dinners were found in the archaeological record.

The evidence for consumption could be deduced from the presence of broken bowls and goblets. Unfortunately, it is often unclear if the pottery with a seemingly clear function also had this use. Carinated bowls for instance may have been used in a large variety of ways. They may have been used in serving out rations, as scoops, or simply indeed to eat food from. Some carinated bowls were discovered with burn marks on one side, suggesting they had been used as oil lamps. It is likely that the bowls were seen as a multifunctional object, which could be used as lamp, porridge bowl, grain scoop, and whatever other use was needed of the object at any given moment. Unfortunately this is a complicating issue in reconstructing activities.

Goblets which have been found in the *dunnu* are less multi-functional due to their restricted shape. Compared to carinated bowls, goblets are also a much less common occurrence in the pottery assemblage of Tell Sabi Abyad. In the deposits which were analysed for this research, 602 bowls and 61 goblets were found. Other drinking-related objects which were found are fragments of bronze straws, filters and small ceramic jugs. The spatial distribution of these drinking-related objects is however also not without problems. The largest concentration

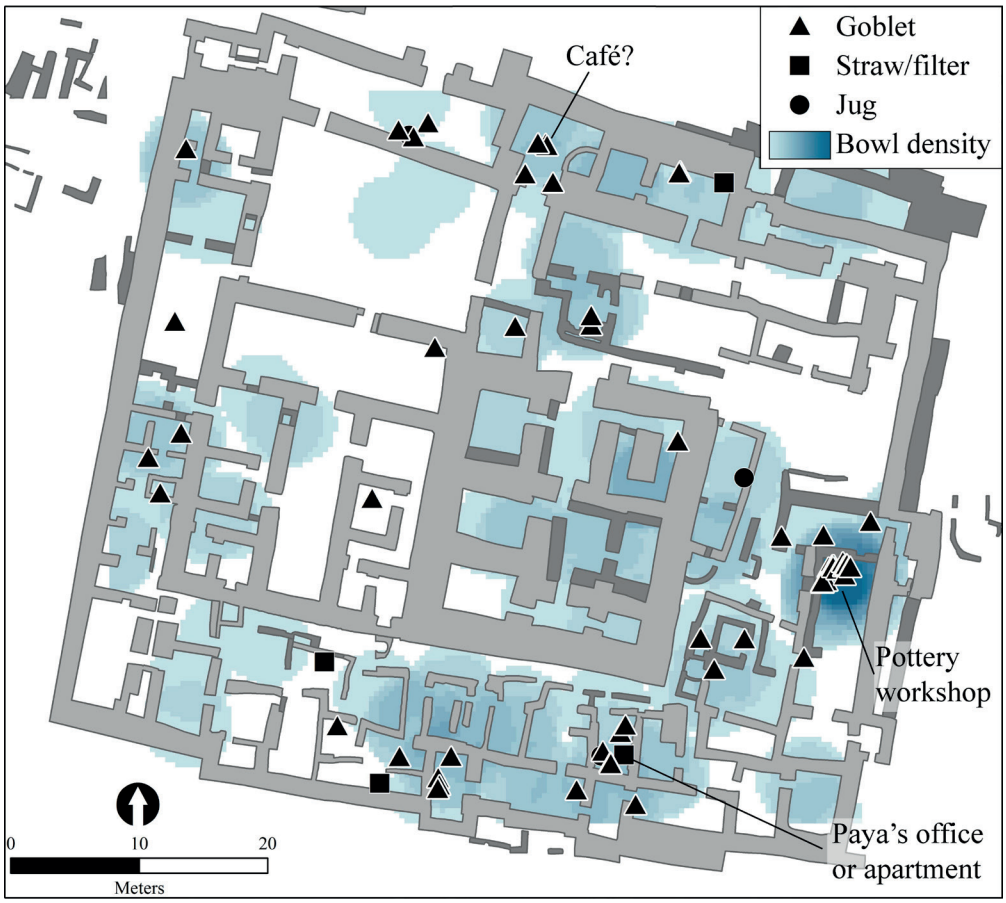


Fig. 4.23: Distribution of drinking related objects.

of goblets is located in a pottery workshop in the east (figure 4.23). These were most likely not used in that location, but they were merely produced or repaired there (see paragraph 3.7.3). Another cluster of drinking-related objects was found in the south of the *dunnu*, in a room which was interpreted as part of the office or apartment of Paya the baker (area 6; see paragraph 3.6.7). These objects were deposited in a complete state on the floor of the room, possibly during a catastrophic fire. It seems therefore likely that the objects were indeed used in that room. Perhaps this was the location where baker Paya drank a beer with his family and friends after a hard day's work. Interestingly, in the area which was interpreted as a café earlier (area 1 of the north-eastern sector; paragraph 3.3.2), only four goblets were registered. Unfortunately, in this space a large number of ceramics were not registered as objects but photographs from the area have suggested numerous drinking and serving ceramics were present there.

In conclusion, although the largest concentration of drinking related objects were found in a pottery workshop, some other areas may still be identified drinking location. Whether all these areas were used as cafés remains unclear. The main concentration of drinking related objects in the south for instance was located in what was previously interpreted as a private apartment.

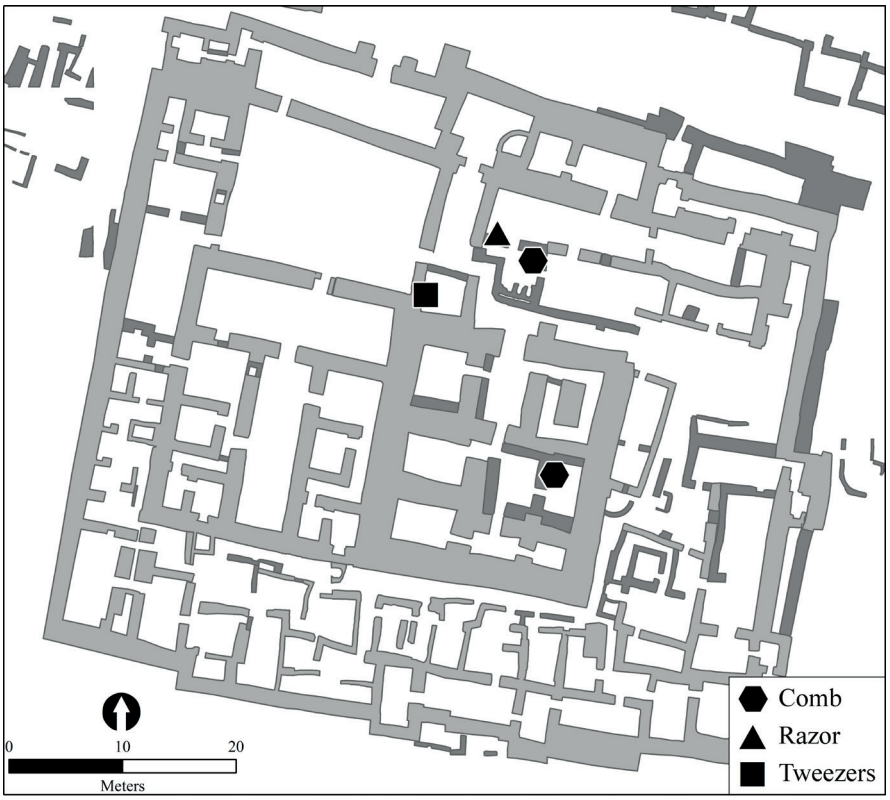


Fig. 4.24: Distribution of combs, razors and tweezers in the *dunnu*.

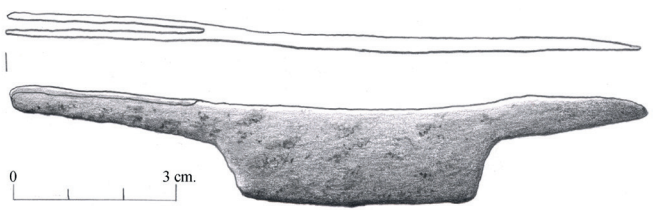


Fig. 4.25: Bronze razor/tweezers tool from the *dunnu* (fig. by R. Timmermans).

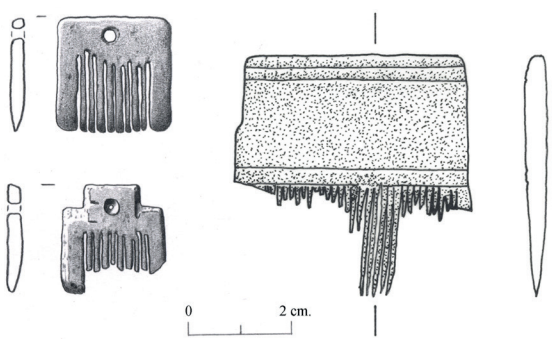


Fig. 4.26: Two bone combs/pendants from the central building (left) and a bone comb from the kitchen (right) of the *dunnu* (fig. by R. Timmermans).

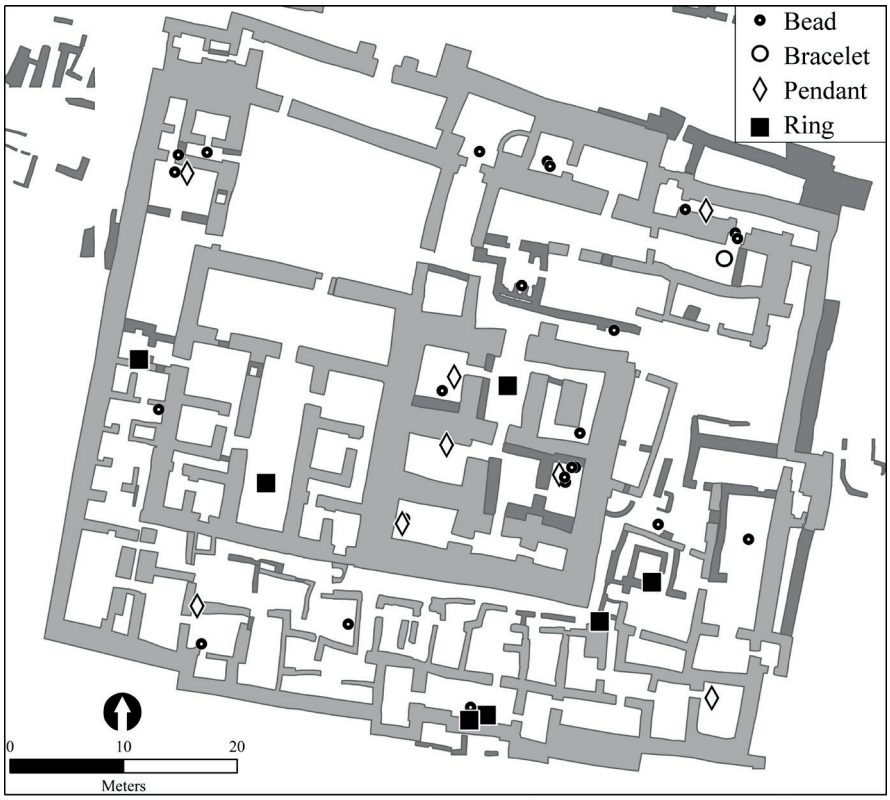


Fig. 4.27: Distribution of jewellery in the *dunnu*.

4.3.9.3 Other aspects of daily life

Although the majority of finds from the Tell Sabi Abyad *dunnu* are related to food production or production processes, several objects hint at the personal life of some of the inhabitants (figure 4.24). Two pairs of tweezers were found, one of which was also fitted with a razor (figure 4.25). Perhaps these were used to epilate facial hair. Three other hairdressing tools were found nearby. In one of the fire places in the kitchen a bone comb was found, and in room 6 of the central building two combs were found (figure 4.26) (Van Hattum 2012).

The occurrence of these objects inside and to the north of the central building may indicate that a barber's workshop was nearby. However, the bone combs from the central building may have had a different use than hairdressing. The combs from this area were quite small and had few but wide teeth, in effect they were unusable. The presence of the two combs was related to the presence of a large number of beads and pendants, some of which were phallus shaped. This has led Wiggermann (2010: 54) to interpret the assemblage as belonging to the official attire of prostitutes. Perhaps therefore these combs should be regarded as pendants. The bone comb from the kitchen does however resemble other known combs (see Wicke 2010: Tafel 31-2 for functioning examples from Assur).

Other objects which were used in personal ornamentation were pieces of jewellery. In all sectors of the *dunnu* beads and pendants were found (figure 4.27). Similar to other objects these objects may have been produced, used or only discarded in their location of discovery. The objects which are indicated in figure 4.27 were all found on floor levels of Level 5 and were therefore probably not part of secondary refuse. Additionally, although a bead making workshop was discovered outside the *dunnu* walls (Akkermans and Wiggermann 2015: 94), nearly no finds inside the *dunnu* walls are raw material, waste, or by products of bead production. Only in the kitchen a grain measure vessel was found which contained tools and raw material for bead production.

All other beads, pendants, rings and bracelets from floor level deposits discussed in this research were therefore probably used as personal ornamentation inside the *dunnu*. It should be noted however that some of these objects were perhaps used for clothing, not necessarily as necklaces. Although it is difficult to indicate the exact mode of deposition of every bead, most of the items indicated in figure 4.27 were probably accidentally lost or caught in an catastrophic event. Of one group this is clearly demonstrated. In room 6 of the central building a large amount of beads were deposited on the floor together with a lot of pottery and burnt remains. These beads and pendants were most definitely part of a catastrophe deposit. However, these objects were most likely stored in that room, not worn (see paragraph 3.5.4).

The single occurrences of beads are more interesting in that respect. These objects were probably deposited through loss. Therefore it is likely that the objects were worn in the location of discovery. A variation in bead distribution through the *dunnu* could for instance signify that certain people were not allowed access to certain parts. The distribution pattern of floor level beads however indicates that there is no significant clustering present. A general emptiness is visible in the north-western sector, in particular in the courtyards of this sector. Perhaps this is related to the notion that this area was not used for a long period of time (see paragraph 3.2.5).

4.3.9.4 Burial

During habitation of the *dunnu*, several people were interred within its confines. A total of 40 Late Bronze Age graves were excavated, which contained the remains of 47 individuals (Düring *et al.* 2015). Of these burials not many were located within the *dunnu* walls. It appears that the burial of dead was particularly undertaken in areas which were not intensively used. During the timespan which is described in this study, Level 5, hardly any people were interred within the walls of the *dunnu*.

The exception to this rule is the cremation burial in the area which was dubbed the 'office of Tammitte'. Düring, Visser and Akkermans (2015: 44) speculate on the idea that the jar may in fact contain the remains of Tammitte himself, a notion which is hinted at by its rich grave goods and location. It is also stressed by the authors that cremation was considered non-Assyrian, so perhaps indicating that a 'foreign' dignitary was buried here. As the name 'Tammitte' is probably Anatolian in origin (Düring *et al.* 2015: 48), he is indeed a clear candidate.

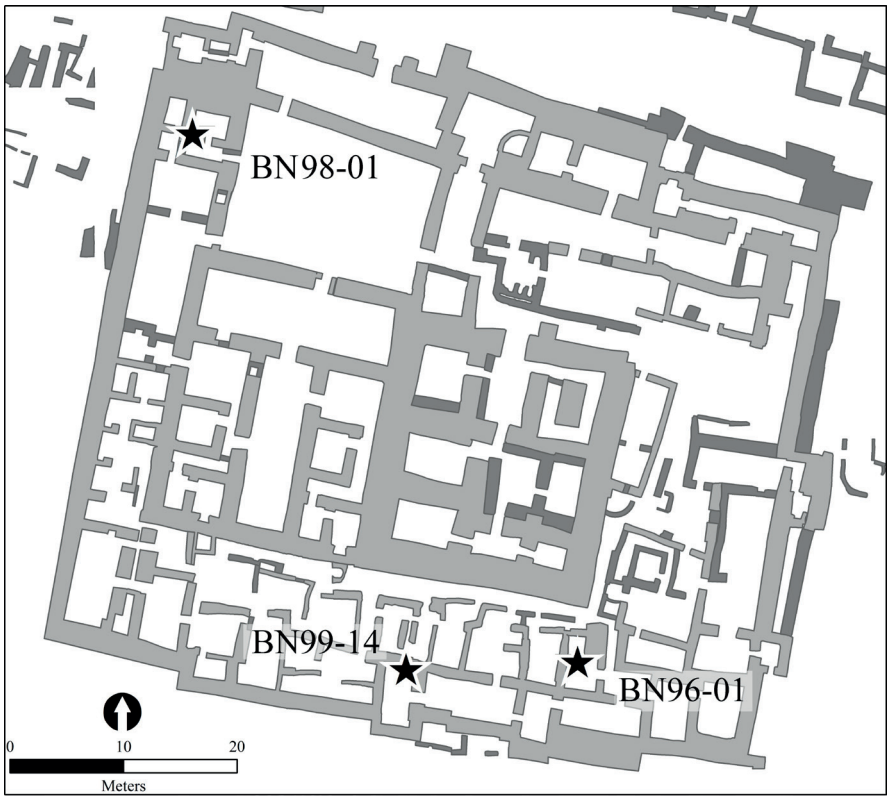


Fig. 4.28: Burials in the Level 5 *dunnu*. BN98-01 is the cremation burial, BN99-14 and BN96-01 are both inhumations dug into deposits covering the level 5 floors.

Other burials which were present in the deposits of Level 5 within the walls of the *dunnu* were buried either before the Level 5 architecture was constructed or after an area was abandoned. In the south of the *dunnu* two burials were discovered which were interred in the deposits which covered the Level 5 architecture (figure 4.28).

Clearly, the spaces inside the *dunnu* walls were not used to burry people during the use of the floors of Level 5. However, both before and after the use of these floor levels in particular the area south was used for burials. As mentioned in paragraphs 3.63 and 3.6.4, several burials were interred in the southern part of the *dunnu* during Level 6. It was suggested that during that time the south-western sector was largely an open space. In figure 4.28 two burials are indicated which were interred into the deposits which covered the Level 5 architecture. These suggests that after the Level 5 architecture was no longer in use, the southern part of the *dunnu* was an open space again, considered suitable for burials.

The lack of burials among the level 5 architecture indicates that the rooms within the *dunnu* walls were most likely in use at the same time for food processing, production processes and domestic use. At least, none of the spaces were used for the burial of deceased people.

4.3.9.5 Textual evidence of domestic life

The evidence about domestic life from the cuneiform tablets from the site is mostly concerned with the Grand Vizier. It can be assumed that the general conditions under which Ili-pada and other royals lived were very comfortable. In a letter to Tammitte he asks for clothes and good linen for his bed in his residence in the capital (Wiggermann 2000: 173). Whether the conditions in the apartments in the *dunnu* were as comfortable as in his main residence is unlikely. However, the apartments which flank the monumental residence are fitted with bathrooms and it seems that entertainment is also provided for by the steward. In a broken letter (T93_033) two female dancers and a hairdresser are summoned to the *dunnu*, apparently "in a matter of life and death" (Wiggermann 2012). Perhaps these were invited to perform at one of the large feasts which must have been held here by the grand vizier.

Drinking was attested in a large number of documents as was described above in paragraph 4.3.4.4. As this was the largest settlement in a large area, the *dunnu* must have fulfilled a central role in the social life of many. The presence of a place to drink beer with other locals must have been attractive in this sense. It could even be suggested that the government was able to keep people in check by providing this service.

4.3.10 Abandonment

The history of the Tell Sabi Abyad *dunnu* has often been described as a sequence of discrete phases, each ending with a period of decline and starting with a renovation event (see for instance Akkermans and Wiggermann 2015). Detailed stratigraphic analysis performed during this research has however indicated that the sequence in which architectural changes took place in the *dunnu* should be considered more fluid and transient in nature (Lanjouw 2016; Brüning and Plug 2016; see also paragraph 1.3.3). Interestingly however, several major renovations did probably take place through time. These therefore do indicate that a certain subdivision in phases is justifiable. Additionally, within phases, such as Level 5 which was described here, many different activities have taken place. Consequently, houses and courts may have been abandoned and reused within a phase, before a major renovation phase occurred. Additionally, derelict structures were most likely used in conjunction with other, freshly renovated buildings. In a sense, the *dunnu* architecture was constantly changing. The manner in which buildings were abandoned was therefore often slow and planned (cf. Schiffer 1987).

In some occasions, buildings seem to have been lost to fire. In previous publications these remarkable events were taken to illustrate the end of a phase such as Level 5. The most dramatic indication for a large fire comes from the monumental residence and the central building. Both buildings were caught in a violent conflagration which demolished the residence and also destroyed parts of the central building. As a consequence large heaps of grain were burned down in the residence and collapsing walls in the central building buried significant amounts of complete and precious objects. Also the 'apartment of Paya' in the south and the kitchen in the north of the *dunnu* were probably victim to a violent conflagration.

Despite a lack of extensive archaeological remains from later periods due to erosion, it is unsure whether the function of the *dunnu* changed significantly. Cuneiform tablets have been found in later deposits, indicating a certain degree of local administration. And the areas which were certainly in use were extensively renovated through time (Akkermans and Wiggermann 2015: 118). Also some rich burials are known from these later times (Düring *et al.* 2015).

4.4 The function of the *DUNNU*

4.4.1 Introduction

Following Kolinsky (Kolinski 2001: 32), *dunnu*s are the likely successor of the similar *dimtu* settlements from earlier periods. These precursors, literally dubbed 'tower', were small agricultural settlements which controlled a certain district they were the centre of. In some cases these were owned by the crown, in other they were family-run. How the later *dunnu*s, such as our own example, may be interpreted in light of its predecessor, remains problematic. In some cases, the two terms were used next to each other, signifying that despite apparent similarities, there was at least a conceptual difference between the two institutions (Kolinski 2001: 31). The term *dimtu/dunnu* was used to denote a variety of institutions through time (Kolinski 2001: 125-6; Düring 2015a: 51).

As a part of the infrastructure in newly conquered areas by the Assyrian empire, *dunnu*s have been viewed in mainly two ways. Either as military strongholds in previously hostile terrain (Kolinski 2001: 32; Düring 2015: 61) or as agricultural centres to provide surplus for their private owners and the empire (Wiggermann 2000; Radner 2004). Another, underlying reason for the construction of these settlements was to populate and consolidate the new territories under imperial control (Tenu 2015: 82).

Investigating the texts from Tell Sabi Abyad, Wiggermann considers farming to be the "sole purpose" of the *dunnu* (Wiggermann 2000: 174). An understandable opinion considering the vast crop yields which were recorded for the site. Kolinsky (2001: 32) however has characterized the site as mainly military in nature due to its location in the western outback of the empire. Düring (2015a: 61) agrees and states that the agricultural yield from Tell Sabi Abyad was probably used to feed the army. In conjunction with the construction of many other settlements along trade routes and boundaries (Tenu 2015: 81), this fits with the general notion of the *dunnu*s as nodes in an imperial network of settlements (Liverani 1988).

In the following paragraphs the function and use of the *dunnu* of Tell Sabi Abyad is discussed both from the perspective of the archaeological remains as well as the texts from the site. Subsequently, the results from both perspectives are compared and combined with each other. From these discussions it appears that the archaeological perspective mainly yields information about the local function of the *dunnu*. The objects and the architecture from the settlement relate mostly to the activities which were carried out their from day to day. In contrast, the textual evidence speaks about both the day-to-day dealings of the *dunnu*, as well as the connections with other settlements and with the central authorities in Assur. Combining the two lines of evidence would consequently yield a comprehensive view of the local situation of the *dunnu* with an added historical background of the imperial network. However, it appears that the texts from the site were not deposited directly after being written. Therefore also the chronological relation between the deposits and the tablets is discussed in detail below.

Fig. 4.29: Distribution of activity categories in the Level 5 *dunnu*. The dark polygons indicate that during Level 5 activities related to the category were carried out there. The use of the space was however not restricted to that single function.

Subsequently, six contemporaneous settlements are shortly discussed and compared with our *dunnu*. From this discussion, it appears that many of the settlements from this period contained a large storage building with several rectangular rooms in a row, which is often characterized as 'similar to building P of Dur Katlimmu' (Kühne 1983a; figure 4.34; for the full discussion see see paragraph 4.4.3). In contrast, at Tell Sabi Abyad despite extensive excavations, this building type was not discovered. However, many functional characteristics of the discussed settlements were also present at the Tell Sabi Abyad *dunnu*. This *dunnu* was therefore probably an anomaly among other contemporary settlements and embodied an aggregation of functions, which are discussed below.

4.4.2 The local function of the Tell Sabi Abyad *dunnu*

Compared to other contemporaneous sites from the region, the evidence from Tell Sabi Abyad is by far the most rich and detailed. In the presence of such quantities of evidence, it becomes difficult to pinpoint a single or most prominent function of the settlement, as it was used in a variety of ways for a variety of reasons. Additionally, the archaeological imprint of the settlement is quite different from the notions which are put forward by the textual evidence from the site. In the paragraphs below the function and use of the *dunnu* are discussed, first based on the archaeological remains, subsequently based on the textual evidence and finally these are compared and combined.

4.4.2.1 The archaeological evidence

The activities which were reconstructed in the previous chapter fit in five categories: administration, production of various artefacts, processing of food stuffs, storage and domestic activities (figure 4.29). These activities were carried out in specific areas in the *dunnu*. The location of activities did however change through time. For instance the monumental residence was initially used for domestic purposes and was in a later phase used for storage and processing of barley.

Administration was carried out in all sectors of the *dunnu*. The map in figure 4.29 indicates that administration was carried out in the known offices or apartments of the *dunnu* and in the main courtyards. Although these courtyards did not yield much direct evidence for administrative practices, it is reasonable to assume that the administrators performed their business there, just outside the office. Nearly all spaces which have been indicated for administrative activities in figure 4.29 were interpreted as 'formal' offices. Only in one area in the south-west two rooms are highlighted which were not interpreted as office. These have been highlighted because of the large amount of tablets which were found there. Because these tablets were found in a layer of secondary refuse it is however unclear whether they were written and dealt with in that location or only discarded. The spatial distribution of administrative activities in the *dunnu* illustrates that this was an important part of everyday life.

Among the archaeological remains of the *dunnu* there is a lot of evidence for short term storage. In many rooms mudbrick or clay bins were placed which probably held foodstuffs. Long term storage is however less well-represented in the *dunnu*. At the end of Level 5 the monumental residence is apparently used for this purpose, hence its indication in figure 4.29,

but no other long term storage of significant size was attested. In a recent article Klinkenberg and Lanjouw (2015) argue that the top floor of the central building was probably used for this purpose. Interestingly, at many other settlements a large storage building, similar to building 'P' from Dur Katlimmu was found. In the absence of such a structure at Tell Sabi Abyad, perhaps the central building fulfilled that role.

The monumental residence was originally constructed to serve as a domestic structure for high ranking officials, probably the owner of the *dunnu*. This was however not the only domestic space. In many other spaces evidence was found for domestic use. In particular the presence of toilet structures was considered indicative of this function. The associated domestic structures were dubbed offices, or formal apartments. In other places however domestic use was also possible. Despite a lack of a formal layout and plumbing in these areas, they may have served as apartments for people who worked in the *dunnu*. Remarkably, if the areas which are indicated on figure 4.29 were indeed all used as domestic space, used for sleeping, eating and reposing, this appears to have been an important aspect of the function and use of the *dunnu*.

Although at the outset of this study it was assumed that many production processes would be attested, this only occurred in three instances. In the west, north and east of the *dunnu* pottery kilns and associated workshops were found. These were probably all constructed in areas which were abandoned for some time. This suggests that production processes were not initially planned to be performed inside the *dunnu* walls. Why these workshops were constructed there is unclear. Other kilns were also attested outside the *dunnu* walls (Duistermaat 2008). The evidence from Level 5 inside the *dunnu* walls suggests that production processes were not a central part of the function of the *dunnu*.

In many parts of the settlement ovens and grinding stones were found. In nearly every space at some point a small oven or fire place was constructed. This probably constituted incidental use of these spaces for this activity. Therefore in figure 4.29 food processing is indicated in rooms and courtyards which were used for this purpose to a larger degree. Two formal kitchens were identified among the architecture. Additionally, the south-western sector was for a large part in use as food processing zone. While the kitchens have yielded a variety of pottery shapes and food remains, the south-western sector was used primarily for the processing of barley to bake bread. The large amount of tools and ovens which were found in this zone indicate that large amounts of food could be processed. Additionally, in several spaces vessels related to beer brewing were found. Some of the grinding activity in these areas was therefore probably related to brewing.

4.4.2.2 The textual evidence

The textual evidence from Tell Sabi Abyad contains rich accounts of the activities which were carried out there. Wiggermann (2000: 190) distinguishes a vast number of professions which must have been carried out in the *dunnu* at some point. Obviously, for many of these professions, it is hard to find archaeological evidence. On the other hand, some professions are not mentioned in the texts, because they were not of interest to the people writing them or because a large part of the original corpus is missing.

The textual evidence suggests that the Tell Sabi Abyad *dunnu* was a very large settlement considering its type. The lands surrounding the *dunnu* were calculated to encompass 4,000 iku (1440 ha) (Wiggermann 2000: 183) compared to 10-100 iku (3.6-36 ha) documented for other *dunnu*s (Postgate 1982: 308-311). Additionally, the *dunnu* was the possession of one of the most powerful men on the Assyrian empire, the Grand Vizier and King of Hanigalbat. As such, it was a state institution which was strictly different from a self-governed settlement (cf. Kolinksi 2001).

The *dunnu* housed a number of guests through time, ranging from nobility to military troops, indicating its role in local politics and the military. In this sense the *dunnu* could be understood as an outpost in which all manner of official business could be performed. The visit of a princess and her party including her steward and the regular visits of local merchants can be mentioned in this regard. The military presence at the site can be understood in terms of provisioning. The *dunnu* played an important role in the fabrication of chariots and could provide passing cavalry with food, drink and fodder.

The facilitative role of the *dunnu* was also present for other passing groups of travellers such as merchants. On a caravan route close to the border of Assyria the *dunnu* also played an important role as customs office, checking and sealing goods sent to the capital. In this sense the *dunnu* can be interpreted indeed as an important state institution, serving the needs of the empire in the western margins of the conquered areas.

In conclusion, the textual evidence indicates that the *dunnu* was an important node in the imperial network for the military, politics, and customs. Although its main day-to-day activities were aimed at agriculture, the settlement was also used to welcome high ranking guests, and to host meetings between Assyrian officials and local groups. In this sense it could be suggested that the settlement fulfilled a facilitatiing role for the empire.

4.4.2.3 Comparing and combining the evidence

The objects and architecture which were analysed for this research have suggested that the *dunnu* itself can be characterized as a settlement in which many people lived and worked. The activities which were reconstructed inside the *dunnu* walls are centred around food processing and administration. Additionally, many people lived inside the *dunnu*, both high ranking officials as well as lower ranking employees. Although the archaeological remains indicate that the inhabitants relied on agriculture for their subsistence, the extent to which this was performed is explained in more detail by the textual evidence. These sources indicate the large scale to which the *dunnu* and its surrounding agricultural lands were used for the production of agricultural surplus. This in turn is indicative for its role as a state institution. In this role the *dunnu* has to feed more people than its inhabitants, but also for example passing army groups. The texts further indicate that the settlement was an important node in the imperial network (see above). How this status of the *dunnu* affected life within its walls is however not directly clear from the textual evidence.

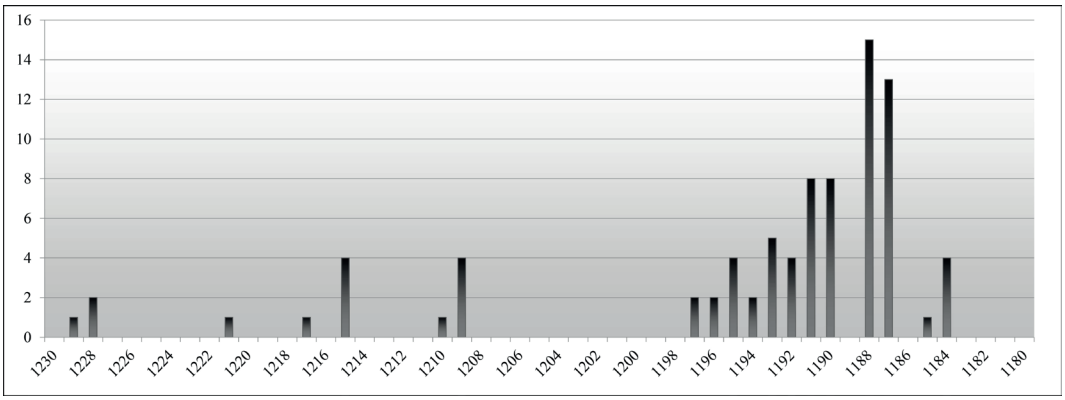


Fig. 4.30: Amount of tablets per year which is attested with *limu*s from Tell Sabi Abyad, based on a preliminary unpublished report by F. Wiggermann. The vertical axis indicates the amount of tablets, the horizontal axis indicates the year BC the tablets are attested to.

Fig. 4.31: Location of tablets with *limu* dates in the *dunnu*. The context numbers which are indicated relate to the numbers in Fig. 4.32.

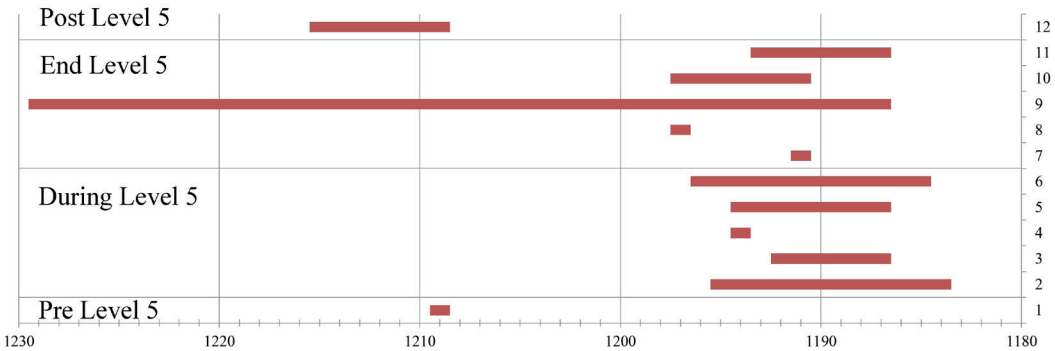


Fig. 4.32: Date ranges for the deposits which are indicated in Fig. 4.31. The range is based on the oldest and youngest *limu* in a deposit. The horizontal axis indicates the years BC.

Also in the archaeological remains there is evidence for banquets. The large kitchen which was excavated in the north of the *dunnu* is interpreted as a structure for short term use (see paragraph 3.3.4). A second kitchen was found in the north-west of the *dunnu*, this was also not used for a long period of time (paragraph 3.2.2). Interestingly, although these kitchens corroborate the suggestion that banquets were held in the *dunnu*, they also indicate that these were sporadic occasions. Similarly, the large monumental residence was probably not used intensely by the owner of the *dunnu* himself. Most of the evidence for activities and remodelling in the building date after the apparent demise of the structure (see paragraph 3.4). Therefore it is likely that although the monumental residence had a palatial function, its use was limited to a few infrequent visits of the owner. The textual evidence is biased towards these official moments in the life in the *dunnu*. The archaeological remains however indicate that for most of the time, the *dunnu* was a settlement in which people lived, prepared their food and worked in agriculture.

To be able to relate the interpretations from the two lines of evidence, it is imperative that they speak about the same time period. One cannot combine the evidence from historical sources with archaeological remains if the documents speak about a different context than the objects or architecture. At first glance this seems unproblematic at Tell Sabi Abyad. The historical documents were discovered within the archaeological deposits. The documents were however probably preserved in an archive for some time before discard. To understand the processes of tablet deposition it is important to combine the archaeological evidence with the textual information.

Combining the two disciplines in this case is done through comparing the stratigraphic chronology with the chronology of calendar dates which are recorded on some documents. The Assyrians used a year calendar with named years, eponyms (Van de Mieroop 2004: 102). These eponyms, which were called *limu*'s by the Assyrians, have been associated with modern calendar years BC. There is debate about the exact correlation of the Assyrian system with the modern calendar which has resulted in several different chronologies for the Ancient Near East. Following Akkermans and Wiggermann (2015) in this research the Middle Chronology is used (Boese and Wilhelm 1979; Boese 1982; Freydank 1991).

Documents are sometimes deliberately dated with a '*limu*', the name, or eponym, of a year. At the end of a contract set up between Tammitte and a farmer for instance a date is given, exact to the day: "(…) month Hibur, day 8, *limu*: Umu-lirik". In total 82 tablets from Tell Sabi Abyad were dated to a single *limu* (figure 4.30; Wiggermann in prep.). The eponym years range from 1184 until 1229 BC. Remarkably, most of the *limu* dates fall within the fourteen years between and including 1184 and 1197. The sharp rise in *limu* attestations in the later years of that period could indicate that around the year 1184 one or more archives were cleaned up and many tablets were discarded. It should be noted that the precise dating of the *limu*'s associated with years 1184-1188 is putative and possibly subject to future change.

The figure above is based on all the available *limu*'s from Tell Sabi Abyad. These tablets were however found in twelve separate deposits in the *dunnu* (figure 4.31). Consequently, these were probably deposited at different moments in time. When exactly these objects were deposited can perhaps be deduced from the dates on the tablets. Therefore the contexts which have yielded *limu* bearing tablets were correlated to the stratigraphy. In figure 4.32 the date range for every context is illustrated by a horizontal bar.

It should be stressed that what is dated by the *limu*s is the year of writing, not the moment of deposition. The objects do however date the moment after which the deposit must have been formed. A tablet from 1197 for instance cannot be deposited in the year 1200. They therefore offer a date post-quem for the deposit. Most tablet contexts in figure 4.32 have an end date between 1184 and 1191. Additionally, the start date of most of these deposits falls around 1197.

Three contexts however have different date ranges. Deposit 1, in a pit under the first floor of the southern architecture, yielded a single large tablet which can be securely dated to 1209 BC. Interestingly, this pit was covered by a floor which is associated with the construction of the main architecture of the south, as well as the residence. It could therefore pre-date the residence. Another deposit, number 12, was found in a pit which was dug into rubbish layers on top of the residence. In other words, this contexts post-dates the residence. The *limu* dates of this deposit however places it in an early phase, similar to deposit 1. This illustrates one of the complexities of these documents. They were most likely brought along in archives and could be discarded decades after the moment they were written. The most poignant deposit in this regard is context 9. In this context both documents dating to this early phase and to the phase where most documents are from were found.

From the graph in figure 4.32 it appears that most tablet contexts have a similar end date. This could suggest that these deposits were formed around the same time. It could even be taken to suggest that the administration came to a complete halt throughout the settlement. Interestingly however, the stratigraphic evidence indicates that these deposits were created through time. These tablets were therefore discarded long after they were written. It implies that through time there were still administrators working in the *dunnu*, but these people were either not writing new documents or they were simply not using *limu*'s anymore.

Then what does this tell us about the relationship between the archaeological remains and the textual information? First of all, the tablets from the *dunnu* were all part of a continuously kept archive. This suggests continuity in habitation of the settlement, beyond the destruction of the residence. The relationship also indicates that the textual information contains a chronological lag. In other words, the texts which are found in a Level 5 deposit often describe events which took place in an earlier phase of the settlement. If the tablet in context 1 indeed predates the residence, the advent of extensive agricultural work around the *dunnu* took place well before this construction. As this is unfortunately the only tablet from this stratigraphic phase, this interpretation should be taken with caution.

Interestingly, the end of active administration in the *dunnu* falls in the same period as the attacks of the so-called Sea Peoples in the Mediterranean, which instigated the general period of decline known as the Bronze Age collapse (Tainter 1988; Cline 2014). Whether the history of the *dunnu* was directly influenced by these events is not evident but imaginable. It is important however to note that despite an apparent administrative decline, the settlement was still in use for decades after the last *limu* was written.

In this sense the settlement has followed the same path as is suggested for the settlement at Tell Fekheriye (Bonatz 2013: 225). At this site the tablet contexts were also discovered under Middle Assyrian architecture, implying that also this settlement was still in use after its administrative function had declined. A similar sequence has also been attested at Dur Katlimmu after the fall of the Neo-Assyrian empire (Tenu 2009).

4.4.3 The function of the *dunnu* in the empire

In a recent article dealing with the question of the function of *dunnu*s in the imperial system of the Assyrians, Düring (2015: 53-4) postulates that for most sites which were proposed to have been a *dunnu*, this cannot in fact be established. Only two excavated sites are considered to indeed be a *dunnu*, Tell Sabi Abyad and Giricano (*dunnu-sa-Uzibi*; see figure 4.33). Their positive identification is based on the presence of undisputable textual evidence. Interestingly, these two settlements are very different from each other in size and layout and illustrate that the term *dunnu* is in fact an administrative expression, rather than indicating a particular functional settlement type (Schachner 2004a: 5). It should also be noted that the two settlements are located in strictly different environments, separated from each other by the massive Tur Abdin mountains. Therefore there may also be regional differences in the function of these *dunnu*s.

For a better understanding of the function of the *dunnu* and its role in the local society, a comparison is made with not only the above mentioned *dunnu* of Giricano, but also other contemporaneous settlements in the eastern part of the Assyrian empire. These sites are Qabr Abu-al ʻAtiq, Tell Fekheriye, Tell Chuera (*Harbe*), Tell Umm ʻAqrebe and Tell Schech Hamad (Dur Katlimmu) (figure 4.33).

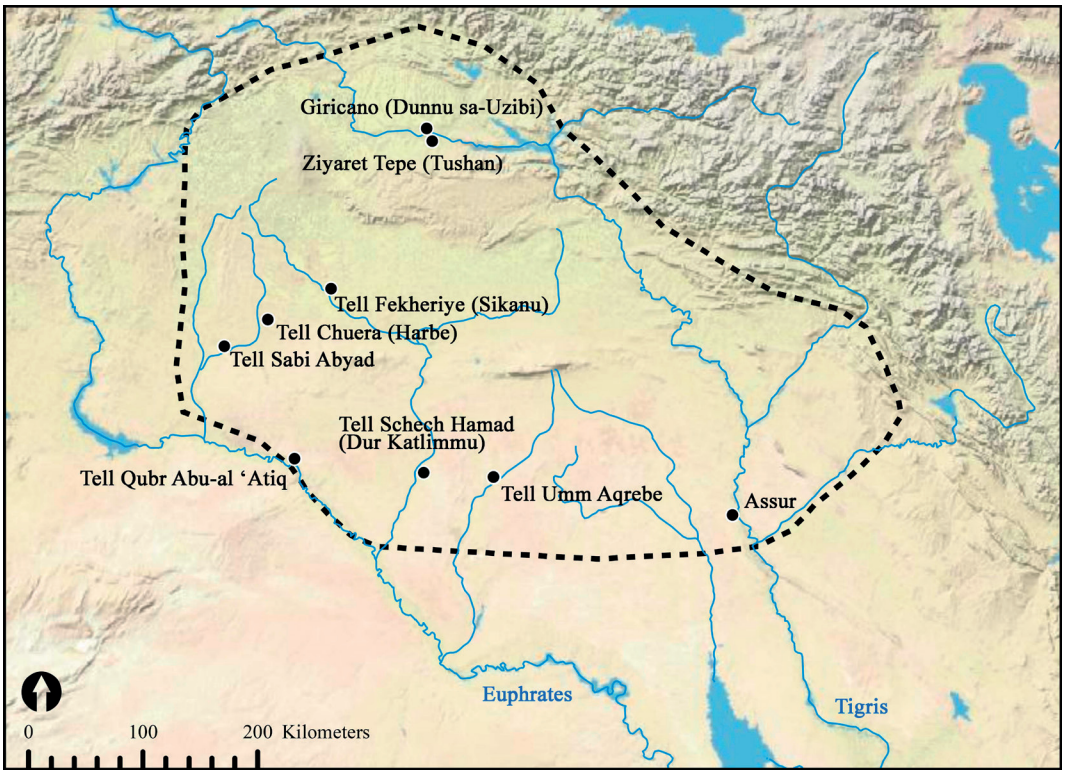


Fig. 4.33: Map of the Middle Assyrian empire with sites which are discussed in this chapter (after Düring 2015a: Fig. 2)

4.4.3.1 A selection of comparable settlementss

As mentioned above, Giricano (*Dunnu-sa-Uzibi*) is the only other excavated settlement of which it is certain that it was a *dunnu* (Radner and Schachner 2004; Düring 2015a: 54). Texts which were recovered from the site indicate that the settlement was a royal gift to a certain Uzibi, hence the name *Dunnu sa-Uzibi* (Schachner 2003: 156; Radner and Schachner 2004). Due to erosion and many pits, the Middle Assyrian architectural remains at the site are fragmented and few. This makes it nearly impossible to reconstruct the Middle Assyrian architecture of the site. Interestingly however, the preceding architecture (Gebäude A) was renovated several times and consisted of a series of rectangular rooms (Schachner 2004b: fig. 12), similar to building P from Dur Katlimmu.

The find material from the site of Giricano is typical for a Middle Assyrian settlement with pottery matching known ceramic styles, including that of Tell Sabi Abyad (Schachner 2002: 33; Duistermaat 2008). Other small finds include evidence for metal work at the site (Schachner 2002: 29; Schachner 2004b: 537). Faunal remains from the site indicate that the inhabitants relied mainly on locally kept cattle and pig for food. A high amount of remains of

red deer (*Cervus elaphus*) has convincingly been interpreted as the remains of leather industry at the site (Berthon 2015: 192). Otherwise, based on the evidence, the site was interpreted as strictly agricultural in nature, in service of its owner who lived in the nearby city of Tushan (Schachner 2003: 156; Berthon 2015: 196).

Unlike Giricano, which is situated in the northern Tigris valley, the other settlements described here are all located in the lands of Hanigalbat. The settlements were inhabited in the same period as Tell Sabi Abyad. For two of these sites, Tell Chuera and Tell Qubr Abu al-'Atiq, also an interpretation of *dunnu* was proposed (see below).

Tell Chuera, with the Assyrian name *Harbe*, is located less than 50 kilometres northeast from Tell Sabi Abyad. It is one of the largest tells in the region and may have housed an important Middle Assyrian settlement. Two trenches were excavated yielding Middle Assyrian remains, trenches 2 and 3 (Klein 1995: fig. 91; Bei. 18). Several burials dating to the Middle Assyrian period were found in trench 2, buried through the remains of a heavy walled structure. This building was interpreted as a residential structure (Klein 1995: 186). In trench 3 a larger and older area of Middle Assyrian architecture was exposed which was interpreted as a large palace or residence (Tenu 2009: 95).

Tablets from the site detail a large number of military operations in the area (Jakob 2015: 180-1). Additionally, the texts indicate that the town was home to a provincial governor and was used as a road station between the Habur and the Balikh area (Jakob 2015: 179). It follows from the texts that Harbe was a small town with several elite residences. Because it was not owned by a certain individual it was stated that it is incomparable with our *dunnu* (Düring 2015a).

The site of Tell Qubr Abu al-'Atiq is located south of Tell Sabi Abyad, along the Euphrates River (Montero Fenollós 2015). The site yielded remains of a collapsed structure similar in layout to building P of Dur Katlimmu (Montero Fenollós *et al.* 2011: 270). Pottery from the site is characterized as homogeneous set of 'administrative style pottery' (Pfälzner 1995; Montero Fenollós *et al.* 2010: 76). Other sites in the region yielded assemblages which included other, local, pottery styles. The homogeneity of the assemblage from Tell Qabr abu-al 'Atiq was interpreted as an indication that the site was founded by the Assyrians (Tenu *et al.* 2012: 145).Two tablets were found, bearing administrative texts (Montero Fenollós *et al.* 2011: 269). Unfortunately the content of the documents has not been published yet.

The area around the settlement was apparently ill-suited for agriculture, resulting in an interpretation of the site as an outpost with a primarily military function (Montero Fenollós *et al.* 2011: 271; Tenu 2015: 80). The size of the site, its location on the border of the empire and its clear homogeneous Assyrian artefact assemblage has prompted some researchers to suggest that this settlement was a *dunnu* (Montero Fenollós 2012: 137; Tenu *et al.* 2012: 148-9). This claim was questioned by Düring on the grounds of its architectural dissimilarity with other known *dunnu*s (Düring 2015a: 54). As the two known *dunnu*s however are also very dissimilar with each other, this argument does not necessarily hold to scrutiny.

Fig. 4.34: The architecture of building P at Dur Katlimmu. From Pfälzner 1995: Abb. 81b.

Interestingly, the site of Tell Fekheriye did yield architectural remains which are very similar to that of Tell Sabi Abyad. At this site, two house plans were excavated which resemble the layout of the monumental residence of Tell Sabi Abyad. House 1 and 2 of Tell Fekheriye are slightly smaller but also consists of a courtyard, and an apartment consisting of a bedroom with a tiled bathroom and an anteroom, reached through a corridor (Bonatz 2013: Fig. 10). At Tell Fekheriye more people resided in luxurious houses, which suggests that more high ranking people lived here, perhaps on a more permanent basis.

The site also yielded a large construction with walls measuring up to 4.4 meters in width, resembling building P from Dur Katlimmu (Bonatz 2013: fig.6). Although this building was probably constructed by the Mittanni who were settled there before the Assyrians, it was also inhabited by the Assyrians (Bonatz 2013: 222).

The site of Tell Umm 'Aqrebe may have been similar to the *dunnu* of Tell Sabi Abyad because of its possible role as road station (Kühne 2011: 145). The site was not excavated but discovered in a survey. The interpretation of the site as a road station is mainly based on the notion that the pottery assemblage from the site was interpreted as 'official administration pottery' (Pfälzner 1995; Tenu 2009: 114). The lower town of Tell Umm 'Aqrebe is taken to evidence that the Assyrians deliberately established new agricultural settlements in these areas to cultivate and consolidate the newly conquered territories (Kühne 2011: 145). The main function of the settlement is therefore suggested to be both a node in the imperial network for the military and trade as well as a physical presence of the Assyrian empire in newly conquered territories. The settlement of Tell Umm 'Aqrebe is situated in between Assur and Dur Katlimmu. It was therefore probably a road station on the road between these two cities.

The city of Dur Katlimmu was the capital of the eastern part of the Assyrian empire, the Lands of Hanigalbat. Although mostly Neo Assyrian remains were found at this site, also one large storage building from the Middle Assyrian period was found, building P. According to the excavators this building may have been part of the palace of the Grand Vizier (Kühne 1983: 241; Pfälzner 1995: 106). The excavated construction consists of at least two series of a minimum of eight rectangular rooms with a height of at least 4.5 metres (Kühne 1983:241; Cancik-Kirschbaum 1996; Röllig 2004; Chambon and Kreppner 2010: abb. 4; Kühne 2010). Large quantities of burnt grain in one of the rooms of the building (room A) as well as the layout, indicate that the structure was used for the bulk storage of grain. Among the burnt grain, in room A also approximately 550 cuneiform tablets were found, these objects have been taken to indicate that the storage building was probably part of the palace complex of the site (Cancik-Kirschbaum 1996; Tenu 2009: 112).

4.4.3.2 Comparisons with the Tell Sabi Abyad dunnu

Compared to the Tell Sabi Abyad *dunnu*, the settlements discussed above had a different administrative status in the Assyrian empire, they were not *dunnu*s. They did however have similarities with the *dunnu* of Tell Sabi Abyad in function and use. In principle, all settlements relied on agriculture for subsistence. In addition, these settlements were an active node in the

Assyrian network of the military and politics (cf. Liverani 1988; Parker 1997). The focus of the activities at a settlement may however have varied from site to site. The settlement at Dur Katlimmu for instance was probably more focussed on administration and politics than the road station at Tell Umm ʻAqrebe.

Many of the functional aspects of these settlements were also established for the Tell Sabi Abyad *dunnu*. The *dunnu* was used to agricultural produce, it functioned as a node in the imperial network and, on a local scale, numerous people were housed in and around the settlement. It is important to note however, that the status of *dunnu* is important when identifying function and use of the Tell Sabi Abyad settlement. As a consequence of its nature, the inhabitants of the *dunnu* were all employed by this state institution. At other, independent, settlements people were less bound to the local authority. It follows that at Tell Sabi Abyad many people were directly dependant on the people in charge (Akkermans and Wiggermann 2015).

The point was made several times a that, despite the small size of excavated plots, nearly every site yielded the remains of a large storage building. These buildings are very similar in layout to each other and are characterized as analogous to the large storage building from Dur Katlimmu, buiding P. Remarkably however, Tell Sabi Abyad did not yield a similar large storage building. At first glance this could suggest that long term storage was not as important in the *dunnu* as it was in other settlements. Another explanation could be that at Tell Sabi Abyad long term storage was realized in the higher storeys of the central building (Klinkenberg and Lanjouw 2015).

4.4.4 Conclusion

As an agricultural production centre, the Tell Sabi Abyad *dunnu* provided a surplus food supply which could be used by the empire. Due to its remote location in the 'wild west' of Assyria, this surplus could most likely not be transported to all parts of the empire (Düring 2015a: 60). The settlement therefore mainly provided for the region it was situated in. When large army bands would visit the site for instance the *dunnu* could provide both men and horses with food and drink. In addition to feeding the troops, the textual evidence from the site indicates that at Tell Sabi Abyad chariots were produced (Wiggermann 2000: 198). Therefore also in more substantial practical ways the *dunnu* fulfilled a nodal function in the network of military bastions (cf. Liverani 1988; Parker 1997).

Additionally, the *dunnu* was used for meetings with local groups and Assyrian officials. To this end the settlement was probably occasionally used to host large feasts. In this sense the *dunnu* probably fulfilled a representative role. This is also indicated by the presence of the monumental residence. This building was constructed early in the existence of the *dunnu* but did not retain its grandeur throughout the settlement's life. The end of use of this building is marked by the remains of heaps of charred grain in its courtyard. At this time the building had been turned into a barn and was lost in a fire (Akkermans and Wiggermann 2015).

Although the representative function of the *dunnu* apparently diminished in time, other functions remained unchanged. In particular in the south of the *dunnu* the use of spaces for grain processing and bread baking was a continuous effort. This indicates that food processing was a function of the *dunnu* which was integral to its existence. A large part of the food processing which occurred in the south of the *dunnu* was however undertaken to feed the inhabitants of the settlement itself. Along the southern *dunnu* wall a large number of domestic structures were identified, indicating that many people were living in this settlement from day to day (see paragraph 4.3.9).

During Level 5, the *dunnu* was used as a large agricultural estate with an added role as administrative and logistic centre. In this position the *dunnu* was from time to time used to host high ranking Assyrians and organise feasts with local dignitaries. To this end, some parts of the internal architecture of the *dunnu* were adapted for the construction of large kitchens. It indicates that during this time the *dunnu* fulfilled a facilitative role for the empire. These events were however infrequent and temporary. This facilitative role is also expressed in the grinding installations which were found in the south-west of the *dunnu*. In this location many people could work simultaneously.

Interestingly, during Level 5 the spaces within the *dunnu* walls have mostly yielded evidence for three activity groups (see figure 4.29 above). Firstly, administration was carried out in many locations in the *dunnu*. Secondly, many spaces were potentially used for domestic purposes. These indicate that a large staff could be present at any time. Thirdly, food processing was an integral part of everyday life within the walls. It seems therefore that everyday life in the *dunnu* was mostly concerned with administration on one hand and subsistence on the other. Additionally, particularly domestic use and food processing appear to be a unchanging elements of the function of the *dunnu*.

The administrative work in the *dunnu* on the other hand was subject to decline in Level 5. It was suggested before that the decrease of administrative activities indicates a decrease in importance of the *dunnu* for the owner and central authorities (Akkermans and Wiggermann 2015). Interestingly however, although the administrative activities did indeed decrease, they did not stop completely. Finds of tablets in younger deposits indicate that the administration was less active but certainly still present (see paragraph 4.4.2.3). Important in this regard is that these tablets were part of the same administration as older examples from the site. They therefore represent a 'lean' continuity of this practice.

For the majority of people who lived in and around the *dunnu*, the changes in the imperial role of the *dunnu* were probably not of great influence. Within the *dunnu* walls the monumental residence and the central building lost their function, other areas however probably remained in use for decades (Lanjouw 2016). Its function as agricultural estate was retained and the work which was performed by the dependants of the *dunnu* therefore remained unchanged.

Chapter 5. Conclusion

On the basis of the find material from the Tell Sabi Abyad *dunnu*, this study has systematically demonstrated the function and use of all spaces in the settlement. The study has revealed that within the walls, most activities in the past were related to domestic use, food processing and administration. Especially the importance of domestic use of the settlement is in stark contrast with the previously assumed imperial role of the estate. To investigate these issues, for this study a systematic approach for the identification of modes of deposition was developed. Importantly, this approach has demonstrated that the contexts in which cuneiform tablets were found, are far from straightforward. In consequence, the functional and temporal relation between texts and other archaeological remains are compellingly problematized.

In this chapter the results of this study are discussed in line with the research questions which were posed in chapter 1. The first main question was 'What was the function and use of the *dunnu*?' In order to answer this, three sub-questions are discussed: 'What activities were carried out where in the *dunnu*?', 'What are the diachronic changes of these activities?' and 'How do these activities reflect the position and function of the *dunnu* in the local society and in the Assyrian Empire?'.

Answering these questions was achieved by an examination of the archaeological evidence from the site. To ascertain to what degree this was possible the second main question was posed: 'How representative is the archaeological evidence for reconstructing activities in the past?'. This issue was tackled by answering two additional sub-questions. These were: 'How do the objects from the Tell Sabi Abyad *dunnu* relate to ancient activities?' and 'How does the information from the archaeological evidence differ from the textual sources?'.

Both themes, the function and use of the *dunnu* and the representativeness of the archaeological record, were successfully addressed by this study. The representativeness of the archaeological record was investigated by a reconstruction of the depositional processes of objects which were found at the site. To this end a comprehensive methodology was devised and consistently applied to the deposits of Tell Sabi Abyad. The results from this study were compared to the literary evidence. This in turn has resulted in a critical overview of the probable function and use of the *dunnu* of Tell Sabi Abyad.

A comparison with six other settlements (Giricano (*Dunnu sa-Uzibi*), Qabr Abu-al 'Atiq, Tell Fekheriye, Tell Chuera (*Harbe*), Tell Umm 'Aqrebe and Tell Schech Hamad (*Dur Katlimmu*) has illustrated that the *dunnu* was a multi-purpose settlement, used as a road station for the military and traders, and to govern the surrounding agricultural lands. Work in and around the *dunnu* was administrated in detail by the presence of local representatives of the empire who resided in the *dunnu*. On several occasions the *dunnu* was used by large groups of visiting officials for political meetings and feasts. Although during these events the *dunnu* was

transformed into a political centre, these events were of short duration and did not influence the long term use of the settlement. The enduring function and use of the *dunnu* was that of a domestic centre and for agricultural production and food processing. Its imperial role must therefore be considered not only in terms of military and political significance, but also for its central place in the local society.

5.1 The representativeness of objects

Many processes have had an effect on the representativeness of the archaeological record from Tell Sabi Abyad. These processes can be divided into three stages in the past. Firstly, those which occurred before the deposition of artefacts, such as cleaning, reuse and recycling are of major influence. Secondly, the manner in which objects were deposited (are they discarded as refuse or are they part of a catastrophic collapse for instance?) has clear implications for the degree to which they are representative of activities at their location of discovery. Lastly, processes which occur after deposition such as decay and erosion but also the excavation techniques at the site have an effect on the interpretation of archaeological remains. The pre- and post-depositional processes which occurred at Tell Sabi Abyad were similar throughout the site. The processes behind the actual deposition of objects are however different from deposit to deposit. In this study therefore a methodology was developed to identify the influence of these processes on the archaeological deposits from Tell Sabi Abyad.

The methodology comprised of a characterisation of typical deposits which can be recognized in archaeology (based on Schiffer 1987). Nine typical deposit types were recognized: primary-, secondary-, provisional- and *de facto* refuse, ritual caches and banking caches, human burials, catastrophe deposits and loss refuse. These deposit types were defined on the basis of eight characteristics: their context, object variety, structuring, size, use-life, damage, replacement cost and relation to space (see table 2.1). A secondary refuse deposit for instance can be characterized as containing mainly damaged or fragmented objects. Subsequently, archaeological deposits from Tell Sabi Abyad were compared to these 'typical deposits'. This allowed for a systematic interpretation of the depositional history of the objects from the *dunnu*. In turn, the interpretation of the depositional history revealed to what degree the deposit could be used for the reconstruction of activities in the area it was discovered in.

Most deposits which were analysed for this research were secondary refuse deposits. These often consisted of damaged or fragmented tools such as pieces of grinding stones. Because these objects were simply discarded, their representativeness for identifying activities in the past is often limited. In some cases however, secondary refuse deposits were discovered which displayed a remarkably homogeneous object assemblage. In particular several tablet-rich deposits which were interpreted as secondary refuse deposits, consisted of only administrative objects. These were therefore interpreted to have been deposited in proximity of their place of use. An interpretation as secondary refuse consequently does not necessarily signify a low degree of representativeness.

Other refuse types which are directly related to the activities which were carried out in the past in the location they were found in, are primary, provisional and abandonment stage refuse. Primary and provisional refuse are often the result of production processes. Within the walls of the Tell Sabi Abyad *dunnu* three pottery workshops were found which also revealed primary and provisional refuse. These were the only major production processes which were discovered within the *dunnu* walls. In other spaces, in particular abandonment stage refuse, consisting of the large and invaluable objects which were left behind at abandonment, were indicative of activities in the past. The presence of large vessels which are interpreted as part of beer brewing in the north of the *dunnu* have indicated that in that area a brewery was located. Interestingly, these object assemblages also indicate that these areas were slowly abandoned.

Other spaces, such as a room in the central building and the courtyard of the monumental residence, were struck by a large fire. Additionally, the deposits in the central building contained many complete and apparently valuable items. The object assemblages in these rooms therefore are characterized as a catastrophe deposit. This deposit type, as well as loss, is strongly indicative of the activities which were carried out in the room they were found in. In these cases, the rooms were apparently used as storage space prior to the catastrophic fire.

In conclusion, apart from most secondary refuse deposits, many of the deposits from the Tell Sabi Abyad *dunnu* are indicative for the activities which were carried out in the spaces they were found in. The methodology which was conceived for this research has yielded a systematic interpretation of objects assemblages and their degree of representativeness. Ironically however, in some cases the objects from a secondary refuse deposit were probably not only discarded there, but also used in the area. The apartment which is known as the 'office of Tammitte', was interpreted as an official structure on the basis of its layout and location. In this office a thick layer of tablet-rich soil was discarded, as secondary refuse. In this case however, although the objects were deposited as secondary refuse, they may also have been used there.

5.2 The textual sources

The textual evidence from Tell Sabi Abyad has revealed a plethora of details about the workings of the *dunnu*. The texts have exposed that the settlement was owned by the Grand vizier of the Assyrian empire and was run by a local steward. Important in this regard is the evidence the texts yield for the function of the *dunnu* for the empire and the owner of the settlement. These are aspects which may be less well-understood by merely investigating the archaeological remains. Additionally the texts have yielded evidence for very specific crafts, such as the production of chariots, and trade which must have taken place in and around the *dunnu*. The degree to which these activities were carried out in the *dunnu* is however not clear from the texts alone.

Much like the archaeological evidence discussed above, the textual corpus is composed of a biased and fragmented selection of tablets. But unlike the objects and architecture, the processes behind the selection and deposition of the tablets is much less clear. It can therefore not be deduced from the surviving elements which other objects must have been present in

the past. Consequently, if evidence for a certain craft such as metal working is lacking from the documentation, this is not evidence for the absence of this process in the past.

Important in this regard is that the tablets speak about a shorter period of time than the archaeological remains do. Many tablets were deposited decades after they were written. This makes the correlation between the two lines of evidence difficult to construct. Clearly however, although the administration of the *dunnu* diminished at some moment in its history, the settlement remained in use as an agricultural estate for decades. This indicates that especially the changes of function and use of the *dunnu* are less well-represented by the textual sources than by the archaeological remains. Remarkably, even within the phase which is described in this study, Level 5, many areas in the *dunnu* drastically changed in function.

One persistent aspect of the areas within the *dunnu* walls was that most activities were focussed on food processing. Interestingly, in the south of the *dunnu* many spaces could be used as apartments and small adjoining courtyards for the processing of food for a single family or household. This suggests that the *dunnu* fulfilled a domestic function in these areas. This contrasts the formal role of the *dunnu* which is suggested by the historical accounts.

The contextual analysis of tablet deposits in this study has revealed that many tablet groups which were previously considered to be *in situ* catastrophe deposits were in fact discarded as secondary refuse. This remarkable new explanation of how tablets were deposited at Tell Sabi Abyad is of great consequence for our understanding of the assemblages themselves and the relation they bear with other archaeological remains. The tablet groups were most likely carefully selected items from a larger archive. These tablet assemblages are therefore not a significant representation of the actual and complete archives from the past. It is worth mentioning that the term 'archive' is often used to denote any large tablet group in archaeological excavations. This study has revealed that this may be a gross oversimplification of the actual nature of the deposit and is in need of thorough investigation.

Similarly the chronological relation between the archaeological stratigraphy and the dates which are revealed by the cuneiform tablets is by no means a straightforward issue. At Tell Sabi Abyad the dates from cuneiform tablets have indicated that youngest tablets are deposited in the oldest layers and that the oldest tablets are deposited in the youngest layers. It follows that tablets should strictly and explicitly only be used to assign a post-quem date for a deposit.

5.3 Activity patterns in the *DUNNU*

The analyses carried out for this study have focussed on the area within the walls of the *dunnu*. within these confines the activities which were identified can be divided into five main categories: Food processing, pottery production, storage, administration and domestic use.

Food processing was carried out everywhere in the *dunnu* at some point. However, there are some clear patterns in the location and duration of these activities. Particularly in the south

and southwest large areas were used for grinding and bread baking. Throughout the sequences described here, this use of the area did not change. Even in the phase in which the residence was already in a dilapidated state, the south was used for this purpose. Interestingly, the area has yielded a fairly straightforward and uniform assemblage of objects and features, indicating that the area was largely dedicated to large scale bread baking and possibly also to domestic use. In contrast, three several specialized food preparation areas were found as well. These include two kitchens and at least one brewery in the north of the *dunnu*. The large kitchens were possibly used to prepare feasts for large parties which visited the *dunnu*. These food production areas were located in the north, northwest and east of the *dunnu* and were used for a short period of time. Possibly these were used to produce large feasts for visiting groups of dignitaries. In the south many solitary ovens were found, possibly related to small domestic structures. In this area therefore, food preparation occurred on a smaller scale. In contrast to the large scale kitchens, these southern areas did not change function within the period described in this study.

In three locations within the *dunnu* walls pottery kilns were discovered. It is clear from the size of the kilns and the extent of the work involved that the production of ceramics was an important activity within the *dunnu* walls (Duistermaat 2008). The ceramics from the *dunnu* were probably used in the surrounding settlements as well (Bartl 1990; Duistermaat 2008). In particular a large kiln and workshop in the east of the *dunnu* has remained in its place and in use for a long period. The two other kilns were constructed in the north and northwest, in areas which were in a dilapidated state. Other production processes were not attested in this study within the walls.

Although every excavated contemporary settlement which was discussed in this study has demonstrated the presence of a storage building comprised of several parallel rectangular rooms, the *dunnu* of Tell Sabi Abyad did not. Whether the function of storage of surplus is therefore less important may however be questioned. Textual evidence has suggested that at least 1 million litres of grain was stored in the *dunnu* at one point (Wiggermann 2000:195). The archaeological evidence did not yield an unequivocal storage building however. At least short term storage possibly took place in the various bins which were found in the *dunnu*. These have probably been used in conjunction with food production activities. Long term storage may have taken place on the roof or higher storeys of the central building (Klinkenberg and Lanjouw 2015). No diachronic changes were attested for this function of the *dunnu* during the period which is discussed in this study.

In several locations in the *dunnu* evidence for administration was found. Although most of the tablets from the *dunnu* were found in refuse layers, these mostly appear to be located in areas which can be characterized as either apartments or offices. These deposits were often interpreted as the remains of local administration, discarded near or at their location of use. Consequently, the *dunnu* contained several offices which were used by the authorities, possibly by the steward of the *dunnu*. At the start of the sequence described here, an office was located in the north-west of the *dunnu*. Later, when this location was no longer in use, another office or apartment in the south-east was used. Two other literate figures in the *dunnu* were the baker

and brewer of the *dunnu*. Tablets which were directed at them and written by them were found around the locations of their work or residence. Their receipts illustrate how the authorities kept a close eye on business and how administration was a part of everyday life.

The last category of activities in the *dunnu* is that of domestic use. Firstly, the large monumental residence must be mentioned. This large house contained two apartments which were fitted with bathrooms. This residence was originally probably constructed for the owner of the *dunnu*. Three other apartments with bathrooms were found within the walls of the *dunnu*. These were possibly inhabited by the high ranking staff of the *dunnu* such as the steward. In addition to these formal apartments, a large number of rooms in the settlement could be used to house staff members. Also the higher storeys or roof space could be used to this effect. In particular the southern half of the *dunnu* was perhaps used for domestic purposes. Small courtyards with ovens which were excavated there were perhaps used by the people inhabiting small apartments in the south. Interestingly, within the period described here, this function did not change. This suggests that domestic use of the areas within the *dunnu* walls was an integral part of the function of the settlement, significantly more important than previously assumed.

In conclusion, The areas within the walls of the *dunnu* were used both for official business such as administration and the receiving of important guests, as well as for mundane everyday activities such as food preparation and domestic life. In the north of the *dunnu* the official and representative function seems to have diminished at some point, while the activities which were carried out in the south of the *dunnu* remained largely the same. There, many staff members could be housed and several areas were reserved for food processing. Interestingly, this seems to be the enduring use of the *dunnu*, despite its apparent diminishing role as administrative and representative centre during the c*ourse of this period.*

5.4 The function and use of the *DUNNU*

Historical evidence suggests that when the *dunnu* was constructed it helped to implement Assyrian rule and consolidate imperial power in the region. It functioned as a node in the Assyrian network of military settlements and was able to shelter, feed and equip passing army groups. Additionally, located in the margins of the empire, the *dunnu* functioned as a hub for the gathering of military intelligence. The *dunnu* also had a clear administrative and representative function. In the archaeological remains this is illustrated by the monumental residence and the large paved court in front of it. This was possibly used by high officials to do business, matters of state. In this sense, the *dunnu* could be considered as a settlement of political significance when the owner was present.

From historical sources it has become clear that the *dunnu* was owned by a private individual, the King of Hanigalbat and grand vizier of the Assyrian Empire. This could indicate the importance of the settlement to the imperial powers. The owner did however not reside in the *dunnu*. Although a large monumental residence was constructed in the centre of the settlement, he was probably usually housed in Dur Katlimmu. Day to day work in the *dunnu*

was taken care of by a steward who did reside in the settlement, among many other people who worked there. To the owner, the *dunnu* was a private agricultural estate, there to provide agricultural surplus. The settlement was also occasionally used by the owner during travels in the region. The settlement provided lodgings for him and his party and could be adapted to hold large meetings and even feasts. From his perspective, the *dunnu* could be considered as a 'home away from home' and also an 'office away from home'.

The occasions of the visits by the owner were however sporadic and temporary. For most of the inhabitants of the *dunnu* and the surrounding lands, the day-to-day activities were centred around working in agriculture and feeding their families. Even within the *dunnu* walls, a major part of the architecture was possibly dedicated to domestic use. It is conceivable that among the people who resided in the settlement many were employed in specialized crafts such as beer brewing, pottery production and handling the livestock which were attested in the archaeological remains. In this sense, the settlement probably played a facilitating role for the surrounding settlements.

The discovery of the large amount of tablets in the *dunnu* indicates that the settlement was well integrated in the Assyrian administration. Both letters between high dignitaries as well as receipts of lower ranking craftsmen were found. These receipts may indicate that the activities which were carried out in the settlement were securely regulated and monitored by the authorities. They illustrate that the settlement was a formal element of imperial domination, not a fully independent settlement.

Curiously, apart from administration and domestic use of the *dunnu*, the activities which were attested by the archaeological remains mostly relate to food and drink production. Apparently therefore these activities must have been an important element of the function of the *dunnu*. Transporting the resulting foodstuffs and drink to the core region around Assur would, however, have been too costly (Düring 2015a: 60). Rather, the products were most likely traded or consumed locally, in the Balikh region.

The bulk foods were partly used to feed large passing army groups. Additionally, the *dunnu* was well-fitted to hold large banquets. Large feasts could be held to strengthen the relationship with local tribes and other dignitaries. The production of beer in the *dunnu* may also have been of great importance in this regard. Analysis of pottery shapes in this study has revealed that beer brewing was carried out in many places in the *dunnu*. It is likely that nomadic groups and perhaps smaller settlements relied on the *dunnu* for this drink.

Food processing was however also accomplished simply for local consumption. The evidence for food processing in the *dunnu* illustrates that large banquets may have been held for short periods, but that a continuous effort was made to provide the local population with food. In particular the southern part of the *dunnu* appears to be equipped to facilitate families who lived in and around the settlement for bread baking. In this sense the day to day activities in the settlement were mainly concerned with feeding the people who lived in and around the *dunnu*.

The historical view of the Tell Sabi Abyad *dunnu* generated a narrative which focussed mostly on the imperial motives for its establishment. One of the important assumptions was that the *dunnu* was established to provide agricultural surplus for the empire and the owner. Secondly, its role in the imperial network of military settlements was highlighted. Although both of these interpretations may be considered accurate, they disregard the local function and use of the *dunnu*, besides its formal imperial role. Careful analysis of find material from the *dunnu* has resulted in a perspective on the settlement which highlights this local function. The majority of activities which are attested within the *dunnu* walls were carried out for the benefit of the local community. The most consistent use of the *dunnu* appears to be small scale bread baking in the south, possibly by families inhabiting the settlement. In this sense, in parallel to an interpretation as an imperial stronghold, the settlement should be viewed as a local agricultural community.

On a regional scale, the presence of the *dunnu* brought about the easy availability of beer for all local and passing groups. Perhaps this, unintentionally, contributed in the consolidation of the area. The settlement did in this sense not function as a display of military might and imperial authority, but, as a social meeting place and source of alcoholic drink. The function of the *dunnu* can therefore be understood both in military terms, as well as in these social respects. For the empire, the settlement functioned both as the proverbial 'stick' as well as the 'carrot'.

Literature

Akkermans, Peter M.M.G. 1987. "Tell Sabi Abyad: Preliminary Report on the 1986 Excavations." *Akkadica* 52: 10-28.

———. 1997. "Seals and Seal Impressions from Middle Assyrian Tell Sabi Abyad, Syria." *Subartu* IV (2): 243-58.

———. 1999. "La Forteresse de Tell Sabi Abyad." *Archéologia*, no. 358: 56-65.

———. 2006. "The Fortress of Ili-Pada, Middle Assyrian Architecture at Tell Sabi Abyad, Syria." In: *Les espaces syro-mésopotamiens. Dimensions de l'expérience humaine au Proche-Orient ancien*. (*Subartu* 17), edited by P. Butterlin, M. Lebeau, J.Y. Monchambert, J. Montero, and B. Müller, 201-11. Turnhout.

Akkermans, Peter M.M.G., J. Limpens, and R.H. Spoor. 1993. "On the Frontier of Assyria: Excavations at Tell Sabi Abyad, 1991." *Akkadica* 84-85: 1-52.

Akkermans, Peter M.M.G., and Inge Rossmeisl. 1990. "Excavations at Tell Sabi Abyad, Northern Syria: A Regional Centre on the Assyrian Frontier." *Akkadica* 66: 13-60.

Akkermans, Peter M.M.G., and F.A.M. Wiggermann. 2015. "West of Aššur: The Life and Times of the Middle Assyrian *Dunnu* at Tell Sabi Abyad." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 89-124.

Allison, Penelope Mary. 1999. *The Archaeology of Household Activities*. London: Routledge.

Arnold, F. 1989. "A Study of Egyptian Domestic Buildings." *Varia Aegyptiaca* 5 (2-3): 75-93.

Ascher, R. 1961. "Analogy in Archaeological Interpretation." *Southwestern Journal of Anthropology* 17 (4): 317-25.

Ault, Bradley A., and Lisa C. Nevett. 1999. "Digging Houses: Archaeologies of Classical and Hellenistic Greek Domestic Assemblages." In: *Archaeology of Household Activities*, edited by Penelope Mary Allison, 43-56.

Barjamovic, Gojko. 2013. "Mesopotamian Empires." In: *The State in the Ancient Near East and Mediterranean*, edited by Peter Fibiger Bang and Walter Scheidel, 120-60. Oxford University Press.

Bartl, K. 1990. "Khirbet Esh-Shenef, A Late Bronze Age Settlement in the Balikh Valley, Northern Syria." *Akkadica* 67: 10-33.

Berghuijs, Koen. 2013. "*Black and White Negatives. Basketry Impressions from Late Neolithic Tell Sabi Abyad (Syria)*." Unpublished BA thesis, Leiden University.

Berthon, Rémi. 2015. "Middle Assyrian Herding Practices in the North of the Empire: A View from Dunnu-ša-Uzibi." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 189-98.

Binford, L.R. 1981. "Behavioral Archaeology and the 'Pompeii Premise.'" *Journal of Anthropological Research* 37 (3): 195-208.

Black, J.A., G. Cunningham, J. Ebeling, E., Flückiger-Hawker, E. Robson, J. Taylor, and G. Zólyomi, *The Electronic Text Corpus of Sumerian Literature* (http://etcsl.orinst.ox.ac.uk/), Oxford 1998-2006.

Boese, Johannes. 1982. "Burnaburias II., Melisipak und die Mittelbabylonische Chronologie." Ugarit-Forschungen: *Internationales Jahrbuch für die Altertumskunde Syrien-Palästinas*, 15-26.

Boese, Johannes, and Gernot Wilhelm. 1979. "Assur-Dan I, Ninurta-Apil-Ekur und die Mittelassyrische Chronologie." *Wiener Zeitschrift für die Kunde des Morgenlandes* 71: 19-38.

Bonatz, Dominik. 2013. "Tell Fekheriye Renewed Excavations at the 'Head of the Spring.'" In: *100 Jahre Archäologische Feldforschungen in Nordost-Syrien – Ein Bilanz*, 209-34.

Brain, C.K. 1981. *The Hunters Or the Hunted?: An Introduction to African Cave Taphonomy*. Chicago: University of Chicago Press.

Braudel, F. 1966. *La Mediterranée et le monde mediterraneen à l'époque de Philippe II*. Paris: Colin.

Brown, Brian. 2013. "The Structure and Decline of the Middle Assyrian State: The Role of Autonomous and Nonstate Actors." *Journal of Cuneiform Studies* 65 (May): 97-126.

Brüning, Merel, and Peter M.M.G. Akkermans. 2010. "De Midden-Assyrische *Dunnu* van Tell Sabi Abyad. Bewoningsgeschiedenis van een versterkte nederzetting aan de grens van Assyrië." *Phoenix* 56 (1): 5.

Brüning, Merel, and Hannah Plug. 2016. *Dissecting the Dunnu: The Late Bronze Age Stratigraphy of Tell Sabi Abyad*, Leiden: Nederlands Instituut voor het Nabije Oosten.

Cameron, Catherine M., and Steve A. Tomka. 1993. *Abandonment of Settlements and Regions: Ethnoarchaeological and Archaeological Approaches*. Cambridge: Cambridge University Press.

Cancik-Kirschbaum, Eva Christiane. 1996. *Die mittelassyrischen Briefe aus Tall Šēḫ Ḥamad*. Berlin: D. Reimer.

Cavallo, Chiara. 2002. "The Faunal Remains from the Middle Assyrian 'Dunnu' at Sabi Abyad, Northern Syria." In: *Archaeozoology of the Near East*, edited by H. Buitenhuis, A.M. Choyke, M. Mashkour, and A.H. Al-Shihab, 228-40.

Chambon, G., and F. Kreppner. 2010. "Hohlmaßsysteme und deren „Standardisierung" in Assyrien und Volumina von Gefäßkeramik aus Dūr-Katlimmu". In *Dūr-Katlimmu 2008 and beyond*, edited by Hartmut Kühne, 11-32.

Charpin, Dominique. 2010a. *Reading and writing in Babylon*. Cambridge, Massachusetts: Harvard University Press.

Charpin, Dominique, and Jane Marie Todd. 2010b. *Writing, law and kingship in Old Babylonian Mesopotamia*. Chicago: University of Chicago Press.

Cline, Eric H. 2014. *1177 B.C.: The Year Civilization Collapsed*. Princeton: Princeton University Press.

Coockson, Ben. 2010. *Living in Mud*. Istanbul: Ege Yayınları.

Curtis, John, and Matthew Ponting. 2013. *An Examination of Late Assyrian Metalwork: With Special Reference to Nimrud*. Oxford: Oxbow Books.

De Groene, Donna. 2015. "*Fire Features of the Dunnu*." Unpublished thesis, Leiden University.

Deal, M. 1985. "Household Pottery Disposal in the Maya Highlands: An Ethnoarchaeological Interpretation." *Journal of Anthropological Archaeology* 291: 243-91.

Diehl, Michael W. 1998. "The Interpretation of Archaeological Floor Assemblages: A Case Study from the American Southwest." *American Antiquity* 63 (4): 617-34.

Duistermaat, Kim. 2008. *The Pots and Potters of Assyria. Technology and Organization Od Production, Ceramic Sequence, and Vessel Function at Late Bronze Age Tell Sabi Abyad, Syria*. PALMA. Turnhout: Brepols.

———. 2015. "The Pots of Assur in the Land of Hanigalbat – The Organization of Pottery Production in the Far West of the Middle Assyrian Empire." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 125-52.

Düring, Bleda S. 2015a. "Reassessing the *Dunnu* Institution in the Context of the Middle Assyrian Empire." *Ancient Near Eastern Studies* 52: 47-68.

———. 2015b. *Understanding Hegemonic Practices of the Early Assyrian Empire: Essays Dedicated to Frans Wiggermann*. Consolidating Empires Project I (PIHANS 125). Leiden: Nederlands Instituut voor het Nabije Oosten.

Düring, Bleda S., Eva Visser, and Peter M.M.G. Akkermans. 2015. "Skeletons in the Fortress: The Late Bronze Age Burials of Tell Sabi Abyad, Syria." *Levant* 47 (1): 30-50.

Etbul, Alejandro. 2010. "*Proyecto San Isidro. La Bóveda Nubiana*." Video available at: https://youtu.be/ZrMbt_z14VM.

Fagan, Brian M. 1996. *The Oxford Companion to Archaeology*. Oxford University Press.

Fales, Frederick Mario. 2011. "Transition: The Assyrians at the Euphrates between the 13th and 12th Century BC." In: *Empires after the Empire: Anatolia, Syria and Assyria after Suppiluliuma II*, edited by Karl Strobel, 9-59. Firenze: LoGisma.

Fantone, F. 2015. "Agriculture on the Fringe: Reconsidering the Role of Barley in Middle Assyrian Agriculture." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 143-66.

———. 2016. Agricultural Practices of the *Dunnu*, Leiden: Nederlands Instituut voor het Nabije Oosten.

Freydank, Helmut. 1991. *Beiträge zur Mittelassyrischen Chronologie und Geschichte*. Berlin: Akademie Verlag.

Friesem, David, Elisabetta Boaretto, Adi Eliyahu-Behar, and Ruth Shahack-Gross. 2011. "Degradation of Mud Brick Houses in an Arid Environment: A Geoarchaeological Model." *Journal of Archaeological Science* 38 (5): 1135-47.

Friesem, David E., Georgia Tsartsidou, Panagiotis Karkanas, and Ruth Shahack-Gross. 2014. "Where Are the Roofs? A Geo-Ethnoarchaeological Study of Mud Brick Structures and Their Collapse Processes, Focusing on the Identification of Roofs." *Archaeological and Anthropological Sciences* 6 (1): 73-92.

Gillis, Carole, and Marie-Louise Nosch. 2007. *First Aid for the Excavation of Archaeological Textiles*. Oxford: Oxbow Books.

Glatz, Claudia. 2009. "Empire as Network: Spheres of Material Interaction in Late Bronze Age Anatolia." *Journal of Anthropological Archaeology* 28 (2): 127-41.

Goldberg, Paul, and Richard I. Macphail. 2006. *Practical and Theoretical Geoarchaeology*. Malden MA: Blackwell Pub.

Greco, Christian. 1999. "*I manufatti metallici di Tell Sabi Ayad. Studio di una classe di materiali nell' economia di un centro Medio-Assiro della Gezira Siriana*." Unpublished MA thesis, Universita' degli Studi di Pavia.

Harris, Edward. 1979. *Principles of Archaeological Stratigraphy*. Vol. 142. London: Academic Press.

Hayden, Brian, and Aubrey Cannon. 1983. Where the Garbage Goes: Refuse Disposal in the Maya Highlands. *Journal of Anthropological Archaeology*. Vol. 2.

Huigens, Harmen. 2011. "*Axes, Adzes and Chisels: Stone Tools from Late Neolithic Tell Sabi Abyad, Syria*." Unpublished thesis, Leiden University.

Inomata, Takeshi, and Laura R. Stiver. 1998. "Floor Assemblages from Burned Structures at Aguateca, Guatemala: A Study of Classic Maya Households." *Journal of Field Archaeology* 25: 431-52.

Inomata, Takeshi, and Ronald W. Webb. 2003. *The Archaeology of Settlement Abandonment in Middle America*. Salt Lake City: The University of Utah Press.

Jachvliani, Dimitri. 2015. "*Bins at Tell Sabi-Abyad I*." Unpublished report, Leiden University.

Jakob, Stefan. 2003. *Mittelassyrische Verwaltung und Sozialstruktur*: Untersuchungen. Leiden; Boston: Brill.

———. 2015. "Daily Life in the Wild West of Assyria." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 177-88.

Katsianis, Markos, Spyros Tsipidis, Kostas Kotsakis, and Alexandra Kousoulakou. 2008. "A 3D Digital Workflow for Archaeological Intra-Site Research Using GIS." *Journal of Archaeological Science* 35 (3): 655-67.

Katz, S.H., and M.M. Voigt. 1986. "Beer and Bread: The Early Use of Cereals in the Human Diet." *Expedition*. 28 (2): 23-35.

Klein, Harald. 1995. "Die Grabung in Der Mittelassyrischen Siedlung." In *Ausgrabungen in Tell Chuera in Nordost-Syrien I*, edited by W. Orthmann, 203-25.

Klinkenberg, Victor. In press. "Are We There Yet?! 3D GIS in Archaeological Research, the Case of Tell Sabi Abyad, Syria." In: UISPP Proceedings.

———. 2014. "Het opwerken van het Tell Sabi Abyad-archief naar de 21ste eeuw." *Tijdschrift voor Mediterrane Archeologie* 52: 46-50.

Klinkenberg, Victor, and Tijm Lanjouw. 2015. "Reconstructing the Tell Sabi Abyad *Dunnu*: A Bottom-up Perspective of the Middle Assyrian Empire." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 143-65.

Kolinski, Rafal. 2001. *Mesopotamian Dimatu of the Second Millennium BC*. Oxford, England: Archaeopress.

———. 2015. "Making Mittani Assyrian." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 9-32.

Kühne, Hartmut. 1983a. "Tall Seh Hamad / Dur-Katlimmu, Die Wiederentdeckung einer Mittelassyrischen Stadt." *Damaszener Mitteilungen*, 149-67.

———. 1983b. "Tall Seh Hamad/Dur-Katlimmu 1978-1983." *Les Annales Archeologiques Arabes Syriennes* 33:1, 239-248.

———. 2010. *Dūr-Katlimmu 2008 and beyond*. Wiesbaden: Harrassowitz.

———. 2011. "Urbanism in the Assyrian Homeland." In: *Correlates of Complexity. Essays in Archaeology and Assyriology Dedicated to Diederik J.W. Meijer in Honour of His 65th Birthday* (PIHANS 116), edited by Bleda S. Düring, Arne Wossink, and Peter M.M.G. Akkermans, 143-52. Leiden: Nederlands Instituut voor het Nabije Oosten.

LaMotta, Vincent M., and Michael Brian Schiffer. 1999. "Formation Processes of House Floor Assemblages." In *The Archaeology of Household Activities*, edited by Penelope M. Allison, 19-29. Routledge.

Lanjouw, Tijm. 2016. *The Architecture of the Dunnu of Tell Sabi Abyad*. Leiden: Nederlands Instituut voor het Nabije Oosten.

Leroi-Gourhan, André. 1943. *Evolution et techniques: l'homme et la matière*. Sciences d'aujourd'hui, Vol. 1. Paris: A. Michel.

Liverani, Mario. 1987. "The Collapse of the near Eastern Regional System at the End of the Bronze Age: The Case of Syria." In: *Centre and Periphery in the Ancient World*, edited by M.J. Rowlands, Mogens Trolle Larsen, and Kristian Kristiansen, 66-73. Cambridge: Cambridge University Press.

———. 1988. "The Growth of the Assyrian Empire in the Habur/Middle Euphrates Area: A New Paradigm." *State Archives of Assyria Bulletin* 2 (2): 81-98.

———. 2001. "The Fall of the Assyrian Empire: Ancient and Modern Interpretations." In *Empires: perspectives from archaeology and history*, edited by Susan Alcock, Cambridge University Press, Cambridge, 374-91.

Losier, L.-M., J. Pouliot, and M. Fortin. 2007. "3D Geometrical Modeling of Excavation Units at the Archaeological Site of Tell 'Acharneh (Syria)." *Journal of Archaeological Science* 34 (2): 272-88.

Lucas, Gavin. 2008. "Time and Archaeological Event". *Cambridge Archaeological Journal*. 18 (1): 59-65.

Lyon, J.D. 2000. "Middle Assyrian Expansion and Settlement Development in the Syrian Jezira; The View from the Balikh Valley." In: *Rainfall and Agriculture in Northern Mesopotamia: Proceedings of the 3rd MOS Symposium, Leiden, May 21-22, 1999*, 89-126.

MacGinnis, J., M. Willis Monroe, D. Wicke, and Timothy Matney. 2014. "Artefacts of Cognition: The Use of Clay Tokens in a Neo-Assyrian Provincial Administration." *Cambridge Archaeological Journal* 24 (2): 289-306.

Mallowan, Max E.M. 1936. "The Excavations at Tell Chagar Bazar and an Archaeological Survey of the Habur Region 1934-35." *Iraq* 8: 111-59.

McIntosh, Roderick J. 1974. "Archaeology and Mud Wall Decay in a West African Village." *World Archaeology* 6 (2): 154-71.

Migchelsen, Migchel. 2013. "*On Defecation in the Ancient Near East. Contextualising Sanitary Conditions in a LBA Assyrian Fortress*." Unpublished thesis, Leiden University.

Milek, Karen B. 2012. "Floor Formation Processes and the Interpretation of Site Activity Areas: An Ethnoarchaeological Study of Turf Buildings at Thverá, Northeast Iceland." *Journal of Anthropological Archaeology* 31 (2). 119-37.

Montero Fenollós, Juan-Luis. 2015. *Asirios en el Medio* Éufrates *: la cerámica medioasria de Tell Qabr Abu al-'Atiq en su contexto histórico-arqueológico*. Ferrol: Soc. Luso-Gallega Est. Mesopotamicos.

Montero Fenollós, Juan-Luis, Shaker Al-Shbib, Ignacio Márquez Rowe, and Francisco Caramelo. 2010. "Tell Qubr Abu Al-'Atiq: From an Early Dynastic City to a Middle Assyrian Fort. 5th Season Report of the Proyecto Arqueológico Medio Éufrates Sirio (2009)." *Aula Orientalis* 28: 73-84.

Montero Fenollós, Juan-Luis, Ignacio Márquez Rowe, Francisco Caramelo, and Yaarob Al-Abdallah. 2011. "Tell Qubr Abu Al-'Atiq: A Middle Assyrian Fort in the Gorge of Khanuqa. 6th Season Report of the Proyecto Arqueológico Medio Éufrates Sirio (2010)." *Aula Orientalis* 29: 267-78.

Montgomery, Barbara. 1993. "Ceramic Analysis as a Tool for Discovering Processes of Pueblo Abandonment." In: *Abandonment of Settlements and Regions; Ethnoarchaeological and Archaeological Approaches*, 157-64. Cambridge: Cambridge University Press.

Müller, M., ed. 2015. *Household Studies in Complex Societies. (Micro) Archaeological and Textual Approaches*. Chicago: University of Chicago Press.

Murray, Priscilla, and Jeffrey John. 1980. "Discard Location: The Ethnographic Data." *American Antiquity* 45 (3): 490-502.

Murray, Tim. 1999. *Time and archaeology*. London: Routledge.

Needham, S., and T. Spence. 1997. "Refuse and the Formation of Middens." *Antiquity* 71 (271): 77-90.

Otto, Adelheid. 2006. *Alltag und Gesellschaft zur Spätbronzezeit: eine Fallstudie aus Tall Bazi (Syrien)*, Subartu 19. Turnhout: Brepols.

———. 2015. "How to Reconstruct Daily Life in a Near Eastern Settlement: Possibilities and Constraints of a Combined Archaeological, Historical and Scientific Approach." In: *Household Studies in Complex Societies: (micro) Archaeological and Textual Approaches*, edited by Miriam Müller, 61-82. Chicago: University of Chicago Press.

Parker, Bradley J. 1997. "Garrisoning the Empire: Aspects of the Construction and Maintenance of Forts on the Assyrian Frontier." *Iraq* 59 (1997): 77-87.

———. 2001. *The Mechanics of Empire: The Northern Frontier of Assyria as a Case Study in Imperial Dynamics*. Helsinki: Neo-Assyrian Text Corpus Project.

———. 2003. "Archaeological Manifestations of Empire: Assyria's Imprint on Southeastern Anatolia." *American Journal of Archaeology* 107 (4): 525-57.

Pfälzner, Peter. 1995. *Mittanische und mittelassyrische Keramik: eine chronologische, funktionale und produktionsökonomische Analyse*. Berlin: D. Riemer.

———. 2001. *Haus und Haushalt: Wohnformen des dritten Jahrtausends vor Christus in Nordmesopotamien.* Mainz: Verlag Philipp von Zabern.

———. 2015. "Activity-Area Analysis: A Comprehensive Theoretical Model." In: *Household Studies in Complex Societies: (micro) Archaeologiclaland Textual Approaches*, edited by Miriam Müller, 29-60.

Pollock, Susan. 2005. *Archaeologies of the Middle East: Critical Perspectives.* Malden MA: Blackwell Pub.

Postgate, John Nicholas. 1982. "Ilku and Land Tenure in the Middle Assyrian Kingdom – A Second Attempt." In: *Societies and Languages of the Ancient Near East: Studies in Honour of I.M. Diakonoff*, edited by M.A. Dandameyev, I. Gershevitch, H. Klengel, M.T. Larsen, and G. Komoroczy, 304-13.

———. 1992. "The Land of Assur and the Yoke of Assur." *World Archaeology* 23 (3).

Prince, J. Dyneley. 1916. "A Hymn to Ninkasi". *The American Journal of Semitic Languages and Literatures* 33 (1): 40-44.

Radner, Karen, and Andreas Schachner. 2004. *Das mittelassyrische Tontafelarchiv von Giricano/Dunnu-Sa-Uzibi: Ausgrabungen in Giricano 1* (Excavations at Giricano 1). Turnhout: Brepols.

Rainville, Lynn. 2015. "Investigating Traces of Everyday Life in Ancient Households: Some Methodological Considerations." *In Household Studies in Complex Societies: (micro) Archaeological and Textual Approaches*, edited by Miriam Müller, 1-28.

Rathje, William L., and Michael Brian Schiffer. 1982. *Archaeology*. New York: Harcourt Brace Jovanovich.

Renfrew, Colin, and Paul G Bahn. 1991. *Archaeology: Theories, Methods and Practice*. Vol. 3rd. London: Thames and Hudson.

Röllig, Wolfgang. 2004. "Eponymen in den mittelassyrischen Dokumenten aus Tall Seh Hamad/Dur-Katlimmu". *Zeitschrift für Assyriologie und Vorderasiatische Archäologie* 94 (1): 18.

Rosen, Arlene Miller. 1986. *Cities of Clay: The Geoarchaeology of Tells.* Chicago: University of Chicago Press.

Sallaberger, Walther. 2012. "Bierbrauen in Versen: Eine neue Edition und Interpretation der Ninkasi-Hymne". In: *Altorientalische Studien zu Ehren von Pascal Attinger: mu-ni u_4 ul-li$_2$-a-aš ǧa$_2$-ǧa$_2$-de$_3$,* edited by Attinger, Pascal, Catherine Mittermayer, and Sabine Ecklin: 391-328. Fribourg: Academic Press.

Sandars, Nancy K. 1978. *The Sea Peoples: Warriors of the Ancient Mediterranean, 1250-1150 B.C.* London: Thames and Hudson.

Savelle, James M. 1984. "Cultural and Natural Formation Processes of a Historic Inuit Snow Dwelling Site, Somerset Island, Arctic Canada." *American Antiquity* 49 (3): 508-24.

Schachner, Andreas. 2002. "Ausgrabungen in Giricano (2000-2001): Neue Forschungen an der Nordgrenze des Mesopotamischen Kulturraums." *Istanbuler Mitteilungen* 52: 9-57.

———. 2003. "From the Bronze to the Iron Age: Identifying Changes in the Upper Tigris Region, The Case of Giricano." In: *Identifying Changes: The Transition from Bronze to Iron Ages in Anatolia*

and Its Neighbouring Regions: Proceedings of the International Workshop, Istanbul, November 8-9, 2002, edited by Bettina Fischer *et al.* Türk Eskiçağ Bilimleri Enstitüsü, 9-23.

———. 2004a. "Die Mittelassyrische Siedlungsschichten van Giricano." In *Das Mittelassyrische Tontafelarchiv von Girican/Dunnu-Sa-Uzibi*, 1-14.

———. 2004b. "Vorbericht über die Ausgrabungen in Giricano, 2001." In: *Salvage Project of the Archaeological Heritage of the Ilsu and Charchemish Dam Resevoirs Activities, 2001*, edited by N. Tuna, 505-46. Ankara.

Schiffer, Michael Brian. 1972. "Archaeological Context and Systemic Context." *American Antiquity* 37 (2): 156-65.

———. 1983. "Toward the Identification of Formation Processes." *American Antiquity* 48 (4): 675-706.

———. 1985. "Is There a 'Pompeii Premise' in Archaeology?" *Journal of Anthropological Research* 41 (1): 18-41.

———. 1987. *Formation Processes of the Archaeological Record. Advances*. Vol. 10. Albuquerque, New Mexico: University of New Mexico Press.

———. 1995. *Behavioral Archaeology: First Principles*. Salt Lake City, UT: University of Utah Press.

Sinopoli, C.M. 1994. "The Archaeology of Empires." *Annual Review of Anthropology*, no. 193.

Smith, C. Wayne. 2003. *Archaeological Conservation Using Polymers: Practical Applications for Organic Artifact Stabilization*. Texas A&M University Press.

Smith, Michael E., and Lisa Montiel. 2001. "The Archaeological Study of Empires and Imperialism in Pre-Hispanic Central Mexico." *Journal of Anthropological Archaeology* 20 (3): 245-84.

Smith, Neil G., Luca Passone, Said Al-Said, Mohamed Al-Farhan, and Thomas E. Levy. 2014. "Drones in Archaeology: Integrated Data Capture, Processing, and Dissemination in the Al-Ula Valley, Saudi Arabia." *Near Eastern Archaeology* 77 (3): 176-81.

Stevenson, Marc G. 1982. "Toward an Understanding of Site Abandonment Behavior: Evidence from Historic Mining Camps in the Southwest Yukon." *Journal of Anthropological Archaeology* 1 (3): 237-65.

Szuchman, Jeffrey. 2007. "*Prelude to Empire: Middle Assyrian Hanigalbat and the Rise of the Aramaeans*." University of Los Angeles.

Tainter, Joseph. 1988. *The Collapse of Complex Societies*. Cambridge: Cambridge University Press.

Tenu, Aline. 2005. "La pratique de la crémation en Syrie : un usage marginal?" *Ktema*, no. 30. Université Marc Bloch: 37-46.

———. 2009. "*L'expansion médio-assyrienne : approche archéologique*." Oxford: John and Erica Hedges Ltd., British Archaeological Reports.

———. 2015. "Building the Empire: Settlement Patterns in the Middle Assyrian Empire." In: *Understanding Hegemonic Practices of the Early Assyrian Empire. Essays Dedicated to Frans Wiggermann*, edited by Bleda S. Düring, 75-88.

Tenu, Aline, Juan-Luis Montero Fenollós, and Francisco Caramelo. 2012. "L'empire Assyrien au XIIIe siècle av. J.-C. : Tell Qabr Abu Al-'Atiq sur le Moyen Euphrate." *Bibliotheca Euphratica* 1: 143-61.

Tkáčová, Lenka. 2013. "*Near-Eastern Tannurs Now & Then: A Close-Up View of Bread Ovens with Respect to the Archaeological Evidence and Selected Ethnographical Examples from Khabur Region*." Unpublished thesis, Masaryk University, Poland. Available at: http://is.muni.cz/th/362654/ff_b/?lang=en;id=273808

van de Mieroop, Marc. 2004. *A History of the Ancient Near East ca. 3000-323 BC*. Oxford: Blackwell Publishing.

Van Hattum, Ijk. 2012. "*The Worked-Bone Assemblage of Late Bronze Age Tell Sabi Abyad, Syria*." Unpublished BA thesis, Leiden University.

Van Zeist, W. 1994. "Some Notes on Second Millennium BC Plant Cultivation in the Syrian Jazira." Cinquante-deux reflexions sur le Proche-Orient: Offertes en hommage à Léon De Meyer. *Mesopotamian History and Environment* 2: 350-73.

Veldhuis, N. 2011. "Levels of literacy." In: *The Oxford handbook of cuneiform culture*. Edited by Karen Radner and Eleanor Robson, 68-89. Oxford: Oxford University Press.

Verhoeven, Marc. 1999. *An Archaeological Ethnography of a Neolithic Community – Space, Place and Social Relations in the Burnt Village at Tell Sabi Abyad, Syria* (PIHANS 83). Istanbul: Nederlands Historisch-Archaeologisch Instituut te Instanbul.

Wheatley, David, and Mark Gillings. 2002. *Spatial Technology and Archaeology. The Archaeological Applications of GIS*. New York: Taylor & Francis.

Wiggermann, F.A.M. 2000. "Agriculture in the Northern Balikh Valley: The Case of Middle Assyrian Tell Sabi Abyad." In: *Rainfall and Agriculture in Northern Mesopotamia: Proceedings of the 3rd MOS Symposium, Leiden, May 21-22, 1999* (PIHANS 88), edited by R.M. Jas, 171-231. Leiden: Nederlands Historisch Archeologisch Instituut te Istanbul.

———. 2005. "Het Sabi Abyad Logo." *FOSA Newsletter* 1.

———. 2006a. "Onthullingen over Ili-Pada... Assyrische teksten en zegels." *FOSA Newsletter* 2.

———. 2006b. "The Seal of Ili-Padâ, Grand Vizier of the Middle Assyrian Empire." In: *The Iconography of Cylinder Seals*, edited by Paul Taylor 90-99. London: Warburg Institute.

———. 2007. "In de boeien geslagen." *FOSA Newsletter* 3.

———. 2008. "Cuneiform Texts from Tell Sabi Abyad Related to Pottery." In: *The Pots and Potters of Assyria, Technology, Organisation of Production, Ceramic Sequence and Vessel Function at Late Bronze Age Tell Sabi Abyad, Syria*, edited by Kim Duistermaat, 559-64.

———. 2009. "Overleg en irritatie bij het bier." *FOSA Newsletter* 4.

———. 2010. "Wein, Weib und Gesang in een Midden-Assyrische nederzetting aan de Balikh." *Phoenix* 56 (1-2): 17-60.

———. 2012. "Bij de kapper." *FOSA Newsletter* 6.

Wilk, Richard R., and William L. Rathje. 1982. "*Archaeology of the household: building a prehistory of domestic life.*" Beverly Hills, California: SAGE Publications.

Wood, W. Raymond, and Donald Lee Johnson. 1978. "A Survey of Disturbance Processes in Archaeological Site Formation." *Advances in Archaeological Methods and Theory 1*: 315-81.

Zarnkow, Martin, Elmar Spieleder, Werner Back, Bertram Sacher, Adelheid Otto, and Berthold Einwag. 2006a. "Interdisziplinäre Untersuchungen zum altorientalischen Bierbrauen in der Siedlung von Tall Bazi/Nordsyrien vor rund 3200 Jahren." *Technikgeschichte (Verein Deutscher Ingenieure)*, 73.

———. 2006b. "Kaltmaischverfahren – eine mogliche Technologie im Alten Orient." *Brauwelt*, no. 10. Nürnberg: H. Carl: 272-75.

Curriculum vitae

The author of this thesis, Merijn Victor Klinkenberg, was born in Apeldoorn, the Netherlands, in 1981. After finishing his secondary school in Apeldoorn, Victor was employed by the archaeological service of the city of Deventer. Here he worked as an excavator and archaeological assistant for three years learning the practical aspects of field archaeology.

In 2004, following a Colloquium Doctum exam, Victor was admitted to the Bachelor program at the Faculty of Archaeology of Leiden University. The first years of academia were oriented to the study of the Prehistory of North-Western Europe, in particular the Netherlands. After completion of his BA thesis on an excavation of an Iron Age settlement at Wijchen-Berendonk, Victor continued in Leiden in the Master program for Palaeolithic Archaeology. After two years he graduated on a thesis on the three-dimensional find distribution at the Middle Palaeolithic site of Neumark Nord 2, Germany. Subsequently Victor was shortly employed within the Palaeolithic research group in Leiden as researcher.

During his studies, Victor held several positions as student representative, organizing academic and social events, and even at one point organized a substantial student protest in Leiden. Most importantly he helped to reinstate the Prehistory student organization Johan Picardt, and co-founded the Digital Archaeology Group.

Additionally, Victor held a position as teacher of Prehistory at the Saxion University of Applied Sciences in Deventer, was employed as research assistant in several projects at Leiden University, and participated in various excavation and survey projects in the Netherlands, Germany, Turkey, and Iraq. Victor also participated in and presented at numerous symposia and conferences, both in the Netherlands as well as abroad.

In 2012 Victor was appointed as PhD candidate in the "Consolidating Empire" project, led by Bleda Düring. The PhD research project, focussing on the find distribution in the Assyrian settlement at Tell Sabi Abyad, Syria, was conducted in four years and has resulted in the thesis which lies before you. Additionally, aided by a grant obtained from the Data Archiving and Networked Services, Victor directed a project to digitize the entire excavation archive of Tell Sabi Abyad, which is now available online.

Also during his PhD years, Victor has participated in and presented at numerous academic meetings, including at the British Association of Near East Archaeology, at the Theoretical Archaeology Group, and at the European Association of Archaeologists. Victor organized various international symposia, and was member of various committees at the Faculty of Archaeology. In his last year he joined Bleda Düring at the excavation of Chlorakas-Palloures, Cyprus, functioning as field director.

Following his PhD research, Victor is employed at Leiden University as a post-doc researcher in the project SETinSTONE. He also continues his work in Cyprus, and is involved in multiple other research projects.