Building Assyrian society: the case of the Tell Sabi Abyad Dunnu

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VII. Synthesis

The research question aimed to address the dynamics between the architectural effect of top-down decisions from an imperial state's perspective, and those decisions made in the course of day-to-day life. To what degree therefore, can we speak about a purposeful design? And how well was it executed? And what do the modifications of the architecture and the spatial configuration say about changing purposes or functions? The study focussed then on four topics to tackle these questions. First, the historical and geographic contexts were discussed in order to set the scene, and understand how and why a *dunnu* here in the form it had took shape in this historical and geographic context. Second, in order to optimise archaeological interpretation and understand the biases and potential of the archaeological record, the nature of the archaeology of the *Dunnu* was discussed. This primarily focussed on formational processes of archaeological deposits to identify aspects of human behaviour such as various construction and demolition activities, and to distinguish those from the effects of natural decay. Third, we focussed on the activities of the builders by discussing construction materials and methods used to build the *Dunnu*. Finally, by reconstructing parts of the architecture of the *Dunnu*, these elements were interpreted from a functional perspective. This included several subtopics such as structural properties, architectural functioning, such as water and waste disposal, ventilation and light, access and circulation of people, and defensive properties. A further step towards understanding the functions of the spaces of the *Dunnu* was made by looking at fixed features. These are immoveable objects such as ovens, fireplaces, bins, and kilns. In this discussion and concluding chapter, the relationship between the architecture and the evidence for various activities is dealt with deeper by linking up with the conclusions of the study of activities in the *Dunnu* by Victor Klinkenberg (Klinkenberg, 2016). After that, the information and insights are synthesized into a model of architectural functioning of the *Dunnu*. In the final paragraph, a conclusion to this study is drawn.

VII.1 History & geography

We can assume that geography, the natural properties of the landscape, and historical events play an important role in shaping not only the general conditions, but also influence the physical properties of the settlement. In addition to these, technology and the cultural background of the people involved with the construction of the *Dunnu*, will have influenced architectural forms, design and spatial organisation.

In chapter II, the general historical and geographic context were discussed. It was shown that the *Dunnu* was built under specific political and military conditions of the early conquests of the Middle Assyrian empire. The *Dunnu* was one of several such *dunnu's*, a type of fortified settlement, built in newly conquered territory in the west, at the expense of the Middle Bronze Age Mitanni kingdom. As the Assyrian state had

for the first time expanded this far, it needed to solve the question of consolidating territorial control. Most likely, the *Dunnu* played a significant role in this early imperial phase. The *dunnu's* were probably built on places of strategic significance: on crossroads of important land and water routes, or near important natural resources such as fertile fields. Another element in the choice for *dunnu's* may have been the lack of an local settled populations, that characterised some of the conquered areas. Traditionally, cities with their walls and naturally located on strategic locations, were the main means of territorial protection and influence. Stuck in the desert-steppe land between the Euphrates and the Balikh, inhabited by nomadic populations, the Assyrian leaders needed a tool for control. This did not just mean political and military control, but also control over agricultural production. The newly conquered areas with its military and forcibly relocated population needed to be fed, and long-distance transport of food over rivers was only possible to a limited degree. Hence, the idea of a *dunnu*, as a fortified centre of a farming estate was implemented. In addition to these historical circumstances, the socio-political structure of the Assyrian kingdom also favoured the use of *dunnu's* for its imperial aims. It has been emphasised by some authors (Brown, 2013), that the Middle Assyrian state was formed by a number of families, lead by powerful individuals that enjoyed significant amounts of political and military freedom. The *dunnu's* are supposed to have been the private possession of such families to be used for the raising of funds for their exploits, or the tasks given to them in exchange for political or military power. Hence, we see the agricultural produce of the *Dunnu* of tell Sabi Abyad being used to supply the military or chariot groups, responsible for the security of the highways.

That they instated *dunnu's* for this end did not just make sense within the geographical context of areas of low urbanisation, but also culturally. Fortified farmsteads, as economic and political bases for important families, already existed for a longer time. Although they seem to be concentrated in certain areas, or periods, the concept persists and can even be seen to survive into more recent times. Nonetheless, they did not play any role of significance in the political structure of the Neo-Assyrian state. Most likely, this is related to higher centralisation of political power to the king in Assur, with a reduced influence of other elite families (Brown, 2013). If this hypothesis turns out to be correct, the *Dunnu* of tell Sabi Abyad played an important role in the demise of these families, and the *Dunnu* as a tool of imperial power. This *Dunnu* was from its inception the possession of the grand vizier of the Assyrian king, who bore the title of king of Hanigalbat. This title and status of kingship finds it origin in the former power that controlled this territory, the Mitanni kingdom. In the course of events, the Assyrian political leadership chose to keep this political unit and status more or less intact and consider it a client kingdom. The Assyrian family that got to be in charge of Hanigalbat, originally headed by a man named Aššur-Idin, therefore became a potential competitor to the central power in Aššur. Aššur-Idin grandson Ninurta-apil-Ekur ultimately conspired against the king and successfully usurped him. After this, there never was a separate 'king of Hanigalbat'

anymore, also because it is quite likely that the Assyrians lost much of their control in the upheavals of the 11th century BCE, known as the late Bronze Age collapse. The *Dunnu* was abandoned, and the concept of a *dunnu* as a tool for imperial control did not survive.

Dunnu's were multi-functional settlements and may in some case be compared to small towns. Similar to towns, they played a military strategic role, had political and judicial functions, and had an important economic function as centres of production. Although information is scanty, it is likely that not all *dunnu's* had the same combinations of functions, political or judicial importance or administrative status. It is therefore unlikely that they all looked the same. The little archaeological information we have on other *dunnu's*, summarised in the next paragraph, appears to confirm this. The physical form of a *dunnu*, would have been determined by the type of structures required to fulfil its functions. It is expected that they all had system of fortifications, as this is implied by the signifier '*dunnu*'. But the buildings that belong to a *dunnu,* its spatial organisation and the degree of fortification are most likely highly individualised. The concept of a *dunnu* may have been applied flexibly to adjust to local political, military, social and economic requirements.

VII.2 Building culture & technology

A *dunnu* was as much a social and political phenomenon, as it was a physical phenomenon. The builders were part of cultural traditions that used particular architectural forms and building techniques. Looking at the *Dunnu* from a purely building technological perspective, there is very little that can be considered unique. The mud brick technology as displayed had been around for most of the Bronze Age and continued into the Iron Age. Interesting variations have been observed within the *Dunnu* in terms of wall bonding methods, arch construction, and mud brick material and sizes. The interpretation of these variations is still open: do they relate to the cultural background of the various groups of builders, to the social status of different building types, or to structural requirements of different building forms? A wider comparative study of such details in terms of building technology was left outside this study, but should be executed to assess the possible significance of variations. It is telling that the available treatises on ancient mud brick construction technology, document and discuss the larger developmental stages of building technology, but do not regard subtle technological variations in a comparative perspective. This may partly be attributed that most archaeological excavations do not systematically record these aspects. If they do, it is to study spatial and temporal developments on the same site, not for a superregional comparative study. There is certainly room for new research avenues here.

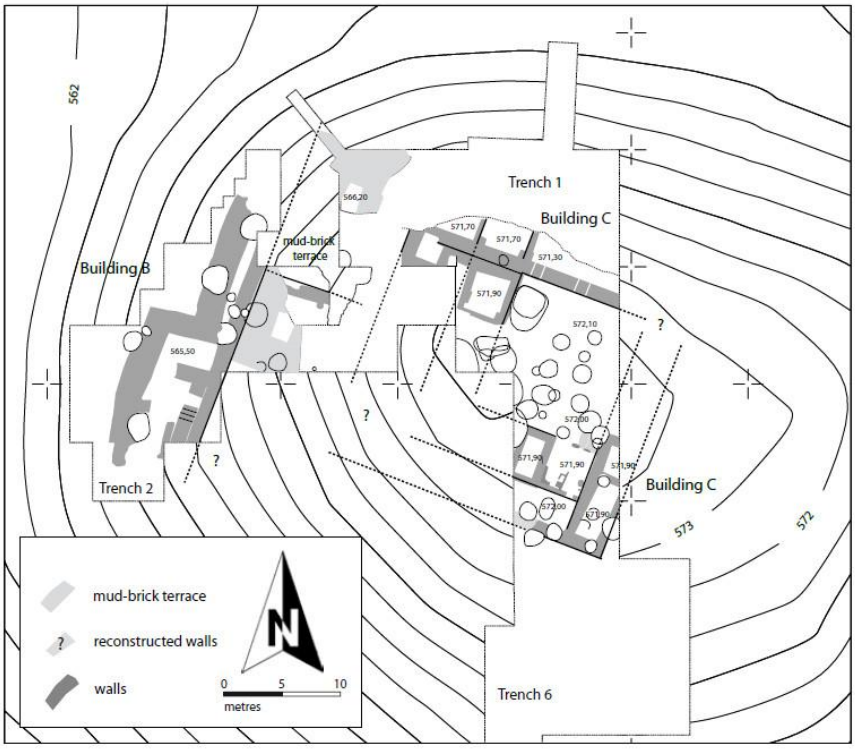
A more fruitful comparison is possible on the level of building typology and morphology. Although this was not the prime focus of this dissertation, some interesting parallels may be pointed out. Since it is

justified to consider *Dimtu* (early/Mitanni) and *dunnu* (later/Middle Assyrian) as different names for approximately the same phenomenon, we may look at both for direct comparison. Various researchers have identified *dunnu's* or *Dimtu's* in the physical remains found in excavations at Tell al-Fakhar (Khalesi, 1977; Kolinski, 2002), Giricano (Bartl, 2012), Nemrik (Reiche, 2014), Tell Qabr Abu al-'Atiq (Montero Fenollós *et al.*, 2011; Luis, Fenollós and Caramelo, 2012; Montero Fenollós, 2015), Tell Hariri, and Gre Amer.[80] Of these, only Giricano has unequivocally been identified as *Dunnu-sha-Uzibi* based on references in cuneiform sources (Schachner, 2004). The others are all possible candidates based on various criteria such the small size of the settlement, presence of fortification, evidence for administration, nearby presence of fertile land for cultivation, or their strategic location. A problem with most of these excavated settlements, except for Tell al Fakhar, is that excavations have not uncovered the complete settlement, or even a complete building. This makes comparison very difficult. However, comparing the incomplete plans with each other, the main conclusion is that there is considerable variation in layout and size. This is in line with the idea that *dunnu's* are used as customizable settlement units, easily adapted to local conditions and circumstances. We should therefore not focus too much on searching for a standardised type of fortified settlement.

There is however one interesting similarity with the only other confirmed *dunnu* and the one at Tell Sabi Abyad, at Giricano/*Dunnu-sha-Uzibi.* At that site the Late Bronze Age levels are poorly known, but the earlier Middle Bronze Age remains – of which we do not know whether it was also a farmstead type settlement similar to a *Dunnu* – there was a central building, or possibly a cluster of multiple buildings with open space encircling it (figure 216), and beyond that space a fortification wall. This arrangement resembles that of the *Dunnu* of tell Sabi Abyad. This spatial arrangement cannot be identified in any of the other excavated *dunnu's* or *dimtu's*. For instance, the supposed *dimtu* at Tell al-Fakhar, is a conglomerate of associated buildings without a spatial separation between the core and a fortification system. The heavy walls function both as exterior walls for the buildings, as fortification walls. This architectural form, dating to the Mitanni period, was therefore very different from the one used at tell Sabi Abyad. Another possible similarity between Giricano and Tell Sabi Abyad, although admittedly tentative, is the elongated rectangular projection from the fortification, connected to a narrow, elongated space. It is alike a similar structure in the eastern fortification wall at Tell Sabi Abyad, where the long narrow space may be identified as stairwell. These observations may indicate there was between the builders of Tell Sabi Abyad and

[80] See also the discussion of the issue of identifying *dunnu's* in Düring (2015, pp. 53–54).

Giricano. For all other excavations of potential *dunnu* structures, the piecemeal fragments of heavy mud brick structures are too generic to draw any conclusions about cultural associations.



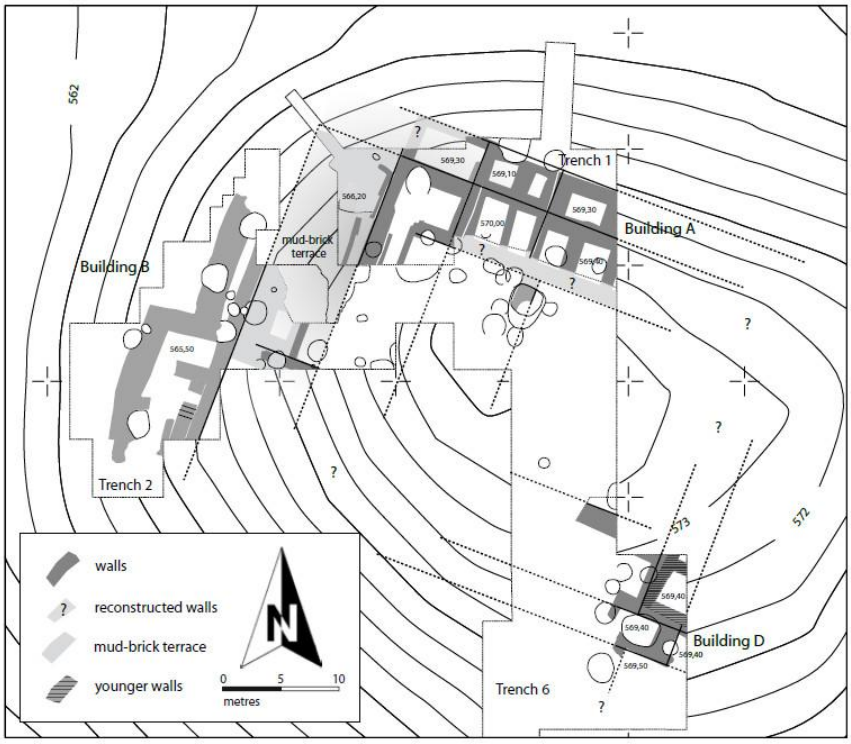


Figure 213. Two phases of the archaeological site at Giricano or Dunnu-sha-Uzibi (after Bartl, 2012).

Specific buildings of the *Dunnu* may be linked to other Middle Assyrian, or Late Bronze Age, examples. For instance, the Middle Assyrian building P at Dur-Katlimmu (Kühne, 1983) has some superficial similarities with the tower of the *Dunnu*. Both are heavy walled structures with small arched doorways (figure 214). Although it may be tempting for some to see these as evidence of cultural links, these architectural features are again too universal to justify this. Mud brick arches and thick walls had been around for a long time, and are used to this day in similarly heavy structures, especially on basement level or ground floors. Reiche (2014, p. 52) also draws a parallel between the heavy walled Mitanni structures at Nemrik, Northern Iraq, and the tower of the *Dunnu*. However, apart from its heavy (but still lighter) walls and the occurrence of (possibly) nine small rooms, there is little real resemblance in access pattern and construction.

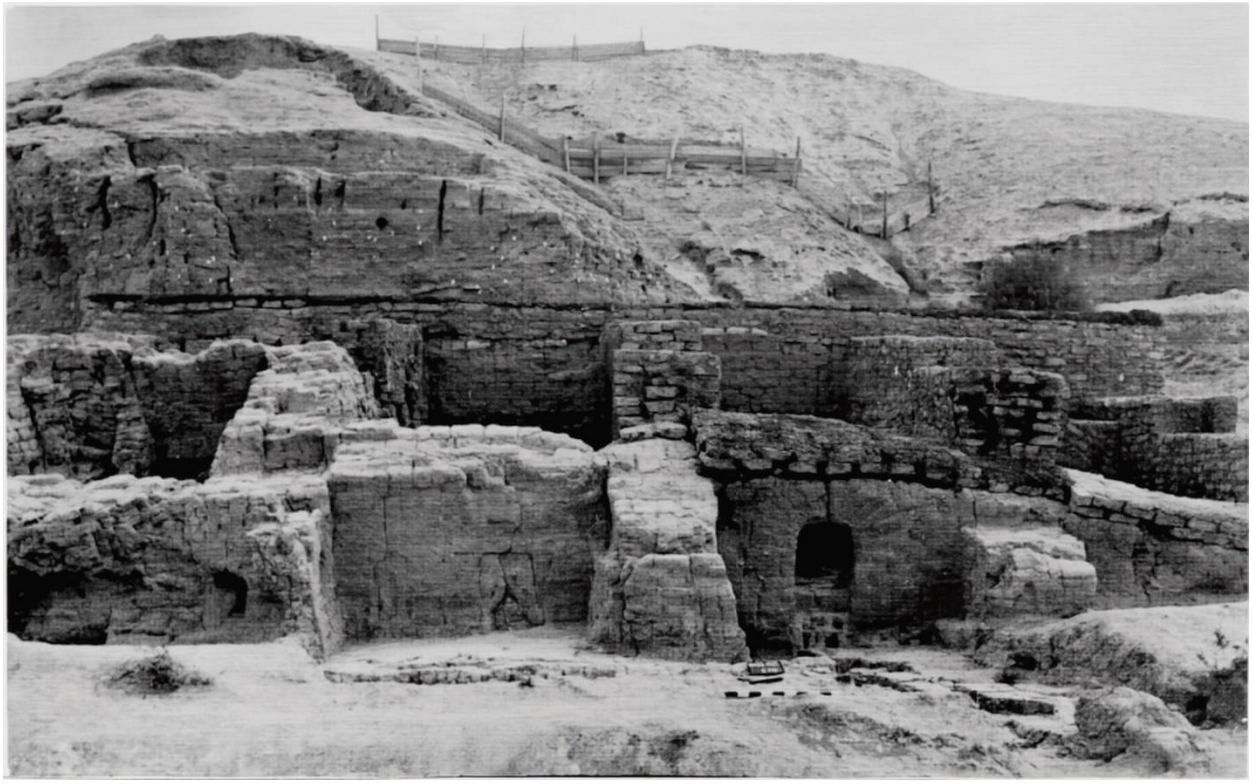


Figure 214. Middle Assyrian building P at the slopes of tell Sheikh Hammed, with the completely preserved arched doorway (after Kühne, 1983, fig. 2).

A spatial structure that does show remarkable similarities to a specifically Late Bronze Age phenomenon is a sequence of rooms that may be interpreted as “apartments”. In the *Dunnu*, several examples are found of one or two rooms connected by a corridor system and a bathroom consisting of one or two spaces. The most striking examples are found in the residence, but at least two, and probably four smaller examples are found as well. These are very similar to houses found at Middle Assyrian Tell Fekheriye (figure 215) (McEwan, 1958; Bonatz, 2014). Although the number of rooms varies, the main characteristic feature of these, is a corridor system connecting the rooms, and with a bathroom always at the end of the corridor. A parallel may also be drawn to the so called ‘reception suite’ phenomenon that has been identified as a characteristic element of the North Syrian palatial architecture tradition with origins going back to the Middle Bronze Age (Matthiae, 1990). The example most resembling the residence of the *Dunnu* is found at Arslan Tash, as it also has two apartments of three rooms connected to the same main room (figure 216). However, although all these reception suites sport a similar sequence of, usually three, rooms with the last being a bathroom, they are lacking the quintessential corridor, which results in a significant alteration of the access pattern.

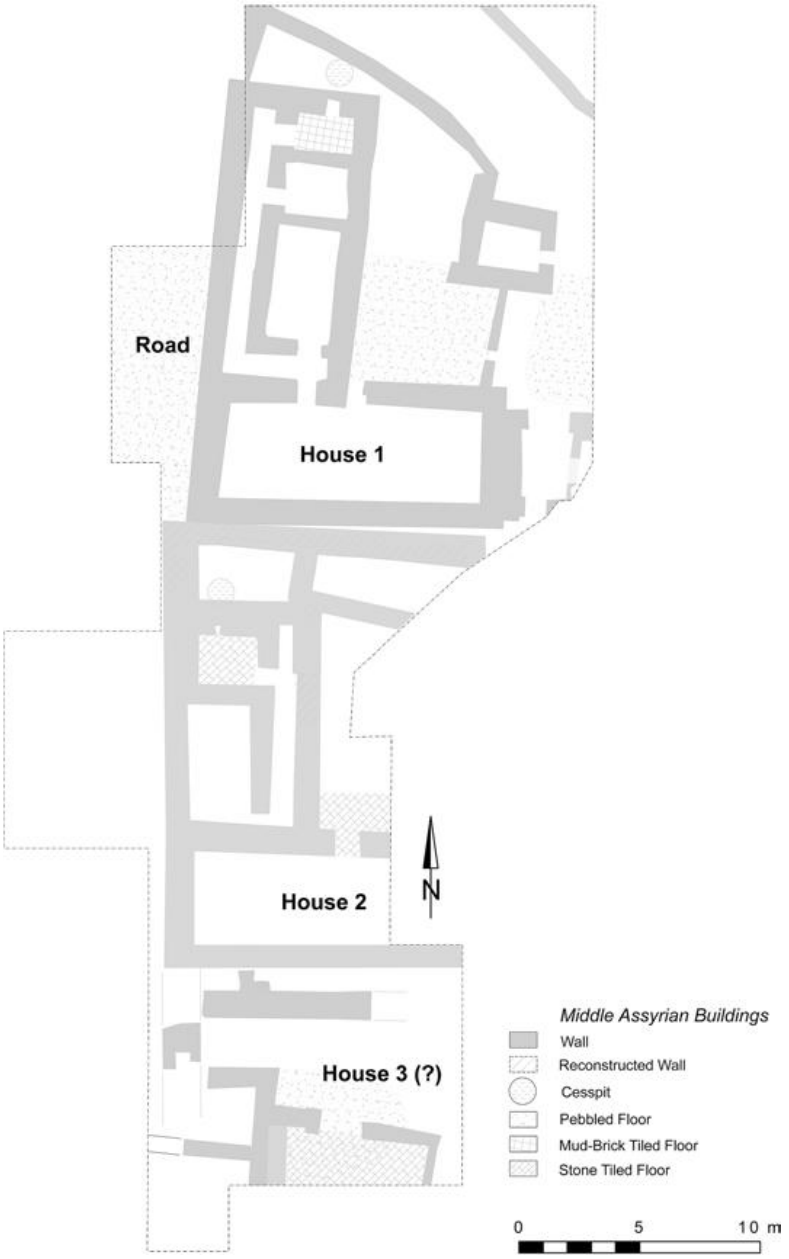


Figure 215. Middle Assyrian houses at Tell Fekheriye (after Bonatz, 2014, fig. 3).

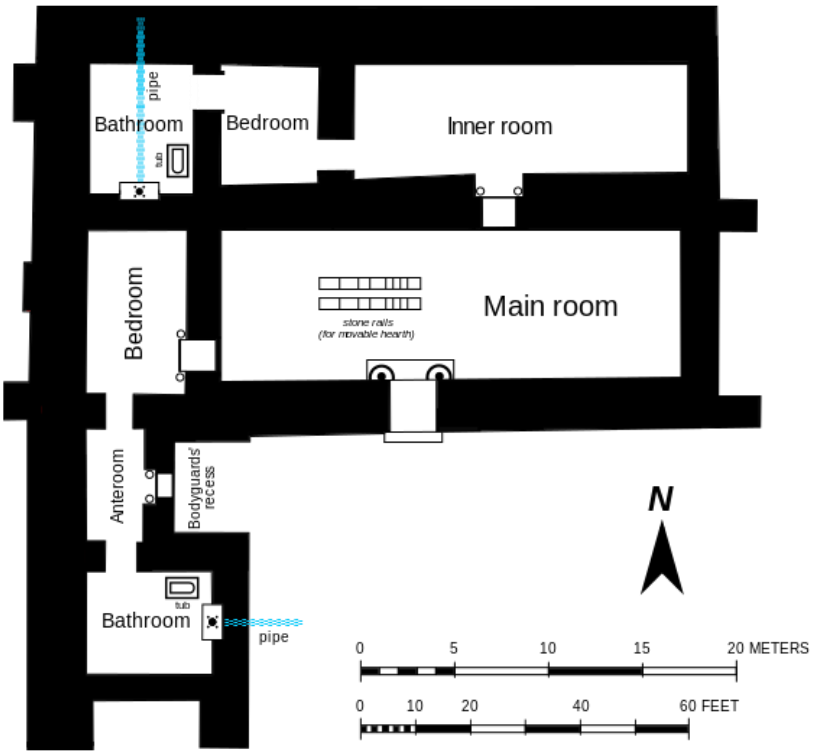


Figure 216. Arslan Tash (image by Bjankuloski/Wikipedia).

In the previous the residence was looked at in isolation, but if the entire architectural context is considered, additional parallels may be drawn. The organisation of space with a residential section and other subsidiary spaces, and a gate room around a courtyard resembles the spatial principle of a house with an enclosed court (Miglus, 1999, pp. 7, 23). This is a type that occurs frequently in a time much earlier than the *Dunnu*, the old Babylonian period, in southern and middle Mesopotamia, on urban sites like Larsa, Nippur, Tell ed-Der and Ur. Again, since the courtyard as spatial organising principle is such a common phenomenon in much of the history of Western Asia, the historic cultural significance of these parallels may be questioned. However, in the case of a courtyard house from the Isin-Larsa period at Bakr Awa, the alignment of gate room, courtyard and residence on the same axis has a generic resemblance to what seen at the *Dunnu* (figure 217) (Miglus *et al.*, 2013), although there is no direct relation between the two. This is remarkable since in most instances of courtyard houses, the main gate and vestibule are not arranged on the same axis as the residential section of the house. Nonetheless, this could very well have been part of the "natural" variation seen within this type of houses with enclosed courtyards. Moreover, ultimately there are more

differences than similarities between an example as Bakr Awa and the courtyard/residence combination at the *Dunnu*.

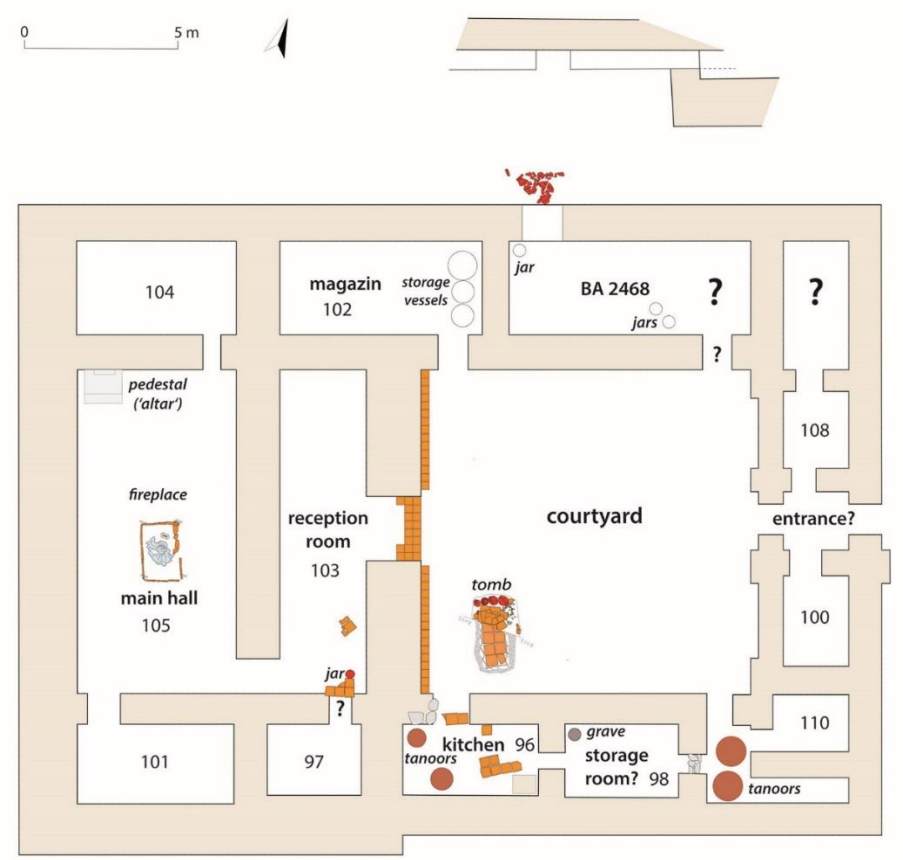


Figure 217. Bakr Awa, Middle Bronze Age residence (after Bürger and Miglus, 2014).

VII.3 Archaeological site dynamics

Now we will turn to the archaeology of the *Dunnu* of Tell Sabi Abyad. In chapter IV of this dissertation, the formation of deposits was discussed with the triple aim of understanding how human building and demolition activity contributed to deposition, of reconstructing what has been lost due to post-formational processes, and of understanding the dynamics of architectural modification over time. The applied methodology involved systemisation of depository processes in 'deposit sequence graphs', in essence generalised section drawings with a unified symbology. All analyses are based on traditional section drawings and deposit descriptions made in the field by the excavating archaeologists. The absence of modern micromorphology methods to analyse and determine the character of deposits, is a limitation of this study. For example, ash deposits can be hard to differentiate visually from eolic deposits of fine grained soil without microscopic study (Friesem, Karkanas, *et al.*, 2014). In the same vein, collapsed roof deposits require detailed, although not necessarily microscopic, stratigraphic observation and an awareness that of

the fact that such deposits are perhaps more often preserved than has been accounted for previously in archaeological research (Friesem, Tsartsidou, *et al.*, 2014). Another important methodological note is that these dynamics cannot be understood without a model of mud brick construction practices and building modification practices. It may be argued that all building activity is the creation of a type of cultural deposit. The topic of site dynamics has therefore much natural overlap with the discussion on building methods and reconstruction of architecture.

Seven different general patterns of deposit sequences were classified using the recorded stratigraphic data, both section drawings and deposit forms. A rough classification can be made differentiating rubble deposits, and gradual accumulation/decay deposits. Rubble deposits, further classified according to the density of mud brick debris, are either caused by demolition, destruction, or natural collapse. It has been shown that deposits caused by intentional demolition activity can be differentiated from deposits caused by decay and collapse. The gradual decay deposits have been classified based on the thickness and irregularity of the layers. The thicker the individual layers, the faster the rate of infill is. This rate of infill can be linked to natural sedimentation from decaying loam plaster and wind deposited materials, and to various activities such as the construction and demolition of installations, thrash disposal, and cleaning regime. The close stacking of a sequence of thin floor levels is also regarded as gradual infill deposit in this model. In fact, it is very hard to draw a difference between 'floor levels' and compacted sedimentation. We will return to this issue below.

The first important aspect to emphasize, is that most deposition in the *Dunnu* occurred in a phase that the *Dunnu* did not function anymore as the *Dunnu* we know from the Assyrian cuneiform sources. Roughly defined, there is a distinction between phase of use with evidence for various modifications, followed partially by abandonment and partially by reuse of a different nature. The effect of this sequence is that most evidence for deposits is concentrated in the so called 'post-*Dunnu*' use phase. This is due to a combination of factors. On the one side the rapid architectural degradation, possibly induced by active destruction followed by accelerated natural decay. On the other side, reuse was of a character that caused additional deposits to form. The typical case is the large, paved court in the north-western sector, probably the heart of the administrative, political and judicial *Dunnu*. It starts to fill up only after a phase with evidence for burning and scavenging. It did not fill up due to abandonment and building collapse however, but by a concentration of human activities that included construction and demolition of smaller walls and installations. Additionally, rapid infill may have been caused by absence of building maintenance of the former *Dunnu* buildings and fortifications. As a logical consequence, there is hardly any depository evidence of the actual use of the large court during the main phase, as it was kept clean during this entire period. In other spaces, a rubble deposits are found directly on top of floors, in some cases also followed

by a phase of gradual deposition, indicating the fact that these formerly covered spaces are now open, and deposits are allowed to accumulate. The effect is that several spaces, both open (the paved courts) and roofed basically have a single floor phase during the entire existence of the Assyrian *Dunnu* without accumulation of deposits. Any later floors or 'walking levels' present in such buildings must often be viewed as a complete change of character of use, associated with the discontinuation of the *Dunnu* as it was. The presence of kilns inside the fortifications is a symptom of this development. The places where just one confirmed floor or surface level has been found is however limited to various spaces and buildings in the western *Dunnu*: the residence, and office. But also in various buildings in the south.

However, not everywhere is there an absence of deposition during the main use phase of the *Dunnu*. In several spaces, some gradual deposition is allowed to occur. These are found in the south, amongst others in spaces related to the bread baking and food preparation zones. The gradual, but modest rise in surfaces here is probably related to sediment accumulation, and the decay or demolition of fixed features. Faster rates of deposition are found just outside these spaces, in the narrow passage, or "alleyway" that encircled the large central buildings. These probably collected a lot of erosion products from the roofs and walls of these large buildings, hence accumulating faster than other exterior spaces. It has been observed that this space did not collect rubble deposits, but did fill up notably faster higher in its later stages, indicating a gradual transition into the post-*Dunnu* phase. It is unfortunate that the large open courtyard like space in the north-eastern *Dunnu* has not been sufficiently excavated, as it would be interesting to compare its rate and type of infill to the alleyway. The limited information that can be gleaned from the soundings seems to indicate a similar process, confirming its status as courtyard with domestic status and use.

The other spaces with evidence for deposition prior to the partial abandonment and reuse phase, all have rubble deposits. These spaces are found across sections of the south-eastern *Dunnu,* the north-eastern *Dunnu*, and in the tower. In all such cases, it involves a rubble deposit, followed by building activity, modifying the prior architectural layout or structure. These rubble deposits can therefore be linked to demolition and levelling activity prior to new construction activity. This construction activity can in turn be linked to functional or structural change or improvements to the architecture. In the case of the tower, the effect of the modification was the enlargement of the building, including the staircase. The structural and functional reasons for this, are most logically the raising of the floors, or even the addition of new floors. In the case of the modifications in the south-eastern corner, it is interesting to note that the rubble deposits cause a levelling of an area that was formerly terraced. Although this may be considered a convenience for users of the area, this does not explain the spatial redesign that also occurs. Looking at the changes in accessibility and new architectural features, it seems that higher levels of security are created with better control over access into the *Dunnu*. In addition, a staircase was constructed that required secure

entry. In the north-eastern corner of the *Dunnu*, the demolition deposits are the effect of taking down building in favour of expansion of the fortifications. Also, most buildings in the eastern extra-mural *Dunnu* contain rubble deposits, and the area is entirely levelled. Again, this implies intentional demolition, although it is uncertain in favour of what, as the layers above that have been preserved badly. It is however interesting that the reduction of these buildings took place before the modifications of the *Dunnu* in the south-eastern and north-eastern corners. In other words, the entire area was repurposed still during the main phase of the *Dunnu*.

As noted in the introductory paragraph of this section, sequences of thin layers within a gradual deposit may be hard to interpret. In the excavation documentation, such thin layer stacks are usually understood to be a sequence of 'floors'. However, looked closely, their character varies widely, and there is not always good material evidence for usage of these surfaces. In in some cases it is not apparent whether these layers are constructed floor renewals, or natural rising of the floor level due to various kinds of sedimentation discussed previously. In some cases, these may be particular for the ruined state of architecture, and related to variable degrees of exposure of interior spaces and the presence of cavities in partly collapsed architecture. It should be emphasized that in most cases of real constructed floors in interior spaces, floor renewals causing a stacking of floor levels, are absent nearly everywhere. Although cyclical floor renewal on interior spaces may have taken place, the stratigraphic documentation does not allow us to tell. This observation makes the exceptions to the rule interesting, and in demand of an explanation. Most notable are the floor level stacking in rooms 2, 3 and 5 of the tower in its earliest phase. Even more notable is the fact that this stacking is halted after a large-scale renovation has taken place. This information put together, has developed into the new hypothesis that these spaces may have been open spaces originally, and that the new interior walls were constructed with the aim of supporting newly built roofs. In theory, interior spaces could also see natural rising of the floor level, if they saw much 'dirty use', involving refuse disposal, the building of loam installations or other types of interaction with the exterior that brings in new sediments. Concrete examples may be stables, interior food preparations areas, or other production activities. However, this situation is less plausible given that most ethnoarchaeological studies indicate, that such activities are nearly always found in outside areas.

VII.4 The construction of the *Dunnu*

The study of construction materials and techniques at the *Dunnu* aimed to understand how the *Dunnu* developed its physical form by cultural knowledge, embodied technological practice and responses to functional and structural challenges and requirements, and within the material limitations offered by resources and technology. A study of construction would not be complete without a proposal for a reconstruction. In this, the perspective of J-C. Margueron (1999a) was followed, who highlights the rational

nature of builders of the past, meaning that no structures were built without relation to functional and structural requirements. His view is a response to the debate about 'non-sensical' large dimensions of walls of ancient Mesopotamian architecture (Heinrich and Seidl, 1968). Margueron reasons that even in the case of over-sized structures with a high symbolic meaning embedded in them, they still had to adhere to a structural logic. And this logic can be 'read', in part, from the building plan. This regards such aspects as the thickness of walls, the type of bonding, the width and length of spaces, the presence or absence of buttresses, etc. The reconstruction, as a method, forces one to think about the structural and functional interpretations that the excavated remains imply.

This topic was studied in three ways: by investigating mud brick construction practices cross-culturally, by analysing the archaeological evidence documented during the excavation of the *Dunnu*, and by assessing the possibilities of the natural and cultural resources in the Balikh valley in the Late Bronze Age. As has been noted above (VII.2), the study of mud brick building practices is somewhat hampered by the fact that research has focussed on the larger developmental outlines, but the particularities of regional, local and perhaps site to site variations of practices have not been investigated in overview studies. We will start by discussing the main characteristics of building methods and materials.

The *Dunnu* was built on top of an eroding Neolithic tell. Digging activities prior to construction have meddled with these layers. Most prominently the fosse, a three meters deep defensive trench was dug into the tell. From a pragmatic perspective, the dug-up material from the fosse must have been used for initial construction. The use of the neolithic tell as mud brick construction material is also implied by the presence of neolithic sherds in Bronze Age mud bricks, but this phenomenon has never been quantified. Preliminary calculations show that the volume of earth thus excavated was enough for the construction of the fortifications[81], and some additional buildings, but not for the entire *Dunnu.*

The hypothesis has been put forward by the excavators that the tower, or the building preceding the tower, was a Mitanni period construction, and this is also confirmed by the ceramic analysis (Duistermaat, 2008). The oldest walls of this building appear to be indeed stratigraphically earlier than the fortifications. However, in the absence of physical, uninterrupted stratigraphic links between the tower and the fortification wall, even this remains uncertain. Theoretically, the early version of the tower could have been accompanied by an early version of the fortifications. Nonetheless, considering the evidence, the hypothesis forwarded by the excavators appears to be the most plausible. This means the Assyrians did not come to a

[81] The volume of earth in the fosse has been estimated to be 4030 m^3. While the total volume of the fortifications are 2550 m^3.

completely empty site, and among their first building activities alongside the erection of the fortification wall with the old gate, may have been the renovation and modification of the building that preceded the tower.

Early building activity, prior to construction, also certainly involved shallow terracing. This must have involved levelling both by addition and removal of soil. The terraced nature of construction is especially clear from the buildings on the south side, where the tell slopes more steeply. Terraces do not appear to have been created for entire buildings, but to accommodate specific walls. This results in a pattern with walls of the same building with different base levels. In some cases, for especially long walls, a stepped construction that followed the local topography, was applied. This is evident in the tower, the residence, and the fortifications. The best documented example of both stepped construction and of wall terracing are found in the well-studied walls of the residence. But the method is implicit in the base levels of walls everywhere else. It should be noted that notwithstanding various references to foundation trenches found in the excavation documentation, 'trench foundations' were not applied at the *Dunnu*. As has been discussed in this dissertation, the absence of foundation trenches is a common feature of mud brick architecture, now and in the past. The generally large dimensions of the width of mud brick walls are related to this, giving them the required stability. The absence of trenches also meant that in the *Dunnu*, the earliest floor levels of spaces are close to the base or foundation levels of the walls. In some cases however, floors appear to be slightly higher than foundation level. This is not due to trench digging, but more likely caused by the dumping of a layer of soil in between the walls of a newly constructed building. The main purpose of this practice was most likely to create a level floor. This artificial raising of floor levels above the natural level of the tell surface, is again most clearly present in the residence, reflecting the additional attention and care given to the construction of this building. In general, the foundation methods thus applied are pragmatic and cost effective. This is expected in a context where construction has to advance quickly, and human labour is the main force driving construction.

Later construction activity, modifying already standing Late Bronze Age *dunnu* architecture, made use of this architecture in the same way that has been documented for many excavated conglomerated built environments across the ages. As has been discussed in the context of site dynamics, evidence from the study of deposits showed that buildings were demolished, probably levelled, and new constructions erected on top of them. This resulted typically in 40-50 cm mud brick building debris within the older walls. This intentionally backfilled space formed the solid foundation for new constructions. In one instance of a complete architectural revision in the south-eastern corner of the *Dunnu*, this method was used to level an entire area that previously had a terraced nature. Thus, more rubble was simply deposited in the deeper

founded spaces. These are indications of a well-planned building activity that considered both the new functional requirements as practical use of the area. It was in other words, an improvement.

The main element of construction are the mud brick walls. Variability of wall construction was studied by mapping and assessing the following material properties: wall thickness, mud brick size, mud brick colour, and bonding methods. Regarding mud brick size and mud brick colour, these have not been consistently documented during excavation, but are interesting sources of information for mud brick building practices, and therefore deserves more attention. The patterning of brick colour and consistency appears in most cases quite random, indicating that this may reflect coincidental differences due to differences in loam sources used for bricks in different sections of walls. On the other hand, in other cases we can see a remarkable more significant differentiation. For instance, the difference in mud brick material and sizes between the residence and the tower. The tower has a larger range of sizes, and has bricks of a different colour and consistency. These materials differences further reinforce our idea that the tower is of a different construction date than the residence. Differences of loam materials used for the bricks also indicate that a different loam source was used. In this respect the most remarkable difference that was easy to observe during excavation, is the contrast between brown and red soil bricks. The residence and the walls of the large, paved court contain layers of bricks of these colours, indicating that a choice was made to create a hybrid wall consisting of two kinds of bricks. Although this has not been confirmed by petrological analysis, the most likely cause is that bricks made from a 'fresh' loam source were used in combination with bricks made from reused tell soil. As this pattern was not observed anywhere else, it emphasizes the special care the residence and associated court received in construction. The application of two types of mud bricks of different quality are known from anecdotal ethnographic sources and from references in ancient texts. Archaeologists of mud brick sites however find a much larger range of mud bricks colours and consistencies (Homsher, 2012). The location of loam sources plays an important role here, with some coincidental patterning as a result. However, selection of good versus bad quality must have taken place on many sites in the past. To better understand the builder's rationale and the causes of coincidental patterning, further and especially systematic comparative study is required.

It was argued in this dissertation that wall thickness is likely associated to building height, and therefore is a source of information for the reconstruction of the architecture. More factors play a role however such as wall slenderness (i.e. long walls without lateral support, high walls without intermediate floors), and functional requirements with regards to potential loads or security. The aim is wall stability in all cases, and increased wall thickness, brings more stability. As higher buildings, or higher walls are potentially less stable, they require thicker walls. Excluding the special case of fortification architecture, it is highly likely that differences in wall width of most 'regular' utilitarian buildings, reflect the number of floors they had.

On the other hand, a special case can be made for the residence, which most likely had a single floor, but high ceilings, which creates more potential instability, hence requiring thicker walls. We may assume that the storeys of the tower were not as high, but that the thickness of its walls reflects the building's considerable height. In addition, it may also be a indication of its function as main storage building, requiring heavily supported upper floors. However, we should not exclude a possible defensive role, or its potential use as prison as functional aspects that determined the thickness of its walls. The former discussion is all based on relative differences of mud brick wall thicknesses. If the absolute thickness is considered, all walls are probably oversized. Building heights that reflect the carrying capacity of the mud bricks, would result in a tower that could be safely 30 meters high, a fortification wall 16 to 20 meters high, and regular buildings with two mud brick wide walls would be 8 meters high.

VII.5 The functioning of the *Dunnu*

In this dissertation, the functioning of the *Dunnu* architecture has been approached from several angles: the access pattern and spatial configuration, defensive qualities, architectural facilitation of domestic and practical usage, and material evidence for the use of spaces. An attempt was also made to chronologically map changes to the functioning of the *Dunnu*, although not all categories of evidence were exhaustively dealt with in this manner.

VII.5.1 Access patterns & spatial configuration

One of the main characteristics of the *Dunnu* results from its concentrical spatial organisation, with several rings each constituting a larger access zones. These zones are spatially demarcated by a fortification wall, a fosse and an inner ring of open spaces. The outer zone is not demarcated by a physical obstacle as far as we know, although we may consider the slopes of the tell a physical demarcation and barrier as well. This zone was not built up uninterruptedly, although the available data is limited both due to preservation issues (erosion), and the limited coverage of excavation. However, it seems plausible that at least the southern area was left vacant as the tell slopes here most steeply and is therefore a slightly less favourable area for construction. Also, the western side seems to have been left largely unbuilt. In the eastern area on the other one large building was excavated. The area north of the fosse appears to have been most built up, since the archaeological evidence shows various elongated structures in this area. This pattern suggests that the flatter areas of the tell were probably chosen for construction, and that the *Dunnu* fortifications were deliberately placed a little off-centre on the hill, skirting the steeper slopes in the south and west. This serves the dual aim of defensibility of these directions and leaving more flat space in the north and east for construction or other social and economic activities.

The area in between the fosse and the fortification wall, called ‘extramural area’ in this dissertation, was also not built up everywhere, and again the focus lies on the eastern and northern sides. This was probably influenced by the same considerations as construction activity in the outer zone. The amount of space that was created between the fortifications and the fosse is also larger in the north and east, than in the south and west. Nonetheless, some excavated structures in the west, indicate that the narrower space here was not left unbuilt. Access to this zone was already much more highly limited due to physical barrier that the fosse created, with only one point where it could be crossed. We should however consider the possibility that also a crossing existed on the eastern side, as there are still some large unexcavated areas, and a crossing would make sense in view of the *Dunnu’*s connectivity with the surroundings, and presence of a very gentle slope here. But even if there was an additional crossing, access to this zone would be much more limited than to the outer zone.

The concentrical organisation is also retained in the intramural area, with a ring of buildings against the interior of the fortification wall, a ring of open spaces, and the inner core of the *Dunnu*, constituted by the two largest buildings: the residence and the tower. The exception to this pattern is the western side: the space between the fortification wall and residence is so narrow that this sequence of a building followed by open space could not be maintained here. The exception is probably caused by the insertion of a large architectural system that takes up all space and required a different approach to spatial organisation: the combined structures of the residence, gateway, large courtyard and related smaller spaces.

The concentrical organisation of the settlement, and the physical barriers that support it, must be viewed as a deliberate design that reflects some ideas of how the *Dunnu* was supposed to function. It implies the existence of graduated access zones, with fewer people being able to continue as one moves towards the core of the *Dunnu.* The first notable effect is that this makes the residence and tower the natural foci of the settlement, which must have had some implications on their status. This is corroborated by the size of these buildings, and other exceptional architectural characteristics. Second, their location in the centre makes them the least accessible and best secured elements. This implies that their function was considered paramount. Although no direct evidence exists to confirm this interpretation of these buildings, this is implied by contextual information. The cuneiform sources found on location clearly suggest the existence of a residential building, and in general its links to the main political figure in the area. Parallel to palaces of the time, the building functioned both as the place where the viceroy resided, and as a symbolic representation of the political power. The cuneiform tablets moreover reveal the importance of the agricultural production and storage. The vital importance of both buildings, economically and symbolically, justifies such a central and well secured location for these buildings.

A desire to control access is not only apparent from the concentrical organisation of space, but also from the specific designs of the access areas that controlled both movement and views. The early moat crossing is oriented along the axis of the northern fortification wall, which constrained people to move along this wall and limited their view on the main gate. It is possible that the other, likely later, crossing changed the situation, as it is placed parallel to the gate entry axis. However, the badly preserved structures on both sides of the moat near this crossing, may be tentatively interpreted as some kind of access and visibility controlling architecture. The spatial structures behind both gates reveal further access controlling measures. Both the main (new) gate and the postern gate have a system of strategically placed secondary and tertiary gates and spaces that controlled the direction of movement and limited views. It is interesting to note that this is also the case with the postern gate, implying there was by no means easy movement between the "potter's district" outside the walls and the inner *Dunnu*. The inner core and extramural areas were therefore strictly separated and did not have much functional overlap. The existence of different gates probably reflects a functional spatial segmentation of the inner *Dunnu*. The large main gate in the north gave access to the main administrative, political, and judicial *Dunnu*. It was probably also the gate through which all the agricultural revenue entered the *Dunnu,* was administrated, and moved to storage. The postern gate on the other hand, mostly served the *Dunnu* staff. Goods and people that entered through this gate must have been used to supply them, or their food procurement and preparation activities.

The accessibility of the intramural *Dunnu* is dictated by the presence of the two gates. As has been shown in this dissertation, both gates have their exclusive service zones. This is evident from the access pattern, and the probability of strong access control between the two halves of the *Dunnu*. Although the concentrical design, and theoretical possibility of a full circular movement would imply integration of the two halves, this was most likely not the case. Access between those parts was controlled through two points of passage, most likely closable doors or gates. This structure allowed for physical separation of functions of the *Dunnu* and ensured that visitors and staff did not need to interact unnecessarily.

The access situation was however not always the same, as the main gate was relocated at some point in time. This offers some interpretational challenges. The old main gate, although more heavily reinforced, seems to have a less optimised access control. It was oriented towards the tower, and gave direct access to it. People were not channelled past a large court with an administrative building and an additional gate, such as in the later situation. It is therefore possible that the old gate was a remnant of an earlier situation, in which the *Dunnu* may have been built for a different purpose. Considering the more heavily reinforced construction, this could have been more military or defensive. By adding the residence and administrative court, and the important functions that come with it, space needed to be organised differently for optimal functioning. As a result, the requirement for a new gate was also created. Although the existence of a

different spatial design of the *Dunnu* in an earlier phase is implied by the existence of the old gate, the archaeological evidence is inconclusive. Although various tantalising clues in architectural plan and structure could be observed, indicating possible earlier versions of the plan, the early *Dunnu* cannot be reconstructed reliably.

Apart from a significant global access pattern, spatial subdivisions can be identified within the *Dunnu*. It has been shown in this dissertation that such spatial subdivisions overlap to large degree with structural subdivisions of the architecture, but not completely. Some structural subdivisions ("buildings") are integrated in larger local access structures. This suggests the presence of spatial subgroups consisting of multiple "buildings", at other times a single building. Clear examples of the latter are the residence and the tower. In these cases, the access pattern and structural entity completely overlap. But many structures are integrated in groups, which strings multiple inside and outside spaces together as functional groups. However, the identification of such groups is somewhat limited by uncertainties regarding the presence of doors. Nonetheless, the patterns are clear enough, and in combination with additional material evidence for activities and architectural features and character some suggestions can be made regarding their function and use.

VII.5.2 Material evidence for activities

The artefactual evidence for activities has been discussed in detail by Victor Klinkenberg in his dissertation (2016), and is used in this section to reflect on the architectural evidence. It is important to note that Klinkenberg focusses on the intramural distribution of artefacts of the latest *Dunnu* level only. References to distributions or finds elsewhere in the *Dunnu* or stratigraphy are based on my own observations, or previously published excavation reports by Akkermans.

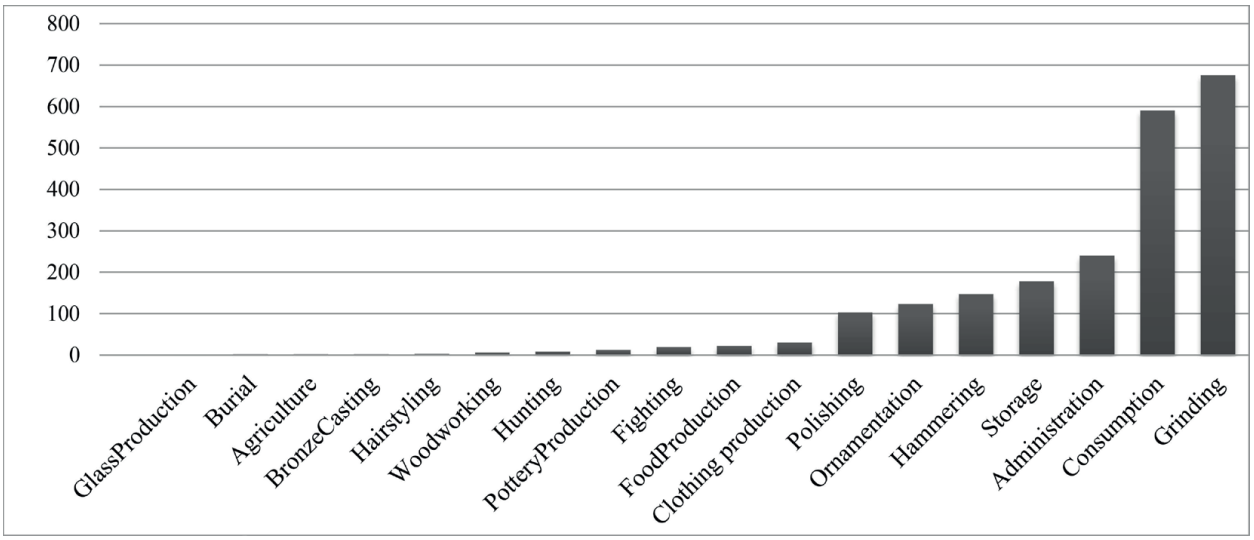


Figure 218. Statistical distribution of level 5 artefacts. Note that for some spaces, level 5 and 6 surfaces are continuously used (after Klinkenberg, 2016).

Klinkenberg defines various activity types, grouping them in larger categories such as subsistence, production processes, etc. Objects are classified according to shape, material and known interpretations and assigned one of these activity types. He then plots individual items on the plan of the *Dunnu.* This gives us both an indication of statistical distribution of artefacts related to certain activities, and their spatial distribution. Regarding statistics, the overwhelming majority of objects are related either to grinding (mortars, pestles, grinding slabs) and consumption (drinking cups, bowls). Storage (large vessels and constructed bins) and administration (tablets) follow, with some significant objects related to manufacture (polishing, ornamentation, and hammering) as well. We may expect that three factors explain the numerical distribution of evidence for various types of activities. These are for a large part low value item, less likely to be brought after abandonment or recovered. In addition, the picture is probably strongly biased due to high survivability of stone and ceramic artefacts, in relation to perishable evidence of activities (fabric, plants, wood). Finally, the actual numerical incidence of certain activities must have caused the pattern as well. For instance, the fact that spindle whorls and loom weights appear in such extremely low numbers, probably reflects the absence of a significant (domestic) yarn and fabric industry. It is clear that much is missing when we compare the results with the activities attested in the cuneiform tablets (discussed below). These for example allude to chariot manufacture and a leather or hide processing industry. No clear evidence has been found of these in the artefactual record.

Main category	Subcategory	Typical objects	Spatial distribution in level 5
Subsistence	Agriculture	Hoes, sickles	One hoe, one sickle in north-western corner
	Hunting	Sling missiles	Four items in south-western area
	Animal husbandry	Cuneiform tablets, faunal material	
Food preparation	Grinding and hammering	Grinding slabs, mortars, pestles	Concentrations in southern *Dunnu* outside of main buildings. Northern *Dunnu* sparser distribution.
	Baking and cooking	Ovens (*tannur)*, fireplaces, cooking pots	Clear concentrations of ovens and fireplaces in certain areas. Spatial focus on the southern *dunnu.*
	Beer brewing	Brewing vessels and strainers	Three confined areas in the north, east and south-east of *dunnu.*
Production processes	Pottery	Kilns, wasters, tool	Three "workshops": East, north and west. *Note:* these reflect *Dunnu* in a state after a functional shift of the architecture. The earlier workshops are all located outside the *Dunnu*
	Metal work	Bronze lumps and molds	Scattered with two possible small concentrations in south-east and south-west. No clear evidence of a workshop.
	Clothing	Loom weights, needles, spindle whorls	Very sparse. Two locations with more than one loom weight (4 and 8) on the same spot may indicate presence of loom.
	Stone working	Unfinished beads, flint and bronze cutting tools	Two locations. Workshop in extramural building west (level 6?). Tools and beads set in box in "kitchen", level 5.
	Wood working	Chisels, axes, adzes	Five objects in total.
Administration		Cuneiform tablets	Six marked clusters, five inside the fortifications, one east of the fortifications. Clusters are part of archives of various individuals: the steward, baker Paya, and a scribe.
War and peace		Arrow heads, spear heads, daggers, mace heads	Few scattered items, large areas without distribution. General predominance of northern half of *Dunnu.*
Storage		Jars, jar stoppers, pot stands	Various marked concentrations, suggesting the use of these rooms or areas for storage. Markedly not in large courtyards, gate areas and in residence.
		Bins	Strong predominance in southern half, and in main gate area. Gate presence differs from other storage objects. Not in large courtyards, residence and structures north-east.

Domestic life	Sleeping and living	Architectural type: formal apartments with private room and bathroom	Discussed in this thesis. Many other areas without clear specific function are identified by Klinkenberg as potential sleeping and living areas.
	Eating and drinking	Goblets, straws, jugs, bowls	Wide distribution, with exception of open spaces and some structures in north-east. High density at pottery workshops does not indicate use for consumption.
	Personal care	Combs, razors, tweezers	Just four items.
	Adornment	Beads, bracelets, pendants, rings	Scattered distribution, some small concentrations. Many spaces excluded. Absence in residence, large open areas. Relatively high incidence in tower.
Burial		Cremation and inhumation graves	Scattered distribution of a few burials. Level 5 only 3. Most date to earlier level 6. Underneath floors.

Table 10. Summary of artefactual evidence for activities in the Dunnu, as classified and identified by Klinkenberg (2015)*. For the distribution maps, the reader should refer to Klinkenberg's work.*

When we turn to the spatial distribution of these activities, there are some patterns that appear, but also these may be strongly influenced by various other factors. One important one results from the fact that Klinkenberg focusses on the 'level 5' distribution of artefacts. Since this level both attests of the *Dunnu* in its latest phase, as well as its shift towards a different function, its final abandonment and its re-use, this is a mixed layer which may be hard to disentangle. Typical of this late phase are the presence of pottery workshops with kilns inside the fortified area of the *Dunnu*, in buildings that were clearly not build for this purpose. Other examples are the presence of mortars and pestles, and large amounts of barley inside the residence. Moreover, in the course of abandonment, the location of objects may have been meddled with, as is evidenced of various stockpiles of building materials, and scatters of cuneiform tablets. In other words, the spatial distributions of moveable artefacts in this level cannot be completely trusted. It is different for fixed artefacts such as ovens, cesspits and bins, although they may also have been constructed during the late use phase as well.

When confronting the mapped activities with architectural characteristics and configuration, the picture is diverse in terms of clarity. It is clear for instance that certain focused 'industrial' or productive activities related to baking, cooking and pottery production are associated with more irregular, open and lighter types of wall construction. These are explicitly not located in the heavier walled architecture build against the interior of the fortifications. How the latter architecture is used, remains somewhat unclear. It would be logical, for their ground floors at least, to be somehow included in the chain of activities related to food production in adjacent areas or spaces. This is indeed indicated by various of such places with high concentrations of objects related to grinding (grinding slabs, pestles) or storage (large vessels). On the other

hand, both of the latter categories of objects are also found throughout the *Dunnu* within the lighter walled architecture. Should we therefore assume more of a continuum of usage of spaces, independent of architectural characteristics? Different locations of storage vessels, or grinding tools can also be explained by their place in the production chain: the difference between a spatial position practical for direct usage, or longer term storage. In that scenario, the usage of the ground floors of the heavier, darker, spatially less integrated architecture for longer term storage seems sensible. It is moreover interesting that most grinding tools have been found in what we expect to be interior spaces. This may suggest grinding activities primarily took place inside. We do however not know for certain whether their find location means they were stored here, or used here. Some of these are found in the fills of rooms, indicating they may have been originally located on the second floor or roof. Looking at architectural characteristics, such items are found in all kinds of buildings, except in the large open spaces and certain baking and cooking areas. This means that there is no propensity of grinding activities or tools storage to favour a type of building. Its presence or absence appears to be more related to its spatial position in relation to other activities. On the other hand, there are spaces where we would definitely not expect grinding tools to be present, such as in the residence. Its architectural features strongly point in the direction of an elite home. The grinding tools found there must therefore be seen as part of the post-*Dunnu* use phase. This pattern is typical for the level 5 phase, which is characterised by (at least) two use phases on the same floors, effectively creating a mixed pattern that is very hard to untangle.

Figure 219. Distribution of grinding tools in level 5 (after Klinkenberg, 2016, fig. 4.7).

There are other remarkable locations of artefacts, which could be functionally related to the architecture. For example, on three locations in the *Dunnu*, small clusters of items possibly associated with beer brewing (large vessels with a hole in the bottom and small strainers) have been found (Klinkenberg, 2016, p. 192). Two of these are found inside the heavier walled architecture next to the fortifications. This would suggest that part of the beer brewing process took place in these dark and less spatially integrated rooms, which makes sense for processes such as germination or fermentation. These processes require the brew to be left alone, and perform better under relatively "cool" circumstances of between 20 and 30 degrees Celsius. Outside temperatures in summer will often have topped this, especially in the sun. The large vessels with holes in the bottom probably are, analogue to the brewing experiments at tell Bazi, as "germination vats" (Duistermaat, 2007, p. 234; Zarnkow *et al.*, 2008, p. 73). Germination is at the very start at beer brewing, while fermentation, which would have taken place in regular large vessels, is one of the final stages of the process. Parts of the process that may require heating liquid (mashing) or heat drying would have certainly taken place elsewhere. The area of the northern brewing object concentration has easy access to the

"kitchen" with stoves that can contain large vessels that would be an excellent location for mashing.[82] However, cold mashing techniques have been suggested to have been in use as well, based on archaeological evidence and experiment at tell Bazi (Zarnkow *et al.*, 2006, 2008). "Cold" mashing makes use of the soaring summer temperatures for stimulating the required enzyme activity. This, however, will only produce a beer very low in alcohol (1-2 %).

In general, there is no academic consensus about the beer brewing process in ancient Mesopotamia, and the interpretation of artefactual and textual evidence is wrought with difficulty (Zarnkow *et al.*, 2006; Damerow, 2012; Sallaberger, 2012; Paulette, 2024). Another aspect to consider is that breweries often functioned as taverns at the same time (Berger, 2012, chap. The fermenting vat inside a tavern in Mesopotamia.). This would turn the dark and cool germination and fermentation areas into more lively social spaces. The texts found at the *Dunnu* related to brewing hint at the presence of a "house of the brewer", which usually was both brewery and tavern (Wiggermann, 2010, p. 33). Moreover, the treaty between the *Dunnu* and the Suteans (T04-37) specifically stipulates that Suteans are not allowed to consume their beer at the brewery inside the *Dunnu*, but back at their tents, implying that others could drink their beer on location (Akkermans and Wiggermann, 2015, p. 119). The distribution pattern of objects possibly related to beer consumption (goblets, straws, filters, jugs) shows they appear in many places throughout the *Dunnu* (Klinkenberg, 2016, p. 215). Many such objects are however small, and the pattern could easily have been influenced by abandonment and post-abandonment processes. Klinkenberg (2016, pp. 192, 215) tentatively places the brewery and tavern in two adjacent but unconnected spaces north of the old gate. The location of a tavern in the space in front of old gate would spatially make sense, since it is at a dead end, somewhat away from the main circulation route. As this space was probably not roofed, but surrounded by high walls, it would have been an outside tavern with good lighting. If the brewery would have been located in the adjacent building, the tavern may have a had an outside and inside area. But this interpretation remains hypothetical.

The cuneiform tablet concentrations, indicative of administrative activities, also have a distinct spatial distribution (Figure 220). The presence of two administrative archives near the two gates, the main gate and the postern gate, in small buildings with a similar layout and is hardly likely coincidence. Both buildings have a movement controlling location in the plan of the *Dunnu*. People had to pass through or along the front entrance of these buildings. Moreover, as the contents of these archives point at daily administration of incoming goods and people, it appears that we are dealing with strategically located "offices". Although

[82] The heating of the mix of barley and water to stimulate enzymes that produce starch sugars. These are then converted by microorganisms into alcohol or lactic acids. This is the fermentation stage.

the offices have different structural properties in terms of plan and wall thickness, they have the same combination of spaces, a small room, a corridor and a bathroom, implying its use as apartment. Thus, the spatial type and function are not necessarily indicated by physical properties of the architecture itself.

Figure 220. Distribution of cuneiform tablets.

The ad-hoc correlations between certain activities and physical architectural properties could be improved by a sounder statistical approach. Nonetheless, the pattern is roughly clear in the sense that different forms of structures could have been used for the same type of activities. The patterning in object distributions, insofar they reflect activities, is probably more related to their spatial interrelations and general spatial organization of the settlement. The question then remains what the reason is behind the different shapes and sizes of various structures inside the *Dunnu*. The probable answer is that these were no primarily related to the uses of the building, but more to structural function and pragmatic spatial planning. This conclusion supports the hypothesis offered elsewhere that the main reason for differences in wall thickness is structural, i.e. building height. With regards to the second part of the conclusion, the different shapes and orientations of the architecture probably reflects the limited space available for building. A good example are the different apartments found in the *Dunnu*. They are clearly recognizable by the presence of bathrooms,

connected to another room or set of rooms through a corridor. All are roughly based on the same spatial concept, but the physical properties of the architecture such as wall thickness, space dimensions and plan design, differ significantly. This most likely is to be explained by the factors mentioned above: structural architectural considerations (presence of second floor, height of ceilings) and pragmatic design within spatial limitations. One other factor must however be added, when it comes to explaining differences in size. Since there are no practical or structural reason for a variation in size of similar spatial structures, size is probably an expression of the social status of the users.

VII.5.3 Architectural facilitation of domestic and practical usage

Based on a preliminary analysis (VI.6), it seems that the *Dunnu* reveals quite some patterning that may be associated with a design that had to optimize day-to-day human activities. For instance, the entire settlement was structured in such way that most buildings had access to light and air by alternating open and roofed spaces in an optimal way. Since the limited space available within the walls of the *Dunnu*, this is indicative of careful planning. The differences of wall width between buildings moreover indicates that roof height varied, and that this may in fact have been used to allow for a better ventilated and lit upper floor. There is a distinct pattern of heavier architecture integrated on the interior fortification wall, and lighter architecture against the heavier architecture.

The absence of windows is another indication that the settlement may have had a vertical spatial organization as well. Although traditional rural buildings of recent date often feature no windows, the *Dunnu* is probably more akin an urban settlement due to its conglomeration of buildings, people and activities on a small area. The use of windows in Late Bronze Age urban settlements is well attested on depictions and architecture models of the time. The limited application of these windows to upper floors was probably just as common as it was in urban settlements until recently. The absence of windows in archaeological evidence in the *Dunnu*, therefore hints at their probable presence on the second or higher floors. This would be the case with all buildings with a domestic function on the second floor. The tower, with storage as a probable main function, is unlikely to have had windows. Also, even with windows, relatively little light would be able to make it inside the building, due to its 2 to 3 meters thick walls. The residence, for which it is likely that ground floor was used for habitation and human social activities, also has no windows in its walls. Only the main room of the “male wing” had abundant access to air and light due to the presence of additional doorways. It is therefore likely that in this building, clerestory windows were present high up its walls.

Rainwater expulsion and drainage also seems to have played a role in the localization of open spaces and walls. Floors appear are sometimes modified to ensure controlled flow-off. Certain open areas, for instance the elongated alley at the back of the large central buildings, probably formed natural shaped drainage

channels on purpose. However, the picture as regards to drainage remains far from complete, and drainage features have not been found on various locations without roofs, where one would expect those. Also, currently, no proof has been found of examples of drainage out of the fortifications, apart from the sewer tubes attached to some toilets. A possibility is that rainwater was collected made possible by a roof water expulsion plan. Since gutters and gargoyles are common features of recent traditional mud brick architecture, such elements may certainly be projected on the reconstruction of the *Dunnu*.

Another way architecture supports functions in a very fundamental way is floor construction. In the *Dunnu* floors were constructed of rammed earth, rammed earth reinforced with pebbles and sherds, rammed earth with a top layer of white plaster, mud brick, and finally fired brick. These reflect different uses of the associated spaces. Fired brick was used in the two courtyards in front of the residence for a large part symbolically, as reflection of special status of this area. But it will also have created a floor that is easier to clean, control water flow off, and still usable during rainfall. In addition, fired brick floors and plinths are used in bathrooms with bitumen sealant for obvious reasons. Pebble and sherd reinforced floors also improve drainage, and create a more resilient and load resistant surface. It is found on certain places which possibly have high intensity usage, possibly in combination with liquids such as in cooking, butchering or possibly beer production zones. In space NW-1b next to the residence, the presence of such a floor is part of the proof that this area was used as stables. Floors with a top layer of white plaster are rare, and interestingly found in the tower only in its earliest phase. For the later phase they are also located in the area of the main gates, and in one room of the residence. Again, it seems to reflect some symbolical usage. Floors made of mud brick are the most elusive in terms of meaning or purpose. Since the smaller backside rooms of the tower contain mud brick floors, it seems that it may have some relation to storage. Special floors designed for storage facilities elsewhere often have fired brick floors suspended on sleeper walls in order to prevent moisture creep. No such floors occur in the *Dunnu*. Nonetheless, the specific and limited application of mud brick floors must have a practical purpose. If their function is related to storage, that has some interesting repercussions on certain other mud brick floor found outside the tower. Room NW-3b in the “office” building, could therefore be a preliminary storage facility rather than the space where the official was housed. Its tiny doorway does also seems to suggest this. Room NE-3b the north-eastern sector has a very large mud brick floor in its oldest phase. If this was indeed a storage facility originally, it was very large. In that case, it may have functioned as main grain storage before the expansion of the tower. Like the tower, it has a large staircase, hypothetically allowing workers to dump grains from above into a huge silo. It was later turned into a domestic area, an apartment or communal space with access to a bathroom instead of stairways.

VII.5.4 Defensive qualities

The defensive qualities of the *Dunnu* architecture have been discussed in detail in section VI.11. The most outstanding features are its location on the summit of a tell, the fosse also known as dry moat, and an inner core with a 2 to 3 meters wide fortification wall, with a reconstructed height of about 6 meters. Such fortifications do not stand lengthy sieges as they are easily undermined or scaled. Nonetheless, there are various protruding features, that would potentially allow for firing control over the lower walls. On the other hand, the absence of clear, consistent evidence for corner towers, indicate that fire control was not a priority. However, we should take into account the possibility that Bronze Age fortification towers had elevated platforms that allowed defenders further reach and defend the foot of the walls against potential attackers that may attempt to breach or scale the walls.

Although strict defensibility against armed attackers may or may not have been a concern for the builders of the *Dunnu*, a certain degree of security clearly was. The architecture was used to ensure control over access and internal visibility, as has been discussed above. The concentrical organization of the main defensive features, and the use of smart access control at the gates point at a high concern for security. This is well in line with the historical information on the security situation in the region at the time (see II.8). The "enemies of the state" were potentially many, and above all, the harvest had to be secured.

The fortification architecture was, like the rest of the *Dunnu*, not a static phenomenon. There were various adaptations. If we look at the structural properties of these adaptations (i.e. wall width), it shows that security or defensibility did not become a lesser concern over time. Nonetheless, one of the most remarkable features of this change is the replacement of the old gate with a new gate, which was a less heavy construction. Whether this points at a potentially more 'military' character of the earlier *Dunnu,* or was simply allowed for by the smarter access control after the gate passage, remains a question.

At some point in time, the entire maintenance of the defensive features was abandoned. The fosse filled up, and walls were left to decay. The decaying walls clearly date to a period of decline, the so-called post-*Dunnu* phase. However, the timing of the filling up of the fosse remains uncertain. By the stacking of many medium thick layers of sediments, it is clear that this was a gradual process. According to the views of the archaeologists of the site, this was a process mostly fueled by thrash disposal, that started immediately after construction and was completed during level 5. Some architecture that is constructed on top of the filled-up fosse, is allocated to that level. However, it has been made clear in this dissertation that stratigraphic links are often unreliable, and site-wide levels that represent a contemporaneous use phase are hard to detect. Moreover, even if the filling was completed at some point during the main phase of the *Dunnu*, it is uncertain when exactly maintenance and regular clearing out of the fosse was quit. It is possible that it was

kept open for an extended period before it was left to fill up. Ending maintenance of this defensive feature would imply a change in focus and ideas about the main functions of the *Dunnu*.

VII.6 Synthesis

Based on the material evidence for activities, the structural and spatial characteristics of buildings and spaces, and the activities known from the cuneiform sources, a model of functions of specific buildings can be deduced with varying degrees of certainty. With regards to the activities referred to in the cuneiform sources, these have been summarized in paragraph III.7. Opposed to the direct evidence we may derive from the architecture or artefact distributions, for which we have a concrete location but some uncertainty about the interpretation, the activities mentioned in the sources are well described but have not spatial component. Important functions or activities that the *Dunnu* administration had to make place for were: administrating incoming and outgoing harvest and goods, bulk storage of barley, chariot production, organized social occasions for larger groups, house an estimated 60 people (Wiggermann, 2000), and various animals such as horses, ostriches and possibly cattle.

As has been concluded above, the access pattern of the intramural area indicates a spatial division of two sides, related to the two gates. The north-western side may be characterized based on architectural characteristics and projected usage, as the *Dunnu*'s 'official, administrative, and representative' side. The other side, including much of the eastern and southern *Dunnu*, on the other hand, may be characterized as the more 'domestic' and 'productive' side.

VII.6.1 North-western sector: administration and representation

The western side, in direct access relation with the main gate, is focused around a large, paved courtyard. Before entering this court, visitors would pass through the large gate room that contained bins used for temporary storage for incoming goods, or perhaps more likely as animal throughs. If correct, this large space would have served as waiting area before entering the paved court, which makes the presence of toilet facilities on the western end a useful addition[83]. Passing through the secondary gate into a large court, with a tile pavement and walls with red and white render. Within the context of the *Dunnu*, these architectural features are exceptional, symbolically underlining the importance of this courtyard. Immediately after passing into the courtyard, one would see on the right-hand side the arched doorway of a small building with a single room, a corridor and bathroom. The room with its mud brick pavement and extremely low

[83] Although in the view of Wiggermann (pers. Comm.), these may have been the guard's exclusive bathroom.

entrance, has more the appearance of a storeroom than the private quarters of the main administrator. Nonetheless, its spatial layout is typical of an apartment. Although a second floor is likely from a constructional perspective, no stairs have preserved. The possibility of wooden stairs in the small room, or on the exterior of the building should not be excluded. Due to its position, the entrance of the building-controlled traffic entering the paved court. The presence of the tablet archive of the steward in this building, even though it was found in a secondary deposit, indicates that it was most likely the office of this senior administrator. So in, or in front of this office in the large courtyard, would be the location where business transactions and the agricultural economy was administrated. Following Klinkenberg (2016), a concentration of seals could indicate that the sealing of goods may have taken place on the courtyard as well. It is possible that brought in goods were moved to temporary storage on location. One of the rooms of the "office", with a tiny entrance and mud brick floor, may have been used as a silo. Alternatively, incoming goods and harvested crops could be transferred to the storerooms in the tower. This building was easily accessible through a gate on the eastern side of the large courtyard. In theory, no-one, except for *Dunnu* staff responsible for the storage facilities, would need to pass through this gate. However, the inner *Dunnu* may have been more permeable for outsiders, as is indicated by the presence of an occasional feast and possibly a brewery and inn. With regards to trade goods that are on transit to Aššur, there is evidence in one text for the need of sealing those goods (see III.7.8), on which the interpretation of the *Dunnu* functioning as customs post is based. The question is whether such goods were also administered at the courtyard, or that they were kept outside the *Dunnu* near to the caravan. On the other hand, in the case of valuable goods, the safest location would be withing the walled precinct. The merchants themselves may have stayed elsewhere in that case.

Directly across the gate that gave entry to the main court, a large building would immediately catch the eye of the visitor, as it is visually dominating the courtyard. The residence would have been the political and symbolic centre of power, both representing the central authorities in Assur and the Grand-Vizier, who possessed the *Dunnu* privately and had full control. Although the residence contains very little artefacts related to its original use, its architectural structure is quite clear. It had room for a paved court, a large room in the center, and for two series of rooms that may be characterized as "en suite apartments". Since there are small, but significant differences in spatial integration, size and architectural finishing between the two apartments, it is very tempting to interpret these as the premises of the grand-vizier and his wife. The main reception room of the larger apartment also had direct access to the courtyard, while the main reception room of the smaller apartment did not. This is a significant difference, indicating that these similar rooms had a different social role to support. A large central room, or 'hall', would moreover be an obvious location for the "dinners" organized by the Grand-Vizier that the texts allude to (Wiggermann, 2010, p. 21). More details about a similar dinner organized at another *Dunnu,* also appear in one text found at tell Sabi

Abyad (97-23). An Assyrian general known as Mudammeq-Assur throws a dinner party for Suteans, the local nomadic people that were both ally and enemy to the Assyrians. It is clear therefore that these dinners would have had a political and social dimension and played an important role in the consolidation of power and control. As a side note, it is interesting that Mudammeq-Assur relies on potters and beer brewers at the *Dunnu* of tell Sabi Abyad, to supply for the feast at his own *Dunnu*. It is possible that the residence's kitchen was located south-west of it just outside the walls. An area with stoves or ovens, and bins is most likely related to food preparation. This food could be brought into the residence by a small service door in the western exterior wall. Although excavation reports indicate that this is a later entrance, cut into the residence's wall, it seems more likely that it was always intended to be there. In addition to the food preparation area, it gave access to a large, elongated space with evidence for spatial compartmentalisation and a pebble reinforced surface. Due to these features, in addition to having a direct access to the main court as well as the main reception room of the residence, this space has been tentatively suggested, for the first time in this dissertation, to have been the residence's stables.

VII.6.2 Towards the eastern *Dunnu*

The eastern side, also including much of the south, on the other hand, could be characterized as the more "domestic" and "productive" side of the *Dunnu*. The eastern gate of the paved courtyard was the only means the two halves communicated, indicating that some control existed. Although in terms of access, this area is an integrated whole connected through a continuous string of open spaces without obvious locations for gates, and we can identify various smaller units. As has been argued previously, the spatial identification of such units has no perfect overlap with what we could identify as structural units ("buildings"). That means that in some cases, multiple grouped buildings could have functioned, at least spatially, as single units. On a larger scale, this side of the *Dunnu* can be spatially divided into two parts: the north-eastern sector, and the south-eastern/southern sector. They are separated from each other by a large open space east of the tower. This is an interesting space, that is functionally not well understood, nor has it been excavated to the earliest layers. Nonetheless, this large open space with irregular layout must have been a courtyard. It could have been used for social gatherings as well as economic activities that take up space.

VII.6.3 North-eastern sector: shifting functions

The functions of the north-eastern sector remain somewhat elusive. It saw intense modification over the lifetime of the *Dunnu*, indicating a significant functional shift. It originally housed a large mud brick covered space with multiple arched doorways and access to a stairway. In the absence of any other explanation for the particular use of mud brick floors in certain spaces, it may have been used as store room, a grain silo perhaps. It is possible that it connected to an even much larger building that ran up till the elder gate, that was in function at this time as main gate. The "kitchen" structure was not constructed yet, although

we do not know what preceded it as excavation did not reach these levels unfortunately. The structure with the mud brick floor and stairways was later partially demolished and replaced by a large room with access to a bathroom in the place of the stairways. Together with evidence of the presence of a loom, this could indicate the domestic function of this space. Its size relative to the surface area of the entire *Dunnu* would imply the person making use of this area, had a high social status. But considering its size and absence of further elaboration suggesting status, it could also have been a place for larger social group occasions or activities. There may be a relation with the fact that in the same phase a "kitchen" structure was added nearby. In addition, in some structures to the north, a brewery has been tentatively located. The question that remains: who made use of these facilities? The *Dunnu* staff, or the many temporary visitors this place would have had to host on occasion? It is also possible, and quite likely, that *Dunnu* staff cooked for themselves near to their small living units in the southern *Dunnu*. We should also consider the options that a possible second floor gave. The heavy walls of the structures in this area either suggest buildings with high ceilings, and with multiple storeys. However, since the staircase is removed at some point, it seems that the upper floor was not that important for daily use. This would support the hypothesis that room NE-3b was in fact the early granary, and that this function was moved to the tower in a later phase. At the time of the removal of the staircase, the fortifications in this corner were in fact expanded. It is remarkable that the new interior space created by this expansion was not even accessible from the interior of the *Dunnu*, although it is a sizable area. The function of the expansion was therefore either structural, to counter structural problems of this corner, or spatial, to increase surface area at the upper floor. The latter seems more plausible when considering the characteristics of the construction. The new structures would have mainly functioned to create a larger surface area on the level of the battlements, that would only have been accessible through a walkway that ran across the top of the ring wall (see fortification reconstruction). Therefore, although this area on top is structurally part of the ground floor in the north-eastern corner, in terms of access, it is spatially separate.

VII.6.4 South-eastern sector: postern gate administration

Across the large eastern courtyard to the south, we find various structures related to the postern gate access area. This is an area that also saw significant modifications. An earlier situation was excavated here, showing some light-walled rectangular structures reminiscent of those found in the southern *Dunnu*. These may have been domestic structures, spatially and functionally unconnected to the postern gate. This situation changes after the modification. In general, the postern gate seems to be more secure than the main gate, in the sense that more additional spaces and passages with turns had to be taken before being able to enter the inner *Dunnu*. In the early phase, the final gate was located all the way across a long vestibule like space that mimics the one near the new main gate. However, a small building is controlling this access point

at the north end of this large space. The small building is a double room structure, with access to a corridor that may originally have connected to a bathroom. The evidence regarding the latter is slim, as it was demolished during the modification, but the corridor system with a 90-degree turn, ending at the remains of a baked tile floor seems to suggest this. Again, this appears to mimic the situation near the new gate, where a small building with access to a bathroom has strong physical and visual control over any traffic coming in. Possibly, during the old phase, a kind of 'office' may have been located at the far end of the vestibule. All physical evidence of administrative activity would have been removed during the constructional overhaul of the area . During this modification, a large part of the architecture was demolished, and a formerly terraced area was made a single level by dumping demolition debris. The formerly 'domestic' structures were replaced by a new building that included a small apartment with courtyard and toilet facilities. The old gate from the vestibule to the *Dunnu* interior was blocked, and a new one was created in a wall rebuild on exactly the same place, that forced people to pass through a tiny inner courtyard space controlled by the building just described. The presence of a discarded, scattered tablet archive makes the identification of this building as administrative building more convincing. In other words, the entire location and focus of control and administration was moved. The plan of this new building, with the curious corridor around the private rooms in the centre may be the result of juggling with the available space within the confines of the walled precinct. Much of the material evidence of the actual use of these spaces (the office building, its courtyard, and the vestibule) shows that the entire area was re-used as potter's workshop. As this clearly represents re-use of structures, this workshop reflects the end of the *Dunnu's* controlling and administrative functions. This is just one of the many cases in which the material evidence for activities reflects a late phase, which is not representative of the *Dunnu's* original purpose of the architectural design.

A last interesting change in this area is the demolition of the building formerly identified as possible administrative building and its replacement by a large single room structure that gave access to a new staircase constructed on the exterior of the fortifications, parallel to the wall. It must be emphasized that due to the modified access situation, this staircase was not accessible from the vestibule, as it was before. Access to the staircase was limited to those that were allowed to pass through the checks that the administrative building may have instated. The construction of this staircase may be tentatively linked to the demolition of a same type of staircase (9 meters long, parallel to the exterior of the fortifications) in the north-eastern sector, described above. As has been described in the section on defensive qualities, the limited number of points required for access to the battlements is remarkable and points at architecture with some, but relatively little concern for defensibility.

VII.6.5 The southern *Dunnu:* food production and domestic

The entire southern zone of the *Dunnu* constitutes one sector. It connects to the rest of the *Dunnu* by means of a narrow alley, with structures lined up alongside it. They all have opening towards the alley. Several spatial units can be identified, that include multiple smaller spaces. Interestingly, the alley has a couple of side passages, short connecting alleys that run up to structures near to the fortifications. There is a distinct difference between structures with walls a single mud brick thick, those with one and a half and finally those with two mud brick wide walls. The difference likely points at the difference between roofed and unroofed spaces, and structures with a single or multiple floors. The result is in effect a variety of roof heights, that may have been a conscious design choice. In the area where lighter walled structures were constructed against the heavier walled buildings integrated with the fortifications, the roofing situation was stepped. As has been argued, this is reminiscent of stepped domestic architecture seen in depictions and ceramic house models. It had the concrete aim, of creating a well-lit and ventilated area used for habitation, on top of a more utilitarian area used for storage and economic activities. Although it is possible that the referred buildings were used as such in the *Dunnu*, this remains hard to proof. Klinkenberg (2016, pp. 211–220) classifies many of these structures as possibly domestic, largely based on their architectural characteristics.

Although the evidence is difficult to interpret, there is ample evidence for food processing, storage and consumption. It is possible therefore that these structures had both a domestic function, as well as storage and functions related to food production. We can expand on Klinkenberg's hypothesis by suggesting there was some vertical organisation of activities as well, using the second floor. Hence there may have been a separation between economic or subsistence activities located on ground floor, and habitation on the upper floors. On the other hand, strict separation of work and private may not have been a luxury that most *Dunnu* staff would have been allowed. One space more can be more concretely identified as the private quarters of the baker Paja. As this person was a relatively major individual who kept his own written archive, and had probably various staff working for him, private quarters are more likely assigned to him. Perhaps not coincidentally, the building with his archive probably had a staircase on its exterior. Some distance away from the bakers possible private quarters, nearing the south-western corner of the *Dunnu*, the presence of numerous bread ovens clearly indicates the use of a cluster of spaces as "bakery". The light walled and somewhat irregularly placed structures in the south-western corner, were probably uncovered, which appears sensible for an area used for a smoke producing activity. But ovens, often of a different type, are also found in roofed spaces with heavier walls a little to the east of the bakery. All the way in the south-western corner, another heavier walled structure is located, that appears to have held another part of the baker's administration. Hence, bread baking, grains processing and possibly beer production were the main

activities employed in the south covering most of the area. At the same time, it seems that it may have been integrated with regular domestic uses.

There are indications that in an earlier phase of the *Dunnu*, the south was used in a different way. Underneath the structures, some remnants of other structures and features are found. This seems to correspond to a phase that also the residence was not constructed yet, underneath which there is also evidence of some kind of pre-architectural phase. This may have been the phase during which the old gate was in function, and the general purpose of the *Dunnu* was different than it became later. Or, if it did roughly correspond in functions of the later phase, their spatial organization was different, and clearly with less interior architecture to support it. In general, however, it is surprising how stable the usage of the architecture in the south appears to have been over the entire existence of the *Dunnu* in comparison to other areas that saw significant architectural modifications reflecting deliberate functional repurposing. To this important insight, we will return below.

VII.6.6 The granary

The bulk storage of barley is one of the key functions of the *Dunnu* (Wiggermann, 2000). No irrefutable evidence for a large granary has been found, but when one considers all the possible places, there is just one likely candidate. As has been stated several times before in this dissertation, the large heavy walled building in the center of the *Dunnu* ticks nearly all the boxes. It is structurally sound, suited for heavy loads, well secured, and easily accessible from the main court. Moreover, its location in the center symbolically reinforces the primary role of the *Dunnu* as center of an agricultural estate, and the central position of barley production. There remain some questions regarding its functioning as grain storage. Ancient depictions of granaries from Egypt, Palestine and Southern Mesopotamia always display domed silos (Currid, 1986; Paulette, 2015). Grains are dropped into an opening in the top, and removed through a hatch in the bottom. Archaeological evidence is more diverse, although often the interpretation of small square spaces in larger heavy walled buildings as grain silos is difficult to prove. When it is clear, elevated floor constructions are used with sleeper walls as support, creating a damp proof and aerated middle floor. It is interesting to note that some of the tower's eldest ground floor rooms, possess mud brick floors (Klinkenberg and Lanjouw, 2015). However, the degree to which mud brick floors without suspension may serve as damp proof is debatable. It is common for granaries to function with addition to the top, and extraction of grain at the bottom. In European historical granaries with multiple floors, a chute is connected to the upper floor that allows easy movement of grains downwards. The grain silos known from ancient depictions, simply have an opening near the bottom of the structure, while grains are added through an opening in the top. However, the requirement of such a 'grain tap' near the bottom, is not very strict. Medieval grain silos in northern Africa, built by Berber communities, are multistoried constructions with small stairways often leading up

three or four floors[84]. They do have in common with the iconographic examples that they had vaulted roof and ceiling construction are employed for them. Considering the evidence for use of the ground floor rooms (Klinkenberg and Lanjouw, 2015), it is likely that most barley was stored at the second and possibly third floors. However, the rooms with mud brick floors and small doorways, may have been filled from the upper floors, while grain was extracted at the bottom. Interesting in this respect is also the evidence for use of room 1 of the tower, which contains in different phases a large basin. While ceramic vessels commonly understood to be grain measures were also found here. Could such a basin be located underneath the opening of a chute? And could this room have been used to measure and or distribute grain rations?

VII.6.7 Extramural *Dunnu* north: facilities for hosting external people and animals?

Although this dissertation focused on the analysis of the structures withing the walled precinct, a large part of the *Dunnu* was located outside its walls. As this area has not been included in Klinkenbergs analysis of spatial distributions of artefacts, the evidence concerning their use is less well documented. Nonetheless, there is something to say about the potential role of these structures in the functioning of the *Dunnu*. Most of this architecture is found north and east of the *Dunnu*, not coincidentally on the sides that the gates to the inner *Dunnu* are present. Along the entire northern face of the fortifications, relatively heavy structures are located with 2, 2.5 or even locally 3 mud brick wide walls, possibly indicating the presence of multistoried buildings. Between the fortification wall in the north and the fosse, various structures are located that may be related to animal rearing, possibly pens and stables. But a substantial number of ovens are also located here, which would indicate other uses as well. All of these structures are demolished when the northern fortifications of the *Dunnu* are expanded. Hence, they are supposed to have functioned during the old gate phase. The structures north of the fosse may therefore have replaced their function, although about their chronological relation cannot be established based on stratigraphic data.

North of the fosse, the entire area was build-up with buildings following the same orientation, possibly all sharing two long west-east running walls. In the north-western corner, the structures are also running in a southern orientation up till the edge of the fosse, which must be somehow related to the crossing located here in the new gate phase. Most of the other buildings have a relatively large, long spaces with as said up to 2.5 mud brick wide walls, indicating a good possibility of a second floor, or these spaces had very high ceilings. The buildings north of the fortifications are distinctly different from those located just outside the eastern fortification wall: the architecture is heavier and spaces are larger. In the absence of other good evidence for their use, it seems that we may at least conclude they did probably not have a function in some

[84] The width and height of these rooms is approximately 2 meters, while their depth ranges up to 10 meters.

kind of industrial activity, such as pottery production. We could project some uses from what is known from the textual sources, for instance activities related to trade or traders or the military. Hence, a place that could have acted as caravanserai and or barracks. It could have also included a location for the administration of goods that were shipped further into the direction of Assur (see III.7.8, VII.6.1).

VII.6.8 Extramural *Dunnu* east: the potter's district

The area in between the fortifications and the fosse on the eastern side of the *Dunnu* is characterized by an extensive area of structures, both enclosed courtyards as well as roofed buildings. Considering the difference in wall width between the longitudinal (1.5 to 2 bricks) and lateral walls of these structures, it seems that these structures were built for supporting a live load. It therefore seems the roofs were intended to be used in the spatial distribution of activities in this area. Various fragmentarily preserved parallel walls positioned close together, possibly indicate the presence of stairs. The walled structures are structurally and spatially integrated, indicating they were part of a single planned building event. At least three pottery kilns were located here, equally distributed over the area. Each kiln is spatially integrated with a group of connected spaces, possibly indicating the presence of three separately operating workshops. The southern end is a projection, as only the remnants of a few structures preserve, including the kiln, but it must extend further south. In the northern end of the potter's district one additional spatially defined group of spaces is visible. No kiln is associated with it, but the area is incompletely excavated. Smaller fire features and bins varying in size, and a gulley shaped by regular water drainage into the fosse may indicate a more varied assembly of activities than just potting. It is however unclear whether the ovens were used domestically, or industrially. It would be no surprise if the potter's families lived here in these structures as well.

The potter's district is at some point completely razed and levelled. New structures were built on top, but due to limited preservation, it cannot be established what their extent was. Nonetheless, the complete demolition followed by structures on different locations, and of different size, clearly indicates an important functional shift. One important cuneiform archive was buried underneath the demolition debris. This is interpreted as 'a discarded' archive, implying it was buried in a place different from where it was used. Interestingly, its final dates correspond to the archives found elsewhere in the *Dunnu*, indicating that the razing of the potter's district probably corresponds to the interior restructuring of the *Dunnu*. During this phase, potter's activity moved into the walled precinct replacing previous functions, reflecting the demise of the administrative and political importance of the *Dunnu*.

Across the fosse to the east, an apparently unrelated building facing the potter's district was located. No crossing was identified here, so it is clearly spatially separated from the rest of the *Dunnu*. However, the possibility of existence of an unknown crossing cannot be excluded due to the limits of the extent of archaeological investigations. It had rooms of various sizes, accessible from a central space that may have

been a courtyard. Although the building does not entirely enclose this courtyard, the western side of the courtyard area is limited by the fosse. It had heavy 2 to 2.5 brick wide walls, suited for at least two storeys, or a very high ceiling. A possible location for the staircase may be identified on the south side of the courtyard, where two parallel walls are located. Like the structures north of the fosse, the function of this building remains elusive. Since it is located outside the defended area enclosed by the fosse, it could have played a role in the dealing with or housing externals.

VII.6.9 Extramural *Dunnu* west: a bead workshop

The extramural area directly west of the *Dunnu* has been excavated incompletely. Nonetheless, two relatively complete structures were brought to light, one with architectural indications of roof top access by stairs. Evidence of decorative bead production has been found here, thus possibly indicating the presence of a bead workshop. These structures appear to have been razed as well, and overbuilt with different, new structures possibly indicating functional changes.