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

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I. Introduction[1]

I.1 The Tell Sabi Abyad *Dunnu*

Although archaeologists came to Tell Sabi Abyad to investigate a late Neolithic settlement in 1986, they were immediately struck by the large walls of a Late Bronze Age structure on the summit of the ancient mound. When excavation progressed, the settlement's distinct fortified character and unusual spatial organization became clear (Akkermans, Limpens and Spoor, 1993) and tablets with cuneiform writing indicated that they were excavating a Middle Assyrian foundation dating to the late 13th and early 12th centuries BCE. During this period, the Assyrian king Tukulti-Ninurta I actively lead an expansionist agenda conquering and attempting to consolidate territory far west from Aššur. The increasing number of tablets unearthed in the subsequent years, especially those found in 1998, helped to identify the settlement as a '*Dunnu*'. According to Frans Wiggermann, this was "a fortified agricultural production centre" (Wiggermann, 2000, p. 172). Although *dunnu's* were known by scholars studying legal contracts and administrative writing, the physical remains of a *dunnu* had never been found. Even though more recently other sites representing *dunnu's* have been found or inferred, the Middle Assyrian fortified settlement of Tell Sabi Abyad remains the primary source of archaeological and textual evidence for Assyrian presence in the Balikh river valley, as well as of the Middle Assyrian *Dunnu* institution in general. No other *Dunnu* has been uncovered by excavation to such an extent, revealing a near complete architectural plan and thousands of left-behind objects. At the same time the amount of textual information about a *dunnu* is also without comparison. Due to this unique circumstance of preservation, the *Dunnu* of Tell Sabi Abyad forms a very interesting case both in archaeological and historical terms. The rarity of finding an actual *Dunnu* from this period, as well as the possibility that this particular usage of a more ancient social institution (see II.4) may well be called an innovation by the Assyrians, justify a closer investigation of its physical character and the information on its functioning on various domains we may be able to glean from that. There are important questions to be answered regarding its functioning on various spatial levels or modalities (local, regional, internal, external), and different domains of human society (economy, military, political, etc). In this research we focus on the architecture and how it reflects choices made on the level of design (top down, predetermined), and on the level of daily use (bottom up, ad hoc) in order to structure relations and activities.

[1] The literature review for this dissertation was primarily conducted between 2012 and 2016. While some more recent works have been included, the study largely reflects perspectives and findings published prior to 2016.

Figure 1. The Dunnu being excavated and documented in 1998. North-western corner, looking towards the east (photo by P.M.M.G Akkermans).

I.2 Research aim

The extensive excavation of the *Dunnu* has given us a remarkable dataset of material remains of a relatively short-lived community. In just two generations the physical form had morphed into something new. The nature of these changes, which are the results of intentional human action to modify the structure of the settlement, is not the same everywhere in the *Dunnu,* nor were they all timed synchronously. We are able to identify larger and smaller modifications. Larger building phases affect certain areas, while in others the built environment seems to have grown in a less structured way, which could be taken as the existence of a contrast between planned construction and organic modifications. We may briefly reflect on the normative side of such interpretation, since 'less structured' can simply be replaced by 'a different purpose' as these places could nevertheless be the location of very structured human behaviours, as well as be *the result of* very structured human behaviour. Whatever ones *a priori* views, general observations of the *Dunnu* allows us to state that there is a comparatively large variation in construction types and architectural forms with varying rates of change. So, the question is justified to what degree these reflect social changes, or changes in the overall purpose of certain sectors of the settlement, or the functioning of the settlement as an integrated spatial unit.

Figure 2. Plan of the Dunnu including all excavated architecture, all phases combined. In blue a fosse surrounding the settlement. Grid blocks are 10x10 meters.

The aim of this study is to better understand the interaction between people and the built environment of the *Dunnu*. By analysing the layout, its constructional features, and the timing and nature of the changes, we may learn how this community interacted with the built environment, and what this interaction tells us about the people that lived there. Hence the study aims to reveal how people are actively involved in creating and modifying the built environment of the *Dunnu* in order to attain certain goals, and the effect this had on the functioning of the community. An essential theoretical question here is the matter of the direction of influence in the relationship between people and the built/material environment. This is a complex question that does not seem to have a single answer, as influencing or determining factors are intertwined and depend on context. The perspective taken in this dissertation

attempts to cover both the deterministic aspect of the physical environment, as well as the power of human agents to make certain decisions within a bandwidth of freedom of choice.

The overarching research aim is that in understanding how the *Dunnu* worked as a building, we learn in turn to understand the role of the Assyrian empire near the western frontier. And how the Assyrians tried to hold onto an empire in the dangerously instable world of the late Bronze Age. Within the consolidating empire project, this study forms part of, this is the general question that was posed.

I.3 Research questions

From the previous discussion follows the research question of the current study:

> *What does the built environment of the Dunnu, and changes therein, tell us about the relation between people and built environment, and the purpose and functioning of the complex?*

The supporting questions deal with subtopics that need to be dealt with in order to develop a holistic perspective on the interactions between people and the *Dunnu* (read further below in methodological section).

- What was the historical context that lead to the creation of the *Dunnu* and how may it have influenced its architectural layout? (chapter 2)
- How did environmental and material context influence the architecture of the *Dunnu*? (chapters 5 and 6)
- How did technology influence the architecture of the *Dunnu*? (chapter 6)
- How was the *Dunnu* constructed and what are the modifications over time? (chapter 5).
- How did spatial and physical factors constrain and enable human movement, interaction and generally activity? (chapter 9)

Figure 3. The excavated heavy walls of one of the Dunnu's most prominent buildings: "the tower". In the area in front, the remains of a large staircase (photo by P.M.M.G. Akkermans).

I.4 Theoretical frameworks

This study used various frameworks for analysis and interpretation. In the history of theoretical thought on the relationship between people and the (built) environment, anthropological perspectives deriving from functionalism and structuralism have been influential (Lawrence and Low, 1990), but their ultimate impact on archaeology is limited as these anthropological approaches propose theoretical generalisations based on detailed studies of living cultures. Given that this is not achievable in archaeology, archaeological approaches to architecture are for a large part dictated by the available data: essentially incomplete and mute. On one hand there are approaches that focus on technological and construction aspects of architectural remains. On the other hand, there are theories that assume that we can understand the social, cultural or experiential dimensions of architecture by looking at observable, material characteristics.

In this study, various approaches are used with some innovations in order to gain an understanding of how the *Dunnu* was conceived, built and used. Archaeological interpretation is layered and hierarchical in nature, requiring first and foremost a detailed classification and understanding of the archaeological data, to serve as a basis for more hypothetical models of the relationship between people and the built environment. For the classification and interpretation of excavated remains, architectural features and deposits, theories about site formation derived from both ethnoarchaeological (Hall, McBride and Riddell, 1973; Kramer, 1979; Horne, 1982) and archaeological studies (Schiffer, 1983; Miller Rosen,

1986; Stein, 1987) are used. However, since architectural features are the result of specialised building activity, knowledge about ancient architecture is required to limit the degree in which misinterpretation of features shapes our high-level understanding of the site. It builds on studies of ancient Mesopotamian architecture that describe and analyse building techniques allowing for an in depth understanding of how a structure came practically into being (Loud and Altman, 1936; Woolley, 1955). These data driven, location specific approaches are contextualised in a more holistic view on architecture, that approaches the built environment as a result of a complex system (Nijst *et al.*, 1973; Ragette, 2003). This latter approach invites us to think about economic, cultural, political or environmental factors in the formation of a building, including characteristics such as location, shape, material.

The next level of archaeological interpretation attempts to create models for the use of architecture based on primary data, or newly derived data such as graphical analysis of spatial structure. The latter part in this case, refers to access analysis of the architectural plans. Simple access analysis is a commonly used technique in categorisation or social analysis of building plans (e.g. Miglus, 1999). A more complex form of access analysis is derived from space syntax, a theory and set of mathematical techniques based on patterns of movement and visibility used to look at settlement and house plans, revealing their underlying spatial structure (Hillier and Hanson, 1984; Hillier, 2007, 2014). Hillier and Hanson have extensively built on a theoretical framework to support their method, in which they argue that the spatial structure is ultimately the determining factor in how a settlement or building is used. This means that any other properties such as presence of certain activities or specific placement of functions or symbolic communication, is always derived from the spatial structure, and are therefore of secondary importance in the analysis of (architectural/urban/domestic) space. Most archaeologists would not agree with such a view, because they consider it narrowly deterministic, but many have suggested space syntax a useful tool nonetheless (Brown, 1990). Various studies, used in this dissertation as inspiration, have used this tool alongside others, and also integrate other physical properties of architecture that we assume help us to understand its use and function (Sanders, 1990; Fisher, 2009, 2014; Paliou, Wheatley and Earl, 2011; Stöger, 2011, chap. 6). Rather than assuming the spatial network determines everything, they are interested in the relation between material properties (size, colour, material, form) and their placement in the spatial network, also relating it to sight.

A framework in which these properties are used to understand the relationship between people and the built environment has been offered by Amos Rapoport (1980, 2006; 1990), which has been influential in archaeology including the work cited above. The work of Rapoport focusses on how the built environment is used to suggest expected behaviour of its users. It does this amongst others by strategic placement of physical elements, most prominently (semi) fixed features (e.g. decorations, furniture). In addition, this type of communication is always based on a redundancy of signals: a multitude of things and properties of a space that signal expected behaviour. The perspective is useful in archaeology as it suggests that we can reconstruct meaning or use through material and contextual analysis. Though the

function might be lost in archaeological contexts, the redundancy is something that might be observable and something we can document. Thus, by simply recording and contrasting the variability in use of colour, materials or dimensions and the effect of light we start learning which parts of the built environment were architecturally distinct, and attempt to explain those distinctions.

I.5 Methodology

Considering the multifactorial model of explanation opted for in this study, a number of aspects are to be taken into consideration in order to understand how the physical *Dunnu* attained its characteristics, and how this impacted human behaviour:

- Cultural models of buildings and construction, e.g. other *dunnu's* or building types that may be part of a *dunnu*.
- The historical context and motives for the construction, hence the Assyrian expansion, and reasons for building a *dunnu*.
- The local conditions, including building materials, topography, climate, hydrology, political, military and social conditions.
- The modifications in the physical layout of the *Dunnu*, and their associated functional changes.

Broadly speaking, these topics are dealt with by dividing the study in three general steps. First the local conditions and historical context are discussed. The second step is the treatment of the archaeological data and all methodological issues that come with its reconstruction. The third is the analysis of the building plan, and reconstructed architecture and changes in the built environment.

The first step involves a literature study, summarising and commenting on the scholarship related to this period and region. It makes us aware of the political, social, economic and environmental conditions and developments. It sets the scene and helps us place into context the decisions that shaped the foundation of the *Dunnu*, and also its ultimate fate.

In the second step the archaeological material will be discussed and interpreted. First, we need to deal with the problematic nature of archaeological data, its possibilities and its limitations. Due to the elementary 'incompleteness' of archaeological data, 'interpretations' or reconstruction of excavation data have much impact on various analyses that use this interpreted information. Hence, it is essential to scrutinize the primary data and their interpretations carefully. This is done following a threefold methodology:

- Analysing the primary archaeological data as found in the excavation documentation: the day reports, summaries and photos and drawing. Dealing with architecture and a complex stratigraphy, the aim is to understand the structural architectural remains and their stratigraphic relations.

- Looking at this material from the perspective of similar architecture. Through reasoning by analogy, the architecture and its possible interpretations are narrowed down.
- Applying constructional analysis on the architectural remains. The question is what the properties of the lower part of the architecture give away about the upper construction. The approach applies constructional logic based on the study of materials and techniques.

In this step advantage is taken from a method developed in the field of computer based three-dimensional reconstruction (Reilly, 1992; Lewin and Gross, 1996; Daniels, 1997; Murgatroyd, 2008; Hermon, 2014). 3D reconstruction from this is an iterative problem-solving technique, an approach to reconstruction not working towards a specific final image but experimentally trying to find a number of possible solutions. Acknowledging that there are multiple interpretations possible, the emphasis lies on exploring various options, revealing where uncertainty is involved and offering alternatives to standing interpretations. The acquired information and insights are used in the assessment of the reliability of the subsequent analysis based on this reconstructed data.

The third step attempts to explain the archaeological observations. Although the constructional reasoning of the previous step will already have untangled architectural reasons for the form of the *Dunnu*, here we go on to add additional models. Various models of how the built environment comes into being as well as how it influences people are used to understand different aspects of its physical form and social meaning. For an understanding of the form of the settlement plan we will first start with a typological and morphological analysis of the *Dunnu*. What are the characteristics of the layout and specific parts of the layout, and what does it tell us about its function? Then the spatial structure or configuration of the *Dunnu* will be analysed in more detail. This reveals how space structured human and animal movement, and highlights how well accessible various parts of the settlement were. Hence, it is a way of reconstructing where the more or lesser socially active areas in a settlement may have been. From the perspective of engineering a *dunnu,* such insights tell something about the purpose of the *Dunnu* and its constitutive parts. Moreover, we may learn how the physical environment structured the day to day live of people living in or visiting the settlement.

I.6 Archaeological data

The possibilities for analysis in this study are for a large part determined by the available types of information resulting from the excavation methods and systems of administration used by the Tell Sabi Abyad excavation project. The data was collected during a series of excavation campaigns between 1988 and 2010. The project applied a box-grid excavation method with a grid consisting of 10x10 m squares projected over the site. The primary unit of excavation and administration are therefore the squares. Each square was excavated individually over the course of one or more excavation season(s). The actual excavated area of each square measured 9x9m, 50 cm out from all sides of the square, to be left standing as section profiles. Although the box-grid method allows for vertical stratigraphic validation while

performing horizontal excavation, one of the downsides is that the 1 m wide balks left standing in between the squares obscures stratigraphic relations and connections. This can be a limiting factor in understanding the relation between use or construction phases across different squares.

The administrative classes that are used are feature, locus, and lot. Features and loci are what in general are called ‘contexts’ in archaeology. ‘Loci’ are distinctive layers of ground, recognized during excavation, but sometimes they are arbitrary boundaries created after 20 cm of ground removal. They have been recorded on ‘deposition’ forms, and drawn in on daily square sketches. ‘Features’ are constructed elements such as walls, bins or ovens. For each locus or feature, ‘lots’ were assigned to finds associated with these. Lots are purely an administrative unit and have no archaeological significance. Aside from forms documenting features, loci/deposit and finds, trench supervisors kept a daily notebook which recorded the progress, observations and hypotheses. An updated plan sketch of the square was made every day with all visible features and loci. The results of a season of excavation were often (but not always, presumably due to time pressure) summarised in a report, which also included a preliminary outline of the phasing. The detailed excavation documentation was used in this study to reconstruct cross-sections in buildings, allowing for the comparative analysis of processes of deposition and site formation related to the buildings of the *Dunnu* (chapter IV). In addition, it was used to create a database of features and spaces, storing information on stratigraphic classification, construction materials, methods, dimensions and interpretations. Included were all architectural features, mainly walls, but also for all other fixed features including ovens, cooking places, and bins. Although the forms used in the field to describe features required the administrator to fill in some basic information on construction, such as building material specifications and method of bonding, this was not consistently done. The database is thus far from complete, and this has an effect on the analysis of construction and architecture (chapters V and VI).

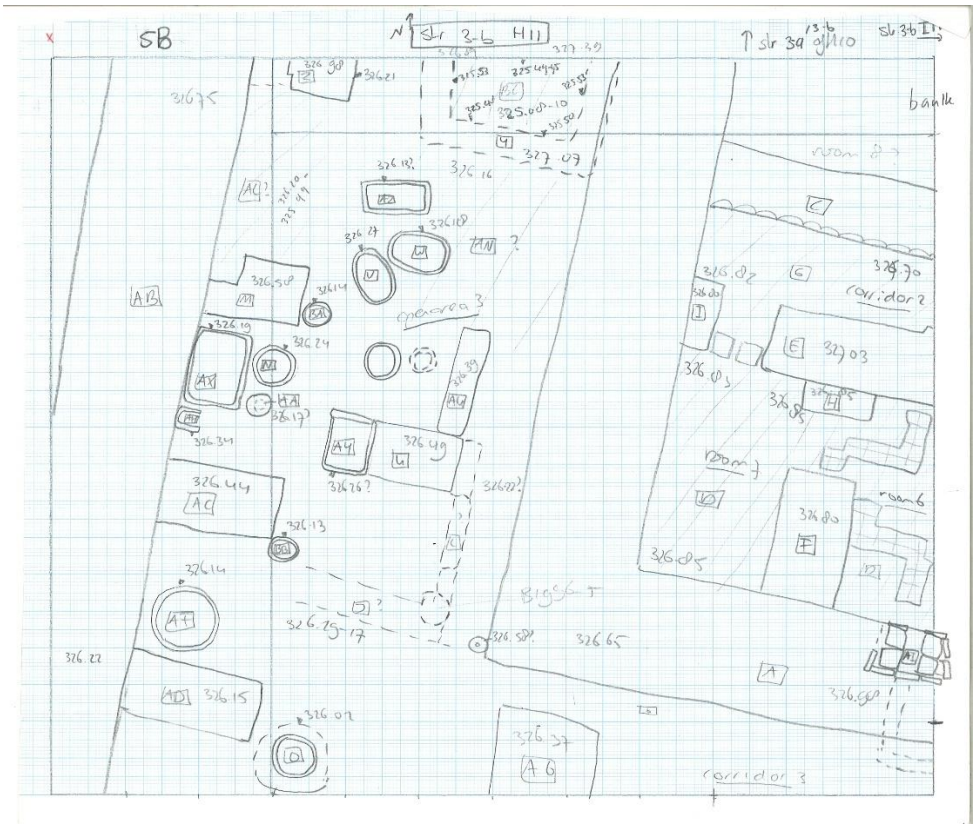

Figure 4. Example of a stratum (reconstructed phase) drawing, square H11.

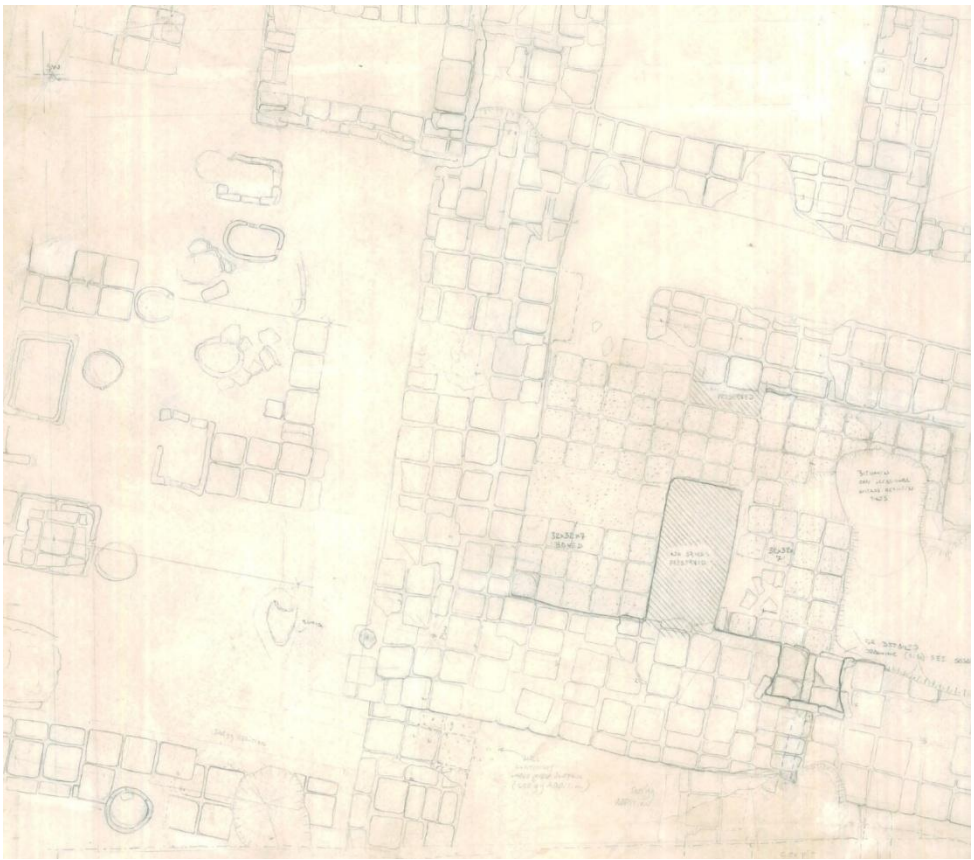

Figure 5. Example of a final square drawing, square H11.

Plan drawings of the architecture and other features were made on a daily basis in the field by trench supervisors. Final plan drawings, focussing on the architecture were hand drawn by a professional draughtsperson. The field sketches are often less accurate, but more complete. They include many features that did not end up on the final drawings. The final drawings are more accurate, and contain a lot of useful information about the brickwork and condition of the walls. They often include small elevation drawings next to the plans, which elucidate archaeological contexts that were not (accurately) described in the day reports. In addition, in post-excavation work, stratum drawings were made to accompany the stratum reports (discussed below). These are essentially phase plans for each individual square, and include all features found in excavation.

In the years after the excavation, the fieldwork data was further summarised and interpreted in a series of stratigraphy reports by the main project assistant. These were meant to unify the results in an easily readable series of documents and create local chronologies. Here, the concept of a stratum is introduced to group surfaces, walls, and other features in a contemporary use phase. An attempt was also made to link the strata across different squares, to determine contemporaneous archaeological site horizons. For this a so called ‘concordance table’ was created in an excel file, which associates strata with ‘levels’ and ‘sublevels’. Earlier in the project, a general site phasing had already been established which distinguished a certain number of ‘levels’. The levels are applicable across the site. However, since local phasing in the squares often did not display the same number of phases (‘strata’) as the levels, the concept of sublevels was introduced. The use of this terminology to describe archaeological phases, as well as the manner in which levels were defined is however problematic, and is critically evaluated in this dissertation (see VI.3.1).

For the study performed for this dissertation, both final plan drawings and stratum drawings were scanned and digitized to be used in a GIS (Geographic Information System). This GIS was used as the main hub of information, linking scans, digital plans, and the architecture and features database mentioned above. In addition, level heights data taken during excavation were used to reconstruct a 3D version of the excavation (Figure 6), which allowed 3D visualization of spatial and stratigraphic relationships and formed the basis for experimental reconstructions.

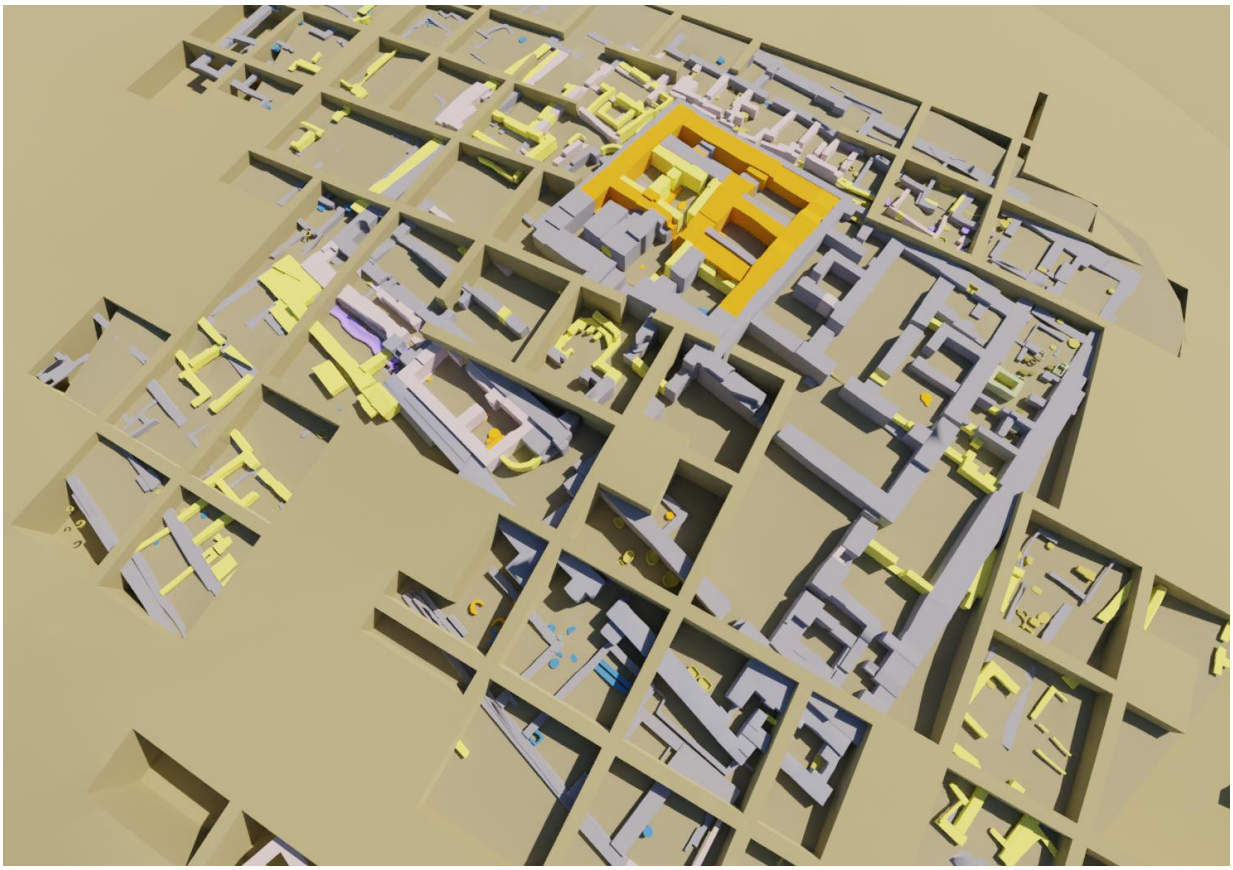

Figure 6. Rendered view of the 3D reconstructed remains of the excavation, combining all phases.

I.7 Consolidating empire

This study is part of the project 'consolidating empire'[2], that was conceived by dr. Bleda Düring in order to analyse and disclose all archaeological and textual data from the *Dunnu* of tell Sabi Abyad. The project aimed to study the origins of imperialism by investigating Middle Assyrian imperial practices from a general point of view, relating archaeological information to the historical discourse, and from a specific point of view at the *Dunnu* of Tell Sabi Abyad. It is meant to give a bottom-up perspective on imperial practices, as seen from the physical evidence of actual Assyrian presence, as opposed to a top-down perspective as is given by the annals of the conquests of kings, which can only give a very general idea of conquest and consolidation. Finally, the divergent perspectives are combined. Within the ambit of consolidating empire, a number of specific studies were made, all focused on the *Dunnu* of Tell Sabi Abyad. The agricultural economy is further investigated by means of archaeobotanical analysis.[3] The spatial distribution of activities has been studied through an analysis of the occurrence of small finds and other features (Klinkenberg, 2016). Detailed descriptions of the architecture and stratigraphy are

[2] Full project title: "Consolidating Empire: Reconstructing Hegemonic Practices of the Middle Assyrian Empire at the Late Bronze Age Fortified Estate of Tell Sabi Abyad, Syria, ca. 1230 – 1180 BC".
[3] This subproject was ended prematurely, but some preliminary results can be read in Fantone (2015).

being prepared (Brüning & Plug, in press), as well as the publication of the extensive body of cuneiform tablets (Wiggermann, in press). Moreover, an overarching study of Middle Assyrian imperialism has appeared by the hand of Bleda Düring (2020).

I.8 Contribution to present knowledge

Recuperating the research aims, the study intends to give a detailed insight in the social and behavioural mechanics of a unique Late Bronze Age settlement type, a *dunnu*. It is hoped to be useful in a specifically historical perspective, teaching us more about Middle Assyrian imperial practices and life, and in a comparative context of multi-functional walled settlements throughout history. Moreover, it is hoped that it will give impetus to developing new methods of excavating and recording, and dealing with excavation data. The study has tried to integrate archaeological data analysis, method and theory in an open-minded and open-ended way. The study also aimed on creating an awareness of the influence of the applied methods of excavation and recording on later analysis. Although this influence is generally acknowledged by archaeologists, it has not sufficiently used to re-assess and develop excavation and recording methods. Moreover, the application of other fields of knowledge, although often found in the thinking of archaeologists, could benefit from a better systemisation and documentation of the process increasing scientific transparency. Experimental archaeology, both in the real and virtual world, and ethnoarchaeology, are often found relatively isolated to the rest of the excavation branch of the discipline and should be more integrated so real world knowledge can be better applied on the interpretation of archaeology.

I.9 Reference site plans

Individual spaces (rooms, open areas) were named and numbered in the field, with reference to the square in which they were found. For this study, the spaces of the *Dunnu* have been redefined and named using a different system based on a spatial definition of 'sector', 'building' and 'space'[4]. Four sectors have been defined, which are spatially related sections of the *Dunnu:* Northwest (NW), Northeast (NE), Southeast (SE) and Southwest (SW). Spaces have been grouped in structural/spatial units that are defined as 'buildings' (see VI.4). These are numbered in sequence for each sector (e.g. NW-4, SE-3). Finally, individual spaces within these units are given a letter (e.g. SW-8b, NE-5d). The two large central buildings diverge from this system, as they did not receive a sector assignation but are referred to with their building name (i.e. tower and residence).

[4] Plans with these space names are included as appendices.