Unlocking Building Biographies during the Late Bronze Age in Central Macedonia: The Case of the Thessaloniki Toumba Mound Settlement[1]

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Late Bronze Age habitation in Central Macedonia, Northern Greece.

Abstract:

Late Bronze Age societies in Northern Greece often appear in research as static and conservative, while change, such as technological sophistication, social complexity and inequality, when it occurred, is interpreted as externally driven through trade and colonization. This paper offers an alternative narrative based on the detailed examination of the approximately 200-year-long history (ca. 1200-1000 BCE) of one of the house complexes excavated at the Late Bronze and Iron Age settlement mound of Thessaloniki Toumba in Central Macedonia. Mounds constituted a highly conspicuous feature in the Central Macedonian landscape during the Late Bronze and the Early Iron Ages. For the Late Bronze Age, the formation processes of the mound, the restricted habitation area and the repeated reproduction of the settlement plan sustained an appearance of continuity, stability, and equality in the community. The study took advantage of the detailed stratigraphy of the house and employed a biographical approach, which focused on examining the shifting patterns of the material culture and architectural features and their associated activities inside and around the building through eight consecutive stages in the life history of the residential group. Through this examination, significant changes were observed taking place in the economic and social practices inside the buildings of the Thessaloniki Toumba

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community, challenging the conservatism evident in the reproduction of the built environment. They created social differentiation, which had very little in common with the institutional hierarchies known from other parts of the Aegean during the Late Bronze Age. Instead, differences in Central Macedonia were rooted in demands arising in everyday life and local interactions, while incorporating influences stemming from external interactions.

Keywords: Biographical approach, Houses, Architecture, Stratigraphy, GIS, Spatial Analysis, Household activities, Late Bronze Age, Early Iron Age, Central Macedonia

The Late Bronze Age (LBA) in the Aegean is characterized by the emergence of the Mycenaean palace-centered polities in Mainland Greece and Crete. During the third quarter of the 2nd millennium BC, large regions in the Mycenaean heartland of Southern and Central Greece were economically exploited to sustain palatial elites and their operations.[2] While the palatial political system collapsed at the end of the 13th century BC, causing significant social, economic, and demographic realignments, several post-palatial communities remained complex, competitive and hierarchical.[3]

Corresponding pronounced social asymmetries and expressions of institutionalized authority are missing from the archaeological record of LBA societies residing in the Northern Aegean, outside the Mycenaean world.[4] Consequently, they often appear in research as static and conservative. Changes in the realms of material culture sophistication, from building practices to pottery production and consumption, and any expressions of economic and social complexity are typically considered externally driven. They are usually attributed to trade and colonization and the asymmetrical contacts with Mycenaean and post-Mycenaean societies.[5] Recently, however, there have been calls for a change of perspective and for the treatment of Macedonian communities as dynamic participants in these contacts. In this context, the need to focus on the Macedonian communities and their active role in selecting, adopting and employing non-local goods, ideas, and practices within their locally evolving systems of needs and values has been highlighted.[6]

The LBA (*c.* 1650-1050 BC) in Central Macedonia was a period of a remarkable increase in the number of settlements, which expanded further in the various landscape zones.[7] The dominant type of habitation in the region was the tall (>10m above the surrounding ground),

[2] Shelmerdine 2001; Shelmerdine and Bennet 2008.
[3] See for example the discussion in Maran 2009, 2011; Papadopoulos 2015; Eder and Lemos 2020.
[4] Halstead 1994; Andreou *et al.* 1996; Andreou 2010; Bintliff 2012.
[5] Hänsel 1989; Wardle 1993.
[6] see discussion in Andreou and Kotsakis 1999; Andreou 2003; Kiriatzi and Andreou 2016.
[7] Andreou 2001.

steep-sided mound or tell, locally known as *toumba.* The formation of this type of site is the outcome of rebuilding the settlement for several centuries within a firmly confined area, commonly defined by retaining walls. It is noteworthy that during the LBA, as opposed to earlier periods, mounds became extremely rare in the rest of N. Greece. Central Macedonian mounds are generally small, with a base that rarely exceeds 1ha and a much more restricted area at the summit. Other features, beyond size, related to the complexity of planning and architecture, also suggest the existence of differentiation amongst settlements. Some excavated sites, such as Thessaloniki and Assiros Toumbas, exhibit massive casemated walls, terraces, and clay banks, which supported and protected the houses on and above the terraced slopes. At the same time, however, these walls and terraces also contributed to the sites' volume and their visibility.[8] Further differences are evident if one compares the regular layout of streets and the large, multi-spaced, rectangular buildings of the Assiros and Thessaloniki Toumbas, equipped during certain phases with substantial granaries, to the small and randomly spaced buildings with limited storage capacity at the contemporary mounds of Kastanas and Agios Mamas. Finally, mound settlements usually occur in clusters, comprising several small and a few larger and/or more massive ones.

Regarding the intra-settlement organization, it has been suggested that the cultural practice of rebuilding on top of earlier dwellings was the material manifestation of corresponding communities' collective genealogical claims to the identity, and continuity of, connection to a specific settlement space.[9] It has been proposed, further, that the absence of significant differences between the architecture of, and the finds in, buildings may imply a way of life that discouraged the display of antagonisms and inequalities inside these complex communities. Furthermore, it has also been suggested that the constant rebuilding of the surrounding walls and terraces and the locational stability of the buildings and the networks of streets evident at the more massive mounds in the region, such as Assiros and Thessaloniki Toumba, possibly underpinned traditional rules, which perpetuated communal planning and ensured the long-established division of space among the residential groups of the community.[10]

However, the study of material culture and food consumption patterns documents the development in LBA communities of social practices, which promoted social differentiation

[8] Kotsakis and Andreou 1992; 1997; Andreou and Kotsakis 1987; Andreou 2001; Wardle and Wardle 2007.

[9] Halstead 1999; see also discussion in Kotsakis 1999, 2008; Andreou 2001, 2010; Kotsakis 2008.

[10] Andreou 2001; Triantaphyllou and Andreou 2020.

and change.[11] Besides, certain aspects of intra-settlement patterns, such as the first occurrence of intramural burials and cemeteries, also allude to significant changes taking place in Central Macedonian communities at the end of the LBA and during the EIA.[12] Yet still, the above may suggest that the continuous reproduction of settlements and, in some cases, of buildings within the limited confines of the mounds' summit potentially imply that some sort of social conservatism prevailed in the LBA communities of Central Macedonia. This conservatism possibly veiled the effect of several mundane activities and architectural changes concerning the daily reproduction of residential groups' identities, and muffled processes of social differentiation and change developing inside and among buildings.[13]

The scope of the present paper is to scrutinize the evidence regarding settlement continuity, especially where continuous replication of the same buildings is involved, and to investigate how it was practiced in LBA mound settlements in terms of building methods. Furthermore, we aim to investigate how building continuity or change related to people's lives and the spatial organization of their mundane activities and social practices which concerned their biological and social reproduction.

The analysis is based on architectural and artifactual data from Thessaloniki Toumba, one of the largest mound settlements in Central Macedonia. The study focuses on House B[14] to explore aspects of continuity during its life history based on four indices: the architectural design and construction of the building, the spatial distribution and use of permanent interior furniture, the types and spatial distribution of domestic activities, and the form and spatial distribution of ceremonial practices (such as burials and feasting). The analyses of the data along these four indices cover both the constructional aspects of building continuity and the socioeconomic factors of living, which contribute to the transformation of a built structure into a home.

The Thessaloniki Toumba settlement

Thessaloniki Toumba is located close to the coast of the Thermaikos bay, in a prominent location at the foothills of Mt Hortiatis, which bound the narrow, coastal strip of Thessaloniki on the North and East (**Figure 1A-B**). The mound is one of the most massive in

[11] See, for example, Andreou 2003; Andreou and Psaraki 2007; Andreou *et al.* 2013; Vasileiadou *et al.* 2014; Efkleidou *et al.* 2018.
[12] Wardle and Wardle 2007; Andreou 2019.
[13] Cf. Chesson *et al.* 2019.
[14] Andreou *et al.* in press.

Central Macedonia, rising to 23m above its surrounding ground. Its base extends to 2ha, but its size decreases at the summit to less than 0.5ha. Evidence for habitation goes back to the end of the third millennium BC, but the great depth of the archaeological deposits impedes their excavation and limits our knowledge of the earlier periods. The extensive remains excavated on the summit of the mound belong to five settlement phases spanning the 13th and 11th centuries BC (**Figure 2**). Settlement phases 5, 4, 3, and 2B, which are characterized by increasing numbers of wheelmade, Mycenaean style vases occurring along with the dominant handmade wares, were related to settlement-wide reconstructive events stratigraphically synchronized among buildings and streets. These events are usually accompanied by deep fill deposits mixed with debris, followed by reconstructions.[15] Settlement phase 2A is recognized stratigraphically only in the higher parts of the summit. It is distinguished from the earlier phases by the introduction of Early Protogeometric decorative features on ceramics, such as concentric circles painted with a multiple brush on closed and open wheelmade vases. These new features occur in this phase with LH IIIC late and Submycenaean style pottery. The handmade wares continue to dominate the deposits.[16] Within this phasing scheme subphases relevant to the life history of individual buildings have also been recognized, but they cannot be readily synchronized.

<<Insert Figure 1 here>>

Figure 1. Thessaloniki Toumba: A-B: Maps showing the location of Thessaloniki Toumba in Greece and Central Macedonia respectively; C: Plan of the settlement during the Late Bronze Age; D: Plan of House B; E: Airphoto of Thessaloniki Toumba (A-D: by Kalliopi Efkleidou; E: Photograph by G. Apostolou, published with permission from the Thessaloniki Toumba excavation archive).

[15] Andreou and Kotsakis 1997; Andreou 2009.
[16] Andreou 2009.

Absolute Chronology		Thessaloniki Toumba Settlement Phases	House B Building Phases	Relative Chronology Southern Mainland Greece
High	**Low**			
1095-1087/1065 BC cal	1070/1040-1030/1000 BC	2A	2A	Early Protogeometric
1232/1145-1140/1078 BC cal	1110/1100-1070/1040 BC	2B	2B1	Late Helladic IIIC LATE
			2B2	
	1140/1130-1110/1100 BC	3	3	Late Helladic IIIC ADVANCED
1341/1282-1232/1145 BC cal	1210-1140/1130 BC	4	4A	Late Helladic IIIC DEVELOPED
			4B	
			4C	Late Helladic IIIC EARLY
			4D	
1395/1346-1341/1282 BC cal	1360-1210 BC	5	Not excavated	Late Helladic IIIA2-B

Figure 2 The absolute and relative chronology of settlement and building phases at Thessaloniki Toumba (low chronology based on Jung and Weninger, 2002, 2004; Andreou, 2009; Jung *et al*., 2009; high chronology based on Wardle *et al*. 2014).[17]

Excavations on the summit of the mound have revealed, to a different extent, seven multi-space buildings, separated by narrow pebble-strewn paths, in a very compact and orderly layout (Figure 1C). Buildings were roughly rectangular. Walls were built with mud bricks on a low stone footing, supported by wooden posts. The roofs were made of reeds and clay and the floors of trodden earth.[18] Once a structure necessitated rebuilding, i.e., after a destructive event or due to severe weathering, it was infilled. The infill, comprising structural debris and, occasionally, earth purposefully brought to the site of the building, covered the interior of the building up to an average height of 0.5m depending, among other things, on the height of the interior structures standing at the time. The new walls were usually built

[17] There are no radiocarbon dates from House B so far and the absolute dates reported for each phase in Figure 2 are based on intra- and inter-site stratigraphic synchronisms. However, it is unlikely that the total chronological span of House B's excavated deposits should exceed 200 years. This time span could be longer (up to ca. 270 years) if we accept the high chronology proposed by Wardle *et al*. (2014, see also Gimatzidis and Weninger 2020) for the dating of the end of the Bronze Age and the beginning of the Protogeometric period.

[18] Andreou 2009.

directly on top of older-wall stubs. Buildings were thus constantly, and theoretically for an indefinite number of times, rebuilt and maintained the plan of the settlement intact. A consequence of this process was the formation of deep archaeological deposits within short periods of time.[19]

Houses A, B and E are the most extensively investigated buildings on the mound summit. House A has been revealed almost in its entirety and extends to *c*. 200m^2. Its deposits belong mainly to settlement phase 4. Architectural remains of more recent phases have been washed away and only small parts of it belonging to the later phases 3 and 2B have been preserved. House E was investigated partly, to the extent of 130m^2 (*c*. 75% of its estimated total area). Like House A, deposits in House E belong mainly to settlement phase 4. The study of the finds from both buildings is at an advanced stage and allows comparisons with the contents of House B.[20]

The present paper focuses on House B, a partially excavated building with several spaces, extending to almost 70m^2 (*c.* 65% of the estimated total area) (Figure 1D). House B preserves the longest continuous stratigraphic sequence among the three complexes, extending from phase 4 to 2A. Deposits of an earlier building phase were only reached in one small trial trench and were not considered. The study of finds from this building is also at an advanced level.

Methodology

The biographical approach

Building continuity in mound settlements is usually studied by creating and superimposing separate settlement-wide phase plans. The aim is to investigate the extent of successive house floor plans and the repetition of features.

The present study moves past this analytical approach, which assumes that all buildings in a settlement followed the same life cycle and, significantly, that they were all destroyed and rebuilt simultaneously. Instead, it approaches building continuity through the reconstruction of individual building biographies. The biographical approach has been advocated since the

[19] The deposits' depth at the summit of the site exceeded three meters at some points. The great depth of the deposits prevented the determination of the number of times each building had been rebuilt.

[20] Andreou *et al.* in press.

1990s.[21] It was argued that understanding the notions of "home" and place-making in the past requires us to move beyond disassociated architectural analyses of houses and investigate the biography of dwellings. A house's biography incorporates not only the number of times it was rebuilt but also aspects of duration and continuity, and the memories and ideas of past actions and ancestors which accumulated and became embedded in it over time.

The reconstruction of House B's biography at Thessaloniki Toumba is based on stratigraphic, architectural, and intra-site spatial analyses. The stratigraphic analysis aims at building a high-resolution timeline of events taking place in House B. Thus, we examine stratigraphic sequences that group archaeological deposits into different types of meaningful actions. These actions may comprise the construction or use of a hearth or an oven, the burial of the dead, the laying of floors (often several times before any structural repair to the house is considered necessary), the repair of walls, the fall of architectural debris due to destruction, the infilling of a space before the reconstruction or the temporary abandonment of certain areas of the house etc. These groups of stratigraphic deposits are then placed within a chronological matrix that situates them in relationships of contemporaneity and sequentiality. The architectural analysis aims to provide us with data regarding any changes through time in the construction or the layout of the building; on the other hand, the intra-site spatial analysis aims to reconstruct the range, intensity, and spatial distribution of the residential group's activities and place-making practices over the life history of the building. This approach allows us to determine the different trajectories that buildings might have followed within the broader settlement's history and to treat each structure on its own merit. The approach is particularly appropriate for Thessaloniki Toumba, where evidence for settlement-wide destruction episodes that would have simultaneously and to the same degree affected the life histories of all structures in the settlement is limited.

As a result of this analysis, eight phases associated with the complete or substantial rebuilding of House B were distinguished. These "building phases", as they will be referred to hereafter, are only relevant to the biography of House B but they have been integrated within the settlement-wide phasing scheme. Consequently, these building phases refine the settlement-wide phasing scheme because they define multiple rebuilding episodes that took place at House B within the duration of the broader settlement phases. As a result, building phases follow the numerical system of the settlement phases with alphanumerical subdivisions (see Figure 2). The data analysis allowed us to detect even finer stratigraphic

[21] Bailey 1990; i.e., Tringham 1991, 1995; Matthews 2005; Bailey and McFadyen 2010; Kay 2020.

distinctions within the duration of some building phases of House B, such as episodes of floor repairs, of insertion or removal of interior furniture (i.e., benches, platforms, and hearths or ovens) or of intramural burials. These episodes did not affect House B structurally and were not distinguished into separate building phases.

Building phases represent structural transformations of House B occurring at variable time intervals, lasting between a few years and several decades. They relate to a wide range of cultural (e.g., responses to changes in the size or the activities of the residential group) or natural causes (e.g., seismic disaster). The biographical approach provides high-resolution data in terms of the relative sequence of events taking place in the context of House B. However, the absence of radiocarbon dates from the building, makes it difficult to determine the duration of each building phase in absolute terms. We can only estimate the range of the building's life history through the stratigraphic correspondence with the stratigraphic phases of House A. The latter rely partly on ^{14}C dated samples from its deposits and partly on inter-site correlations with the ^{14}C dated levels of Kastanas Toumba *c*. 50km NW (Figure 2).[22]

The stratigraphic analysis

The relative timeline of events was constructed using Harris-matrices (**Figure 3**). This procedure was significantly facilitated by the rigorous stratigraphic excavation and single context recording applied at the site. In all, 1251 excavation units from four neighboring excavation trenches (4x4m wide, separated by 1m-wide bulks) were seriated into a relative sequence of depositional episodes/events.

<<Insert Figure 3 here>>

Figure 3 The complete Harris matrix (left) and a detail of it (right) showing the stratigraphic relations of excavation units for House B at Thessaloniki Toumba (Figure by Kalliopi Efkleidou).

Each excavation unit in the Harris matrix was situated within wider stratigraphic-unit groups. Their relative depositional order and relations of contemporaneity were established even where stratigraphic sections from the field did not directly connect stratigraphic units. The Harris matrices produced were then ordered into distinguishable depositional or post-depositional "events" in the life history of each space in the building, such as the

[22] Jung and Weninger 2002, 2004; Andreou 2009; Jung *et al.* 2009. Kastanas is the only fully published excavated toumba in the immediate region allowing comparisons of its stratigraphy and development of the local Mycenaean style pottery production with Thessaloniki Toumba.

construction or repair of a floor, use, abandonment, destruction or demolition, and in-filling (keeping in mind that not all these types of events were present or distinguishable in every space).

Subsequently, a building-wide Harris matrix was developed based on the synthesis and correlation of individual spaces' Harris matrices. This building-wide Harris matrix was necessarily coarser. It was soon made evident that (depositional) events in different spaces during the same phase had different characteristics or duration, i.e. floor repairs in certain rooms were significantly more frequent than in other rooms, presumably due to "heavier" use.[23] Furthermore, different formation processes, often related to the function, material culture and mode of abandonment of individual spaces, were found to have created variable stratigraphic sequences. These could be linear and straightforward in some cases and complex and often defying the law of superposition in others. As a result, some deposits and stratigraphic sequences have better resolution than others where two or more different deposits were excavated deliberately or accidentally as one. In the building-wide Harris matrix, groups of excavation units classified as "events" taking place in different spaces were re-grouped into "building phases".[24] Each building phase thus represents a complete cycle of events within the life history of the structure from the stage of the preparations for (re)building to the actual construction of the structure (walls, floors, roof); to the use; and, finally, to its destruction or demolition before a new building phase and a new cycle of events begin.[25]

As Harris matrix diagrams are generally considered difficult to read and interpret except by the "stratigrapher" of a site,[26] we also adopted the methodology devised by Tsipidis[27] to visualize the excavation units in 3D (**Figure 4**). This 3D unit visualization allowed early identification of errors in data recording and a relatively quick and easy way to comprehend the thickness of excavation unit groups classified either as events and as building phases or the relative position of artefacts within layers.

<<Insert Figure 4 here>>

[23] see discussion in Kotsakis *et al.* 1995.

[24] Site-wide correlation and calibration of individual buildings' phases is still under preparation. Preliminary observations, however, have been reported in several publications (Efkleidou *et al.* 2018; Andreou *et al.* in press).

[25] The resulting matrix documenting the place of each excavation unit within clearly defined events and building-wide phases was then integrated in the excavation's database archive for each excavation unit to be associated with all artefacts and features related to it.

[26] Taylor *et al.* 2015, 128.

[27] Tsipidis *et al.* 2011. See also Katsianis *et al.* 2008; Katsianis *et al.* 2015.

Figure 4 The 3D models of the excavation units for House B at Thessaloniki Toumba (Figure by Maria Karantoni).

Evaluating building continuity and replication

Rebuilding on the same spot, on top of older houses that had fallen out of use as documented at mound settlements in Central Macedonia, did not necessarily involve rebuilding the same house. In these cases, changes in the material culture and the economic and social practices of communities might correspond to changes in the architecture and layout of houses and the settlement as a whole. However, when houses were rebuilt using older wall stubs or closely reproducing their predecessors' layout, it is most likely that this was an intentional act aiming at maintaining the same house by replicating it. On the other hand, architectural replication did not necessarily mean that the function and use of a building or the social practices and ideas of a residential group were also replicated.
In the present study, building continuity is monitored from one building phase to the next on the grounds of four indices: architectural modifications in the external and internal layout of the structure; the location of built furniture (notably, thermal features and platforms) in the interior of houses; the spatial distribution and organization of broad "taskscapes" within the building; and the form and location of burials or other ceremonial practices (i.e., feasting) in the structure. Tracking the "evolution" of the building's life history along these four indices is expected to provide us with comparable results for every building phase, in order to objectively document the level of replication throughout a building's life history.

Architectural analysis.

The documentation of the architectural remains of House B focused on establishing the degree of wall superposition that is often taken for granted in excavations of sites where continued rebuilding has been observed. Relevant information was derived from excavation plans, notes, and photographs taken in the field. This methodology allowed us to distinguish among walls that were rebuilt making use of the stubs of earlier walls, walls that were built offset from the stubs of earlier walls, and walls that were introduced to the structure where none existed before. While the two former cases did not significantly affect the layout of the building, the latter signified substantial changes in the use of spaces and the circulation of people in the interior of the house.

Analysis of interior built features

Interior built features are relatively rare at the site. These include primarily thermal features of various types (mainly clay or stone-lined open hearths) and raised clay platforms used either as work benches or as stands into which pithoi were set. A few more features have also been found but are not discussed in the present paper due to the ambiguity of their functions. The degree of maintaining the location of thermal features and platforms throughout the life history of House B will be evaluated as an indicator of the degree of house replication from one building phase to the next.

Household activities and their spatial distribution within the domestic sphere

The distribution of household activities through time in House B is explored through a GIS-based spatial analysis of functional artefact densities. The analyses produced distribution and density maps for each building phase, allowing us to create sequenced series of maps that immediately visualize the distribution of artefacts and detection of any possible overlap or segregation of household activities during each building phase and throughout House B's life history.

To this end, an intra-site Geographic Information System was built integrating the project's database recording all artefacts located. In the present study, spatial analysis was focused primarily on the distribution of ceramics, which were classified into functional classes: cooking, food or drink consumption, short-term storage and transportation, and long-term storage (**Figure 5**). Ceramic vessels used for specialized purposes, such as aromatic oil storage and transportation or grave goods, have not been considered. One significant limitation concerns the analysis of long-term storage. This analysis was based on the spatial distribution of pithoi or pithoid vessels only found *in situ*. As the study of this material has not yet been completed, the actual number of pithoi in use during each building phase is still approximate and represents only the minimum number of containers used during each building phase.

Finally, preliminary analysis of other types of artefacts (bone, metal, stone, and clay objects), showed that most of them could be classified into multiple or too generic functional categories, introducing too much uncertainty into the distribution maps and interpretations. Their distribution was explored only in cases where such artefacts could offer important contextual information.

Food/drink preparation and cooking	**Food/drink consumption**		**Short-term storage**
	Handmade:	**Wheelmade:**	Jars
Cooking pots	Jugs	Jars	Storage jars
Baking pans	Bowls	Kraters	Large storage jugs
Wide-mouthed jars	Cups	Jugs	**Long-term storage**
Portable composite cooking pots[28] (also known as "pyraunoi"[29])		Cups	Pithoi
		Goblets/kylikes	Pithoid jars
		Bowls	
		Grey Minyan ware	

Figure 5 The classification of different types of ceramic vessels into functional groups related to household activities.

The spatial analysis of artefacts was undertaken at three levels: distribution analysis, density analysis at 1m radius, and density analysis at a higher resolution of 0.5m radius.

The density analysis was performed with the Kernel density estimator instead of point density. Both tools estimate the magnitude-per-unit area of ceramic vessels (point features) that fall within a pre-defined search radius. However, in point density, the impact of each point feature is considered the same for all point features within the search radius. In contrast, in Kernel density, the impact of the point feature reduces as the distance from it increases. Consequently, the search radius needs to be chosen with caution based on the scale of the analysis and the research questions.[30]

A 1m (cell size= 0.02m^2) search radius was initially chosen for the present study. This search radius is appropriate for defining the area that can be reached by a person squatting or sitting on the floor during some active household activity. The targeted review of density finds used a 0.5m search radius (a distance well within arm's reach) to provide density maps of higher resolution.

Initial exploratory spatial analysis of the distribution of artefacts as classified in functional groups highlighted one further limitation in our analysis. The analysis of artefact distributions (intra-site spatial analysis) has been a standard tool for extrapolating household activities based on the premise that artefacts found in use deposits, on floor surfaces, and

[28] A characteristic example can be found in Wardle *et al*. 1980, 249, fig. 13.
[29] Hochstetter 1984.
[30] Baxter *et al.* 1997; Wheatley and Gillings 2002: 186–187; Conolly and Lake 2006: 175–177; Herzog and Yépez 2013.

near or on built features were actively being used “on-site”. Upon first view, thus, distribution and density maps seem to depict the locations of different household activities. However, it must be noted that artefacts may not always be found where they were used, but where they were stored, discarded,[31] or ended up through various depositional or post-depositional processes (i.e., the in-filling of houses).

With this problem in mind, the functional artefact groups of each building phase were reviewed stratigraphically and contextually. To the degree that it was possible and necessary, the analysis considered artefacts on floors and in use layers, distinguished from those in fill layers. This was possible for all building phases in House B, except for building phases 4C, 4A and 2A. The resolution of the floors and use levels of phases 4C and 4A was low, whereas the deposits of phase 2A were disturbed by later activities. Finally, the matrix of artefact clusters (the types of ceramics included and their spatial distribution) and their association with any interior furniture (i.e., thermal features and platforms), other artefacts, or organic remains recovered in the same spaces were reviewed to get better insight into the spatial organization of household activities.

Analysis of burials

Only a small number of burials from the Late Bronze Age have been identified in Central Macedonia. Therefore, the finds from the settlement of Thessaloniki Toumba are essential to our understanding of burial practices at the time and the use of settlement space for the burial treatment of the dead.[32] Human remains have been located at Thessaloniki Toumba in two forms: First, as random human bones commingled within fill deposits; second, as skeletons in anatomical order, in cases of formal and non-formal (accidental) burial. At House B, both formal and accidental cases have been found. Two children were found lying on the floor of one space in building phase 4B. They were probably accidentally killed on the spot and buried by rubble among artefacts and pithoi standing *in situ*. However, five individuals were found formally buried inside or near House B.[33] Their burial treatment and spatial distribution throughout the life history of House B are considered another index for evaluating the replication of ceremonial household activities.

[31] Haagsma 2010, 171-173.
[32] Andreou *et al.* 2014; Triantaphyllou and Andreou 2020; Andreou *et al.* in press.
[33] Andreou *et al.* 2014; Triantaphyllou and Andreou 2020.

A short history of House B

Between *c*. 1200 and 1000 BC, House B was entirely rebuilt at least seven times. On three occasions, at least, the building was violently and unexpectedly damaged and abandoned (in phases 4D, 4B, and 3) probably due to seismic activity. While the cause of destruction cannot be verified, remains of activities were located in an excellent state of preservation indicating that the complex was abruptly abandoned and quickly sealed by debris.[34] After each of the first two destruction horizons (4D and 4B), the building was restored, walls and roofs were rebuilt. However, interior furnishings, household equipment, and evidence for the long-term provision of foodstuffs were minimal during the post-destruction phases 4C and 4A. In the latter phases, occupation gives the impression of having been temporary and of having involved limited personal investment. Nevertheless, during phase 4A the occupants of House B sealed the northern part of the house with red earth that was brought to the top from the foot of the mound. The space at the NE corner was then abandoned until phase 2B even though, in the meantime, the rest of the building had been reconstructed twice already.[35] During phases 4B and 3, the building had a significantly high storage capacity, with large storerooms used for the long-term storage of staples and household equipment. However, storage practices changed noticeably in the following phases, 2B and 2A. The scale of storage decreased substantially, and storage vessels are found dispersed in multiple spaces. Evidence for craft activities is not abundant. However, the deposits of one space in building phase 3 furnish ample evidence for the production of purple dye from murex shells.[36] The deposits of the same space, further, have yielded micromorphological evidence for metallurgical activities supplemented by the finding of bronze metal artefacts, a mould, and slags which belong to building phase 4B.[37]

During building phase 2B2, floors were repeatedly repaired without any rebuilding of walls and a few changes in interior furnishings. These consecutive floor surfaces, clearly observable in the stratigraphic sections of respective spaces, were impossible to distinguish during excavation. Phase 2B1 marks the last of these floor repairs and a significant revision of the use of space. This is evident in the use of the NE space. This space was initially (phase 2B2) used as an open space where burials could take place. It was later (phase 2B1) turned into a domestic courtyard with a platform and a hearth used for food preparation and other

[34] Efkleidou *et al.* 2018.
[35] Efkleidou *et al.* 2018.
[36] Efkleidou *et al.* 2018; Andreou *et al.* in press.
[37] Andreou *et al.* in press. Kyrillidou 2017.

routine activities. Three burials took place during phase 2B2 and then a platform was deliberately constructed above the last burial of the three, marking the beginning of phase 2B1. One could argue, thus, that the area transformed from a burial-designated space into a more domestic-related taskscape. The end of building phase 2B was marked not by some destructive event but by the death of a child who was most unusually buried facing down in the same courtyard space as the earlier three.[38] It is possible that a feast, whose remains were found in the fill layer that sealed the remains of phase 2B2, took place during or after this last child's burial.

During phase 2A, the reconstruction of House B also involved a generalized revision of the interior layout and circulation patterns. An oblong space that probably had an opening to the street west of the house served either as a lightwell or as a corridor providing access to the rooms surrounding it. The use of space could not, however, be safely assessed because of the heavy disturbance caused by later constructions in this area of the settlement.

Data Analysis

The outputs of the data analyses are presented in spatiotemporal sequences of House B's phase plans, that allow for immediate visual comparison of the indexical element analyzed each time. Each sequence consists of eight plans that show, for reasons of clarity, only those elements of the building's life history that have been taken into consideration in the corresponding analysis. The reader can, thus, directly observe changes or standardization over time in the architecture of the building, its interior furnishings, and the distribution of essential household activities and burials.

Architecture and interior built features

As a rule, the mudbrick walls of House B in every building phase were rebuilt on the stubs of the earlier phase (**Figure 6**). Some architectural modifications are observed in every building phase except for the two post-disaster transitional phases during which the scale of occupation was small. These involved primarily the building of interior walls offset from the stubs of earlier walls. In this case, the new mudbrick walls were always built on low stone foundations (of one or two courses) and partially on top of or abutting the stubs of earlier walls. As a substantial change to the interior layout was not sought after in this case of

[38] Andreou *et al.* 2014; Efkleidou *et al.* 2018.

architectural modifications, one can only assume that the choice of not re-using the stubs of earlier walls was made for structural reasons. However, the experiential aspect of living inside these spaces would not change substantially nor would the exterior image of the building present any difference to other members of the community.

The second case of architectural modifications involved the construction or demolition of interior partition walls, either to create one larger space or to divide a large space into smaller units to suit the needs of the residential group. These modifications appear connected to changes observed in the organization and dynamics of household activities from phase to phase, but, significantly, they did not alter the house exterior. Two such cases were observed in phases 3 and 2A respectively.

<<Insert Figure 6 here>>

Figure 6 The sequence of building phase maps for House B displaying information on the architectural replication of the structure through time (Figure by Kalliopi Efkleidou).

Analysis of the spatial distribution of interior furniture through time (**Figure 7**) demonstrated that there was no standardization in the allocation of thermal features or platforms in House B. Their location was dictated by the needs of changing household activities rather than by a formal association with a specific type of space. Clay platforms were always abutting a wall and their height was probably related to their function. Their construction also varied. In the earliest phases (4D and 4B), the clay platforms' top surface was plated with rectangular clay slabs.[39] In both cases, food remains, food-processing tools, and clay vessels for serving food and drink were found on or in front of them. These remains corroborate the interpretation of these platforms as workspaces for food preparation and processing.[40]

The platform of building phase 3 should perhaps be best described as a bench with an inserted large pithos found in situ. The bench was 0.3m high and 2x2m wide and constructed with packed earth coated at the top with a 0.1m thick layer of red clay. Part of the bench was probably used to support the pithos and the rest might have been used as a stand for smaller vessels. Several of them were shattered on the bench and around it on the floor. [41]

[39] Efkleidou *et al.* 2018. Platforms and floors plated with clay slabs have also been found in spaces of House A dating to phase 4 (see plans in Andreou and Kotsakis 1997).
[40] Efkleidou *et al.* 2018; Andreou *et al.* in press.
[41] Efkleidou *et al.* 2018.

On the final floor level of building phase 2B (see phase plan 2B1) a platform was constructed in the NE courtyard with a clay hearth on top. Significantly, the platform integrated and covered the earlier burial of an adult male on the spot.

A few more thermal installations were found in the building. The earliest is a small clay oven in the room with the platform of phase 4D.[42] In building phase 2B2, a clay-lined hearth was constructed in association with a pit and a circular area paved with sherds.

Looking at the sequence in Figure 7, it becomes evident that built thermal installations in House B were neither frequent nor stable in their location from phase to phase. However, concentrations of burned earth, charcoals, and ashes on the floors of various spaces throughout the building's life history may imply that activities related to cooking or heating could have taken place with the use of portable utensils, such as portable composite cooking pots, which frequently occur in LBA settlement deposits in Central Macedonia.[43]

<<Insert Figure 7 here>>

Figure 7 The sequence of building phase maps for House B displaying information on the replication of interior furniture in the building through time (Figure by Kalliopi Efkleidou).

Household activities

The sequences in **Figures 8 and 9** present the integration of all types of ceramics associated with household activities, such as cooking, food and drink consumption, and temporary storage. According to an initial exploratory analysis of the ceramics' distribution, these activities are present throughout the life history of the building. There is additional evidence, at least based on pithoi found in situ, for long-term storage of foodstuffs or liquids. It should be noted, however, that the small area of building phases 4D and 4C excavated does not allow us to form an accurate understanding of either the spatial distribution or the intensity of household activities at the time.

During building phases 4B through 2A, indicators of food and drink consumption seem dispersed in every space of House B (except for the NE area, which was sealed and left abandoned during phases 4A and 3). The Kernel density analysis clearly indicates a spatial correlation between food/drink consumption and temporary storage. This is suggested by two-handle jars and jugs of medium and larger size that were presumably used to store and

[42] Efkleidou *et al.* 2018.
[43] Hochstetter 1984. Wardle 1997.

transport liquids for short- or medium-term consumption (such as water, wine, or beer). The same, however, does not hold for cooking, which seems to have been more spatially restricted to one or two spaces alone.

<<Insert Figure 8 here>>

Figure 8 The sequence of building phase maps for House B displaying information on the distribution of the ceramics classified by functionality through time (Figure by Kalliopi Efkleidou).

<<Insert Figure 9 here>>

Figure 9 The sequence of building phase maps for House B displaying information on the kernel density analysis (based on search radius of 1m) of the ceramics classified by functionality through time (Figure by Kalliopi Efkleidou).

However, further scrutiny of initial observations based on contextual evidence (interior furnishings, spatial correlation with other types of finds, formation processes, and type of stratigraphic deposit) presents a more complex organization of household equipment and activities.

This is the case with the southwest corner space in phase 4B. This was a probably unroofed or semi-covered interior space, with an exterior doorway in its west wall.[44] It contained six pithoi, which were found *in situ*, one next to the other clustered in groups of three. The pithoi stand in the middle of the room, blocking access from the southern part of the room to the northern part. Free space, especially in the northern part of the room, was too limited to allow for everyday mundane activities, such as cooking, craftwork or, in fact, food and drink consumption, for which there is ample evidence based on the ceramics' typology, to take place. To explore in greater detail the distribution of ceramics (n=36) in this space and refine our interpretations of its function, a second kernel density raster (with a smaller search radius of 0.5m) was generated.

In the new raster (**Figure 10**), it is evident that ceramics in the southern part of the room are concentrated in the area to the front of the pithoi and of the exterior doorway in the west wall. Evidence for cooking in this part of the room is securely based on the presence of two portable composite cooking pots and one other cooking vessel. Near the portable cooking pots lay several bowls, cups, and small and medium jars and jugs for serving liquids indicating that food and drink consumption was also supported in this area of 8.5m^2 (fitting 6-8 people in a squatting position).

[44] Andreou *et al.* in press.

In the northern part of the same room, there was a concentration of bowls (n= 5), jugs (n=5), two-handle jars (n=6), kraters (n=3), and a small cup. Most of them were found among or inside the pithoi, indicating that the smaller vessels were stored on shelves from where they had fallen. The larger containers were presumably standing among the pithoi. Consequently, even though most of these ceramics were initially classified as containers for serving food and drink, their number and presence in this limited space could be an indication that they were either used for storage purposes or that they had been stored at the location where they were sealed by a catastrophic event.

<<Insert Figure 10 here>>

Figure 10 Plan of building phase 4B for House B displaying information on the kernel density analysis (based on a search radius of 0.5m) of the ceramics classified by functionality through time (Figure by Kalliopi Efkleidou).

In building phase 3, once again, the northwestern space contained a bench with a large pithos inserted in one side. The rest of the bench was partially destroyed by a smaller pithos that fell onto it. A thin layer of grey-black earth was observed during excavation on the top of the bench, but not on the floor of the room. No thermal installation was found anywhere in the area. However, the distribution of the ceramics and kernel density analysis indicate that this room supported cooking, food/drink consumption, and temporary storage added to the long-term storage practiced in the large pithos stuck in the bench.
Further exploration of the kernel density analysis with a smaller search radius (0.5m) **(Figure 11)** confirmed the observation made even during the excavation that a destruction deposit covered the bench, the pithos, and the floor. The presence of a significant number of entire and broken small- and medium-sized pots (six cooking pots, two jugs, a bowl, a small jar for perfumed oil storage and transportation, two storage pots, and two two-handle jars) inside the pithos indicates that these vessels fell from shelves mounted on the northern and western walls of the room. Other vessels, primarily handmade, stood on the bench or on the floor. These were four cooking pots, four bowls, six jugs and jars for serving food and drink, four small jars for perfumed-oil storage and transport and four food and drink storage pots (wide-mouthed and two-handled jars) for immediate consumption. The sheer number of vessels (most of them for the temporary storage of foodstuffs and liquids) and the lack of any substantial evidence for active processing, cooking, and consuming of food and drink on

the spot favors the interpretation of this space as a large storage room where some pottery intended for cooking and consumption was also temporarily stored.[45]

This space was accessible from the unroofed or semi-covered room at the southwest corner of the house, where pottery distribution and kernel density analyses indicate that it functioned mainly as a place for eating and drinking. Yet contextual, stratigraphic and artifactual evidence suggests a more complex function for the room and implies that these vessels were part of the equipment necessary to produce purple dye.[46] Significantly, in the northern part of the room, an oval-shaped structure lined with stones and mudbricks and the area around it were covered with large quantities of smashed murex shells and grey earth with a high organic matter content. In this area, five grinders were also found. Near the grey earth, a roughly circular area was discovered where a large quantity of murex shells was found among a multitude of medium-sized sherds. The murex shells were probably stored inside these containers on the eastern side of the room. Consequently, the two areas of the northern part of the room were related to the different stages of the chaîne opératoire of purple-dye production. The latter, in fact, was reserved for the storage of vessels containing crushed murex shells for purple-dye extraction and production at the household level.[47] The southern part of the same room, on the other hand, did not contain any remains of murex shells. A few pots related to food and drink consumption (three bowls, a juglet, a cup and a two-handle jar) and concentrations of ash layers might imply some cooking and food/drink consumption.

The amount of storage containers and pottery vessels rises again in the southeastern space of the excavated building. A large pithos was found in situ along with the imprints of two large baskets, presumably used to store grain or other staples. With an estimated storage capacity of around 200-240kg[48] for each basket and at least twice that for the pithos,[49] the total storage capacity for this space would have exceeded 1000kg. The area taken up by these three containers alone comprises 1/3 of the excavated area of the room, and the rest was taken up by 27 vessels for cooking (n=4), food or drink consumption (n=9), serving (n= 4), and temporary storage (n=7). In addition, there were three small containers commonly used for the storage and transport of aromatic oil. What is conspicuously missing is any trace of fire or food preparation. Unless the missing traces are hiding in the unexcavated part of

[45] Efkleidou *et al.* 2018; Andreou *et al.* in press. Vliora 2021.
[46] cf. Veropoulidou *et al.* 2008.
[47] Alberti 2008, 73-90; cf. Veropoulidou *et al.* 2008; see discussion in Macdonald 2017, 43-46.
[48] Based on the diameter of *c.* 1m and the height of *c.* 0.3m of one basket that could be measured.
[49] Based on the measurement of its maximum belly diameter at 1.3m and presumed height at *c.* 2m.

the room, this is one more space during the same building phase that appears to have functioned primarily as a storeroom for household staples.

<<Insert Figure 11 here>>

Figure 11 Plan of building phase 3 for House B displaying information on the kernel density analysis (based on a search radius of 0.5m) of the ceramics classified by functionality through time (Figure by Kalliopi Efkleidou).

A final case of interest lies in the interpretation of a stratigraphically closed ceramic assemblage associated primarily with space B2-3 in building phase 2A (see Figure 1-D). Artefacts were conspicuously few in the building during this phase except for this space, where an unusually large number of sherds was found in a layer of grey soil. The latter is regularly associated at Thessaloniki Toumba with unroofed areas such as yards and streets. The sherds belong to 57 vessels associated primarily with drink/food consumption (including 53 painted wheelmade pots in the LH IIIC late/Submycenaean style[50]: 18 amphoras, two jugs, four kraters, seven shallow bowls, 22 cups and deep bowls; a handmade pithoid amphora; and a wide-mouthed storage vessel).

There is compelling evidence that decorated, Mycenaean style, wheelmade pottery was adopted in Late Bronze Age Macedonia, first as imports and later as locally made imitations, to be used as a specialized ware for the consumption of beverages and perfumes in ceremonial events of feasting and body cleansing.[51] The huge number of this category of vessels in this unique closed assemblage, attests to a feasting event with a large number of participants, where considerable quantities of (probably alcoholic) beverages and meat (cattle, pork and caprids)[52] were consumed. Evidence of cooking is lacking from this assemblage and the excavated interior of the structure, leading us to assume that the preparation and cooking of the food took place elsewhere. However, the utensils employed on the occasion of the ceremonial consumption were conspicuously discarded in this yard. This deposit testifies to the ability of the residential group to organize an event or events of collective consumption that exceeded the status of routine eating and drinking. The fact that the special vessels used in this context were discarded afterwards in a specific area (instead of being kept for reuse) allows for the interpretation of this event as exceptional and symbolically significant for the social status of the residential group and its relationships with

[50] Kedrou 2012.
[51] Cf. Jung and Weninger 2002; Andreou 2003; Kiriatzi and Andreou 2016.
[52] S. Chronaki, pers. comm., October 11th, 2021.

participants in the event. Furthermore, the intentional integration of the event's physical remains in the biography of the building made the latter the embodiment and constant reminder of a statement that was aimed to last in the memory of the residential group and the community at large.

Burials

Burials are a rare feature in Late Bronze settlements in central Macedonia and were first identified at Thessaloniki Toumba.[53] There are merely eight undisturbed burials at the site, but several human bones in fill deposits testify to the existence of more burials that had been disturbed by activities taking place during the same period.[54] The earliest burial in House B **(Figure 12)** took place during phase 4B, under the probably unroofed or semi-covered floor of the southwest space. An adult woman was placed in a shallow pit, along the wall across the entrance from the street. A small Mycenean-style jar (amphoriskos), containing probably perfumed ointment, accompanied the deceased. After the burial, the area continued to be used in routine household activities.

Burials were made in the building again in phase 2B. Three burials took place at the NE space, which functioned as an open courtyard at the time, including the street. An infant and a nine-year-old child were buried in shallow pits in the street. A 40 to 50-year-old man was last placed in a shallow pit along the western wall of the courtyard, accompanied by a handmade, burnished, two-handled perfume container. Numerous large pithos sherds covered this burial distinguishing it from the previous ones.

The three burials mark a change of attitude regarding the choice of location for formal burials. As opposed to the older one, the latter were placed in an area neither clearly private nor public. It may not be a coincidence that a thick layer of red clayey earth was brought from the foot of the mound to the top to cover the pithos sherds over the adult man's burial. This act may have marked the end of the abandonment and the re-introduction of this area into active use by the household. The latter emphasized its claim further through the construction in phase 2B1 of a stone and clay platform. This platform, along with the area adjacent to the street, started being used for routine domestic activities, such as food processing, cooking, and consumption.

The latest burial was odd. It belonged to a seven-year-old child placed on the earthen floor of the NE courtyard area and street face down. The deviant position of the deceased may

[53] Andreou *et al.* 2014.
[54] Andreou *et al.* 2014; Triantaphyllou and Andreou 2020.

not be unrelated to the fact that the infant suffered from osteochondroma, a tumor that possibly protruded from its shoulder. The number of objects, the largest concentration of funerary offerings accompanying a burial at the site to date (a small handmade jug, a two-handled jar, a whetstone, and a spindle whorl), manifests the special care for the interred child. This was the last event associated with the use of this courtyard. The entire building was then in-filled and rebuilt.

<<Insert Figure 12 here>>

Figure 12 The sequence of building phase maps for House B displaying information on the burials through time (Figure by Kalliopi Efkleidou).

Results

The analyses confirm that the occupants of House B at Thessaloniki Toumba were reproducing the building for at least two hundred years through the replication of its architectural features. They systematically reused older wall stubs to replicate the exterior shell and the interior floor plan. Even when walls were slightly displaced, the impact on the circulation patterns in the interior was minimal. Only rarely would a wall be inserted or removed to divide or enlarge a space to better accommodate any activities needed to be performed. The preliminary study of the architecture of Houses A and E at Thessaloniki Toumba suggests that their occupants followed a similar strategy in the rebuilding of their houses.[55] Thus, the building's architectural replication aimed at the continuous reproduction of the perception, embodiment, and experience of the people who interacted with it on the inside and from the outside.

The analyses, however, also clearly demonstrate that beyond the building as a structure, there was nothing else replicated from one phase to the next. Interior furniture and the range, intensity, and distribution of activities within the building continuously changed, adapting to the shifting needs of the residential group. Hearths or ovens used for cooking, heating, or craft activities were rare, fixed features in the building. A possible oven was located in a space belonging to the earliest phase (phase 4D). Although scientific analysis of its contents and construction material is pending, contextual information suggests that it was probably used for indoor cooking. Only two hearths have survived, and they belong to building phases 2B2 and 2B1. Their low degree of survival in the archaeological record of

[55] Andreou and Kotsakis 1997; Andreou 2001; Andreou *et al.* in press.

House B could be related to the constantly changing function of the various spaces of the building.

On the other hand, it is possible that other means, besides fixed thermal installations were also employed for cooking and heating. Portable composite cooking pots could have been used instead, as attested in other Bronze Age settlements in Central Macedonia.[56] Remains of only two such portable composite cooking pots have been securely identified in the deposits of House B so far. Nevertheless, patches of ashes that could not be associated with fixed thermal installations were reported during excavation. Considering that composite cooking pots were portable, they could have been used in various spaces as the need arose and probably even a small number of these cooking pots could fulfil the needs of a residential group. Alternatively, cooking in portable composite pots could have taken place outdoors. However, we need to point out that so far, the narrow streets among buildings and the crossroads were the only public open spaces available for outdoor activities at Thessaloniki Toumba. It is difficult, therefore, to imagine any type of activity systematically taking place in these spaces.

Routine household activities, such as the preparation, cooking or consumption of food and drink, appeared initially to have been randomly dispersed throughout the building during its life history. However, further scrutiny and contextual re-appraisal of the density and distribution patterns of the relevant artefacts demonstrated that the equipment associated with these activities was not regularly found where it was used but where it was stored or discarded. This phenomenon was observed systematically in spaces where pithoi or baskets occurred. It seems that the storage of large quantities of staples was combined with the storage of liquids in medium-sized ceramic vessels for temporary storage (e.g., deep narrow or wide-mouthed jars) and vessels used for serving food and beverages (e.g., jugs, bowls). In these storage areas, space is too limited to support actual cooking or consumption of food and drink, although the existing data do not preclude such functions.

It is probably noteworthy that there are areas in the building, where the evidence for cooking and food and drink consumption is spatially correlated with vessels used for serving and temporary storage. On the other hand, there are occasions where the evidence of cooking is not associated with any evidence of consumption or temporary storage of food and drink. This may be explained as an indication that during the life history of the building there were no fixed spaces to be used for the preparation, temporary storage, and

[56] For similar practices in a Bronze Age tell of Central Macedonia see, for example, Deliopoulos *et al.* 2015; Hochstetter 1984; Wardle 1997.

consumption of food. This notion agrees with the distribution of thermal installations and with the use of portable cooking pots. It also agrees with preliminary observations on the distribution of thermal structures and faunal remains in House A of Thessaloniki Toumba.[57]

The storage patterns that developed during the life history of House B are also interesting. An emphasis on the storage of large quantities of staples is evident in the earlier phases, primarily in 4B and to a lesser extent in 3.[58] During those times, large spaces were dedicated to storage, with multiple pithoi, large baskets, and other medium-sized vessels, such as pithoid, wide-mouthed jars, and large jugs. It is difficult to estimate total storage capacity due to the circumstances of preservation and the lack of analytical data. However, a similar situation is observed in House A, where three spaces containing at least 15 pithoi in total have been identified as storerooms. These pithoi belonged to two types ranging in capacity from 50 to 250L[59] and were often coated inside with beeswax or birch bark tar to seal the surface.[60]

Both building phases followed violent destruction of the building, possibly by an earthquake, and a transitional phase of small-scale habitation. It is impossible to know if the need to secure large quantities of foodstuffs could, thus, be related to some post-destruction stress. Nevertheless, the amounts of stored crops could be achieved only by intensive farming practices to produce large yields. The application of intensive farming practices at Thessaloniki Toumba during the LBA is supported by the recent stable isotope[61] and zooarchaeological[62] studies, which indicated that the inhabitants employed integrated strategies of crop and livestock production, intensive use of manuring and irrigation and animals for traction. A similar situation existed in settlement phase 9 at Assiros Toumba, some 200 years earlier. Large storerooms were identified there filled with the charred remains of crops stored in clay bins, clay-lined baskets, and pithoi. According to recent studies, the crops came from the surrounding fertile area of the site.[63]

Interestingly, the same investment in large-scale storage is not visible in the archaeological record of House E at Thessaloniki Toumba during phase 4. Storage-scale there is limited and dispersed among various spaces of the building. This contrasts with the evidence for intensive cooking activity and the numerous fixed thermal installations in the same building.

[57] Andreou and Kotsakis 1997; Vasileiadou *et al.* 2014.
[58] The investigated area of the earliest phase 4D is very limited, while phases 4C and 4A were associated with habitation on a small scale with minimal investment in household equipment.
[59] Margomenou *et al.* 2005.
[60] Roumpou *et al.* 2003.
[61] Nitsch *et al.* 2017.
[62] Vasileiadou *et al.* 2014.
[63] Jones 1992; Jones *et al.* 1999. See also discussion in Nitsch *et al.* 2017.

At least three such facilities were found in the rooms of House E.[64] Only during phase 3 was a storeroom of House E comparable to the storerooms of House B. Therefore, it appears that neighboring residential groups did not follow similar trajectories in terms of successful farming practices and the production of agricultural surplus.

The storage patterns at House B changed during periods 2B and 2A. Storage capacity was reduced, even though during phase 2A the building had expanded again to its original area. Single pithoi for bulk storage were dispersed in various spaces of the building. A similar pattern of dispersed and reduced storage capacity is also observed at Assiros Toumba after phase 8. Particularly during phase 2 almost every space of the investigated multiroom complexes at Assiros contained a pithos. However, at Thessaloniki Toumba these changes did not coincide in every excavated building and did not occur in the same order. Dispersed storage emerged earlier (during phase 3) in House A and changed back into centralized storage during phase 2, when a storeroom with several clay-lined bins existed in the NW corner of the building. These shifts in storage practices could indicate fluctuations in crop yields, associated perhaps with fluctuations in the capacity of the residential groups at Thessaloniki and Assiros Toumbas to mobilize labor from surrounding settlements to assist with the labor-intensive farming practices. The shifts may also be related to occasionally failed harvests that might have affected residential groups differently. On the other hand, it cannot be excluded that the distribution of pithoi or other jars in different spaces of the buildings could be related to changes in the spatial configuration of household activities. It could also be related to changes in the residential group's internal organization, where small semi-self-sufficient groups might have shared the same building.[65]

A remarkable change in the occupational history of House B occurred when the residential group decided to take up the production of purple dye. The community of Thessaloniki Toumba was not a novice in this craft. It is first attested in Middle Bronze Age and early LBA levels and again in House A during phase 4.[66] When the residents of House A gave up the practice of this craft, the residential group of House B took it up. Small-scale craft production of various types of equipment such as metal,[67] stone,[68] and bone[69] tools or weaving implements[70] and ceramics has already been documented at the site, including House B.

[64] Andreou *et al.* in press.
[65] Andreou 2019.
[66] Veropoulidou *et al.* 2008.
[67] Mavroeidi *et al.* 2004.
[68] Tsiolaki 2015.
[69] Chondros 2019.
[70] Chatzigiannaki 2004.

However, the shifts in the location of craft production through time, which have already been noted, could indicate differentiation over time in the size and ability of different residential groups to take up activities beyond those necessary for their survival.

A final note needs to be made about the burials and ceremonial practices associated with the life history of House B. As already mentioned, mortuary data are conspicuously missing from the archaeological record of LBA Central Macedonia. The intra-mural burials of Thessaloniki Toumba suggest that at least some of the dead in the settlement received formal treatment within the confines of the settlement at the time.[71] While the number of burials is too small to make any statistical observations, a shift in the type of location chosen to place the dead is evident. The earliest burial in House B was found under the floor of the southwest corner space. This was a private space, but, interestingly, unroofed and the burial itself was placed directly opposite the entrance to the house. During subsequent phases, things changed. The new burials in phase 2B occupied a space that had been converted into an open courtyard blurring the distinction between private and public space. It could be argued, therefore, that the early integration of the dead in the interior of the building served as a material reminder of membership within the residential group and of the close bond between the residential group's identity and the building in which they resided. Keeping the dead close to the living still seemed important during the later phases. On the other hand, opening up the burial location to the public meant that the audience targeted during the actual burial event, and subsequently in the community's memory, surpassed the narrow limits of the residential group. In this case, the ceremonial occasion of the burial was aimed at the community at large. It is difficult on present data to contextualize further these burial patterns. Still, it is possible that the interment of the dead in public spaces reinforced upon the community the increasing differentiations between different residential groups. The practice also marked a break from the tradition that emphasized compliance with communal rules confining ceremonial activities exclusively to the interior of buildings and discouraging the open display of difference. The evidence for feasting, which is based on the massive presence of Mycenaean-style drinking, eating, and serving vessels in the open space B2-3 of House B and may or may not be related to the unusual upside burial outside, could also be part of the new trend, which encouraged residential groups of the community to openly display their differentiation.

To conclude, evidence from the mound settlement of Thessaloniki Toumba supports the proposition that the continued rebuilding was intentional and aimed at reproducing the

[71] Andreou *et al.* 2014; Triantaphyllou and Andreou 2020.

basic principles of the settlement's social and political organization. The architectural replication of the buildings offered a stable and reliable context for residential groups to organize their lives and interactions. For the community, it materialized the impression of stability and unity necessary to secure its social reproduction. The biographical analysis of one of the longest living buildings in the settlement evinces that, hidden beneath a cloak of stability, lay individuals and groups of people who were highly active and responsive to internal and external stimuli. Differentiations and antagonisms between different residential groups found their expression in other fields of action and material culture, such as the organization of commensal events or the consumption of ceramics and craft products. These differentiations for a long time did not have any effect on the built environment. Material attempts to break from this tradition are found after the end of the 12th century BC when burials of residential group members occasionally started being "performed" in semi-public spaces close to the residential seat of their respective groups.

The methodology followed allowed us to reconstruct a biography of high-resolution for one building in the settlement and may be considered partial to the idiosyncrasies of a particular residential group. The analytical approach, however, based on the element-by-element breakdown of the buildings' life history, allowed us to create comparable representations over time and space, which reveal the buildings' use and the experience of the residential group. Such analytical approaches in the future may provide insights into the life history of other mound settlements in the region, allowing better-grounded comparisons between them through time.

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