Tel Aviv University

The Lester and Sally Entin Faculty of Humanities

The Chaim Rosenberg School of Jewish Studies

Department of Archaeology and Ancient Near Eastern Cultures

Southern Levantine Early Bronze Age III:

Society, Social Power, and Ideology

Thesis Submitted for the Degree of Doctor of Philosophy

By Hai Ashkenazi

Under the Supervision of Professor Raphael Greenberg

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Preface and Acknowledgements

From my first days in archaeology I have been fascinated by prehistoric “revolutions”, and by the urban “revolution” in particular. Urbanism revolutionized human life, concentrating people in unheard-of numbers and inducing deep organizational change and structured hierarchies which survive, in one form or another, to this very day. Comparing societies before and after the urban “revolution” reveals radical differences, but it is not always clear whether change was sudden or gradual, whether individuals could comprehend its nature, and if they had any control of these changes, or merely swam with the current. As critical archaeology has established, any tales we tell of the past are directly concerned with our vision of the present and future, and any coherent view of ancient society must be grounded in contemporary social theory. This is the basis for my own attempt to piece together a comprehensive picture of the urban revolution in one small part of the ancient world.

“Man is born free, and he is everywhere in chains” wrote Jaques Rousseau, “the human race divided into herds of cattle, each with a master who preserves it only in order to devour its members ... the ruler promises his subjects civil tranquillity, but in his greed of power, he brings more wars” (Rousseau 1968 [1761]: 49, 51, 55); “no man”, he adds, “has any natural authority over his fellows” (Rousseau 1968 [1761]: 53). The beginning of the process that led to this social inequality is the concern of this thesis.

I would like to thank Prof. Raphael Greenberg for days and hours of work he invested in correcting, editing, and upgrading this thesis; Prof. Pierre de Miroschedji for allowing me to work on the Tell Yarmuth data; TAU Lester and Sally Entin Faculty of Humanities Research grant for sponsoring me through the course of this thesis; my family for not seeing much of me in the last months; Tamar Halfon for the moral support; Uri Davidovitch, Shmuel Band, and Eyal Tenenboim for helping me throughout the way; Jenna Belobersycky for thoroughly editing this thesis; and Barnea Levi Selavan for a quick final edit.

English Abstract

1. Introduction

The Early Bronze (EB) III traditionally marks the apex of Early Bronze Age (EBA) urbanisation. Despite its importance and long duration, it is poorly articulated as a separate period in the existing literature. This thesis will use new archaeological materials and a fresh theoretical approach in order to determine if south Levantine EB III society comprises a distinct social and political entity, to evaluate what its significance might have been in the evolution and diffusion of early urbanism, to understand the manner in which social power was reproduced and maintained, and to find evidence for its ideology(ies).

2. Background and Research Framework

The relative chronology of EB III was first defined in ceramic terms, when G. E. Wright (1937) identified Khirbet Kerak Ware (KKW) as the primary marker of the EB III. Although other diagnostic forms have since been established (e.g., pattern burnished platters), where KKW is absent, sites have often been characterized as “EB II/III” in date, thus obscuring their attribution. In the absence of secure synchronisms with securely dated sequences in neighbouring regions, absolute dates are provided by ^{14}C dating, with the most recent research suggesting a range of 2800/2900 to 2500 BCE.

The main settlement pattern during the EB III is one of site clusters organised in a heterarchical structure. Many settlements, large and small, were deserted in the EB II-III transition, and most of the EB III population lived in relatively large fortified settlements. These fortifications are the most prominent monumental buildings of the period. Other large structures include the Circles Building of Tel Bet Yerah (TBY), the palaces of

Yarmuth, and the palace-temple complex at Megiddo. Domestic houses show no fixed form. Pottery production in the period was less centralised than in EB II, and there are more instances of localised workshops. The appearance of KKW, an alien tradition apparently introduced by migrant potters, is part of this trend.

As in earlier phases of the EBA, EB III subsistence was based on a Mediterranean economy, with some evidence for accumulation of staple products and cash crops hinting at agricultural intensification and economic stratification. Vine and olive horticulture, still widely practiced, necessitated stability and long-term rights over plots. The societal structure may have been based on households and corporate groups, with a debatable amount of interpersonal stratification.

The bulk of evidence for ritual or ceremonial activity comes from temples, which appear to have proliferated in EB III. There is not, however, a corresponding increase in the number of ritual or cultic artefacts, which remain few and far between. Objects of apparent symbolic quality, when found, appear to represent the prestige and power of elites or are connected with economic functions. Data on mortuary practices of the EB III is generally sparse, with the outstanding exception of the Bab edh-Dhra‘ charnel houses and a number of collective tombs at Jericho.

Theoretical Approach

Building on the foundations in relative chronology and typology established by traditional, culture-history archaeologists, late 20th century EBA research adopted quantitative, environmental and evolutionary approaches in creating a number of important syntheses regarding issues of urbanisation and patterns of settlement. Interpretive approaches characterise 21st century studies, which tend to focus on specific sites or regions.

The massive fortifications of the period and the relative absence of weapons in the archaeological record requires the insights of conflict theory. These studies suggest that warfare, or at least the imminence of violence, may have been endemic in early sedentary societies, and may well have impacted the form of societies and the nature of their leadership.

The approach used in this study attempts to merge functional-processual methods and critical interpretation in a conceptual framework wherein *social power* is the capacity of social actors to make other people act according to their will. To be stable in the long run it should be based on *legitimacy*, which sanctions and naturalises the existing order, and on *ideology*, which is one of the instruments used to achieve legitimacy. Ideologies tend to reproduce the dominance of the elite by hiding conflicts, legitimising their claims, and ensuring that their interests become the interests of society as a whole. They may be materialized in rituals, monuments, mortuary practices, and material culture.

Blanton and Feinman's typology of social power strategies distinguishes between *exclusionary* strategies, in which the political system is built around the monopoly of political actors over the sources of power, and *corporate* strategies, in which power is shared across several groups or sectors. Both can exist in the same society. Social power rests on legitimacy and force, consensus and coercion, but to be stable it requires constantly reinforced authority and persuasion.

Current interpretive practices in archaeology prioritize the role of material culture and the built environment in social processes. The presence and permanence of monuments, for example, deny time and assert timeless stability and power. Their successive use continuously presents and represents the past in the present and helps to create and maintain political and social space.

3. Social Analysis of EB III Material Culture and Architecture

The analysis focuses on two sites, Tel Bet Yerah and Tel Yarmuth, due to their size, centrality, and especially the quantity, quality and availability of data gathered in their excavations.

Monumental Architecture

The analysis of monumental architecture begins with the Circles Building at TBY: a large building made of three stone platforms enclosing a hall and a courtyard. Seven stone-lined shallow circles were sunk into the platform. North of it a paved open area, or ‘plaza’, was recently found. The building was uncovered in 1945/6 and is widely interpreted as a granary. Recently excavated as well as unpublished data from the early excavations are used to analyse the building and to identify two phases of EB III occupation: a construction phase characterised by local pottery only and secondary occupation characterised by large quantities of KKW.

Metrology and planning: Statistical tests were used to identify for three standard units of measure employed during the construction of the building . This may attest to planning and central authority.

Social cost: Calculating the amount of raw material and the number of workdays needed for the construction of the building, and considering availability of workers, it seems that the 4,700-13,200 workdays needed were not a heavy burden on the site’s population. Even with low participation, construction of the Circles Building could have been accomplished in 2-3 months.

Function, location and access pattern: Reexamination of the data suggests the building was intended to be a granary, but that its construction was not finished. In contrast to contemporary granaries of the ancient Near East (ANE), the building was open, accessible, and unfortified, thus suggesting that the labor force for its construction was recruited by means of persuasion, rather than coercion. It was probably intended to be a communal redistribution centre.

Yarmuth Palace B-1 is a 6,000 sq m building with 40-50 rooms and courtyards surrounded by a wall. Storage vessels found in the building's internal storerooms could store at least 17,000 L. It probably housed the local ruler or estate owner. Distribution analysis of 'potter marks' reveals they are more highly concentrated in the storeroom area, which may point to an administrative function.

12,000-28,000 workdays were needed for the construction of Palace B-1. This was probably a heavy burden on the site's small population. Participation was probably low due to the non-communal nature of the building. Place B-1 occupied an impressive 3.7% of the site's area, but was located in the lower town. Access to it and its storerooms was highly restricted, especially when compared to the Circles Building.

Conflict and Warfare

Markers of war relevant to the 3rd millennium southern Levant are fortifications and site location, weapons, and skeletal evidence. In order to fulfil its primary military function, a town wall must be paired with a defending garrison producing fire power. The wall should also be high and wide and have shielded firing platforms, preferably on towers or bastions. These should be positioned 25-40 m apart so the area outside the wall is covered by the defenders' projectiles.

That said, it should be kept in mind that evidence is lacking for the existence of siege engines and trained armies in the EBA Levant.

Other functions of fortifications are to act as a symbol of the city, the ruler and their might and to establish separation and control. These functions are dependant on the military effectiveness of the fortification.

Long-range weapons are mandatory for siege warfare. The only possible long-range weapons of the period were sling stones and wood-tipped arrows. Neither are very lethal. Short-range weapons of the EBA were mainly mace-heads, the lethality of which is also questionable due to their thin shafts and lack of sharp edges.

Although fortifications grew larger during the EBA and reached a climax during the EB III, analyses of the fortifications at several sites shows they had low tactical value.

Both **TBY** and **Tel Yarmuth** had walls that included sophisticated military features like a saw-tooth pattern (TBY) or indirect access gates (Yarmuth), but their efficiency was hampered by issues such as the inferior location of some sections, inefficient positioning of towers, large gaps between towers, unfortified sides (TBY), internal bastions, and the rendering of sections of the fortifications obsolete by later construction (Yarmuth). Construction of fortifications at both sites would have been a costly and large project.

Both **Bab edh-Dhra‘** and **Zeraqun** were lacking fortification on one of their sides, while the other sides were heavily fortified. The cemetery of Bab edh-Dhra‘ yielded some evidence of violence (without increase) during the period.

The fortifications of **‘Ai** were massive and were constantly widened, but closer inspection shows that these renovations sometimes resulted in the removal of defensive features like towers. The site of **Hebron** had impressive, plaster-faced fortifications, but its location was tactically inferior. The only site yielding some evidence of warfare is **Leviah**, where a destruction layer with possible sling stones and two mace-heads were found near the city gate.

Economic Structure

Based on Genz's demonstration of the use of 'cash crops' in EB III, I suggest a *semi-wealth economy* model in which the elite acquired social power through manipulation of a restricted range of valued symbolic items and costly commodities (mainly olive oil and wine). An example of this is Yarmuth Palace B-1 with its small granary and large storage facilities. The former could have provided for the palace's annual grain consumption needs, while the restricted-access storage rooms appear to have contained a much larger quantity of valued commodities such as olive oil, wine, or resin. The large quantities stored in the palace are an indication that these products were not intended for consumption, but were commodities with high social value.

During the EB III at TBY, the economy changed from the EB II *staple economy* (of which the Circles Building was a direct product) into an economy marked by a moderate increase in prestige goods and decentralised processing and storage of grain.

EB III is characterised by a moderate increase of prestige goods. Some may have been connected to the elite while others marked a stratification of cult. The increase in the size and flattening of platters during the period were intended for presentation of larger quantities of food. The larger platters were found at the larger sites and attest to conspicuous consumption of food as a part of the semi-wealth economy.

Ritual and Symbolism

Two types of cultic structures characterise the period – large temple complexes and small shrines. Religion maintains social order by asserting the existence of a similarly ordered heavenly world. Thus, stratified societies tend to have stratified gods. This is seen in the large complexes of Megiddo and Zeraqun. It is also seen in the small shrines that are always found at sites where larger temples existed. These shrines seem to belong to cults intended for the commoners. Larger temples may have had some economic power since it appears that some of the elevated platforms found next to them were probably granaries.

While others have suggested that the dearth of symbols, symbolism, and mortuary practices may be related to iconoclasm or to a move from the wealth finance of the Chalcolithic to the staple finance of the EBA, a closer analysis of the EB III shows that the reasons for this may be more complex.

4. Discussion

The Circles Building was built using three units of measure, which attests to some attempt at formal control, albeit not very developed. It was a building designed to look approachable and accessible while still being monumental. It projected stability and accessibility and is reminiscent of the EB II ideology of ‘communal action’. This, together with the EB II preparations for its construction, indicate that it was a creation of the EB II society, executed at the beginning of the EB III. During the later period, central rule declined and storage was decentralized and moved to the fortification towers.

The plaza was an area probably intended to be controlled by the elite and to be used in ceremonies. Its location increased the effect made by the size of the Circles Building. A large number of broken mace-heads found in the plaza may be testimony to a symbolic act (of resistance?) performed here.

Yarmuth Palace B-1 was a costly building project. It was built over a large plot and intended for the benefit of a small group only. The building differs from the Circles Building in almost every aspect: size, accessibility, cost, location, storage capacity and owners. Palace B-1 was a creation of a hierarchical social structure that could mobilise a large workforce, though its power was not without limitations.

Evidence for the existence of warfare includes destruction episodes at some sites, constant renovations of fortifications, a move of populations to fortified sites, strategically positioned sites, indirect-access gates, blockages of gates, and the willingness of the population to participate in the building of large fortifications. However, EB III fortifications were less effective than they seem. Some notable deficiencies include large gaps between towers, inferior locations, unfortified sides, and unfeasibly large garrisons. Other indicators that warfare was not a predominant feature of EB III society are: a lack of weapons and siege engines in the archaeological record, unprotected water sources, and almost no skeletal evidence of death due to physical trauma.

Based on the above, it seems warfare was a rare phenomenon in EB III and the investment in fortifications was out of proportion with the potential threats. It is suggested that a perception of impending violence and constant preparations for war were used to increase the status of the elites. The de-facto roles of fortifications were to symbolise and show the power and ideology of the elite, and to create borders between inside and outside, 'us' and 'them'. Their construction fostered group identity, while their physical presence imposed itself on the perception and use of urban and inter-urban space. Fortifications became larger as a function of towns trying to exhibit their wealth and status. Their construction was conspicuous consumption aimed to demonstrate the power of the elite. Threat, or anticipation of it, did exist, and the monumental size of fortifications may have been used to deter attackers and to compensate for the lack of armies.

During the EB III the subsistence economy was based on grain, while the political economy was based on olive oil, some prestige items, and conspicuous food consumption.

This model is defined as a *semi-wealth economy*. Changes were neither linear nor evolutionary and changed course during the period (as was shown in the case of TBY). Cultic structures of the period mirror the social structure: the larger ones were run by the elite, and the small ones were intended for commoners. The dearth of evidence for crafts and symbolic behaviours seems to indicate that individual people were not supposed to stand out and their remains were not intended to be remembered and preserved. This is in contrast to the city and its fortification walls, which would have been seen as permanent and eternal.

5. Summary

Viewing the EB III period as a distinct archaeological entity reveals its salient attributes: an increase in stratification, an increase in the construction of monumental structures, an economy based on semi-precious goods, some prestige goods, and conspicuous consumption of food, and stratification of ritual and cult.

The analysis of TBY and Yarmuth reveals two different EB III societies – a corporate society with a staple economy at TBY, versus a more stratified society with a semi-wealth economy at Yarmuth. Societal structures at other sites in this period lay between these two extremes. The existence of warfare cannot be substantiated through the archaeological record. The threat of violence played an important role in the rise of elites and stratification, but for the most part, fortifications fulfilled a social function.

Complexity and social organisation can take various forms, and EB III societies appear to have experimented with many of them. The end of this period shows that such experiments do not necessarily lead to a higher degree of complexity.

1. Introduction

Recent research has characterised the Early Bronze (EB) III as the apex of the first urban period of the Southern Levant. While the first broadly urban period is EB II,[1] it was during EB III that the main features of Early Bronze Age (EBA) urbanism appear to have reached their full expression: settlements became larger and densely inhabited, their fortifications became extremely massive, cultic centres were more prominent, palace complexes appeared, and small villages disappeared from the landscape, their inhabitants presumably absorbed into the larger centres (Esse 1982; Greenberg and Porat 1996; Greenberg 2002; Miroschedji 1999). Recent studies of the EB III delineate the broad components of its material culture. These studies have observed diversity in the nature of society in parts of the southern Levant and have offered interpretations of the Khirbet Kerak Ware (KKW) phenomenon, associated with the arrival of northern migrants in the Levant, and reassessments of the question of urbanism (M. Chesson and Philip 2003; M. S. Chesson 2015; Greenberg and Goren 2009; Miroschedji 2006; Philip 2008). They suggest that the period ended in a resounding collapse of urban institutions (Dever 1989; Esse 1989a).

However, a closer look at the present state of EB III studies reveals many lacunae. For one, although EB II and EB III are formally recognised as different entities, many scholars treat them as one, with EB III considered merely as an "intensification" of the former period (e.g., R. Amiran and Gophna 1989; Ben-Tor 1992a; Mazar 1990: 108-44; Miroschedji

[1] Here I follow common usage of the term "urban" (R. M. Adams 2012; Childe 1950; Greenberg 2002; Manning et al. 2014), while the precise content of the Southern Levantine 'urbanism' will emerge from the discussion. Some scholars contest the use of this term for the EBA (e.g. M. S. Chesson 2015; Philip 2001; Savage et al. 2007).

2014). Second, according to the most recent chronological schemes, EB III was significantly longer than EB II (e.g., Greenberg 2002: 8; Philip 2001), thus suggesting a longer and less uniform trajectory of social change as the period progressed. Moreover, as a recent treatment concedes, the knowledge of the period remains schematic in many ways (Greenberg 2002: 122). Challenges for new research include: completing a structural analysis of EB III society, building a detailed chronology of the period and its sub-phases, and theorizing on the internal workings of EB III towns and households and the dynamics leading to their collapse (Greenberg 2002; Philip 2001: 182-83). In view of these gaps, there is a need to re-evaluate the nature of the traditional separation between the EB II and EB III periods, to determine if south Levantine EB III society comprises a distinct social and political entity, and to evaluate what its significance might have been in the evolution and diffusion of early urbanism.

Urbanization marks the “emergence of differences in access to status, power and wealth” that culminated in the establishment of central authorities (Bogucki 1999: 206). This development led autonomous households and communities to surrender their freedom and autonomy and to become subordinated to a social, economic and cultic elite (Bogucki 1999: 265). From the viewpoint of our contemporary urban, highly differentiated and hierarchic society, it is difficult to comprehend the processes by which South Mesopotamian farmers left their villages and agglomerated in the first large cities, leaving behind their old ways of life (Andreev 1989: 172). As Clark and Blake have asserted, the institutional of social inequity is a paradox: people agree to cooperate and subordinate themselves to others, often in non-coercive circumstances (J. E. Clark and Blake 1996: 258).

The move into ancient cities is even more enigmatic when contrasted to modern motivations. For the most part, modern cities offer the prospect of access to economic advantages, better paying jobs, health services, education, transportation, culture, and entertainment. Ancient cities do not appear to be very alluring, and in many cases offered a quality of life inferior to that of villages, as they suffered from poor health conditions, poor sanitation and high population densities (C. S. Fischer 1976: 15-65; Middletown 1987: 17; Pile 1999); and with most of the population practicing agriculture, they held few employment advantages as well. One may well ask, after Mann (1986: 49), (1) How did most of the people surrender their autonomy while delivering social and economic power into the hands of a few? (2) How did authority become institutionalized, i.e. permanent and monopolistic?

Coercion might have been involved, but as A.T. Smith has argued, violence is rarely the first option for the state. The authority and the differential access of a small group to social power, wealth and economic power were probably obtained by establishing legitimacy, by a perceived threat of violent sanctions against those who resist, and by an ideology that naturalized popular support of the elite (Bogucki 1999: 265; Smith 2003: 93). Smith (2003: 1–5) has noted that in this day and age, the presence of authority and of the state may often go unnoticed, since, as in Andy Warhol's painting of an electric chair, it is embedded in the material culture and lacks clear contours. During ancient times however, the situation was different, as can be seen on the tomb of Queen Pubai of Ur, where the presence of the ruler is clearly evoked in the architecture of the grave and her power is materialized in conspicuous consumption. This boldness allows researchers of past societies to better understand the rise of differentiation and authority. The Southern Levantine EBA in particular is a fertile ground for such an analysis as it is in this period that the local institutional authority makes its first steps.

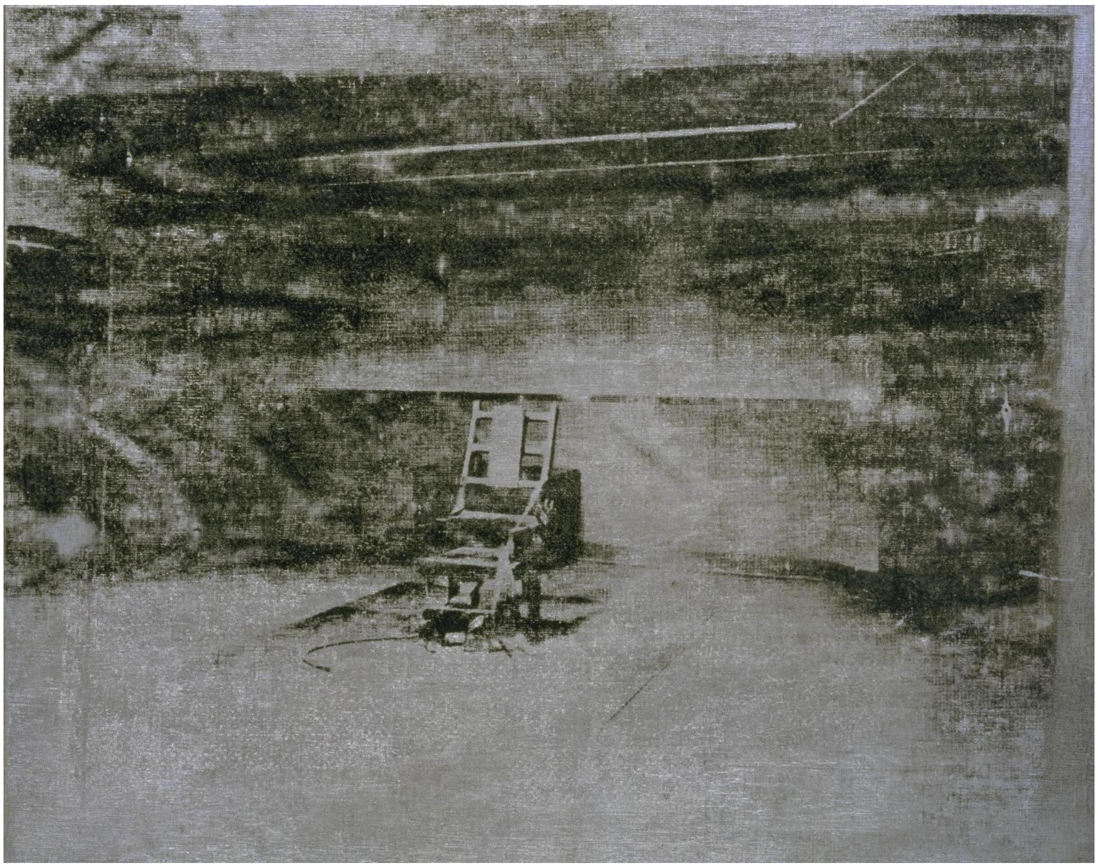

Figure 1: Andy Warhol Electric Chair (1964)
(Smith 2003)

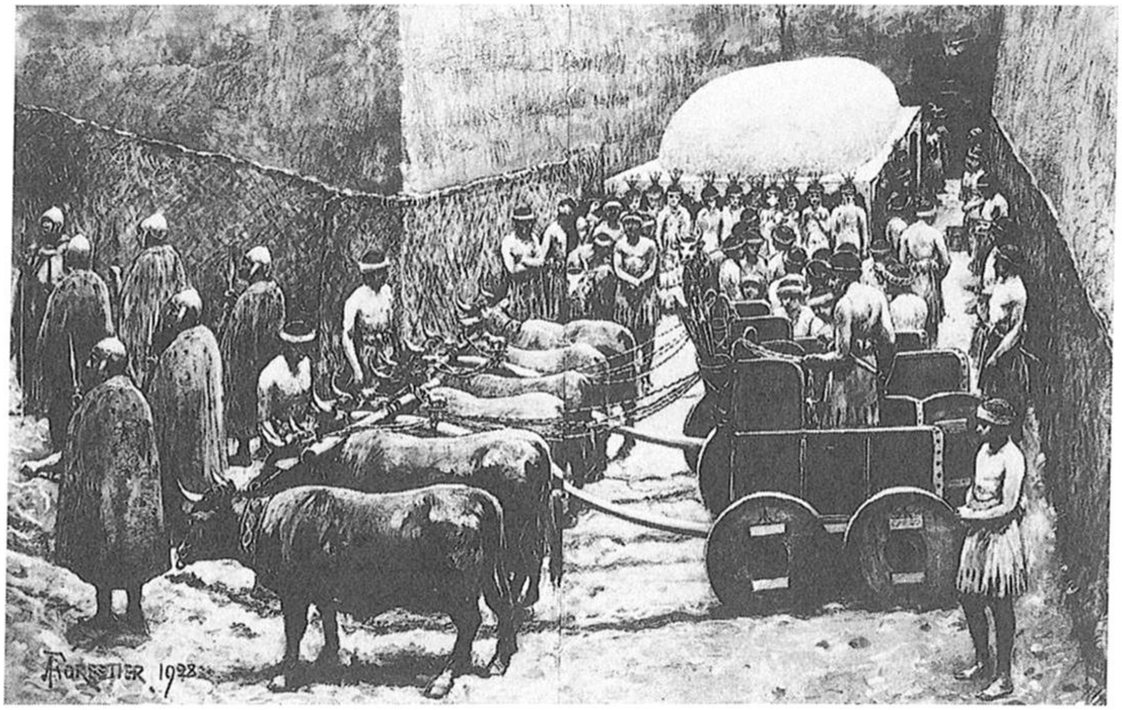

Figure 2: A reconstruction of the death Queen Pubai of Ur
(Smith 2003)

In the following thesis I will use new archaeological materials and a fresh theoretical approach in order to test the assumption that the EB III can be defined as a distinct archaeological entity and as a distinct subtype of early urbanism. As a part of this objective, I will probe into the EB III society, with all its diversity and any distinct elements which may give reason to distinguish it from EB II, attempt to account for the period's longevity, and hopefully gain a clearer appreciation of the reasons for its 'collapse'.

The aforementioned new materials include recently published results of excavations as well as unpublished materials from the renewed Tel Aviv University excavations at Tel Bet Yerah and the CNRS excavations at Tel Yarmuth. Most of the research is based on these two sites. The theoretical approach to be used has emerged from the nature of the finds: since the most prominent material remains reported are architectural and artefactual (rather than, for example, household- or subsistence-related), I will employ descriptive, interpretive and critical approaches that address the following issues:

- The convergence of structural and physical changes in EB III towns;
- The manner in which social power was reproduced and maintained during the EB III, including: the possible emergence of hierarchies, social stratification and levelling mechanisms, and competing powers and resistance, and how all of the above are represented in the material culture;
- Evidence for the ideology(ies) that may have contributed to the longevity of EB III social formations as well as to their collapse.

Social structure, power, and ideology as subjects of archaeological research have been addressed in relation to several centres in the ancient world such as prehistoric Europe, the New World, and the ancient Near East (e.g., Clarke et al. 1985; Earle 1997; S. Paz 2010; Smith 2003). Using methods applied in these studies, the following thesis will attempt to generate an original consideration of the EB III in the southern Levant.

1.1. Thesis Structure and Synopsis

Following this introduction, Chapter 2 offers an extended review of the current state of knowledge regarding south Levantine EB III. It serves both to define the contours of the period and its remains, particularly where these have been obscured by the tendency to lump EB II and III together, and to provide a setting for the more expansive treatment of selected issues in the following chapter. The first part of Chapter 2 thus covers prior research and current knowledge of chronology, settlement pattern, architecture, and site planning, material culture, economy, ritual, symbolic behaviour and climate. The second part of the chapter looks at the intellectual history of south Levantine EB III research, associating landmark studies with relevant advances in interpretive theory. It concludes with a presentation of the theoretical underpinnings of this study, illustrating its use of descriptive and quantitative approaches to architectural and artefactual remains.

Chapter 3 analyses several aspects of material culture and architecture in order to examine central issues in EB III society. Aspects treated include monumental architecture, conflict-related material culture and architecture, economy, and cultic and symbolic activity. It takes the results of recent excavations at two top-tier EB III sites, Tel Bet Yerah (TBY) and Tel Yarmuth, as test-cases for in-depth examination of their social structure through their monumental architecture (the Circles Building at TBY and Palace B-1 at Yarmuth). The question of conflict in EB III is treated through the analysis of fortification walls of various sites and other markers of war and conflict, examining whether EB III fortifications were as efficient as they seem to be, and whether other indicators of war are present. The final section of this chapter analyses several aspects of economy, ritual, and symbolism in the EB III, demonstrating how they might function as tools for accumulation of social power, either through economic means or symbolic and ritual-based affirmations.

Chapter 4 and 5 discuss and summarize the above finds, showing how the EB III differs from the EB II, not only in its material culture, but also in its social structure, stratification, economy, and ideology. Significant social change can be attributed to the transition between EB II and III, taking different trajectories in different parts of the southern Levant. Tel Bet Yerah, with its Circles Building, reveals an initial tendency to preserve corporate structures of the EB II, though this changes in the latter parts of the EB III. At the same time, hierarchy in Tel Yarmuth was more pronounced, as its palaces demonstrate.

In spite of the large fortifications that characterise the period, organised warfare and conflict occurred rarely. The threat of violence may therefore have been used to enhance power and social control of the local elite. Additional evidence for growing inequality can be shown in aspects of EB III economy, in its ritual and in its symbolism. The urban 'experiment' ended at the end of EB III, with the internal tensions promoted by increasing stratification probably playing an important role in what is generally termed 'urban collapse'.

2. Background and Research Framework

2.1. Definition and Description of the EB III in the Southern Levant

This section reviews existing definitions and characterizations of the EB III in the Southern Levant, viewed independently of – and sometimes in contrast to – preceding EBA phases. It deals with chronology, material culture, architecture, site planning, settlement distribution, economy, symbolic representations and possible impact of climate change for this period. This sets the stage for the more focused social analysis that will be presented in later chapters.

2.1.1. History of Research

G. E. Wright (1937) was the first to divide the EBA into sub-periods and to define Khirbet Kerak Ware (KKW) as the primary diagnostic ceramic of the EB III. Since the days of Wright, other markers for the period have been established (Greenberg 2000; Miroschedji 2000). Nonetheless, KKW is still often considered the main marker of this period, and sites where it is absent (as it is at many sites of the south) are often referred to as 'EB II/III', especially those that were only surveyed (Philip 2001: 171; Savage et al. 2007). As a result, there is a tendency to treat these two periods as one even in discussions of political and social structure – the EB III usually being considered a mere evolution of the EB II, rather than a different entity (R. Amiran and Gophna 1989; Ben-Tor 1992a; M. S. Chesson 2003, 2015; Mazar 1990: 108-44). In recent years, several studies which concentrate on the EB III (Greenberg 2002; S. Paz 2010) and the KKW phenomenon have been published (e.g., Greenberg and Goren 2009), but there has been only modest treatment of the EB III specifically. The published works regarding this period deal with issues like (1) changes in the spatial distribution of settlements (Getzov et al. 2001; Gophna 1995); (2) the social structure of the period – mostly stressing the question of urbanism (M. Chesson and Philip 2003; Genz 2003a; Greenberg 2003; Richard 2003), and the extent of this urbanism (Philip 2003a); (3) analyses of the EBA urbanism and its collapse (e.g., Dever 1989; Esse 1989a; Herzog 1997; Richard 1987); (4) the EB III in Jordan (Philip 2001, 2008). Other papers deal with more localised or specific issues, like (5) the EB II and EB III in Yarmuth and southern Palestine (Miroschedji 2000, 2001, 2006); (6) aspects of the EB III in the Hula valley and the north of Israel (Greenberg 2000, 2002); (7) radiocarbon chronology (see below); (8) mortuary practices (M. S. Chesson 1999; Gasperetti and Sheridan 2013; Kenyon 1960; Schaub and Rast 1989); and (9) artistic representations such as bull-heads and decorated bones (Genz 2003b; Miroschedji 1993b; Zarzecki-Peleg 1993).

2.1.2. Chronology

Pottery based chronology

Pottery remains one of the chief tools used in ascribing sites to the EB III.[2] As noted above, Wright's identification of Khirbet Kerak Ware as the main ceramic marker of the EB III has remained largely in force (Esse 1982; 1991: 64), although Esse, among others, illustrated typological changes in several local forms at northern sites, especially Megiddo and Tel Bet Yerah. Southern EB III assemblages, where KKW is absent, were described by Fargo and Seger (Fargo 1979; Seger 1989), and treated extensively by Miroschedji

[2] EB III Pottery is also dealt with in chapter 2.1.5.

(Miroschedji 2000) in relation to his excavations at Tel Yarmuth. More recently, analysis has focused on the changes within the ceramic industries during the EB II-III transition in the two broad geographic regions – the northern and southern parts of the southern Levant (Greenberg 2000; Greenberg and Iserlis 2014).

Internal subdivisions of the EB III have also been suggested. Hennessy defined two phases, EB IIIA and EB IIIB, in Jericho (Hennessy 1967: 7-25). Callaway subdivided the EB III at Ai into two phases as well (Callaway 1972: 253). Esse noted that these sub-divisions were based on local stratigraphic considerations (Esse 1982: 162-63), but later suggested they may apply to all of the EB III sites (Esse 1991: 65). Miroschedji subdivided the EB III at Yarmuth into three sub-phases (Miroschedji 2000), but later indicated that these sub-periods may apply only to the south (Miroschedji n.d.). Albright, Getzov, Paz and Gophna argued that the EB III may be divided into three phases: a pre-KKW phase, a KKW phase and a post-KKW phase (Albright 1965; Getzov et al. 2001). This may be in accord with a possible post-KKW phase at Hazor, characterized by a decline of KKW from 25-33% to 10% of the diagnostic pottery (Greenberg 2000: 189).[3] Despite the above, the suggested sub-phases of the EB III are yet to be recognized throughout the entire region, hence most scholars treat the EB III as one period.

Aside from KKW, there are other ceramic markers for the EB III, although usually less prominent and based on changes in type distribution, quantity and size. In the north, during the transition from EB II to EB III, the large-scale distribution of Metallic Ware (Greenberg and Porat 1996; sometimes called 'North Canaanite' or 'South Levantine' Metallic Ware, hence NCMW or SLMW) declined and this pottery type no longer dominated the

[3] A "Final EB" phase was detected at TBY (Greenberg and Eisenberg 2006; Greenberg and Paz 2006a), but is considered unique and transitional.

assemblages. Local industries, sometimes limited to specific sites can be identified, such as ‘common ware’, which was non-metallic ware locally produced at Tel Bet Yerah (Greenberg and Iserlis 2014), ‘Dribble-Painted’ ware at Hazor (Greenberg 2000: 184; 2002: 51), and an increase in the frequency of holemouth forms and introduction of ledge handles (both very rare in the northern EB II) in the Hula Valley. In addition to these changes, the platters and ledge-rim bowls of the EB III are markedly larger, thicker and flatter than their stratigraphically earlier counterparts, and a pattern burnish, perhaps simulating basketry, was applied to many of them (Greenberg 2000: 186; Greenberg and Iserlis 2014: 86-87). Other later forms include red-slipped jugs, combed vats and jars, and hemispherical and carinated bowls, often red-slipped and showing evidence of wheel formation (Greenberg 2000: 186). NCMW vessels were still in use during the EB III, but mainly consisted of jars and pithoi. There are also some instances of ‘imitation’ or locally produced ‘combed-metallic’ types in both the north and the south (Greenberg and Porat 1996; Greenberg 2000).

Common ware, which replaced some of the EB II NCMW vessels, had thick walls, which were essential due to the inferior fabric and lower firing temperature. It was often slipped with a low-quality slip that does not preserve well and tends to peel. Thick, non-Metallic platters and ledge rim bowls were the main marker, other than KKW, for EB III levels (Greenberg 2000: 185-86). Very large platters of this type were found throughout Israel, but were generally more common in the south (see below) (Greenberg 2000: 186).

Dribble-Painted ware are thick walled vessels with a coarse fabric and are fired at low temperatures. They are literally ‘dribble-painted’, i.e. have a non-uniform colour applied in running droplets. Most vessels are horizontally combed. They are only found in the north of Israel and it seems they were influenced by the Syrian ‘smeared wash’ vessels (Greenberg 2000: 191). De Miroschedji argued that they are found only in the northern Jordan Valley (Miroschedji n.d.).

The transition to the EB III in the south of Israel was somewhat different from that of the north with a change of fabrics, decorations, shapes and surface treatment in relation to the preceding period. The EB III pottery of Yarmuth seems to be more standardized, better manufactured, and better fired, with an increase in the use of the slow potter’s wheel for “wheel finishing” and “wheel shaping” (Miroschedji 2000: 320; n.d.; Roux and Miroschedji 2009). While NCMW was not found at Tel Yarmuth, local types resembling it, chocolate-brown in colour (in contrary to the red-brown of the northern Metallic Ware), were found in the south in a limited number of types and shapes. The northern characteristics of well fired, pattern-combed, thin walled vessels can be found in the south, but in different forms, and Miroschedji suggested that they may not represent a separate production centre (Miroschedji 2000: 321).

Southern platter-bowls appeared during the EB IIIa. These were large bowls, relatively shallow, with a pattern-burnish (Miroschedji 2000: 322, Fig. 18.3). ‘Giant’ platters, platter-bowls, and basins appeared during the EB IIIb. They have large diameters, often more then 60 cm, and some of them reach the 90 cm mark. Large platters (diameter 40-60 cm) are the most common in EB III Yarmuth (Miroschedji 2000: 326).

The use of burnished and pattern-burnished slips became more common during the EB III and vessels had a better finish. Smaller vessels such as juglets and jugs were not as common. Spouted vats, found in significant numbers, are another marker of the EB III. EB IIIa holemouth jars are ovoid, with a flat or rounded base, and differ from their EB II counterparts in that they have a less coarse fabric, optionally combed surfaces, and thinner rims (Miroschedji 2000: 322-26).

Miroschedji pointed out that KKW might not have appeared in the south before EB IIIb, although the meagre quantity of sherds found at Yarmuth prevented him from reaching a definite conclusion. No KKW sherds were found in the extensively excavated EB IIIa and EB IIIc areas (Miroschedji 2000: 328).

During the EB IIIc the vessels had a coarser matrix and finish; they also became more uniform and there is greater evidence for the use of potter's wheel. A lime wash can be found on some of the bowls, holemouth jars, jugs, and platters and on most of the jars. Also of note, there is a smaller percentage of 'giant' platters in this phase and platter-dishes are a typical vessel (Miroschedji 2000: 330-34).

Relative chronology and synchronisms

With strong Egyptian and associated synchronisms in place for EB I and EB II, the beginning of the south Levantine EB III can be synchronized with the neighbouring Egyptian dynastic sequence and, by extension, with the northern Levant. This synchronism is not as secure as it is in the earlier periods and becomes even less secure for the later part of the period.

Late EB I in the southern Levant has been tied to late pre-dynastic Egypt through numerous finds bearing the incised *serekh* of Narmer found in southwest Canaan. The beginning of the EB II is usually correlated with Pharaoh Djer of the 1st Dynasty due to Canaanite-origin NCMW EB II vessels found in his tomb (B. Adams and Porat 1996; Greenberg and Eisenberg 2002; Philip 2008: 166), although it is possible that it correlates with an earlier king (Müller 2014). Other evidence for this connection includes vessels of possible Bet Yerah origin found in Upper Egypt 1st Dynasty tombs, as well as an Egyptian graffito scratched on a locally-made jug found in an EB II context at Bet Yerah (Greenberg and Iserlis 2014: 66).

After the 1st Dynasty, the picture is far less clear. Canaanite "combed ware", some metallic and some not, has been found in elite tombs of later dynasties and attributed a Southern Levantine origin. Large quantities were found in 4th Dynasty tombs, and lesser amounts in those of the 5th and 6th Dynasties. The latest example of this ware is attributed to a Pepi II era tomb (late 6th Dynasty) (Thalmann and Sowada 2014b). This led scholars to equate EB III with the Egyptian 3rd through 6th Dynasties (Mazar 1992; Miroschedji 2000). Recent work has established that these connections were with the central/northern coastal Levant, as the best morphological parallels to the vessels in question have their origin there (Thalmann and Sowada 2014a). Thus, Egyptian items attesting to connections between southern Canaan and Egypt are limited to the 1st Dynasty/EB II horizon. Evidence for 2nd and 3rd Dynasty connections with Byblos suggests that the overland connection with the southern Levant was disrupted in EB III, to be replaced with maritime connections with the central/northern Levantine coast (Greenberg and Eisenberg 2002; Greenberg 2011b). The scanty evidence for connections between Egypt and the southern Levant in this period makes correlation of the EB III with Egyptian dynasties problematic.

Absolute chronology

Absolute chronology of the EBA has undergone significant revision in recent years (e.g., Barta 2013; Dee 2013; Ramsey et al. 2010). As recently as 1999, the end of EB III was dated to around 2300 BCE (Mazar 1992; Miroschedji 1999), correlating to a military campaign of Pharaoh Pepi I presumably aimed at the southern coastal plain of Canaan (Miroschedji 2012). This correlation was not considered a secure one since the dating of Pepi's reign as well as the destination of the campaign are disputed (Esse 1991: 64; Regev et al. 2012b). Recent work on Levantine and Egyptian absolute chronology indicates that the late EB III correlates with the 4th and 5th Dynasties, and that the ascension or reign of the late 5th Dynasty king Djedkare should be dated to around 2410 BCE and is to be associated with the end of the EB III in Syria and Palestine (see below). The aforementioned military campaign of Pepi I, led by Weny, would then have to be assigned to the Intermediate Bronze Age (IBA) (Barta 2013; Dee 2013; Höflmayer and Eichmann 2014; Höflmayer 2014; Ramsey et al. 2010).

Kempinski, basing his work on Egyptian correlations, dated the beginning of EB II to 3000-2800 BCE, and the EB III to 2650-2200 BCE (A. Kempinski 1992a: 68). Miroschedji (2014) dated the EB II to 3000 – 2700/2650 BCE and the EB III to 2700/2650 – 2300 BCE, with the beginning of the EB III correlating with the beginning of the 3rd Dynasty in Egypt (Mazar 1992; Miroschedji 2000). Chesson and Philip dated, compared and correlated EBA dates for the southern Levant with contemporary Syrian periods and reached a somewhat different dating scheme (see below) (M. Chesson and Philip 2003: Table 1; Philip 2008: 167, Table 6.1). Sarit Paz (S. Paz 2010), based on recent ^{14}C dates found in the renewed excavations at Tel Bet Yerah, dated the beginning of the EB III at the site to ca. 2750 BCE.

Recent radiocarbon research sheds new light on the dating of the later sub-periods of the EBA. A comprehensive radiocarbon study conducted on a large database of samples taken from excavations conducted mainly in Israel was recently published by Regev et al.

(Regev et al. 2012b). In this study an ‘independent’ chronology for the Southern Levant was built. Using data from sites with two or more superimposed periods, the date of the transition between the periods could be calculated. Based on samples from Jericho, TBY, Tell el-Umeiri and Yarmuth, it was suggested that the EB II-III transition should be dated to shortly after 2900 BCE. The accuracy of this dating is enhanced by a slope in the calibration curve (Regev et al. 2012b; Regev et al. 2012a: 522-23; Regev et al. 2014). Hoflmayer et al. dated the EB II – III transition at the site of Tell Fadous-Kfarabida, Lebanon, to between roughly 2850 and 2650 BCE; this wide range, due to the shape of the ^{14}C calibration curve at this point (***Figure 3***), underlines the residual uncertainty in absolute dating within the EBA (Höflmayer et al. 2014).

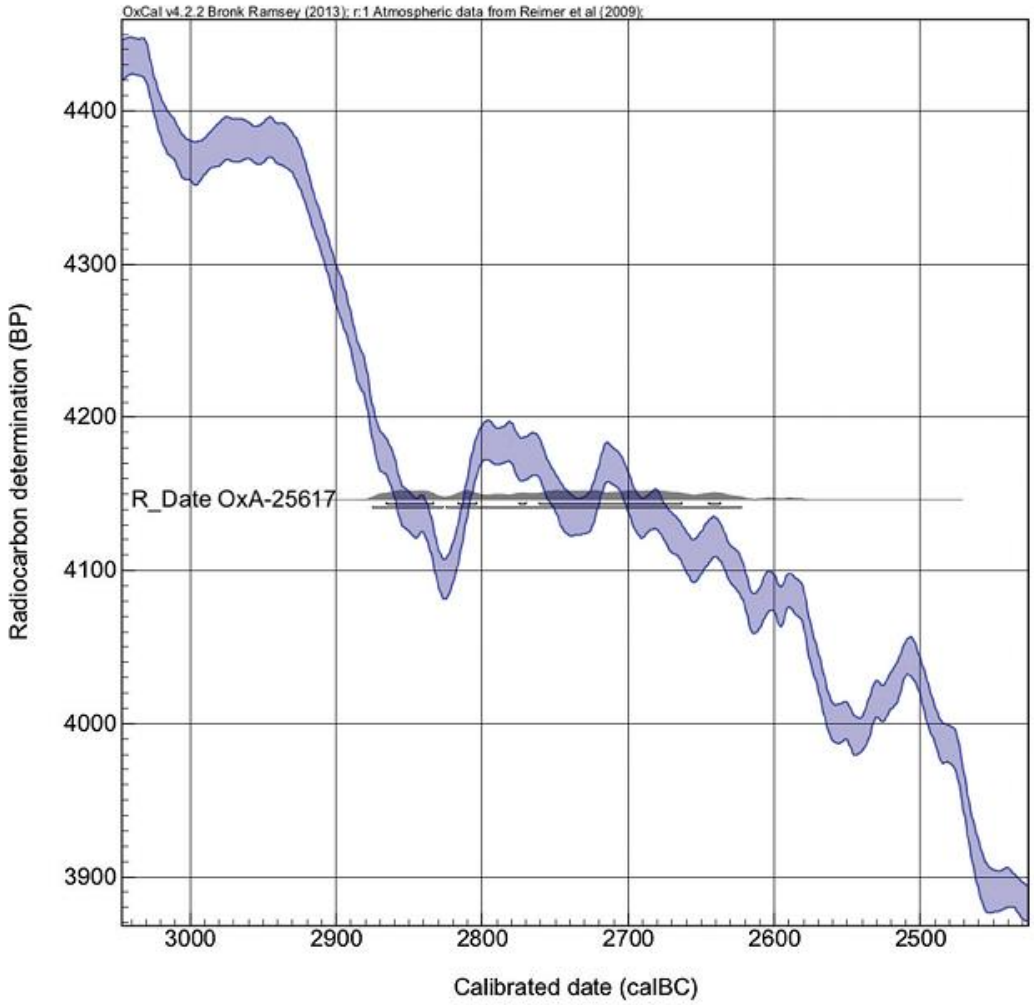

Figure 3: ^{14}C calibration curve with an example of an EB II-III transition sample (Höflmayer et al. 2014)

Dating the transition from the EB III to EB IV in Israel has proven to be a more complicated task in view of the lack of sites with superimposed, radiocarbon dated strata of EB III and IV. Nonetheless, the dates calculated for the end of the EB III are between 2500 and 2450 BCE. The end of the EB III was probably not simultaneous in all of the sites and the demise of the period may have lasted as long as one to three centuries

(Höflmayer et al. 2014; Miroschedji 2000; Regev et al. 2012b; Regev et al. 2012a: 522-23).

It is worth noting again that a 2550-2500 BCE end date for the EB III, correlated with the late 4th or early 5th Dynasty of the Egyptian Old Kingdom, severs the end of EB III from the possible 6th Dynasty military campaigns in the Levant (Höflmayer et al. 2014).

The reason for the ambiguous ^{14}C dates for the EB II-III and the EB III-IV transitions is not only due to sampling, statistics and the shape of the calibration curve. Interpreting the data also requires giving consideration to Philip's argument regarding occupation cycles in ancient sites: when archaeologists identify material culture of a certain period in a site, they usually assume that the site was inhabited throughout this period. The actual process may have been less stable and continuous, with sites – even large, fortified ones – going through cycles of occupation and abandonment within a single archaeological period (Greenberg Forthcoming; Philip 2008: 168-69). Sites dated to a certain period may have had different occupation patterns, with some sites seeing a change in their material culture before others, and some being deserted prior to the EB III-IV transition. Averaging together dates for the EB III (as was done in Regev et al. 2012b) offers a convenient approximate date for the period, but obscures the complexity of processes of occupation and transition.

The following table summarizes the various EB II and EB III dating schemes discussed above. Particularly noteworthy is the tendency of the radiocarbon dating not only to raise both EB II and III dates, but to 'squeeze out' EB II, raising the possibility of different social temporalities in the two periods: swift and radical change in EB II, vs. protracted change in EB III.

S. Levant Period	*West Syria Period*	*Amuq Sequence*	*North Syria and SE Anatolia*	*Kempinski 1992: 68*	*(Miroschedji 2014)*	*(S. Paz 2010)*	*(M. Chesson and Philip 2003: Table 1)*	*(Philip 2008: Table 6.1)*	*(Regev et al. 2012b)*
EB II	EB I/II	Amuq G-H	LC5/ Post-Uruk	3000/2800 – 2650	3000 – 2700/2650	3100/3050 – 2750	3100/3000 – 2800/2700	3100/3000 – 2850/2750	3200/3040 (even 2900) – 2900
EB III	EB III	Amuq H	Multiple competing terminologies	2650-2200	2700/2650 – 2300	2750 – 2400	2800/2700 – 2400/2300	2850/2750 – 2400/2300	2900 – 2500/2450
Final EBA		Amuq I	EB IVA			2400 – 2300			

Table 1: ^{14}C dating schemes for the last sub-phases of the EBA (Cal BCE)

2.1.3. Settlement Distribution

Settlement pattern data for EB III is, for the most part, based on surveys conducted in Jordan, Israel, and the Palestinian Authority. These include regional surveys in Upper Galilee (Frankel and Getzov 1997; Frankel et al. 2001), the Hula Valley (Greenberg 2002), and various regions within Jordan (e.g. Harrison 1997; J. M. Miller 1991; Savage et al. 2007). Survey results should be viewed with caution, especially where site-size data and fine-grained dating are concerned. This is true especially when dealing with tell sites, where early phases are often buried and even sealed under metres of later accumulation (Philip 2008). Another issue, specific to the EB III, is the challenging task of accurately identifying the period where KKW is missing; this has led to the vague dating of many sites to a broad 'EB II-III' period. Nonetheless, the surveys provide a basis for discerning significant shifts in the settlement landscape between the two periods.

The southern Levant is characterized by diverse ecological and geographical units with different trajectories. West of the Jordan River these areas consist of the coastal region and the northern valleys of Israel, the northern Negev, the hilly area (Shefela), the Yarkon-Ayalon basin, Judea and Samaria. The Jordan Valley is another unit and may be divided into southern and northern parts. East of the Jordan Valley are the plateaus of Jordan such as the Madaba Plain and Kerak Plateau (Getzov et al. 2001; Gophna 1995; Harrison and Savage 2003; Philip 2008). Other ecological niches are the 'zones of uncertainty' (Wilkinson et al. 2014) that are positioned at the fringes of areas suitable for dry-farming.

During the EB I an increase in settlement density, site size and the number of sites was detected in all of the Southern Levant. This increase slowed in pace during the EB II and in many areas the trend was even reversed; a decline was seen, particularly in the number of smaller sites. During the EB III, this phenomenon reached its apex when a large proportion of the population concentrated in large fortified settlements, and villages became a relatively rare phenomenon in some areas. Although total site area did not change significantly during the EB II and III, when taking into account the long duration of the EB III, there may have been a decline in site populations. At the end of the EB III almost all of the sites were deserted, especially the larger ones. The majority of the sites dating to the subsequent period (EB IV/IB) were located on new ground, or at sites that were not inhabited during the EB III (Falconer 1994; Finkelstein and Gophna 1993; Getzov et al. 2001; Gophna 1995; Greenberg 2002, 2003; Harrison 1997; Regev et al. 2012b).

An extreme example of the processes described above can be seen in the Hula Valley in the north of Israel, where 22 EB II sites positioned on routes and valley access points have been identified. During the EB III the settlement map dwindled to three or four sites (Dan, Hazor and Khisas; Abel may have been another) with much ‘empty’ space between them, possibly occupied by transient populations who may be responsible for extensive dolmen fields within that space (Greenberg 2002). Other areas showing significant settlement loss are the southern Sinai and Negev highlands, the Upper Galilee, the Golan region, and the Samarian hills. By contrast, some regions, such as the southern Shephelah and central Transjordan, appear to show settlement increase (Getzov et al. 2001; Harrison 1997; Harrison and Savage 2003).

The two maps reproduced below show a portrait of EB III settlement based on surveys and excavations (***Figure 4***), and on excavations only (***Figure 5***). Both display discontinuous areas of relatively dense settlement separate by ‘empty’ zones, highlighting a rather anomalous portrait of settlement geography, when compared with previous periods. Moreover, given the possibility of temporal discontinuity discussed above, the picture becomes even more fragmented. Settlement hierarchy was identified in several regions, usually in the form of a two or three tiered system (Getzov et al. 2001; Gophna 1995; Greenberg 2002; Harrison 1997). These hierarchies may attest to relatively large political and economic units (Philip 2008), although most scholars believe they were sporadic and short-lived. It seems that the main system was of “community site clusters” (Harrison and Savage 2003) organised in a heterarchical structure (M. Chesson and Philip 2003). In this type of social structure, different elements may fulfil different functions, yet maintain a similar rank with respect to each other. At times, hierarchies may emerge (e.g., between sites or between and within social institutions), and subsequently dissolve. As can be inferred from the end of the EBA, this system is not a “stage” in the evolution of societies (Harrison and Savage 2003). Some scholars interpret this system as an outcome of the fragmented and diverse ecological and geographical units and niches that characterize the Southern Levant. This fragmentation contributed to a more diverse, less integrated and more flexible society and may have been an obstacle for the creation of large scale centralization as was formed in contemporary Egypt and Mesopotamia (Harrison and Savage 2003; Philip 2008).

The geographic fragmentation and proximity to desert regions also contributed to the existence of a significant pastoral and semi-nomadic component in the society, a component with strong social and economic connections to the rest of the population. These nomadic elements might have low visibility in the archaeological record, leaving traces like villages located on the fringes of the desert or dolmen fields (Greenberg 2002; Harrison 1997; Regev et al. 2012b). It has been suggested that the abandonment of settlements at the end of the EB III and the “disappearance” of a large percentage of the population may be attributed to an adaptive response of a flexible society that gave up a sedentary way of life for a more mobile one (Harrison 1997).

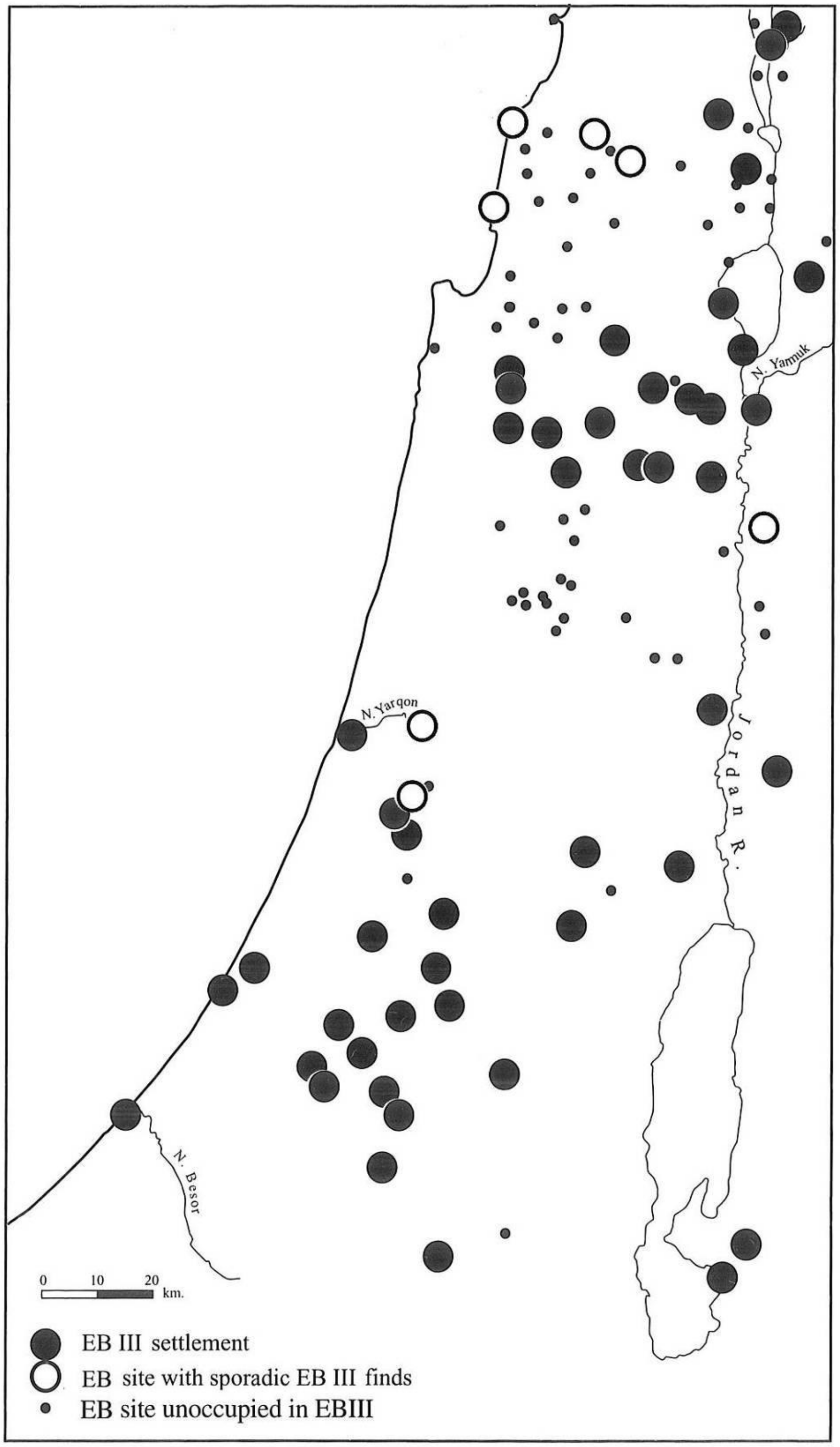

Figure 4: EB III Settlement distribution (based on excavations and surveys)

(Based on Getzov et al. 2001: Figs. 13-14)

Figure 5: EB III settlement distribution (based on excavations only)

(Greenberg Forthcoming)

2.1.4. Architecture and Site Planning

During the EB II, several sites began to show signs of site planning and architectural design in the form of differentiated intra-settlement areas, streets, and public areas. EB III introduced monumental architecture and evidence for systematic planning based on units of measure, while scaling back earlier site-wide projects. While some of the EB II evidence of planning is arguable, as in Arad (R. Amiran et al. 1997; Herzog 1997), other sites, and especially TBY with its planned street grid, show noteworthy evidence of planning and urban design. Greenberg and Paz have argued that the streets and their plan are an indication of urban thinking, dealing with organization of space, partitioning and differentiation between public and private areas (Greenberg and Paz 2011, 2014; S. Paz 2010). It seems that during the EB III the streets of TBY either fell out of use or were not maintained as well as they were during the EB II.

Another indication of planning and urban thinking is the upper and lower town arrangements found throughout Israel (A. Kempinski 1992a) and Jordan (Douglas 2011; Philip 2008: 172), with public structures on the acropolis and domestic ones in the lower town. At Megiddo this differentiation became segregation, with a wall separating the acropolis from the lower town (Greenberg and Paz 2014; A Kempinski 1989). Again, this evidence of planning started before the EB III.

The fortification walls that became popular during the EBA are another testimony of design and planning, with sophisticated military features at some sites (Greenberg and Paz 2014), as well as a planned access road found at many of them (Helms 1976a: 202; A. Kempinski 1992a: 79). Another significant example of site-wide planning is the terracing at Tel Yarmuth (Regev et al. 2012a: 507).

An additional indication of for the planning of monumental architecture is evidence of the use of standard measures and metrology. An elaborate use of the cubit is witnessed in the Tel Yarmuth Palace B, dated to the EB III. This large monumental complex was planned and built in a single effort using multiples and halves of the 52.5 cm cubit. Other EB III buildings that may have been built using the same cubit were the monumental building at Ai and the Megiddo Megara temples (Miroschedji 2001).

Fortifications

One of the main characteristics of EB III sites are their fortification walls, which encircled every major site of the period. These fortifications were furnished with various military features like glacis, towers, bastions and gates. Fortification walls grew incrementally larger in the course of the EBA, mainly by joining new walls and features to the existing fortifications, until they reached thicknesses of 8-15 m during the EB III. These impressive widths may reflect their original height, a countermeasure against scaling (Herzog 1997: 94-96; Joffe 1993: 70; A. Kempinski 1992a: 68; Kern 1999: 12; Mazar 1995; G. R. H. Wright 1985; Yadin 1963: 54).

Apart from the increase in widths, another proposed evolutionary trend is a change in tower forms as the period progresses (Helms 1976c; A. Kempinski 1992a: 68; McLaren 2003) . It is more likely however that there were several forms of towers concurrently in use throughout the period; the only noticeable linear change being that towers became more elaborate and larger later in the EBA, to a point where many of them can be classified as bastions. These became more common during the EB III (Helms 1976c; A. Kempinski 1992a; Philip 2008).

As in EB II, EB III fortification walls were built in sections (Eisenberg 2011; P. M. Fischer 2008; A. Kempinski 1992a; Kern 1999; Philip 2008). These sections were as long as 100 m and in some cases have noticeable gaps between them. It has been proposed that walls may have been built this way to prevent extensive collapse were a part of the wall to come down due to an earthquake or enemy action (Kern 1999: 11; G. R. H. Wright 1985: 173, 77-78; Yadin 1963: 54) . This logic is questionable since when an enemy breaches a small part of the wall the rest of the fortifications loose their importance, whether they stand or not, and the effect of an earthquake is never local. An alternate explanation, that each section represents the work assignment of a single workgroup (G. R. H. Wright 1985: 177-78), seems more reasonable.

Although the Chalcolithic Ein Gedi temple testifies that the concept of a complex gatehouse was already familiar before the onset of the Bronze Age, the gates of the early EBA are not very elaborate. Only in the EB III do gatehouses become more complex, and the large number of posterns typical to the EB II decreases. The glacis was introduced during the EB II and was improved upon and appeared more frequently during the subsequent sub-period. Outworks were also found in some sites (Brandl 1989: 379-83; Callaway 1980: 152; Douglas 2011; A. Kempinski 1992a; Nigro 2009; Sala 2013; Seger 1989; G. R. H. Wright 1985: 178, 87).

While the traditional view has assigned a defensive function to the massive EB III walls (e.g., Herzog 1997; G. R. H. Wright 1985; Yadin 1963: 54), additional or alternative social and political functions have been proposed, on general grounds (e.g., Joffe 1993: 70-71; Miroschedji 2006: 70; 2013). These aspects merit further attention and will be taken up in detail in Chapter 4.

Public and monumental buildings

Leaving aside the fortifications (discussed above) and temple complexes (discussed below), large building projects are rare in the EB I and II, and only somewhat more abundant in the EB III. The best known of these are the Tel Bet Yerah Circles Building, Megiddo Palace 3177 (A. Kempinski 1992a: 75-78), and Tel Yarmuth Palaces B1 and B2. Other monumental structures are the possible palace of Zeraqun (Douglas 2011), the Yarmuth White Building (which may have been a temple, or a patrician house), the terracing project at the same site, and Yarmuth's Terrace J with its unexcavated large buildings K, L and M (Miroschedji 2006, 2014; Regev et al. 2012a: 507). Another large building is the "Palace of the Copper Axes" found at Khirbet al Batrawy (Nigro 2010: 71; 2014), which may be better described as a patrician house (or houses; see below).

The Circles Building at Bet Yerah (which will be the focus of the discussion in Chapter 3.2.1), about 940 sq meters in size, is composed of three large platforms built around a central space. Seven circles, 8–9 m in diameter, are sunk about 20-30 cm into the platforms with four partition walls inside each of them (Currid 1985; Greenberg and Paz 2006b; Maisler and Stekelis 1945; Maisler et al. 1952; S. Paz 2006b; Stekelis and Avi-Yonah 1946-1947). The building was called 'the Circles Building' after its prominent features and has generally been interpreted as a granary (e.g., Mazar 2001; G. R. H. Wright 1985).

Megiddo Building 3177, assigned to Strata XVII-XVI or Levels J-5 and J-6 (both dated to the EB III), is considered to be a palace by most scholars (M. J. Adams 2013b; Finkelstein and Ussishkin 2000b, 2000a; Finkelstein et al. 2006b; Finkelstein et al. 2006a; Greenberg 2006a; Herzog 1997: 79; Joffe 2000; A. Kempinski 1992a: 78). It is a 900 sq m complex with two separate wings, inner courtyards, possible living chambers and ceremonial rooms. It had wide walls covered with plaster, pebble paved courtyards, light shafts and subterranean drainage (Herzog 1997: 79; A. Kempinski 1992a: 78). The Megiddo acropolis, including Building 3177 and the adjacent round platform (or altar) 4017, was separated from the rest of the site by a massive wall (4045A) (Herzog 1997: 79).

Two superimposed palaces were excavated in the lower city of Yarmuth (see chapter 3.2.2). Both were built in the latter part of EB III. The first palace, B2, was built over an area that once housed domestic dwellings. Most of it was later razed and replaced with Palace B1, a well-planned and built complex that covered an area of 6000 sq m. The palace was constructed with lime plastered walls and floors, hewn stones and a system of channels and cisterns. It included a domestic area, storerooms containing scores of pithoi, and an ‘official’ or administrative area. It was peacefully abandoned at the end of the EB III (Miroschedji 2000: 317-20; 2001, 2008, 2013).

Dwellings

Domestic buildings of the EB III had many plans and forms. In contrast to the EB I and EB II periods, where several types were widely used, no single form was preferred in any particular region during the EB III (Greenwald Bonn 1976; S. Paz 2010; Philip 2001: 180; 2008: 176-77).

Private houses of the EB III were usually rectilinear structures with stone foundations and a mud-brick superstructure. Many dwellings were organized as compounds including roofed rooms, probably intended for the accommodation of the household members, and unroofed areas for accommodating the livestock as well as for various activities like food preparation, cooking, weaving, and fishing net maintenance (M. S. Chesson 2003; M. S.

Chesson and Goodale 2014; Harrison 2011: Fig. 3; S. Paz 2010). Ben-Tor defined a 'forecourt building', which was a sub-type of the compound house. It had two or three rooms (some of them broad-rooms), and an open courtyard at the front, where some installations were positioned, like hearths and silos. The whole compound, including the courtyard, was walled (Ben-Tor 1992a, 1992b). At Gat-Hefer, the domestic units consisted of two adjacent rooms: a rectangular room and a smaller square room. Storage vessels were positioned inside the houses, probably mainly in the smaller rooms. The larger rectangular rooms served for some storage and caching, as well as for cooking and food preparation. Open areas used for cooking, flint knapping, and processing of agricultural products like olive oil (Bankirer and Marder 2003; Covello-Paran 2003).

Another sub-type of the compound house was used for private dwellings at TBY during late EB II and III. This was the 'Bet Yerah house' type, which was usually a small square structure with stone foundations, divided into smaller spaces, one of which may have been a small internal courtyard. A remarkably low number of storage installations and vessels were found in TBY private houses during these periods. The density of TBY dwellings during the EB II increased when spaces between houses were taken up by new dwellings. There was a continuity over the periods, with the newer buildings making use of the older layouts and walls (Greenberg and Paz 2014: 38; S. Paz 2010). At TBY, the 'Bet Yerah house' was common in EB II and EB III. The only other type of house identified so far are houses associated with the KKW people in which the square form was not preserved and the open and common areas were much larger. Greenberg and Paz have argued that the cellular plans of the domestic dwellings, the diminishing courtyards and open spaces, the paucity of private storage, and the paving of main streets, are all indicative of constraints imposed on the local population, the change of the social structure in which the nuclear family became the basic social and economic unit, and the economic changes in which storage and staple distribution stopped being private (Greenberg and Paz 2014: 38-39).

Some sites exhibit differentiation among houses. The Khirbet al-Batrawy "Palace of the Copper Axes" was described as a compound of two pavilions with a corridor between them (Nigro 2010: 71; 2014), but may have actually been two patrician houses with a street between them[4]. The wealth of finds in the western-most of these two houses may attest to the existence of wealthy elites. Other possible patrician houses may have been the modest 'palace' of Zeraqun (Douglas 2011) and the White Building of Yarmuth (Miroschedji 2014: 318).

2.1.5. Material Culture

Pottery

In addition to serving as chronological markers (noted earlier), EB III pottery types and technology can be used as proxies for social and economic analysis.

De Miroschedji, Greenberg and Iserlis have all noted that pottery production techniques did not change significantly between the EB II and III. However, decreased efforts in surface finish increased the visibility of wheel-marks in both open and closed vessels, indicating a shorter operational sequence in EB III ware production (Greenberg and Iserlis 2014; Miroschedji n.d.; Roux and Miroschedji 2009). Other indications of such a transition include a decrease in the number of forms (Ben-Tor 1989: 45; Esse 1989b: 90-91;

[4] According to the published photos, there is no entrance from the "corridor" to the western "pavilion" (as can be seen in Nigro and Sala 2012: Fig. 6,8; Nigro 2013: Fig. 15).

Miroschedji n.d.) and higher firing temperatures in some forms produced at southern sites, which though not up to the EB II NCMW standards (Greenberg and Porat 1996), usually changed the colour of fired pottery from pale red brown to pink. Surface treatments in the southern assemblages show an increase of pattern combing, wheel combing and pattern burnishing, as well as an increase in the use of lime wash on coarse vessels (Miroschedji n.d.).

The production contexts of EB III diverge markedly from those of EB II. Whereas the former period is characterized by centralized industries serving a large number of sites – Metallic Ware and Golan cooking ware in the north, 'Aphek bowls' in the central plains (Beck 1985), and the Arad-Sinai complex in the south (R. Amiran et al. 1973; Goren and Porat 1989) – EB III production is linked more closely to large urban centres and had a far more restricted range (Greenberg 2000). Greenberg and Iserlis proposed that EB II concealment of individualism, manifested in the standardisation of the NCMW, turned into subtle representations of status and wealth in the form of less standardisation, larger serving vessels, and more decorations in EB III (Greenberg and Iserlis 2014: 92).

Common pottery types produced by local-tradition industries (i.e., not including Khirbet Kerak Ware and a handful of imported pieces) included **bowls**, **platters**, **jars**, **cooking pots**, **jugs**, **juglets**, **pithoi** and **vats**, all based on EB II predecessors**.** The following comments relate to significant changes introduced in some types in EB III.

EB III **platters** were a continuation of similar EB II vessels (Esse 1991: 49-50). They were formed in moulds and finished on a slow wheel. The bases were usually less carefully treated, with often crude traces of scraping (Greenberg 2002: 48; Miroschedji n.d.). A variant 'tetrapod platter' was found in small quantities at Tel Yarmuth and may be an indication of status differentiation (Miroschedji n.d.). Another sub-category is the giant platters, which includes platters with a diameter of 60 cm and more (Greenberg 2000: 186).

Greenberg and Iserlis grouped the platters at TBY into 'high-effort' and 'low-effort' categories. The former were large, elaborate and pattern-burnished, while the later were flat, simple and the surface of most of them was not treated (Greenberg and Iserlis 2014: 86-87).

EB III platters became larger in diameter (Greenberg 2002: 48) and in consequence, thicker and flatter. Metallic ware platters ceased to be distributed widely at the end of the EB II and are found only where they can be considered a local industry, namely in the northern Hula Valley. The non-"metallic" lower firing temperatures created a more friable ware, and therefore the large platters were fairly fragile. Greenberg suggested that these large vessels were not only used for the serving of large amounts of food during communal feasts, but also were also objects manifesting wealth and social status (Greenberg 2000: 186). This will be discussed in further detail in Chapter 4.3.13.4.

Cooking pots had several regional forms. Three types of cooking pots were used in northern Israel during the EB II and EB III; (1) a cooking pot with a round base and a folded rim, (2) a necked cooking pot with a flat base and a simple flaring rim, and (3) a round-based holemouth pot. The round-based pots have thin uniform walls, while the flat-based pots have thick uneven walls (Greenberg 2006b; Iserlis and Paz 2011; Miroschedji n.d.). Further south, from the Jezreel Valley to the southern plains, flat-based holemouth jars/pots continued to be the standard form, as in EB II (Greenberg 2006b; Miroschedji n.d.). Round and flat -based types of pots are conducive to different cooking styles and may represent different local cuisines. During the EB II, a type of cooking pot known as the ‘brown holemouth cooking pots’, was produced in the Golan Heights and distributed throughout northern Israel, together with NCMW. Like the latter industry, Golan ware production and distribution decreased during the EB III and most of the cooking pots found in this period were locally made (Iserlis and Paz 2011).

Jars appear in various forms, sizes and shapes, showing a lack of standardization (Esse 1991: 50-51; Greenberg and Iserlis 2014; Miroschedji n.d.). Lime-wash on jars, including holemouths, increases during the EB III, particularly at southern sites.

EB III **pithoi** tended to be larger then those of the EB II, with thicker rims and a more frequently applied rope decoration. The pithos was one of the only metallic vessels that might still have been produced and distributed in the north of Israel during the EB III. Pithoi are usually found in small quantities, indicating domestic-level storage (Greenberg 2000: 188; 2002: 51); they occur in large numbers, however, in palatial contexts at Tel Yarmuth and Kh. ez-Zeraqun, and appear to achieve a measure of standardization at those sites (Genz 2003a; Miroschedji n.d.).

Vats, spouted and unspouted, show similar developments to jars and pithoi, with the addition of combing and white lime wash and the notable presence of over-sized pieces in palatial contexts. Spouted vats are usually connected with the production of olive oil, although they may have been used for other functions, like domestic water containers (Miroschedji 2000, n.d.).

Jugs expand their range and diversity during the EB III. Alongside the general morphological tendency to elongated ‘stump’ bases, many sites show oversized jugs as well as miniature juglets. Highly polished jugs occur with various decorations and slipping techniques (R. Amiran 1969: 59-75; Esse 1991: 51; Miroschedji n.d.).

Painted decorations exist in forms like Red on Light Band Painted Decoration (vertical, horizontal and diagonal painted strips), found only in the south, or Grain Wash decoration also known as Band Slip. The latter, usually used on large jars and pithoi and ascribed to the EB I and EB II (Miroschedji n.d.), was recently found in various EB III sites as well (Genz 2000; Greenberg and Iserlis 2014: 88; Mazar et al. 2000: 267; Nigro and Sala 2011: 97).

Standing apart from the local tradition, **Khirbet Kerak Ware** (KKW) represents an alternative ceramic technology – differing from the local in its typology, colour, surface treatment and production technology – that has been clearly defined as allied to the Kura-Araxes or Early Transcaucasian (ETC) cultural sphere (Greenberg and Goren 2009; Greenberg and Palumbi 2014). The main types are open vessels like bowls, cups, and kraters, but also common are stands, lids, and andirons. There is no standardisation and the typology is rich and diverse (Greenberg 2000: 189; Greenberg and Iserlis 2014; S. Paz 2009; Philip 2008: 168). The vessels are all hand-made, with no use of a potter's wheel. The surface treatment is very elaborate, with most pieces having a thick highly burnished slip, while the ware itself is soft and fragile. A full discussion of this phenomenon, which has recently been treated extensively by Iserlis (2015), is beyond the scope of this study, but the very presence of cultural alternatives within EB III sites, as well as the manner of interaction and entanglement with local societies (see e.g.,Greenberg et al. 2014; Iserlis et al. 2012), highlight the diversity of at least some EB III communities. Moreover, the subsequent, although small-scale, diffusion of the pottery from its places of production is a further indication of the scope offered for the articulation of social distinctions by way of consumption. KKW, with its marked differences in technology and typology marks a segregation and differentiation of the group producing and using them. Contrasting evidence that suggests use of local ware may be the absence of essential vessel types, like cooking pots and storage vessels (Miroschedji n.d.), and the existence of hybrid vessels, produced using a mixture of KKW and local technology (Greenberg and Iserlis 2014).

Imported pottery was extremely rare. Only a few Egyptian vessels and possible imports from the Lebanese coast were found, as well as few examples of local imitations of Egyptian pottery found at Ai and Khirbet al-Batrawy (Callaway 1972; Greenberg 1997: 21, Fig. II.2:12; 2006a: 165, Fig. 10.9:6,7; Miroschedji n.d.; Nigro and Sala 2012: 50-51, Fig. 13; Sowada 2002).

Only a few examples of EB III **cultic vessels** have been found. These include a rhyton, a kernos, one globular pedestaled jar and a few stands (Miroschedji n.d.; Nigro and Sala 2011: 92-93, Fig. 10).

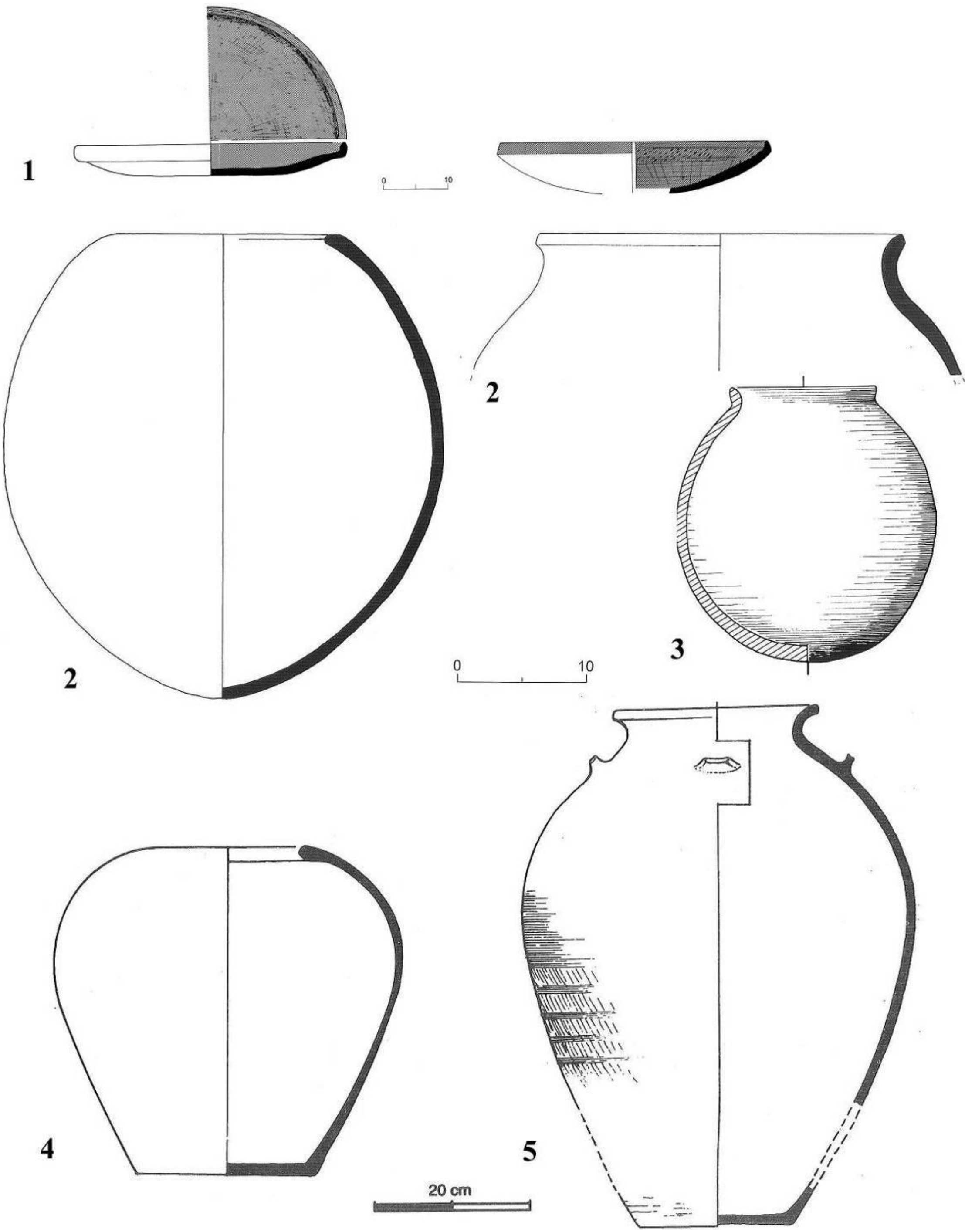

Figure 6: EB III pottery

1. *Platters from TBY (Greenberg and Iserlis 2014: Fig. 3.56:5,9)*
2. *Cooking pots from TBY (Getzov 2006: Figs. 3.47:10, 3.52:14)*
3. *Cooking pot from Zeraqun (Genz 2002: Tfl. 73:4)*
4. *Holemouth jar from Yarmuth (Miroschedji 2000: Fig. 18.10:2)*
5. *Large Jar from Yarmuth (Miroschedji 2000: Fig. 18.10:3)*

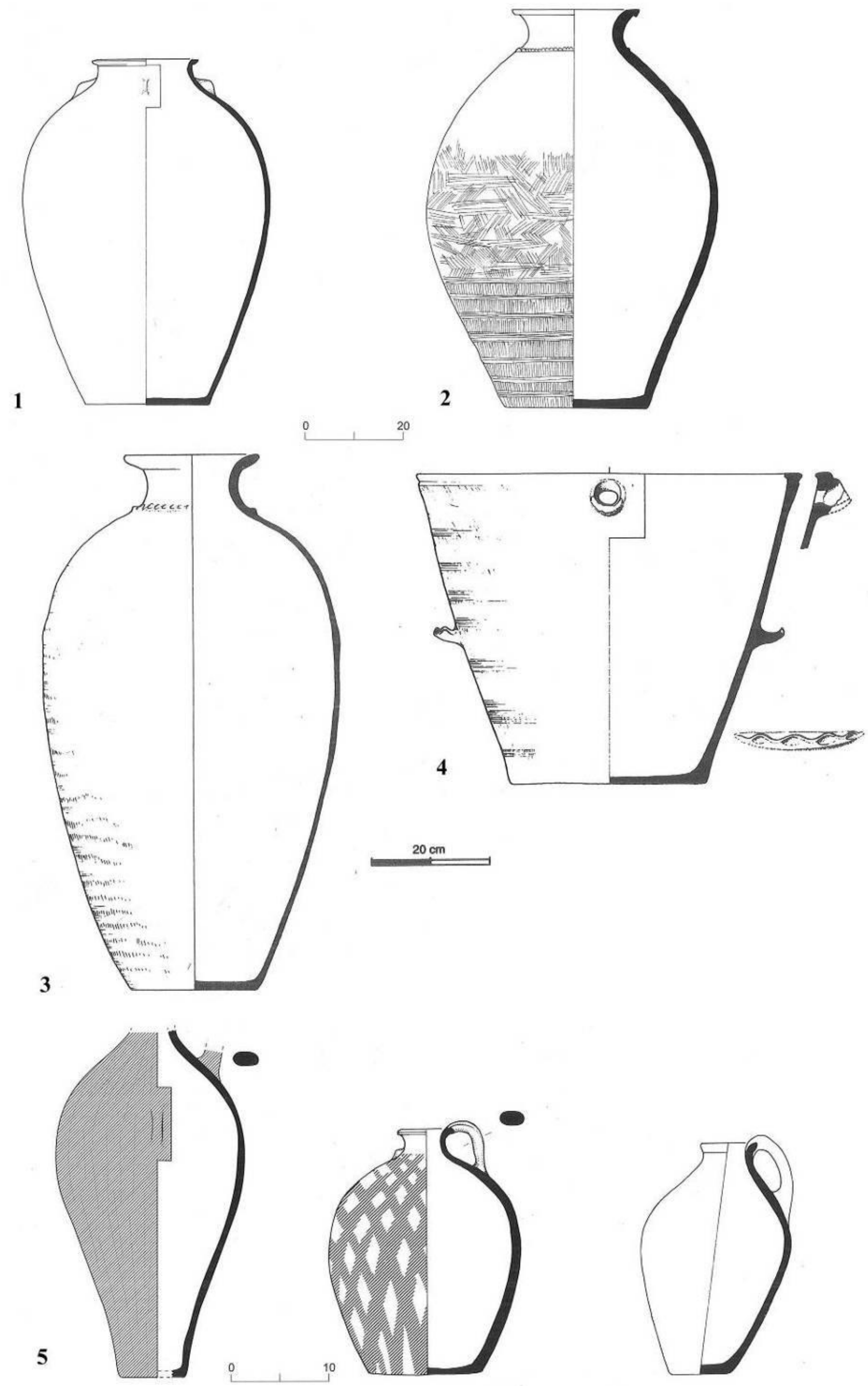

Figure 7: EB III pottery

1. *Local tradition pithos from TBY (Greenberg and Iserlis 2014: Fig. 3.61:7)*
2. *NCMW pithos from TBY (Greenberg and Iserlis 2014: Fig. 3.61:8)*
3. *Pithos with lime wash from Yarmuth (Miroschedji 2000: Fig. 18.10:6)*
4. *Vat from Yarmuth (Miroschedji 2000: Fig. 18.10:4)*
5. *Jugs from TBY (Greenberg and Iserlis 2014: Fig. 3.58:1-3)*

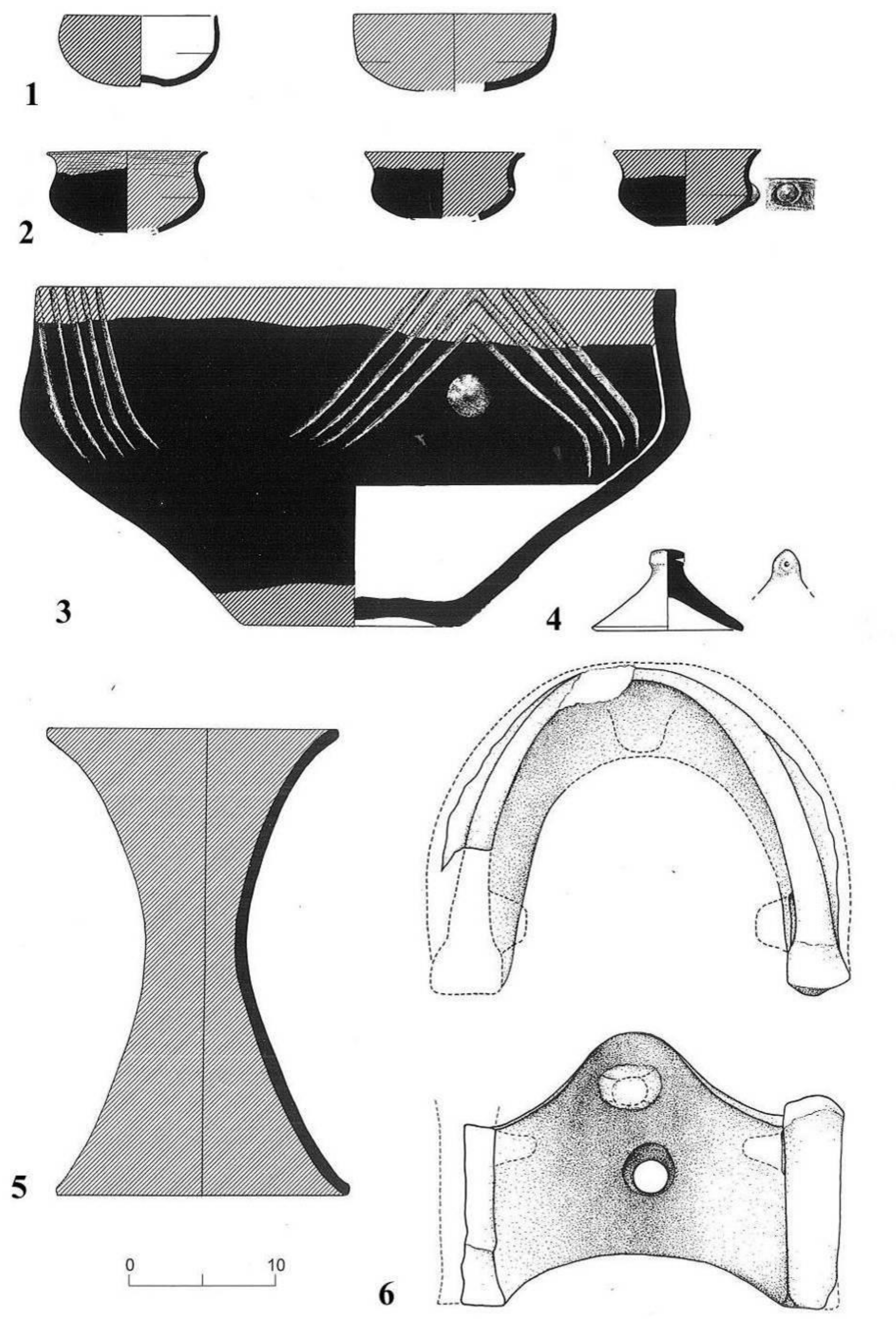

Figure 8: EB III pottery (KKW)

1. *Bowls (Greenberg and Iserlis 2014: Fig3.47:2-3)*
2. *Cups (Greenberg and Iserlis 2014: Fig3.48:1-2,5)*
3. *Krater (Greenberg and Iserlis 2014: Fig3.48:14)*
4. *Lid (Greenberg and Iserlis 2014: Fig3.51:2)*
5. *Stand (Greenberg and Iserlis 2014: Fig3.49:3)*
6. *Andiron (Greenberg and Iserlis 2014: Fig3.51:7)*

Lithics

Flint industries of the EB III seem similar to the pottery ones, with evidence of standardisation and distribution networks along with local production and a lack of centralisation. To date no major difference was found between the EB II and III lithic industries.

The lithics of the EBA are usually divided into three industries: Canaanean sickle blades, tabular scrapers and ad-hoc tools (S. A. Rosen 1997). **Canaanean blades** are long and wide blades with an average width of 2 cm and reaching lengths of 15 cm and more. They usually have two parallel ridges along the length of their dorsal side which create a trapezoidal cross section. The blades were usually produced as long pieces and then truncated or snapped into shorter segments. Many of the blades are retouched and many have a sickle gloss (S. A. Rosen 1997; Shimelmitz 2009). Canaanean sickle blades are found in large quantities in EBA sites situated in the sown area. Sickle blades found in contemporary southern desert sites were usually produced using a non-Canaanean technology (as in the sites of Bab edh-Dhra‘ and Biq’at Uvda) (S. A. Rosen 1989b, 1997; Shimelmitz and Rosen 2014).

Most scholars believe that Canaanean blades were mainly used as pieces in composite sickles for harvesting wheat and barley (e.g., Bankirer 2006; Blockman and Groman-Yaroslavski 2006; S. A. Rosen 1989b, 1997). Other scholars have contested this assumption and, based on use-wear analysis, claimed that all of them were used as pieces in threshing sledges (Anderson et al. 2004), or that some were used in the production of pottery vessels (Greenberg and Iserlis 2014; Groman-Yaroslavski et al. 2013; Shimelmitz and Rosen 2014). Shimelmitz believes that except for the functional value of the blades, their presence in burials and caches, is a testimony for their symbolic value (Shimelmitz 2009).

Temporal increase in the width of Canaanean blades was suggested by several scholars (Bankirer 2003, 2006; Betts 1992). This was contested by Rosen and Shimelmitz who argued that the variations in widths are the outcome of different production centres. They suggested that the Canaanean blades were manufactured in small villages and distributed locally (S. A. Rosen 1989b: 206-09; Shimelmitz 2009; Shimelmitz and Rosen 2014) as packets of long non-truncated blades (S. A. Rosen 1997). Rosen and Shimelmitz, as well as Milevski, also claimed that Canaanean blade production was a specialized system, though the distribution of the blades and the production of sickles were not. Elites did not control, nor were involved in any part of this process (I. Milevski 2013: 215; S. A. Rosen 2014; Shimelmitz 2009), except for a possible 'elite sponsorship' (S. A. Rosen 2014). An example of the independence of production centres can be found in the site of Titris Hoyuk (2600-2100 BCE), where a very large Canaanean blade workshop was found in its suburbs. The workshop appeared to be domestic and independent and made Hartenberger et al. suggest that local elites were not involved with the production (Hartenberger et al. 2000).

Shimelmitz and Rosen have recently pointed out that the sophisticated Canaanean technology stands in contrast to the ad-hoc industries and are a reflection of the growing social stratification and complex society of the EBA (Shimelmitz and Rosen 2014). They may be also a product of 'corporate villages' (Shimelmitz 2009).

Tabular scrapers are large and flat retouched flakes, with the cortex usually left on the dorsal side. They sometimes have incisions on their cortex (S. A. Rosen 1997, 2014). They were quarried and produced in the southern fringes of Levantine civilization and exchanged with inhabitants of the sown areas (I. Milevski 2013; S. A. Rosen 1989b: 202-04). They are usually found in small quantities at sites in northern Israel, with the exception of TBY where they constitute approximately 10% of the flint assemblage (Shimelmitz and Rosen 2014: 165)[5]. Tabular scrapers are found throughout the Chalcolithic and the EBA, and disappear before the IBA (S. A. Rosen 1989b). Rosen maintained that their production did not involve specialization nor elite sponsorship (S. A. Rosen 2014).

The functions of tabular scrapers may have included butchering, reed scraping, or sheep sheering (S. A. Rosen 1997). At TBY, some of the tabular scrapers were constantly retouched (Shimelmitz and Rosen 2014: 162), which suggests some utilitarian value. In contrast to this, based on their provenance, special caches, and incisions appearing on some of them, Rosen argued that tabular scrapers, especially incised ones, had ritual value or function (S. A. Rosen 2014: 255).

Ad-Hoc tools such as borers, drills, notches, denticulates, scrapers, backed pieces, hammer-stones, choppers, and miscellaneous trimmed/retouched pieces have been found at all EBA sites. They were usually produced on flakes and were probably not a part of composite tools (S. A. Rosen 1989b: 211-13). The production of ad-hoc tools was an unspecialized intra-site industry, that did not involve elites. They were produced on spot and used for various tasks, probably being discarded immediately after use (S. A. Rosen 1997, 2014).

Arrowheads and microlithic lunates are rare in the EBA and were found only in the Negev, southern trans-Jordan and Sinai at sites dated to the EB I and II (S. A. Rosen 1989b:

[5] This may also be due to the lack of thorough lithic excavation techniques and analysis in most EB III sites.

204-06). In contrast to Egypt, there is an absence of chipped stone points in the sown areas of the EBA Levant (S. A. Rosen 2014).

Weapons

Few weapons are associated with the South Levantine EBA. The only apparent weapon found in considerable quantities is the mace-head, a 'shock weapon' designed to be used against people and with little use in daily life or for hunting (Hamblin 2006: 20-21; Keeley 1996: 50; Sebbane 2009).

Philip included axes and daggers among south Levantine EBA weapons, but noted that only a few are safely attributed to EB III layers (Philip 2003b, 2008). It seems that all EB III daggers come from ritual or symbolic contexts, such as those found in Bab edh-Dhra' Charnel House A22 (dated to the EB II-III) (M. S. Chesson 1999; Gasperetti and Sheridan 2013), or the dagger found in the wall of the Zeraqun temple compound (Genz 2002). Among the axes, the tanged crescent axe might have served as an efficient weapon. In addition to a stray find near Kfar Monash whose date is debateable (Gophna 1968; Hestrin and Tadmor 1963), only three such axes are known: from Tell el-Hesi (Bliss 1894: 39-40; Fargo 1993), Jericho (Kenyon 1955) and Bab edh-Dhra (P. W. Lapp 1966). The Jericho axe is very thin and was probably a grave good, not a functional weapon (Miron 1992: 24-25, 47-51). Another type of axe found in EB III contexts is the 'simple blade'. Such axes may have been used in conflicts, but their main function was as a working tool (Miron 1992).

2.1.6. Economy

Published data on the economy of the EBA usually does not differentiate between the EB II and III. It can be said that the period's economy was based on what is known today as a Mediterranean economy with rain-fed crops, horticulture, and animal husbandry; the varied terrain of the Southern Levant allowed for a wide spectrum of subsistence strategies and the exploitation of various niches, and created a diversified economy. Wilkinson et al. suggested that the wetter climate of the EBA allowed for intensive exploitation of the core areas, as well as of climatically marginal areas they term the 'zone of uncertainty" (Finkelstein and Gophna 1993; Wilkinson et al. 2014).

Rain-fed crops were based on the eight 'founder crops' that included cereals (barley, Emmer and Einkorn wheat), pulses (lentil, pea, chickpea, bitter vetch) and linseed (Ben-Tor 1992a; Grigson 1995; Philip 2008; Riehl 2004; Zohary et al. 2012). The latter was probably used both for its flax fibres and oil (Grigson 1995; Riehl 2004).

Horticulture included vines and olive trees which were mainly raised for their processed products – wine and olive oil, but also for raisins (Finkelstein and Gophna 1993; Genz 2003a; Grigson 1995; Langgut et al. 2013). Philip recently argued that the appearance of drinking vessels during the IBA is the first evidence for the production of wine (Philip 2008: 181), but most scholars agree that there is ample evidence for the production of wine during the EBA and even for its export to Egypt (Batiuk 2013; Genz 2003a; Grigson 1995; McGovern 2007; Miroschedji 2006).

Other fruit included figs, dates, walnuts, almonds, plums, and pomegranates. There is also some evidence for pistachios, acorns (Ben-Tor 1992a; Grigson 1995; Riehl 2004), fibres from flax (Grigson 1995), and fishing (Esse 1991: 98-100).

Animal husbandry included goats, sheep, cattle, pigs and donkeys. The predominant animals raised were sheep and goats, which were used for meat as well as for their secondary products such as milk and its long-lasting derivatives like yogurt and butter, as well as wool and leather. Cattle were raised in smaller numbers , but were an important source of meat due to their large size. Pigs were grown in smaller quantities as well and in certain areas only, due to their need for large quantities of water and possibly owing to cultural reasons that prevented their raising in sites such as at Yarmuth (Ben-Tor 1992a; Grigson 1995; Horwitz and Tchernov 1989; Philip 2008).

An important innovation of the EBA was the use of donkeys and cattle for transportation and traction. Starting during the EB I, donkeys were domesticated as pack animals, replacing rams and perhaps oxen (Ovadia 1992). Ox-drawn ploughs and carts were also introduced during the EBA (Greenberg 2014c; Grigson 1995; Philip 2008; Pullen 1992). The functions above were not necessarily fixed, as oxen may have been used for the transportation of heavy weights and donkeys for ploughing and cart pulling as well (Grigson 1995; Pullen 1992). These new innovations allowed for the intensification of agriculture and an increase in agricultural output, generating surplus and the ability to cultivate marginal zones. The new degree of mobility made possible by the donkey and cart allowed for trade and transport over longer distances.

Agricultural intensification led to wealth disparities and accumulation of surplus even before the EBA. The ownership of the new means of production in the form of donkeys and oxen was probably limited to the wealthier segment of the population, since only they could sustain the costs involved with buying, owning and training them. This led to greater wealth inequalities that were translated into greater social stratification (Grigson 1995;

Pullen 1992). Philip argued that since communities were comprised of kin-based units, the inequality would have been between units and not between individuals (see also below) (Philip 2008).

Subsistence based on horticulture necessitated political stability and security due to the fact that olive trees need 6-7 years between planting and fruiting, and because after the initial investment they bear fruit for many years. Stability and security is required not only to deter violence but also to protect against seizure of land, accomplished via the creation of long-term rights over plots and tracts. The protracted investment in horticulture resulted in farmers being attached to the local landscape and created a sense of connection to the past ('the ancestors who planted our trees') and to the future ('the future generations who will enjoy their fruits') (Finkelstein and Gophna 1993; Philip 2003a, 2008; Stager 1985).

Indirect evidence for irrigation in the more arid regions of the Southern Levant, especially in the Jordan Valley, were found in the form of large seeds, wood remains, fruit, and crops like cereals and pulses that could not grow in dry areas without the use of irrigation (Grigson 1995; Liphschitz 1989; Philip 2008). The size and quantity of EBA sites in the Jordan Valley is also indirect testimony to the use of irrigation (Philip 2008). Grigson suggested that EBA irrigation in the Southern Levant was based on controlling seasonal flood water (Grigson 1995), while others have claimed that irrigation involved channelling spring flows and runoffs (McCreery 2011; Philip 2008). Onsite simple water systems were found at Jawa (Philip 2008: 170) and Zeraqun (Moawiyah and Mittmann 1997), while possible reservoirs were identified at Ai (Callaway 1993) and EB II Arad (R. Amiran and Ilan 1993).

Trade consisted of non-integrated exchange networks of several products. A 3-4 km radius catchment area around major sites was typically enough for basic subsistence (considering each person needed 1.5 hectares of rain-fed agricultural land). A limited range of items like tabular scrapers, Canaanean flint blades, ground-stones and some types of pottery (e.g., NCMW) were obtained through commerce (Falconer 1994: 312; Greenberg and Porat 1996; I. I. Milevski 2005; Philip 2008: 178). The small scale of trade and exchange is not enough to classify the economy of the EBA as 'market economy' (as opposed to Grigson 1995: 245).

Evidence regarding the nature of a social-status-related economic structure of the EBA does not fit either of the two common models – *wealth-finance* and *staple finance* (D'Altroy et al. 1985; Earle 1997: 70-73). In the former, political and social power is based on access to valued materials, products and commodities. In a *staple finance* society, power is gained from manipulation and control of the products of subsistence production and can be recognized in the archaeological record by intensified agriculture accompanied by storage and transport facilities.

Archaeological evidence of *wealth finance* in the form of palatial complexes, conspicuous consumption, prestige items or valued fine-craft goods are generally lacking in the EB III (Harrison 2011; Philip 2008). Even the probable palaces at Yarmuth and Megiddo provide little evidence for wealth, beyond the quality of the construction itself (Miroschedji 2001). The only commodity that may have had a role as a high-valued product in the competition of local elites is the olive oil (Philip 2008). Evidence for *staple finance* in the form of public storage facilities was found in the presumed granary at Tel Bet Yerah, in the Yarmuth palace and in building 0.8 on the acropolis of Zeraqun (Genz 2002: 96;

Miroschedji 2001; S. Paz 2006b; Philip 2008); however, the two latter structures may not have been public at all.

Recent evidence from the site of TBY shows an extramural, possibly central, cereal processing during the EB II, and a transition into intramural processing in the EB III (Berger 2013). This, together with many small residential storage facilities found at EB III Numayra (M. S. Chesson and Goodale 2014), may indicate a trend towards a less centralized economy during the EB III.

Philip argued that the EBA in general was mainly characterized by intensification of the subsistence economy through irrigation, ox-drawn ploughing, tree crops (especially olive and vine), employment of the donkey as a pack animal, and metal tools that allowed for extensive cultivation (most metal tools are inferred due to the limited numbers of stone tools finds, such as axes and adzes). There is a lack of evidence for conspicuous consumption and elites, in contrary to a wealth of investments in communal projects like fortifications (Philip 2008). Chesson (M. S. Chesson 2003) and Philip (Philip 2001) suggested a model of a corporate society that could settle these discrepancies. Their model is of an intra-settlement heterarchy in which several groups with roughly the same social and economic power work together.

Chesson elaborated on this model by emphasizing the role of the house in EBA society. She, and later Harrison, proposed that kinship was an organizing principle in the EBA. Households in the community were organized in corporate groups, based on kinship. Members of each group worked together for the survival of the group, had mutual economic aims, could respond to changes, and even had specializations. These corporate groups had relationships within the community and settlement as well as with external economic forces. Cooperation between houses allowed for the construction of large civic structures like fortifications and administrative complexes (that were not palatial complexes). Meanwhile competition between corporate groups contributed to the social and economic changes in the EBA. Community leadership must have taken the form of a ‘governing council’, as no evidence for social or economic elite and stratification was found (M. S. Chesson 2003; Harrison 2011). Paz agrees with Chesson, although she has contested her conclusions about the absence of complexity in EB II society, suggesting that a corporate house society may be urban (S. Paz 2010).

2.1.7. Ritual/Symbolic Activities and Artefacts

The bulk of evidence for ritual or ceremonial activity comes from temples, which appear to proliferate in EB III. There is not, however, a corresponding increase in the number of ritual or cultic artefacts, which remain few and far between. Objects of apparent symbolic quality, when found, appear to represent the prestige and power of elites or are connected with economic functions.

Temples and cult structures

In the EB III, there is a small but notable increase in the number of temples and cultic structures. These are generally larger than their EB II counterparts. The larger ones are usually located where temples of previous periods used to stand, as with the cultic complex at Megiddo (Ben-Tor 1992a; Finkelstein 2013; Mazar 1990), the large rebuilt temple at Ai (A. Kempinski 1992b: 57), or the Bab edh-Dhra‘ Sanctuary A (Rast and Schaub 2003: 165, 291-95, 321). In sites with no earlier cultic centre, the larger temples were usually erected on higher grounds, such as the cultic complex on the acropolis of Zeraqun (Douglas 2011; Ibrahim and Mittmann 1989; Philip 2008), or the temple of Khirbet al-Batrawy (Nigro 2009; Sala 2007).

Smaller structures were incorporated into the domestic landscape in a similar fashion to the EB II temples (A. Kempinski 1978: 33-34; S. Paz 2010). They were usually found at sites with a contemporary large temple or complex. These include Zeraqun’s lower town temple (Philip 2008: 172), the Bab edh-Dhra‘ Field XVI shrine (Philip 2008; Rast and Schaub 2003), and the probable domestic Sanctuary A at Ai (Ben-Tor 1992a: 102-03; Callaway 1972; 1993: 44; Herzog 1997: 71; A. Kempinski 1992b; Lavi 2011; Yeivin 1973).

EB III cult structures were identified on the basis of cultic artefacts found in them, and their location and plan. They usually conform to the “common” public architecture of a rectangular ‘broad-house’ – a hall with a central row of pillars (A. Kempinski 1992b; Philip 2008: 174; Sala 2007). Ben-Tor pointed out that the broad-room plan was characteristic of temples and probably also of palaces as the house of man was the same as the house of god (Ben-Tor 1992a: 101).

Ai

Two possible cultic structures were identified at Ai: the Acropolis Temple and Sanctuary A. The Acropolis Temple is a monumental building that was first identified as a palace (Marquet-Krause 1949), but today most scholars agree it was a temple. First built in EB II, it was renovated during the EB IIIa (Callaway 1993: 41-42). It had massive walls, stones cut to the dimensions of bricks, a broad-room type main room with a row of columns in the centre, and a large square courtyard in front of it. It is the largest single EB III cult building found to date (A. Kempinski 1992b). External features and walls were interpreted as temenos walls and a store room or a closing of the back of the temples for purposes of cultic purity (Ben-Tor 1992a; Callaway 1993; Herzog 1997: 67-71; A. Kempinski 1992b). The temple went out of use during the EB IIIb (Callaway 1993) or earlier (Lavi 2011). Callaway argued that it may have been turned into a royal residence (Callaway 1993: 44), although the evidence for this is meagre.

Another structure, found away from the acropolis and next to the town's fortification wall, was termed 'Sanctuary A', identified as such by both Marquet-Krause and Callaway based on cultic artefacts and a platform identified as an altar (Callaway 1972; Marquet-Krause 1949). Callaway believed that the sanctuary contained cultic furniture from the Acropolis Temple, removed to this location inside of what was probably a remodelled domestic complex (Ben-Tor 1992a: 102-03; Callaway 1972; 1993: 44; A. Kempinski 1992b). The artefacts found in Sanctuary A include an ivory bull's head, a bed model and Egyptian alabaster vessels which were quite likely heirlooms from an earlier time (Beck 1993, 1995; Ben-Tor 1972; Marquet-Krause 1949). The modest dimensions of Sanctuary A, together with its irregular plan, convinced some scholars that it was a mere domestic structure (Herzog 1997: 71; Yeivin 1973). Others have suggested it was a sanctuary with a plan that resembles Arad temples (Lavi 2011) or later, 2nd millennium, temples, consisting of a hall, sanctuary, and a holy-of-holies (A. Kempinski 1992b). The bed model found in Sanctuary A, although usually found in domestic houses, suggested to Beck that the sanctuary might have been devoted to a deity connected with birth and fertility (Beck 1993, 1995).

Bâb edh-Dhra‘

Two cultic structures were identified at EB III Bâb edh-Dhra‘ as well. The more elaborate one is Sanctuary A, found in Field XII and attributed to Stratum II (EB III). Positioned in an open 300 sq m plot on the southwest part of the site, on an elevated area near the site’s fortification wall, the broadroom structure stood on the site of an earlier, smaller edifice (Sanctuary B). Inside the building a wooden beam with plaster-filled notches was found, as well as pottery assemblage which differs from other areas in the predominance of bowls, jars, jugs, and painted jars. In front of the building there is a mudbrick paved courtyard with sunken vessels filled with ash and a semi circular stone platform that was interpreted as an altar. The finds within this area of the structure included seven tabular scrapers and a seal impression depicting ritual activity (Rast and Schaub 2003: 165-66, 321-41).

Another EB III structure which may have had a cultic function was found in Field XVI. It includes a room with a plastered floor, on which a chiselled column base, chalice and an imported siltstone palette were found. A Stratum I (EB IV/IB) “cult feature”, comprised of a flat stone slab encircled by a wall, was discovered directly above the earlier building (Philip 2008: 173; Rast and Schaub 2003: 291-95).

Khirbet al-Batrawy

The temple of Khirbet al-Batrawy is located in a prominent location on the east side of the site. It is a broad-room structure, measuring 2.7 x 11 m (inner dimensions), with 1-1.2 m wide walls. (Nigro 2009; Nigro and Sala 2011; Nigro 2013). The excavators identified a cult-niche inside the structure and a circular platform that was positioned in front of the entrance to the building, inside a courtyard paved with crushed limestone.

Megiddo

Area J at Megiddo (Area BB of the Chicago expedition) functioned as the cultic centre of the site throughout the EBA (***Figure 42***). The components of the latest EBA phases in this area are the three "megaron" temples (numbered 4040, 5192, and 5269 by the Chicago expedition), a circular stone platform (4017), and a large complex, probably palatial (3177, see also above). The complex also included a monumental staircase and large walls (4045A, B and C) that were either terrace walls, external fortification walls, or internal compound walls. Temple 4040 on the east side of the compound may be described as an *in antis* temple with a broad-room, a roofed porch supported by two columns, and a cult chamber off the back. At the back of the temple, there was a wall surrounding a circular platform, which most scholars interpret as a circular altar that was built before the temple (Ben-Tor 1992a; A. Kempinski 1992b; Mazar 1990). The two similar western temples were probably added later (A. Kempinski 1992b). Based on its relatively hidden location and large size, Herzog suggested that platform 4017 was actually the base of a granary operated by the temple and that the temenos wall was actually a perimeter wall guarding the contents of the granary (Herzog 1997: 81).

Recent papers by members of the TAU Megiddo Excavation Expedition have reconstructed the stratigraphy of the temples as follows (M. J. Adams 2013b, 2013a, 2013c; Finkelstein and Ussishkin 2000b, 2000a; Finkelstein et al. 2006b; Finkelstein et al. 2006a; Finkelstein 2013; Greenberg 2006a; Joffe 2000; Ussishkin 2013):

- Levels J-5 and J-6b (equivalent to Chicago Stratum XVII) are dated to the EB III and include two phases of Palace 3177, an adjoining compound (which included domestic buildings) and the round altar.
- Level J-6a (equivalent to Chicago Stratum XVI) is dated to the EB III and includes the rebuilt Palace 3177 and its compound.
- Level J-7 (equivalent to Chicago Stratum XV) is dated to the EB III or the IBA, and includes Temples 4040, 5192 and 5269.

The dating of level J-7 and temples 4040, 5192 and 5269 is still controversial. Finkelstein, based on their monumentality, finds from the Chicago excavation, and the temple column bases (which are similar to one found in Palace 3177) argues that the three temples were built and used during the EB III, with possible continued usage during the IBA (Finkelstein 2013). Ussishkin and Adams propose that the temples were built and used during the IBA based on their "flimsy" construction, large 'megalithic' boulders used for their walls, and several sherds found in most recent season (M. J. Adams 2013b, 2013a, 2013c; Ussishkin 2013).

Finkelstein (Finkelstein 2013), Adams, and Ussishkin postulated that there was another level J-5/J-6 temple, which was contemporary with Palace 3177 and possibly connected with the round altar. It was either removed with the construction of the J-7 temple complex (M. J. Adams 2013c) or was located in the unexcavated area to the south (Ussishkin 2013, 2015). Another possible temple may have been Building 3177 itself (M. J. Adams 2013a). This whole complex, together with Palace 3177, was built on the top of the mound on a large terrace supported by terrace walls 4045, 4045B, and 4045C (Herzog 1997: 79; Ussishkin 2013). During the time period coinciding with Level J-7, Palace 3177 was replaced by a monumental staircase, Building 3160, that lead to the three temples (M. J. Adams 2013c: 95; Herzog 1997: 85; Loud 1948).

Yarmuth

Another possible EB III temple is the White Building complex in area C, Yarmuth (Mazar 1990; Miroschedji 1999: 8-9; Sala 2007). This is a broad-room structure with thick 1 m wide walls covered with white plaster. The building has one central door and a side one that lead to a white-plastered sunken floor through short staircases. Inside the building there is a dais (Mazar 1990). A 10 x 6 m courtyard is positioned in front of the building, and a fireplace and a sunken vat were found therein. Across the yard, there is another structure with a rectangular stone platform inside of it (measuring 3.5 x 2.3 m, and at least 1 m high). This may have been connected with the activities in the White Building. Only a small number of finds were found inside this building; accordingly, and based on its architecture, it was initially identified as a temple (Miroschedji 1993a), although the excavator later suggested that it may have been a patrician house (Miroschedji 2014: 318). As is the case with Bab edh-Dhra‘ and Ai’s Sanctuary A, the White Building was also positioned near the site’s fortification wall.

The White Building dates to the early phases of the EB III. In a later phase it was covered by a large non-domestic complex, whose function is unknown, due to its poor preservation (Miroschedji 1999).

Zeraqun

Khirbet ez-Zeraqun, situated in the north of modern Jordan, had a temple complex on its acropolis consisting of four large broad-room or buildings surrounding a 7 x 25 m courtyard and a circular stone platform, 6.5 m in diameter and possibly plastered, with stairs leading to its top. The complex was built during the EB II, and was probably deserted at one point during the EB III, but it seems to have been re-used during the same period, as indicated by some KKW sherds found in it (Douglas 2011; Ibrahim and Mittmann 1989; Philip 2008). Philip has suggested that only one of the structures in the complex should be identified as a temple (Philip 2008), while Herzog sees the circular platform as a granary, rather than an altar (Herzog 1997: 93-94). As in several other sites, the complex is positioned close to the town fortification wall and to the gate (Ibrahim and Mittmann 1989: Fig. 2).

Another building, numbered 1.3 and positioned in the lower town of Khirbet ez-Zeraqun, had the layout of a domestic building, but was defined as cultic due to several figurines found in it. Its modest size could imply its use in a domestic cult (Philip 2008: 172).

A number of interpretations have been offered of the role of EB III temples in society, politics and economy. The positioning of temples inside settlements (in contrast to the off-site temples of the Chalcolithic Period) can be seen as a mark of the centralization and control of religious activities (Philip 2008). On the other hand, the presence of small domestic sanctuaries like those of Ai (Sanctuary A), Bab edh-Dhra‘ (Sanctuary A, B and the structure in Field XVI) and Zeraqun (building 1.3) may indicate diverse activities unregulated by authorities (Philip 2008). Miroschedji suggested that the period's multiple-temple complexes may have been 'needed' for the accommodation of another deity – a masculine one that symbolized and legitimised the male ruler of the city-state (Miroschedji 2011).

Two shrine model fragments found in EB III contexts at Yarmuth and Tel Bet Yerah (Miroschedji 2011; S. Paz 2014: 259) may supply some evidence for the architecture of EB III temples. It seems that both models have projecting or decorated doorposts.

Symbolic representation and objects

In stark contrast to the Chalcolithic Period, which preceded the EBA and the Middle and the Intermediate Bronze Ages which followed it, Symbolic representation is not a marked phenomenon during the EBA, neither in quantity, technology, nor sophistication (Beck 1995; A. Kempinski 1978: 32; Mazar 1990: 136; Yekutieli 2014). During the period, the use of symbolism was greatest in the EB I, only to decline during the EB II-III (Beck 1995). The major types of symbolic artefacts associated with the EB III include seals and seal impressions, decorated bone cylinders, and carved ivory or stone bull's heads. Potter's marks appear to comprise a system of intentional signification.

Cylinder seal impressions comprise the largest corpus of south Levantine EBA figural art. Impressed on jars and pithoi at the 'leather hard' stage, before firing, they have attracted a good deal of discussion due to their resemblance to Mesopotamian seals and to their possible administrative role (Joffe 2001). Following on Ben-Tor's pioneering catalogue and typology, which established a basic categorization and chronology for the corpus (Ben-

Tor 1978), subsequent publications have established that the bulk of the EBA impressions are to be associated with regional workshops linked, in the EB I, to pottery industries of the western Jezreel Valley (Braun and Gibson 1984), and in EB II – to North Canaanite Metallic Ware. The main corpora for the EB II seals include Tel Bet Yerah (Esse 1990; S. Paz 2014), northern Israel (Flender 2000; Greenberg 2001), Tel Qashsish (Ben-Tor 2003), Numeira (N. Lapp 2011) and the partly published corpus of over 100 sealings from Kh. ez-Zeraqun (Flender 2000; Moawiyah and Mittmann 1997; Philip 2008: 207).

The close association of cylinder-seal production and NCMW ended with the contraction of NCMW ceramic production at the end of EB II (Greenberg 2001). It is therefore no surprise that in EB III, the quantity of cylinder seal impressions declines markedly and, as seen in the published collections from Bab edh-Dhra and Numeira (N. Lapp 2011).

The function or functions of the seals are still debateable. They may have been cultic, showing sacred or divine scenes (Ben-Tor 1992c), symbolised the emerging hierarchy and elite (Miroschedji 2011), or mere decorative (N. Lapp 2011; Teissier 1987). They may have been used as potter's mark or trade marks of itinerant potters, or (in the case of NCMW) of a workshop (Ben-Tor 2003; Greenberg 2001; Porat 2003), or were used to strengthen the seam between the neck and the body of the vessel (Greenberg 2001). They may have had an administrative function as a symbol identifying the contents of the vessel (Flender 2000: 302-04) or its volume (Greenberg 2001).

The seals themselves are a rare find in the archaeological record of the EBA in general and the EB III in particular; one seal, made of hippopotamus ivory and bearing an Egyptian influenced motif, was found in an EB III layer at Tell es-Safi (Maeir and Kolska Horwitz

2011), and another, made of the same material was found in Megiddo phase J-6a (dated to the EB III) (Blockman and Sass 2013; Brandl 2013). Based on its typology, the Megiddo seal was dated to pre-dynastic Egypt (Naqada IIIA1, 3380-3330 BCE, parallel to the early EB Ib). Brandl suggested that it was looted from its original Egyptian funerary context and brought to Canaan as an antique (Brandl 2013), where it may have been a prestige item.

Potter's marks, usually incised near the rims of holemouth jars, occur throughout the Southern Levant, but appear to be particularly popular and sophisticated in EB III. As the name suggests, potter's marks are usually interpreted as a marking left by the potter who produced the vessel either as a trade mark or in order to identify it for retrieval when firing vessels alongside those of other potters. As with the cylinder seals, there have been considerable debates over their possible function. Suggestions include their possible use as an indication of volume, content, ownership, specialized production, or group affiliation (Feldbacher and Fischer 2008; Genz 2002, 2004; Greenberg and Porat 1996: 10; Harrison 2000; Miroschedji 2006, n.d.; Rotem 2012; Ziv-Esudri 2012: 264-65).

Decorated bone tubes are hollow and polished bones covered with incised decorations of geometric patterns. Some of the motifs resemble those found in cylinder-seal impressions. The bones used were usually long-bone shafts of cattle or possibly large predators. They were found all over the southern Levant (Zarzecki-Peleg 1993), usually in EB III contexts, with a large proportion of them found in the Jordan Valley – from Bab edh-Dhra‘ to Tel Bet Yerah (Beck 1995; S. Paz 2014; Zarzecki-Peleg 2003). They are homogenous and uniform and have similar features in the motifs, but the workmanship is different (Zarzecki-

Peleg 1993). Zarzecki-Peleg proposed that they were produced by several workshops, or by travelling artisans (Zarzecki-Peleg 1993). The bones were used as handles, paint tubes or containers (Zarzecki-Peleg 1993). Genz, based on needles found in a decorated bone tube in Greece, suggested that they were used to store needles or cosmetics (Genz 2003b).

Carved **Bull's-heads** were found mainly in the Jordan Valley, at sites like TBY, Jericho and Bab edh-Dhra' (Beck 1995). They are usually small (several centimetres high), and made of bone, ivory and stone. They are dated to the EB II, as well as to the EB III (Miroschedji 1993b; S. Paz 2014), however Greenberg has recently supported Beck's suggestion that all of them should be dated to the EB III (Beck 1995; Greenberg 2014a). Although they are fairly similar in style (Miroschedji 1993b), they were made of different materials, there are many variations, and therefore were probably produced in different workshops. Paz has recently suggested that one of the workshops could have been located at TBY (S. Paz 2014). The figurines tend to have holes at their base, possibly for affixing them to an armrest, staff, or sceptre (Miroschedji 1988: 86-87; S. Paz 2014), or to a body sculpted in perishable material (e.g., wood). These heads are unique to Israel in both their material composition and their production technique (Beck 1995). The bull was commonly used in early Near Eastern art to represent male deities (Beck 1995; Miroschedji 2011) and as a symbol of power and rulership (Beck 1995; Greenberg 2014a). Beck also claimed that the bull was prominent in the EBA due to the importance of cattle in agriculture (Beck 1995).

Another type of symbolic representation are the **bed models** that were found at several sites in the southern Levant, the majority of them at TBY. They first appeared during the

EB II and reached a peak in the EB III. Beck argued they are models of birth-stools and were used as an amulet to grant fertility and safeguard the mother, and may have been influenced by Mesopotamian traditions. Miroschedji connected the bed models with the Mesopotamian ritual of sacred marriages and suggested they were connected with fertility rituals (Miroschedji 2011: 95*). Since they are usually found in domestic contexts (Beck 1993, 1995; Miroschedji 2011; S. Paz 2014), they were probably part of domestic rituals.

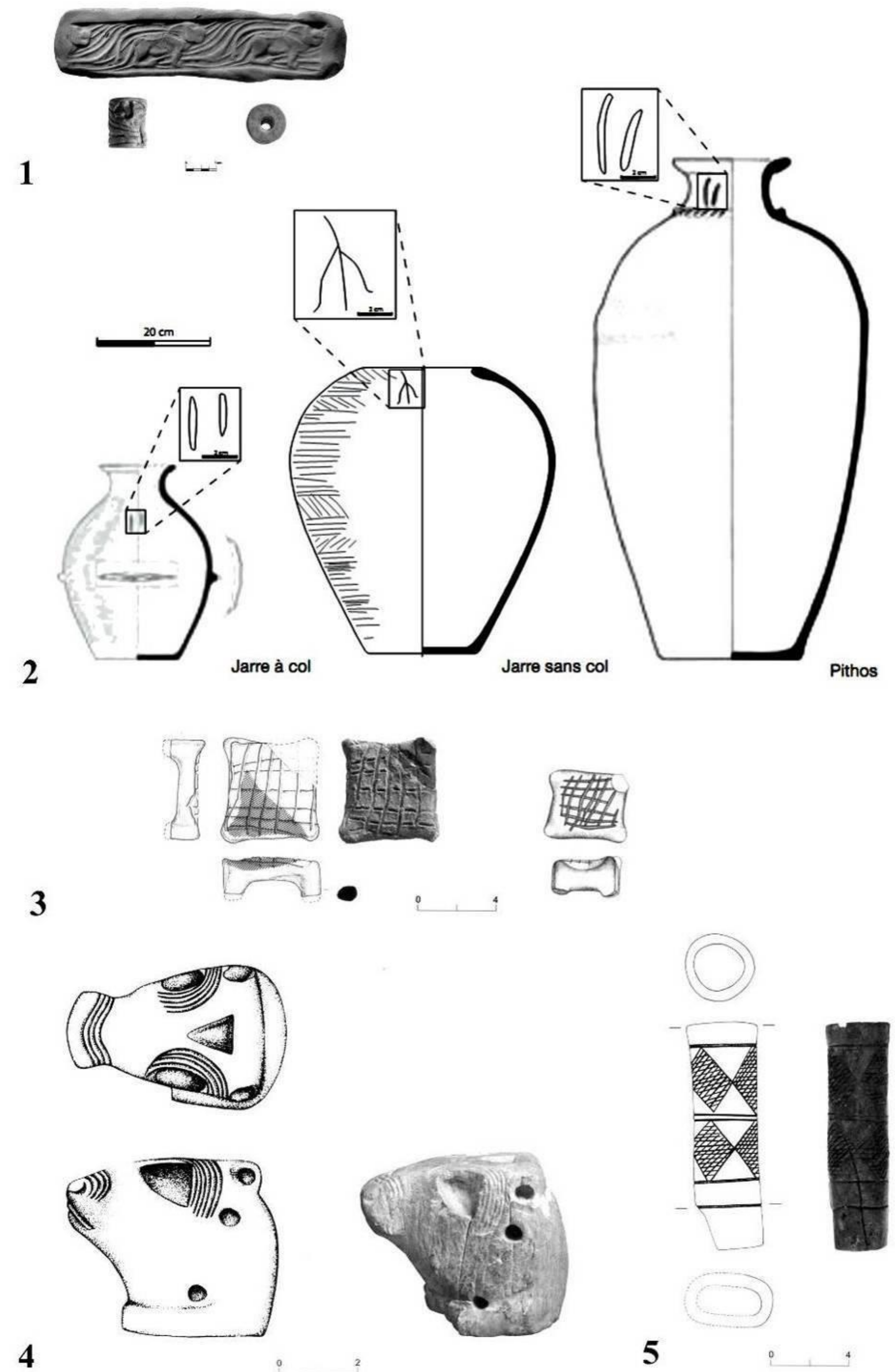

Figure 9: EB III Symbolic objects

1-Cylinder seal and impression from Tell es-Safi (Maeir and Kolska Horwitz 2011)

2-Potter's marks from Tel Yarmuth (Desormeau 2014)

3-Bed models from TBY (S. Paz 2014)

4-Bull's head from TBY (S. Paz 2014)

5-Decorated bone tube from TBY (S. Paz 2014)

Other EB III symbolic and craft items include incised tabular scrapers, beads, model wheels, zoomorphic vessels and zoomorphic and anthropomorphic figurines, many of them of animals symbolising power (Ben-Tor 1989, 1992a; Greenberg 2014a; Mazar 1992; Mazar and Rotem 2012; S. Paz 2014; A. M. Rosen 1989a: 202). An interesting phenomenon is the disappearance of the EB I-II **donkey figurines**. These were figurines of donkeys, usually carrying some kind of a receptacle. They started to appear during the EB I, were prominent in the EB II, and virtually disappeared during the EB III. These figurines may be connected with the rise of trade during the EB I-II as well as with the increasing importance and novelty of the donkey as a pack animal (I. I. Milevski 2005; I. Milevski 2011; Ovadia 1992; S. Paz 2014).

Mortuary practices

Data on mortuary practices of the EB III is generally sparse (Ilan 2002). The main source of information is the cemetery of Bâb edh-Dhra‘, where EB II-III above-ground rectangular charnel houses were found. The charnel houses, varying in size, included large numbers of disarticulated primary interments accumulated over a long period of time. The larger charnel houses contained up to 200 and possibly more burials and included grave goods like pottery vessels, beads, pendants, stone palettes made of local and non-local raw materials, and a few metal weapons. The smaller charnel houses contained less pottery, hardly any weapons and no non-local items (M. S. Chesson 1999, 2003, 2015; Gasperetti and Sheridan 2013; Harrison 2001; Philip 2001: 199-200). The variability between charnel houses was explained as showing differentiation and competition between (kin) groups in the community, with larger houses belonging to the more affluent groups (M. S. Chesson

2003, 2015; Philip 2001: 200), and with some persons having higher status and access to preferred materials (M. S. Chesson and Schaub 2007: 258; M. S. Chesson 2015: 73). Alternatively, Philip argued that the graves may have been used by emerging elites as a tool for promoting egalitarian or group-centred ideology (Philip 2001: 200).

Another cemetery dated to this period is that of Jericho, where eight tomb-caves were excavated by Garstang and Kenyon. Kenyon noted the small number of graves relative to the long duration of the EBA at Jericho and explained it as caused by erosion (Kenyon 1960: 2-3). As in Bab edh-Dhra‘, burials were primary and successive, with previous burials disturbed by every new one; top burials were in articulation, while the lower ones were not, with some of their bones missing (Kenyon 1960).

Other possible EB III burials are few and questionable, especially those within the core Mediterranean area. Examples include Horvat Mezarot in the eastern part of Nahal Tavor, which mainly contained EB I to II burial caves. Two of the excavated caves (46 and 49) had KKW sherds in them. The site was excavated in 1964, and the EB I finds were recently reported in a PhD thesis (Rotem 2015; Zuckerman et al. 2009: 151). Another example is an EBA tomb on the slopes of Mount Tabor which included an EB III layer with several pottery items, many of them are KKW. No skeletons were found, and the excavator suggested that they may have been removed by modern activity (Covello-Paran 2011).

Dolmens and tumuli, which are large stone-built mortuary structures, are traditionally considered to be built by pastoralists and nomads during the Chalcolithic, EB I or IBA periods (e.g., Bahat 1992; Ilan 2002), but possibly date to the EB III and may have been built and used by sedentary or non-sedentary people (as can be inferred from their numbers and degree of proximity to sedentary settlements) (Greenberg 2002; Philip 2008). Philip claimed that these above ground structures were visible in the landscape and probably were 'houses for the dead', like the charnel houses of Bab edh-Dhra'. They may have served as markers of territorial claims and as gathering places (Philip 2003a: 118-20; 2008).

The small number of EB III graves and cemeteries, especially in proximity to major urban centres, has been addressed by various arguments: Some suggest that the perceived absence is due to post-depositional damage, such as erosion caused by deforestation at the end of the EB III (Kenyon 1960: 2-3), lack of preservation of above ground stone graves in the Mediterranean zone (Philip 2003a: 118), and modern activity (Covello-Paran 2011). These arguments are not very convincing since similar structures and graves from earlier and later periods have survived. Ilan suggested that the EBII-III dead were buried in shallow pits (as in Rosh Haniqra, see Tadmor 1993) or cremated. He argued that the burial tradition was "intended not to leave permanent material remains" (Ilan 2002: 101). This may be in accord with Philip's interpretation of the burial traditions at Bab edh-Dhra': he noted the striking paucity of metal grave goods such as pins, weapons, and personal ornaments in the EB I-III graves, especially when compared to the wealth of these types of grave goods in the IBA and MBA. He suggested that this is an evidence for a tendency in the EBA to contain and subsume the individual in the group (Philip 2001: 199; 2008: 196-97). Another step towards the same objective was the burial of large numbers of individuals in the same charnel house, the disarticulation of bodies, and the long period of use for each tomb. These practices would promote a group-oriented ideology centred around values of equality and uniformity, and could be used to mask disparities and inequalities in society (Philip 2008).

2.1.8. The Question of Climate Change

Climate change has always been a popular explanation for the growth and decline of societies in the Southern Levant, especially at its arid margins. The 'collapse' and abandonment of large settlements at the end of the EB III has also been attributed to such an event, namely a significant decrease in rainfall – the "4.2 K BP event" – causing the collapse of both economy and society, either directly or due to a slow or unsuccessful response to new environmental stress (Donahue 2003: 50; A. M. Rosen 1989a, 1995; Staubwasser and Weiss 2006). Wilkinson and others have recently suggested that data gathered from speleothems at the Soreq Cave (Bar-Matthews and Ayalon 2011), combined with the new ^{14}C data described above (Regev et al. 2012b), and studies showing that the climatic evidence from the Soreq Cave can be applied to most of the Southern Levant (or at least to a radius of 100-200 km around the cave), strengthen Rosen's hypothesis of gradual increase in precipitation at the beginning of the EBA and decrease at the end of it (A. M. Rosen 1995; Wilkinson et al. 2014). Other studies support these results (e.g., Donahue 2003; Grigson 1995; Harlan 2003).

Contrasting opinions are also abundant. Pollen diagrams based on cores from the Sea of Galilee and Birkat Ram were recently interpreted as showing that the EB Ib was indeed the most humid phase of the EBA, but that the slightly lower precipitation levels during the EB II and EB III did not cause a major decline in the Mediterranean arboreal vegetation, and therefore could not have caused the social change witnessed at the end of the EBA. The only two short events of drier conditions during the EBA are dated to c. 2350 BCE and to c. 2000 BCE (Langgut et al. 2013; Langgut et al. 2015; Langgut et al. 2016). Höflmayer and others (2014; and see also Regev et al. 2012b) have recently shown that, based on multiple radiocarbon dates, the EB III in our region ended about 300 years before the 4.2Ka BP event that had earlier been seen to trigger the end of the EB III (Staubwasser and Weiss 2006). Faust and Ashkenazy (2007), based on similar speleothem data from the Soreq cave (Bar-Matthews et al. 1997), reached a different conclusion from Wilkinson et al. (above), suggesting that the EB II and EB III were humid up to a point that settlements on the coastal plains of Israel were deserted due to floods and expanding marshes.

The actual outcome of possible climatic change is also debateable; societies can and should cope with external stressors, and they usually do. Harrison, for example, suggested that the 'collapse' at the end of the EB III should be treated as an adaptive response to the decrease in precipitation (Harrison 1997). If a society which is used to coping with the variable environments of the Southern Levant fails to adapt to an environmental change, it can only be because it had pre-existing internal structural problems and *these* are the issues a researcher should look for.

2.2. Social Approaches in the Archaeology of the Southern Levantine EBA

Following the definition of the EB III as a distinctive stage within the EBA and the outline of its principal components, the following sections present existing interpretive frameworks used for understanding the social history of the EBA in the Southern Levant and the tools that will be used to expand these frameworks in the following chapters.

The archaeology of the Near East and the Southern Levant has sometimes been described as a field in which excavation techniques and their refinement are more important than interpretive theory, and where researchers are concerned mainly with description, typologies, and textual illustration (Silberman 1995: 19-20). But this is far from accurate. The results of Near Eastern research have been incorporated in a number of powerful and influential theoretical schemes such as Marx' and Weber's theories of political and economic evolution (Marx and Engels 1969; Weber 1978), Childe's theories of Neolithic and Urban revolutions (Childe 1941 [1936], 1950), Wittfogel's hydraulic theory (Wittfogel 1957), Binford's analysis of social structure through the social function of artefacts (Binford 1962), Polanyi's economic anthropology (Polanyi 1971), and anthropological evolutionary schemes of the 1960s and 70s (e.g., Service 1975). Although included within the 'Biblical' paradigm, Bronze Age research in the Levant, and especially EBA research, faithfully mirrors theoretical developments in the field, whether in a clearly programmatic or an indirect way.

The first 'culture-history' decades of twentieth century Levantine EBA archaeology were devoted to working out the relative and absolute chronology, synchronisms with neighbouring civilizations, assumptions about diffusion (basically in the spirit of Childe's history of cultures). Although such studies were affected by, and often enlisted in, the promotion of historical and theological agendas, they provide essential scaffolding for much subsequent work (Bunimovitz and Greenberg 2006; Geva 1992; Kletter 2006; Reich 1995: 196-200). Works based on this paradigm include Wright's relative chronology of the EBA (G. E. Wright 1937), Amiran's pottery typology (R. Amiran 1969), and Ben-Tor's PhD dissertation on 'central problems' in the EBA (Ben-Tor 1968).

When New (later, Processual) Archaeology came belatedly on the scene, in the 1970s and 1980s, it had a profound impact on the Southern Levantine archaeology, best exemplified in the works of W.G. Dever and his students like A.H. Joffe, S. Richard, J.P. Dessel, and G. Palumbo (Bunimovitz and Faust 2010; Gitin et al. 2006). Its influence was particularly strong in EBA studies, because they were generally free of biblical disputes and because they had a central component of social evolution. Israeli scholars are influenced by this paradigm to this day, with a marked emphasis on local adaptations to stressors and changes. A notable collection of contribution in this vein is the 1989 Emmaus colloquium, edited by P. de Miroschedji, in which prominent researchers such as Esse, Dever, A.M. Rosen and the editor himself approached EBA urbanisation using various elements of the processual approach (Miroschedji 1989b). Other contributors include, among others, Esse, Gophna, and Mazar (Broshi and Gophna 1984; Esse 1991; Gophna 1995; Mazar 2001). While the Southern Levant as a whole might have been thinly colonized by processual research, the EBA stands out with a relatively higher proportion of works dealing with social structure and ideology. These tend, however, to be broadly synthetic, focusing on settlement systems (as exposed by regional surveys) and evolutionary trajectories.

In the 1980s and 1990s, a critical reaction to processual archaeology became prominent in the Anglophone literature, reaching the Levant with a characteristic delay. Interpretive archaeologists criticised several aspects of processual archaeology: (1) its view of the social as a separate input-output system aimed to cope with the environment, (2) its search for scientific ‘objectivity’, which masks an absence of critical appreciation of the social and historical contexts of knowledge production, (3) its lack of explanatory value, (4) its inability to explain change, and (5) its erasure of the individual agent (Brumfiel 1992; Hodder 2004: 25-24, 31, 35; Patterson 2004; Shanks and Tilley 1993 [1987]; Tilley 1995 [1989]; Tringham 1991). The reaction to processual approaches was expressed in EBA research in renewed interpretive studies of individual sites, small regions or specific attributes, such as the charnel houses of Bab edh-Dhra‘, storage practices at Numeira, or the origin and use of Khirbet Kerak Ware (M. S. Chesson 1999; M. S. Chesson and Goodale 2014; Greenberg and Goren 2009).

Thematic interpretive studies include Greenberg’s (1999) look at the ideology of the EB II, or his consideration of EBA settlement patterns in the Hula Valley in northern Israel (Greenberg 2002). Greenberg and Porat (1996) analysed petrographic origins of the Northern Canaanite Metallic Ware and the social implications of this homogenous pottery and its distribution. Philip dealt with the archaeology of EBA Jordan, and specifically questions related to urbanization, hierarchy, and the region’s communities and societies (Philip 2001, 2008). His conclusions were comparable to those of Meredith Chesson (M. S. Chesson 2003, 2015), who suggested that EBA society was neither urban nor stratified, and was led, not by elites, but by councils of elders. She claimed that the only stratification was between households and that society was a ‘house society’, rather than class society.

The 2003 issue of the Journal of Mediterranean Archaeology addressed issues like the nature of the EBA urbanization (M. Chesson and Philip 2003), EBA society as a society of households (M. S. Chesson 2003, see above), different trajectories towards urbanization (Greenberg 2003), economy (Genz 2003a), as well as studying EBA societies through their man-made landscapes (Philip 2003a).

Milevski, in his recent book, dealt with the EBA goods exchange and economy. Attempting to use Marxist theory, he argued for a society as complex as chiefdoms or early states in which urban centres have limited control over production, surplus and exchange (I. Milevski 2011). S. Paz, in her PhD thesis studied the social structure of the EB II through the analysis of the urban habitus (S. Paz 2010).

Despite the proliferation of studies directed at the EBA, the conflation of EB II and III continues to obscure important changes in the transition between these two periods. Where specific EB III phenomena are addressed interpretatively, they tend to address specific sites or limited regions, leaving the big questions – the nature of EB III polities, their fortifications, their monuments and their social structure as distinct from EB II – largely unanswered.

2.3. Conflict Theory

It has already been noted that fortifications are a dominant characteristic of the EB III, but that they appear to stand in contradiction to the dearth of weapons associated with this period, leaving their specific function open to doubt. In order to interpret the role of fortifications in EB III society, it is necessary to consider questions of warfare and conflict – their role in antiquity and their impact on the archaeological record.

Otterbein (2004) defined two groups of war research scholars – ‘the hawks’ and ‘the doves’. The former argue that warfare always existed, while the latter argue that war arose only with the creation of the first states, about five thousand years ago.

Keeley and Monks are good examples of ‘hawks’. They claim that archaeologists tend to ‘pacify the past’ and ignore the possibility of warfare before the rise of urban states (Keeley 1996; Monks 1997). Signs of warfare and weapons are ignored or treated as ritual behaviour (Keeley 1996: 18), an interpretation analogous to interpreting modern cars merely as symbols of masculinity, status, and freedom only, without mentioning their function as a means of transportation (Keeley 1996: 20). Keeley suggests that farmers are seldom peaceful since they depend on their immobile houses, fields, and relatively numerous possessions. These possessions do not allow the farmers to flee and avoid the conflict, and therefore drive them to stay and protect their belongings and property (Keeley 1996: 31). He also claims that non-state societies are engaged in warfare much more frequently then state societies. Based on ethnographic studies, he notes that 66% of the 50 non-state societies studied were engaged in conflicts every year (Keeley 1996: 32). Prominent motives for ‘primitive’ wars were revenge for murders and economic reasons, and there is no clear-cut correlation between population density and the frequency of conflict (Keeley 1996: 113-26).

Haviland, a ‘dove’, believes that war is a relatively recent invention. According to Haviland, hunter-gatherers usually do not fight due to borders and groups being flexible, family relations between bands, and a lack of food surplus which prevents long-lasting conflicts. In contrast, agriculturists and pastoralists are inclined to go to war because their populations tend to grow while their land resources are limited. They start wars in order to gain economic advantages and resources. In contrast to hunter-gatherers’ perception of the world, of which they see themselves an integral part, agriculturalists and pastoralists see the world as a place which should be exploited. This latter worldview can lead to the notion that other human societies are a resource that can be utilized as well (Haviland 1993: 335-39). Otterbein states that all societies more complex than hunter-gatherer bands engage in warfare (Otterbein 2004: 81). On the other hand, states or centralized polities cannot emerge in a state of warfare – there must be peace in order for these entities to evolve. He believes that this theory is strengthened by the archaeological record, which shows no evidence of warfare during the formation of the first states (Otterbein 2004: 96-97). Bogucki claims that chiefdoms are not stable and societies oscillate between complex and simple. According to Bogucki, however, these fluctuations are not always discernible in the archaeological record and therefore what is perceived is an (expected) linear progression of development. The instability made war and conflict endemic in pre-state societies like chiefdoms (Bogucki 1999: 268-69; Monks 1997).

Arkush and Stanish maintain that conflicts in non-complex societies were often ritualized and game-like with few or no casualties. However, these conflicts could escalate into raids, ambushes and massacres. Fortifications may have been constructed in order to protect settlements from such raids. Ritualized battles may also have been used to deter other groups from attempting similar raids. Most types of violent conflict involve ritual behaviour, but this does not necessarily make the conflict less violent, and therefore evidence for ritual violence does not negate the possibility of violent warfare. Arkush and Stanish suggest that ritual fights, with their limited and local nature, were never direct cause for the construction of fortifications. Fortifications, skeletal trauma and other manifestations of violence and warfare are the markers of non-ritual violent conflict only. Arkush and Stanish base their arguments on Andean evidence of bloodless ritual combat, mainly in the form of artistic representations and anthropological records on the Andean *tinku*: it is a constrained, formalized and festive-like combat similar to modern boxing or to medieval tournaments. *Tinkus* rarely affect politics, may be violent and inflict casualties, but are not accompanied by raids, ambushes, massacres, and trophy seizing. Ritual battles usually took place within complex state societies, where the state kept to itself the right to initiate real, violent wars. Contained low-casualty fights took place in less complex societies but were accompanied by raids and massacres that raised the death rate (Arkush and Stanish 2005: 6-14).

The role and function of war may be to ensure the survival of the group, but also to achieve social and economic goals such as prosperity, wealth, or enhancement of personal prestige (Monks 1997). War can be a prime mover in the rise of a complex society; male leadership can arise from the need for group survival, but then it may become dependent on war for maintaining its achieved social status. Warfare may have been one of the factors leading to the formation of larger and more complex groups, since larger group size is an advantage in conflicts. A larger group requires greater organization and coordination and therefore results in a rise in complexity (Carneiro 1970; Monks 1997).

2.4. Theoretical Approach Used

This study is based on the proposition that social stratification and complexity are not 'natural' evolutionary phenomena, but require explanation and justification. While the sources of social inequality are broadly debated in political philosophy (at least since Hobbes 1996 [1651] and Rousseau 1968 [1761]) and in anthropology (e.g., Clastres 1987; Price and Feinman 1995, 2010), it is fairly clear that within the South Levantine EBA, there is a movement from undifferentiated, apparently egalitarian villages that characterize its first centuries to institutionalized inequality at its end. This movement, which involves an increasing loss of personal and familial autonomy (Bodley 1994: 157-58; Mann 1986: 124), must have involved the institutionalisation and legitimation of power, and these processes should be reflected in the material remains through which social power would have been manifested.

In this thesis I use practical tools developed in processual archaeology to analyse and quantify the material evidence in relation to demography, social mobilisation and energy expenditure, and tools from Marxist, interpretive and critical archaeologies to discuss and interpret these finds (Leone et al. 1987; McGuire 2002 [1992]: 213-45; Patterson 2004), the following sections outline concepts and define terms used in the analysis.

2.4.1. Social Structure and Agency

Interpretive archaeology introduced new concepts and new definitions of existing terms: **Structure** in interpretive archaeology is an extensive configuration; a field of settings, conditions, rules for behaviour, symbols, resources and possibilities. It is the social system and it is constructed by the practices of the agents (see below) that populate it and by the relationships between them. In contrary to the processual archaeology view of structure as stable, constraining, determinate, and external to the agents, the structure in interpretive archaeology cannot exist without the practices of the agents and without the agents themselves. The structure is formed by the agents occupying it and in a recursive process it facilitates and allows their actions, while simultaneously, constraining them. There is no simple cause and effect, and the structure does not determine the actions of the actors in it (Barrett 2001; Bourdieu 1977; J. E. Clark and Blake 1996; Joyce 2000; Souvatzi 2008; Tilley 1982).

Bourdieu defined the *agent* as a bound individual that can change the structure through practice or praxis. The individual, although not determined by the structure, has unconsciously internalized the structure as a scheme of dispositions, conditions and rules. This scheme is called *habitus* (Bourdieu 1977; Hodder and Hutson 2003: 90-91; Joyce 2000). The habitus both structures and is structured by the agent. Some scholars think that the agent, especially in ancient times cannot actually change the structure, since he is unconsciously conditioned by it (e.g., Dornan 2002), and some suggest that "human beings are neither to be treated as passive objects, nor as wholly free subjects" (Barrett 2001; Giddens 1979: 150; Joyce 2000). The capacity of an agent to act in the world is the **Agency**, which includes all types of social strategies like resistance, acceptance, or acquiescence (Dobres and Robb 2000; Dornan 2002; Joyce 2000: 71).

Interpretive archaeology sees societies as consisting of agents and social structures. Agents know "how to act" in the society due to social structures, that have been internalized and become part of their own consciousness. Agents externalize the structure with some modifications and resistance, and thus they reproduce, form, and change the social structure. The structure is not external to individuals and it exists only if it is recurrently formed and reproduced by human agency (Shanks and Tilley 1993 [1987]: 178-80; Souvatzi 2008; Tilley 1982). Unlike processual archaeology, which saw individuals as simple followers of social conventions and values, and as being fully determined by their social and natural environments (Barrett 2001: 146), the agent in interpretive archaeology has some control over the internalization of socio-cultural structures (Dornan 2002: 321, 16; Hochschild 1983; Mahmood 2001). Agents are not necessarily rational, calculated, and goal oriented (as in the 'rational actor model'); rather they are influenced by contrasting interests, emotions, histories, habits, traditions, customs, resistance, and a lack of information (Dornan 2002: 317-18; Hodder and Hutson 2003: 91-92).[6]

The structure is changed by "small-scale decisions" of agents, that may lead to different results in different situations (Bogucki 1999: 208). Each social actor has some knowledge of his/her position, abilities and constrains inside the system. The actor, which is usually a man, can partially manipulate the system to achieve his personal aspirations. Some actors are more ambitious than others – Clark and Blake call them 'aggrandizers'. These aggrandizers want to have personal prestige, though they do not necessarily want to be chiefs, and the final outcome of their competition is unforeseen by them. They initiate a process that eventually leads to institutional social inequity. The society must be large enough and allow personal ambitions, and the economy must be rich enough to have accessible, abundant and predicted resources. Political power, even after it is achieved, is not stable and needs continual public recognition (J. E. Clark and Blake 1996: 259-64).

[6] 'Individual' may be a recent, modern idea, and therefore should be treated with caution (Dornan 2002: 315; Hodder and Hutson 2003: 7), or be replaced be 'agent'.

2.4.2. Social Power, Ideology, and Legitimacy

Social power is the capacity of social actors to make other people act according to their will. This can be achieved by means of simple persuasion, arguing for divine support, using economic power, or physical force (Arnold 2000: 14; Mann 1986; Weber 1947: 152-53). However, social power which is based on direct physical force is unstable in the long run and therefore rulers need to base their power on legitimacy (DeMarrais et al. 2002: 349; Shanks and Tilley 1993 [1987]: 180).

Legitimacy is defined by Yoffee as a social institution with the aim of preserving the existing order as the only one and the right one, thus allowing the elites to maintain inequality. Legitimacy usually invokes the past and makes it a derivative of the present. It reshapes the past and creates a 'social memory' so the current social order is seen as a natural and permanent result of the past, or a logical outcome of it (Yoffee 2005: 40). Legitimacy creates the trust needed by political systems to maintain stability and it is therefore based on the actual values of the society in question, such as wealth, age, or divine aid (Haviland 1993: 339-40). Legitimacy is achieved when the interests of the regime seem to concur with the interests of the subjects. Legitimate social power leads to authority, which is the right to lead (Earle 1997: 3; Mann 1986: 7; Smith 2003: 108-09).

Ideology is one of the instruments used to achieve legitimacy. It can be defined[7] as a practice or a set of practices that try to reproduce the dominance of the hegemonic groups, hide conflicts and contradictory aspects in the society, legitimise the claims of the elite, and ensure that the interests of the dominant group become the interests of the whole

[7] There are many definitions of ideology. See also (Collins 2000: 2-11; Flannery and Marcus 1998; Whitley 1998a: 254) for different opinions.

society. These practices appear in society as a system of knowledge, ideas, beliefs, and values. The structural effect of ideology in society is to dilute, conceal and deny contradictions. It is not a conspiracy and it is not true or false, and it is a major power in the reproduction of the structure, in the maintenance of it, and in avoiding conflicts between the social actors. Ideology can be a positive force, and minorities can have ideology as well, but it can also be used to legitimize a suppressive or repressive social system (DeMarrais et al. 2002: 349; Giddens 1989: 727; Macionis 2001: 256; Marx and Engels 1969: 17ff; McGuire 2002 [1992]: 38; Shanks and Tilley 1982: 130; 1993 [1987]: 76,181; Tilley 1984: 116; Whitley 1998b: 253-54). Although ideology may legitimize the interests of a small segment of the population, in order to retain its power it must be plausible and genuine (Hodder and Hutson 2003; Mann 1986: 23; Shanks and Tilley 1993 [1987]: 77).

Based on the Frankfurt School of critical theory, as well as Althusser, Marxist archaeology treats ideology as a system of ideas, usually false and misleading, created by the social elites in order to keep society intact. It does so by masking things like exploitation and inequality or by making them acceptable, normal natural and unchangeable (Althusser 1971: 165; Handsman and Leone 1995 [1989]: 118-19; Hodder and Hutson 2003: 75-89; Leone et al. 1987: 284; Ritzer 1996; Whitley 1998b: 253-54). Ideology itself is masked and is not easily seen (Leone 1978). Huaco (Huaco 1986) even suggested that it is an unconscious and hidden aspect of all human culture.

Mann claimed that people either cannot or do not want to understand the world directly; they need an interpretation of their perception in the form of concepts and categories of meaning. Stable social organization needs norms and morals in order to make people understand how to act in society. Those who monopolize meaning and societal norms and who control aesthetic and ritual practices hold the ideological power (DeMarrais et al. 2002: 349; Mann 1986: 22-24). This power allows the regime to effectively control its subjects, with little use of force or coercion (Bogucki 1999: 266; J. Thomas 1993: 91). Ideology is an important source of social power, and control through ideology is very effective, especially in the long run, and may be more efficient than military or economic power (Campbell 2009: 824; DeMarrais et al. 2002: 349; Earle 1997: 207-08).

Since ideologies are external to the people who follow them, they must materialize in the world and in material forms of social practices (Shanks and Tilley 1993 [1987]: 76). Ideological meanings naturalise the social order by materialising into daily material culture like pottery, tools and even foodstuffs. Needing to be communicated to a large audience, they also materialise into monuments, rituals, mortuary practices, and symbolic objects. It is the archaeologists' task to reconstruct the socio-political system of past societies through their material culture and to trace the meaning of artefacts beyond their technological functions, all without assuming that the ancient system resembled our own (DeMarrais et al. 2002: 349-50; Shanks and Tilley 1982; 1993 [1987]: 181; Tilley 1984: 116; Whitley 1998b: 254-55).

2.4.3. Power, Coercion and Consent

Blanton et al. suggested that there are two types of power strategies: *exclusionary* and *corporate*, and that both can exist in the same society (Blanton et al. 1996: 2). In the exclusionary power strategy the political system is built around the monopoly of the political actors over the sources of power. Power can be exercised personally (in small societies, like vassalage in Europe) or by a bureaucracy (in larger societies). In the corporate power strategy, power is shared across several groups or sectors and centralization of power in one group or individual is prevented. The distribution of power is structured and limited by the society's social codes, but the society is not necessarily egalitarian. The strategies of a corporate society to legitimise the hierarchy may even be similar to those of an exclusionary society (i.e., religion, ritual, and cognitive code) (Blanton et al. 1996: 2,6,7).

Social power (see above, chapter 2.4.2) is a primary factor in social structure (Brumfiel 1992: 559) and was a central concern in ancient societies (Brumfiel 1992: 557). Power rests on legitimacy and force, and on consensus and coercion (Moore 1996: 3), all of which translate into social relationships, economic power, military might and ideology (Earle 1997: 4-10).

The administrative and social life of political communities is not made up of simple coercion and consent. Coercion by itself cannot hold for a long time or on a large portion of the population. The largest base of support must be based on constantly reinforced authority, legitimacy, and persuasion, which make subjects give up their autonomy and transfer their loyalties to the leaders (Arnold 2000: 15; Earle 1997: 67; Smith 2003: 25-26; Tainter 1988: 27). In stable societies coercion may exist mainly as an implied threat behind the power of the ruler (Earle 1997: 3).

Complex societies[8] are not homeostatic nor a living thing with an aim of adaptation to its environment, but rather a composite of unforeseen outcomes generated by the activities of human agents (Brumfiel 1992). They are diverse, composed of competing and opposing

[8] Complex societies are usually defined as highly stratified societies with strong central authority and bureaucracies (Smith 2003: 5; Tainter 1988: 37; Yoffee 2005: 15-31). In this thesis the term 'complex society' usually refers to the less stratified societies, with decentralized authorities like "pre-state" or "complex-chiefdom" societies (Monks 1997; Yoffee 2005: 15-31), which seem to fit EBA relatively-complex societies.

groups and factions, and suffer from a great deal of internal tension (Brumfiel 1992: 558). Ancient complex societies were marked by semi-autonomous social groups, each with their own internal structures and conflicts related to power both inside the groups and between them. At first states were small (city-states or mini-states) and then they evolved into ‘peer-polities’. They belonged to the same culture and thus shared common ideology, material culture, and literature, and had economic and political interactions (Yoffee 2005: 42-44).

The following thesis will not classify polities as “state” or chiefdom”, as these are mere categories which tell us little about the actual nature of these polities and the processes creating, reproducing, maintaining and replacing them (Smith 2003: 96).

2.4.4. Materialization of the Social

Current interpretive practices in archaeology prioritize the role of the material culture and the built environment in the social process. Using ideas derived from semiotics and structuralism, it argues that material culture has meanings beyond its physical and functional properties. These meanings are derived from the social environment of the object and the people who used it (Hodder 2004: 28).

Material culture does nothing by itself – it acts on people within a social frame of beliefs, concepts and dispositions (Hodder and Hutson 2003: 8-9). Material culture is not merely tools or architecture with distinct functions; as a human product it carries meanings with it and is actively used to reproduce and transform the social structure, either intentionally or unintentionally (Hodder 2004: 29; Tilley 1982: 37). Material culture synchronously forms social relations and is produced by them (Shanks and Tilley 1993 [1987]: 104).

The social materializes into material culture through a process in which objects and architecture are given meanings within agency. Their meanings and messages can remain active over long periods of time, especially when dealing with architecture. Social actors move within the built environment and are constrained by it – it makes them perceive the world and interact with it in certain ways. In this way space and the built environment become part of the structuring of the social world (Hodder 2004: 33-46; Moore 1996: 3). Architecture can be used by the community or by its leadership to express stability, permanence, pride, civic values, strength, and power, as well as status and hierarchy (Clarke et al. 1985: 4-10; Johnson 1996; Middletown 1987: 25; Moore 1996: 1-2; Sharon 1976; Thompson 1977: 41). Architecture reflects the society, but also guides, directs, shapes, and changes it (Geertz 1973: 5; Moore 1996: 10; Nave 2003; Sharon 1976;

Souvatzi 2008; J. S. Thomas 1991: 30, 41). Monuments, with their size, craftsmanship, and practicality have a special role in these processes, since they are imbued with meanings and demand respect and admiration. The presence and permanence of monuments deny time and assert timeless stability and power. The successive use of monuments and ceremonies connected with them are analogous to the constant and natural change of seasons and thus they continuously present and represent the past in the present. In this way, monuments may help to create and maintain political and social space (Nave 2003; Thompson 1977: 41; Tilley 1984).

Materialization gives ideology a concrete physical form and makes it a significant source of social power, although not the only one. Ideology manipulates symbols and beliefs to fit the objectives of the ruling class; it creates solidarity, social cohesion and group identity, while legitimizing leadership, unequal access to wealth and showing the coercive nature of authority. Forms of materialization that creates and promotes ideology are construction of monuments, production of symbolic and specialized objects, use of symbols of military might, and recurrent ceremonial events (DeMarrais et al. 2002: 375-85; Earle 1997: 169-69; Leone et al. 1987).

Material culture serves as a sign system, which is amplified by its context and spatial and temporal relations. The agent producing and using the material culture is never fully aware of the entire symbolic system of signifiers embedded in the material culture he/she acts within. Material culture can be used to naturalize social relations (frequent use and triviality can help this process), to legitimate society, and to produce and organize a consensus by making the current order appear natural (Hodder and Hutson 2003: 92-94;

Hodder 2004: 29; Leone et al. 1987; Shanks and Tilley 1993 [1987]: 103-12; Tilley 1995 [1989]: 115, 55).

Since material culture carried meanings with it and served as an arena for the enculturation of members of ancient society, than it may be read as a text by present day archaeologists (Hodder 2004: 29-30). Daston argued that material culture ("things") – talks and speaks the "truth, the purest, most indubitable truth conceivable" (Daston 2004: 13). Reading material culture is contextual; it can be straightforward (e.g., gold is precious and thus signify high status), but it can also be complicated and unobvious (e.g., gold is flamboyant and therefore the upper classes should not use it). Much of an object's meaning is sensual, non-discursive and unconscious, and different readers in different times and periods may read them differently (Hodder 2004; Leone 1982). Furthermore, material culture, with its involvement in the formation of practices that form society, is not a direct reflection of society. The recursive creation of material culture is done through cultural sets of ideas, beliefs and meanings. Burial customs for instance, depend on attitudes and beliefs toward death (Hodder and Hutson 2003: 3; Shanks and Tilley 1993 [1987]: 85).

In the absence of writing, material culture has an important role as a signifier; it was important in ancient times, and it is important to the archaeologist trying to understand proto-historic societies like the Southern Levantine Early Bronze Age. An analysis of material culture should rely on theoretical grounds. This theorization, lacking from contemporary social theory (Shanks and Tilley 1993 [1987]: 98, 113), partially exists in archaeological theory. The theory-based study of material culture "must try to uncover what lies beneath the observable presences, to make account of the absences, the co-presences and co-absences, the similarities and the differences which constitute the patterning of material culture in a particular spatial and temporal context" (Shanks and Tilley 1993 [1987]: 102-03). The principles that govern the form, nature and content of material culture are found in the micro and the macro and are linked together, so analysis must not restrict itself to one feature of the material culture.

Theories, interpretations and the way we read the past – are all fundamentally distorted by the values of the researcher. Any attempt to minimize or hide these distortions is either doomed to fail or, and this is the worst case, the hidden distortions have the potential of being illusive and misleading (Bourdieu 1977; Hodder and Hutson 2003: 18-19; Hodder 2004; Tilley 1995 [1989]: 110). Interpretation should rely on the data. The 'how' is important – interpretation instead of explanation. This is the hermeneutical approach, which advocates for making sense of an event in relation to the happenings around it, while also taking into account the researcher's prejudgements. The chosen interpretation is the one that makes more sense than the others (Hodder 2004: 27-28). It can be done by using multiple approaches (and not just site plans and the non-human bird's-eye view) in order to grasp the experience, layers of meaning, and the context of the living monumental structure within its surroundings (Vranich 2002), by virtual reconstruction of the architectural landscape from the user or visitor's viewpoint (Gifford and Acuto 2002), or by using a landscape approach (Smith 2003: 32-71).

3. Social Analysis of EB III Material Culture and Architecture

3.1. Methods: Finding the social in the EB III material culture

Keeping in mind that the society in question was preliterate, its archaeological analysis seeks to identify evidence for the materialization of the dimensions of power, manipulation, and ideology. This includes evidence for: control over economic resources (accumulation and distribution of wealth, relations of production), control and manipulation of knowledge, ceremonies, and symbols, the ability to impose obedience by force, control of military power, and influence over the symbols of social integration and incorporation (Brumfiel 1992; Clarke et al. 1985; Yoffee 2005: 34-38). The analysis will primarily deal with two central EB III sites that have been thoroughly excavated – Tel Bet Yerah (TBY) and Tel Yarmuth, with supplementary examples provided as is relevant from other contemporary sites. The sites of Tel Bet Yerah and Yarmuth were chosen since they are (1) both large EB III sites, but are (2) distinct in terms of both location and societal framework; TBY is located in the north, next to the Sea of Galilee, while Yarmuth is located in the south; a communal granary was constructed at TBY, while in Yarmuth, a palace with internal storage capacity was built. Other reasons for choosing these two sites to focus on were of a more practical nature: (3) the large scale of archaeological excavations conducted in these sites, (4) the quality and quantity of data gathered on these sites, (5) access to this data, and (6) the relative lack of data from other sites.

The following analysis includes four parts: (1) monumental architecture, (2) defence and warfare, (3) economy, trade and specialization, and (4) cult, rituals and symbolism.

Monumental architecture: Aspects of monumental architecture analysed include construction technology, planning and metrics, urban contexts, access patterns, location inside the settlement and social cost involved with construction of the monumental building.

Defence and warfare: In this section I examine evidence for and scale of violence and warfare in the Levantine EB III. EB III fortifications are analysed in order to find if these structures had multiple functions by: (1) comparing the magnitude of the fortifications and the labour invested in them to the actual security needs during the period, (2) evaluating their tactical effectiveness, and (3) assessing their suitability for other functions such as internal and external surveillance, border-markers, declarations of power and their role as a place in the city. Geographical Information System (GIS) allows effective analysis of measurements, topographical placement, and visibility of and from the fortifications, as well as their various features, such as gates, posterns, towers, bastions and glacis.

Other markers of war, such as weapons and skeletal trauma, are examined and assessed using similar criteria.

Economy, trade and specialization: In order to better understand the political economy of the period (Blanton et al. 1996; Earle 1997), I attempt to analyse various aspects of the economy with regard to the appearance of ruling elites and stratification. These aspects are: the initial appearance of large scale coordinated production of goods, utilization of large labour forces, considerable investments in resource extraction and capital improvements, economic interdependencies, craft specialization, intensification of exchange, prestige goods, the appearance of tokens and other mnemonic and bureaucratic devices, technological innovations, external contacts, and feasting supported by large subsistence efforts like architectural elements (Arnold 2000: 28-30).

Cult, ritual, and symbolism: This section deals with rituals, public ceremonies, and symbolic representations. I search for evidence of rituals and public ceremonies and their role in the social structure by studying public areas (especially open ones) and artefact distribution within them, and by analysing the intra-site distribution of items connected with ceremonies and feasting (e.g., oversized platters). Items with symbolic meanings, are analysed in relation to their practical and symbolic function and form. Symbolic and prestige items are analysed in relation to inter-societal exchange and connections with outside elites.

The results of all of the above will be discussed, in order to understand the character of the EB III and how the period's social structure was formed, reproduced, maintained and changed.

3.2. Monumental Architecture Analysis

The term 'monumental architecture' refers to elaborate and large non-domestic structures, for which the effort or 'energy' invested in construction surpasses their evident practical function. They are designed to be recognized as separate from the mundane, ordinary and prosaic and to convey meanings, messages and information to the entire society or parts of it (Moore 1996: 92, 95; Trigger 1990). Architecture, especially monumental, can transmit a range of messages and information, control space and movement, and affect the behaviour of those using and encountering it (Cunningham 2007). The Early Bronze Age is the first period in the southern Levant in which large and monumental structures were a regular feature of settlements (though there are earlier, isolated instances of monumental construction). In the EB III, most of these monumental structures took the form of fortification walls, towers, bastions and gate complexes; these are discussed in Chapter 3.3. This chapter deals with 'civic' monumental structures, and specifically with the two largest and most remarkable structures excavated to date, the Tel Bet Yerah Circles Building and the Tel Yarmuth Palace B1. These case-studies will be used to examine what role such structures filled in EB III contexts, what their impact might have been, and how these relate to the question of 'social complexity'.

Society and culture are created through daily practice, and thus achieve an objective existence outside the minds of individual agents (see Bourdieu 1977; Giddens 1979, 1989). Social values and ideas may be materialized through repetitive ceremonial events, symbolic objects and icons, or through public monuments and landscapes. The latter category includes large buildings, centres of political activities, ceremonial facilities, defensive structures and other monumental buildings. The advantage of monuments over other means of materialization is that they can transmit a message to a large audience over an extended period of time (DeMarrais et al. 2002: 350-57). Monumental architecture may be seen as a means of uniting society in formative periods and in times of transition or stress, when social integration is most important (Abrams 1989: 62; Bradley 1984: 73-74). Like with the hypothetical Panopticon of Bentham, ideology influences and shapes architecture. Since the elites are the ones who initiate and direct the construction of public buildings, these buildings will reflect their own ideologies, values, and meanings (Moore 1996: 218).

Following the lead of Moore (Moore 1996) and Smith (Smith 2003), the following analysis will deal with the impact of the built environment on the society. It is based on the fact that all buildings are cultural constructs imbued with symbols, especially public buildings, which are loaded with symbols that inform the society about the basis of the social order (Moore 1996: 15; Ristvet 2007). The analysis will deal with the location of the building, the way it was perceived, its capacity and size, how accessible/inaccessible and visible/hidden were the building and the activities carried out in it, its use history, phases of use and construction, how long was it supposed to be used, how long was it actually functional, and how much work was invested in its construction.

The location of a public building and its relation to the built environment is significant and never random. An example of this is the close proximity of many early Mesopotamian palaces to the town's temple. The proximity was intended to stress the 'spatial continuity' and connection between these two establishments of the regime (Smith 2003: 214). Political complexity is often accompanied with intensification of ritual activity. One can see this in the building of new temples by new kings in Mesopotamia. The ritual activity serves as a form of ideological legitimization of the ruling elite (Bretschneider et al. 2007: 1).

The way a building is perceived is partially dependent upon its built environment and landscape (Moore 1996: 93). For example, the impression a monument makes is dependent on its surrounding landscape; if there are obstacles, built or topographic, between it and the viewer, its monumentality may be hampered. Creating a concave surface in front of a monument makes the monument seem larger and more impressive. The different angles from which a monument can be viewed are important as well; assessing the viewshed of a building, taking into account its height, the height to base size ratio, and the areas around it, may allow us to determine its communicative potential (Moore 1996: 98-107). Smith stressed the importance of the landscape and defines the term 'Political Landscape' as an imaginative aesthetic guiding representation of the existing world, a space which evokes responses in people through "perceptual dimensions of physical space", and an experience of form that shapes how we move through the created environment (Smith 2003: 10).

Analysis of access patterns (access graphs) to a monumental building and its various internal spaces, rooms, storerooms, and courtyards, will allow understanding of its functions and their accessibility to the public (Moore 1996: 184-91). Moore argued that tall and prominent monuments, rising high above their neighbourhood, were used to pass messages to the entire community, while enclosed prominent monuments were aimed at a small audience. Broad and wide monuments, in which a series of plazas and walls lead to a central building, emphasized horizontal distance and may have accommodated processions and parades (Moore 1996: 108-20).

Another topic to assess is the cost of work needed to construct the monument relative to the available workforce and the practical benefits of the structure. The amount of work a state is able to funnel into public projects is a measure of the capital the state can manipulate for its own benefit. A by-product of constructing a public project is that it serves to unite the people and creates a sense of corporate identity (Ristvet 2007).

The demolition of older monumental architecture by a later polity or social entity should be analysed as well, since it may help understanding social processes. Political practices may include the literal destruction of the commitments of the people to pre-existing polities. At the state level, this is accomplished by demolishing fortresses and sites connected to previous regimes. The old architecture is a rival architectural aesthetic and a sense of a place, which might lead to an alternative understanding of the contemporary political landscape and therefore it should be obliterated (Smith 2003: 166-67). Similar processes, more localized in nature, might accompanied community-level changes.

In line with the above guidelines, the following sections analyse the TBY Circles Building and the Tel Yarmuth Palace B-1

3.2.1. The Circles Building ('Granary') at Tel Bet Yerah

Tel Bet Yerah is a 28 hectare mound, positioned on a low hill at the southeast of the sea of Galilee. It is flanked by the lake and the Jordan river and is an easy gateway to a variety of ecological niches, water sources and fertile lands, including the Kinrot Valley, the Sea of Galilee, and the Jordan river. The site was first inhabited during the Early Bronze Age, during which it reached its largest extent. It was practically deserted at the end of the EBA, and was largely unoccupied until the Hellenistic period. During the Islamic (Umayyad) period a fortified complex and a bath house were built at the north of the tell. Since 1933 TBY has been studied by no less than 17 expeditions that identified ten periods of occupation (***Table 2***) (Greenberg and Paz 2006a; Greenberg 2014b; S. Paz 2006b).

Chronological Period	*TBY Period*
EB Ia	A
EB Ib	B
EB II	C
EB III	D
Final EB	E
MB I	F
Persian	G
Hellenistic	H
Roman/Byzantine	J
Early Islamic	K

Table 2: TBY strata

After (Greenberg and Paz 2006a: Table 1.2)

The Circles Building (***Figure 14***) is located at the north end of the mound, under the Islamic period bath house and fortified complex; these caused some damage to its northeastern corner (S. Paz 2006b). The building was discovered during the second season of the Stekelis and Avi-Yonah excavations at Tel Bet Yerah, in 1945-6. The excavators described a monumental building with 10 m wide 'walls' enclosing a courtyard and a central hall. The expedition found seven stone-lined shallow circles sunk into the building's wide 'walls' (better described as platforms) and traces of what they believed to be an eighth one. They also reconstructed a ninth circle in the northeast corner of the building (Maisler and Stekelis 1945; Maisler et al. 1952; Stekelis and Avi-Yonah 1946-1947). The existence of the last two circles was later ruled out by the renewed TBY expedition (see below). From the moment it was unearthed, the building was recognized as unique in its size and plan in comparison not only to other EBA structures but also to those in other periods and other parts of the Ancient Near East. It was enigmatic and unusual in its form, intended function and monumentality.

The finds from the excavations were stored at the Rockefeller Museum in Jerusalem, and since the excavators had no access to the museum after the 1948 Israeli War of Independence, the only published reports are preliminary and therefore not always accurate; the first comprehensive excavation report was published by Paz in 2006 (S. Paz 2006b). Since this publication, a detailed finds register of the 1945/6 excavations has been discovered and additional data and finds have been gathered in the renewed excavations of the building and its environs. The following section will study the Circles Building – its structure, function, and especially its social role, an issue that was barely dealt with in previous analyses. This will be achieved through a detailed stratigraphic, architectural, and economic analysis of the building and its plan and construction, and by a review of its finds, which will enable a better understanding of its use-history. A spatial analysis of the building and its environs will situate the structure in its urban setting.

History of research

The Circles Building, trapezoidal in outline, measures approximately 32 x 41 m. Its broad platforms are built of large dark basalt field-stones. The diameter of the circles, which are sunk 20-30 cm into the platforms, is 8-9 m and each is divided into symmetrical quadrants by four partition walls, each extending part-way from the perimeter of the circle toward its centre. The dimensions of the partitions are 2.2-2.4 m long and 0.8-0.9 m wide, and they roughly align with the cardinal directions (or, more precisely, with the nearest outer wall of the building). The general asymmetry of the platforms suggests that the builders were constrained by a pre-existing street grid (see stratigraphy, below). However, the inner space of the structure approximates the perpendicular (Currid 1985; Greenberg and Paz 2006b; Maisler and Stekelis 1945; Maisler et al. 1952; S. Paz 2006b; Stekelis and Avi-Yonah 1946-1947). The building was called the Circles Building after its prominent features and interpreted as a sanctuary due to 'ovens', traces of fire, burnt animal bones, figurines and a kernos with two bull-heads, found in, on, or next to the building. Maisler, Stekelis and Avi-Yonah believed that the traces of fire ruled out the possibility that the building was used as a granary. However, in a remark in their last publication, the excavators noted that after comparing the building to the then recently found granary model from the island of Melos (Marinatos 1946), they accepted that the building may have been a granary with the 'ovens' added at a later phase[9] (Maisler and Stekelis 1945; Maisler et al. 1952; Stekelis and Avi-Yonah 1946-1947). Later, based on the same Melos model, Avi-Yonah and Yeivin argued in favour of the latter explanation (Avi-Yonah and Yeivin 1955: 104-07).

Since its discovery, the enigmatic Circles Building has been studied by several scholars. Amiran (R. Amiran 1965) suggested that the round structures may have been dwellings of 'KKW people'. James Mellaart, based on a similarity between the building's central hall and courtyard and the temples of Ein-Gedi, Megiddo and Ai, thought that the building was a sanctuary. He proposed that the circles were the bases of domed structures that were used as the temple granaries or as dwelling rooms for the temple personnel (Mellaart 1966: 74-76). Later scholars favoured the granary explanation, with some disagreements regarding its reconstruction and the function and importance of the inner hall: Wright reconstructed

[9] See the Melos model in: (de la Croix 1972) and *Figure 26*

the Circles Building with about 10 m high mudbrick domes over the circles (***Figure 10***).[10] In his reconstruction the domes abutted each other and thus formed a barrier around the central area of the building (G. R. H. Wright 1985: Fig. 240). He thought that the inner hall was a temple while the circles were for storage of grain, and thus he envisioned TBY as having a temple economy (G. R. H. Wright 1985: 302). Kempinski, following Wright's reconstruction, also described the building as a granary (A. Kempinski 1992a: 76-78), as did Currid, who viewed the circles as foundations of "beehive" structures. Noting a built passage from the main hall to one of the western circles, he suggested that all circles could be similarly accessed (Currid 1985).

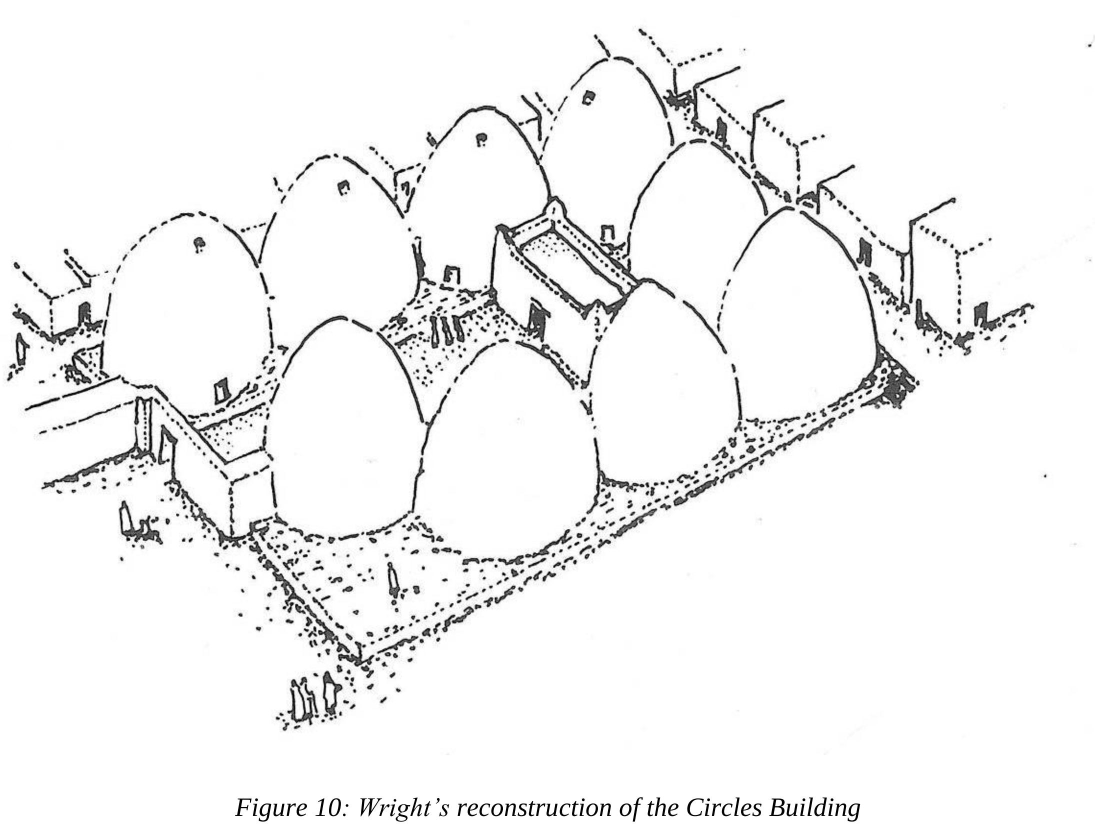

Figure 10: Wright's reconstruction of the Circles Building
(G. R. H. Wright 1985: Fig. 240)

[10] Wright's reconstruction, as well as the other reconstructions presented in this sub-chapter were based in the excavators' assumption of the existence of eighth and ninth circles, an assumption later proved to be wrong (see below).

Herzog, and later A. Mazar, reconstructed the building with a massive mudbrick superstructure with only the domed tops of each silo protruding above it. Both postulated that the inner hall was a sanctuary (Herzog 1997: 86-87; Mazar 2001). Mazar maintained that the building was a six-to-eight metre high structure with nine silo granaries, each with a mudbrick dome over it. According to this reconstruction, the domes were partially covered by the building's mudbrick superstructure (***Figure 11***) and the building was high enough to allow the two corridors leading to the two circles in the northwest and southwest corners to be roofed. Mazar favoured the explanation that the building may have been a temple with an attached granary. He asserted that the inner broad room resembled the temples found at Yarmuth and Ai. Based on the dimensions proposed by Mazar, the nine silos of the building could hold more than 1700 tons of wheat or 1370-1600 tons of barley. Based on a yield of 700 kg per hectare, the building could store all of the entire yield of 2430 cultivated hectares. Mazar proposed that the area of available agricultural hinterland at TBY was 2700 hectares, most of it south of the Sea of Galilee (Mazar 2001).

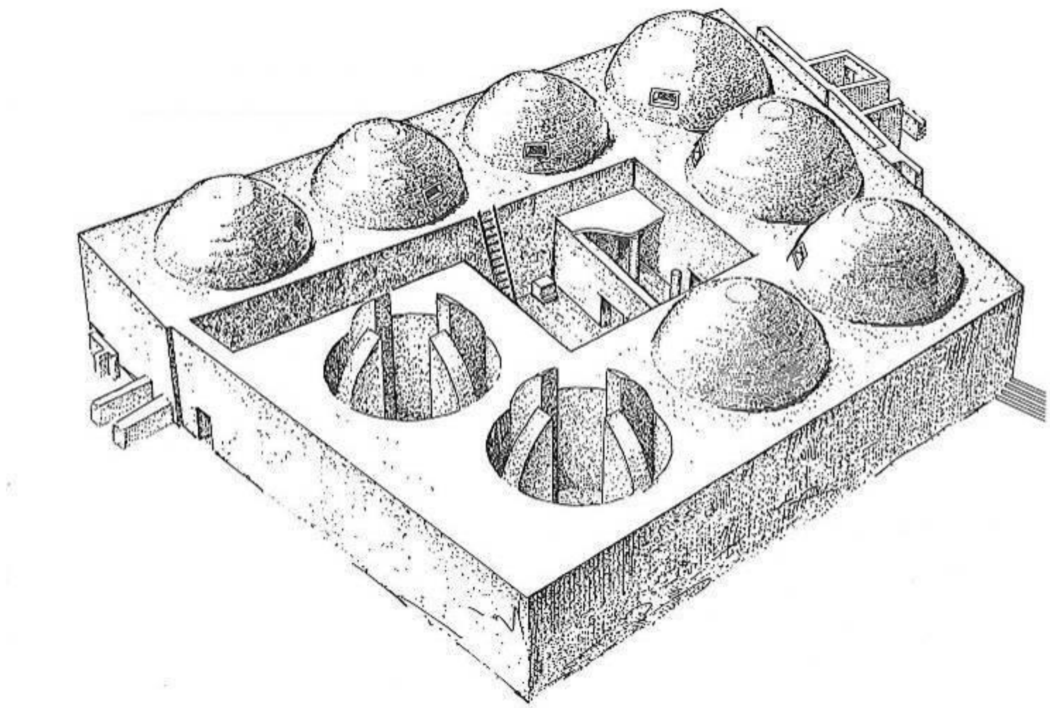

Figure 11: Mazar's reconstruction of the Circles Building
(Mazar 2001: Fig. 23.3)

In the first significant revision of the 1952 excavation report on the Circles Building (using documentation from the original excavation and a partial reconstruction of the distribution of finds within it), Sarit Paz was able to reconstruct two phases of use. For the first phase she favoured the granary explanation, with a mudbrick superstructure above the circles only. In its second phase, the building went through some alterations and did not function as granary but rather was used for various crafts (S. Paz 2006b).

Unpublished data from previous and renewed excavations

Since 2003, new data on the Circles Building has been assembled through renewed excavation of selected contexts in and around the building and, no less important, via the discovery of the 1945/6 detailed register of finds: the 'basket index' of the Stekelis – Avi-

Yonah excavations, which consists of file cards with details of the pottery and small finds found in discreet units of excavation. Each card in this index records a special find or the contents of a specific context (basket). The 'regular' baskets contain a short description of the pottery found in the excavation, while the special find cards hold a more detailed description of a specific find. In most of the cases, these descriptions could be converted into an accurate and quantitative ledger of pottery forms and periods. Some of the data in the cards could be cross-checked with actual finds stored in the Israel Antiquities Authority warehouses, thanks either to the detailed description or to the basket number marked on the find. A total of 2191 baskets were recorded.[11]

Based on its grid location (see ***Figure 13***), elevation,[12] description and the text in the excavators' daily logs, each basket was then associated with a 'locus' – a spatially discrete excavation unit. Baskets with the same properties were connected with the same locus. Since the excavators had not used a locus system, all loci represent my interpretation of the excavation.[13] A total of 48 loci were created and 2074 baskets could be associated with a locus number. The other 117 baskets did not have sufficient location data. Each locus received a provenance grade based on its location and content. Loci that were in a clear EBA context and consisted of EBA pottery were graded as 'Clean'. Loci in a clear EBA

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[11] The cards were entered into the TBYREP computerized database as baskets with numbers in the form of 4502XXXXX, where 45 designates the excavation year, 02 marks the season (the Circles Building was dug during the second season of the Mazar – Stekelis – Avi-Yonah excavations), and the XXXXX is the original basket number with leading zeros where needed. The few basket cards with identical numbers were either merged when their location and level data were similar or entered as 45020XXXX and 45021XXXX.

[12] The elevations on the cards were marked in metres below a bench mark. This benchmark was reconstructed using field measurements and was found to be 195.30 m below sea level.

[13] The locus numbers are in the form of 4502XXX, where 45 is the excavation year, 02 is the season and XXX is the locus number with leading zeros where needed.

context with a small percentage of other pottery were graded as ‘Clean-’. Other loci were graded as ‘Mixed’ and were not incorporated into the analysis of the building.[14]

Once the above work was completed, data was then converted into spatial data and entered into an ArcGIS map. Spatial descriptions of baskets in the card index usually consisted of the square a basket originated from on the 1945/6 grid (see S. Paz 2006a) and/or the basket’s location relative to an architectural feature. This enabled the creation of a basket location map. This map, together with the loci grades, enabled the creation of a locus provenance map which includes the type of each locus (either occupational debris or fill layer) and its provenance (whether it is mixed with finds from later periods or consists only clean EBA finds) (see ***Figure 12***).

[14] The list of loci is presented in Appendix 6.1.

Figure 12: Reconstructed 1945/6 loci

(multiple hatching designates superimposed loci)

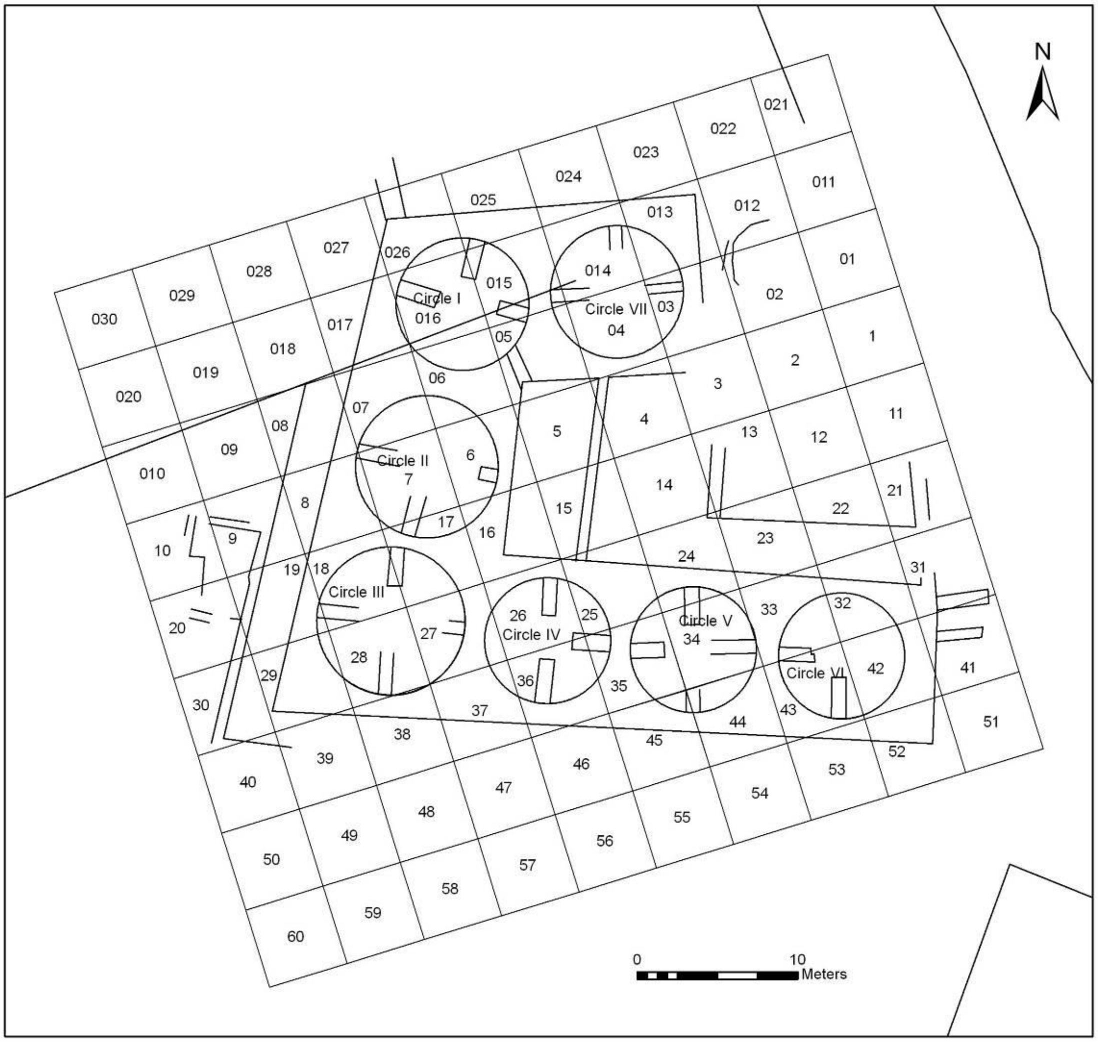

Figure 13: Circles Building 1945/6 grid and circle numbers

Using the spatial data and the basket location map, artefacts found in the Stekelis – Avi-Yonah excavations and appearing in the basket index were exported from the database into the ArcGIS map, and marked on it. In cases where there was no specific information on an item's exact provenance, it was marked in the centre of its associated square or architectural feature. With this quantitative and spatial database in place, the finds from the 1945/6 season were analysed together with the finds from the renewed excavations. The analysis of the finds from the Stekelis – Avi-Yonah excavations, is presented in the following sections and will be used to understand the intended and actual functions and uses of the building.

Stratigraphic overview

The information collected in the renewed excavations at TBY, together with the analysis of the new data from the older excavations, has allowed for a reconstruction of the stratigraphy of the Circles Building and clarification of its construction and phases of use. The building was found to have seven circles only and an open eastern side, in contradiction to the former reconstruction of nine circles and a narrow eastern entrance.

The building was also found to be built as a massive casemate foundations inserted into domestic Early Bronze II remains. Two phases of use were found in the structure itself – a local-tradition Early Bronze III pottery layer associated with the original floor, and a layer above this, characterized by a large proportion of Khirbet Kerak Ware. Both phases of use date to the EB III, with the earlier phase assigned to the indigenous Bet Yerah population and the latter to ETC-related migrants.

Foundations and construction

Soundings taken beneath the Circles Building during the 1945/46 excavations revealed details on its construction. Loci 4502014, 4502052 and 4502053 (***Table 3***) consist of finds from the sounding in the northwest corner of the inner hall (‘Room 2’). Pottery in these loci mainly dates to EB I and EB II. A small percentage of EB III sherds in them is probably intrusive due to either excavation techniques or to foundation trenches connected with the construction of the building during the EB III. The two upper loci (4502014 and 52) should be dated to the EB II due to the large percentage of NCMW in them, while the lower one (4502053), with a larger percentage of EB Ib, may be older. The most prominent ceramic type found in this trench was the storage jar.

The relative abundance of flint tools and small finds in the sounding is interesting when compared to the scarcity of these items in the loci above it. It seems that the activities occurring in this area changed between EB II and III.

During the 2007 excavation season, two probes were dug in Circle VI, on either side of the western partition in order to better understand the construction of the Circles Building and its context. Loci SA 808 (northwest of the circle) and SA 818 (southwest of the circle) consist of material found during the dismantling of the circle's pavement in the two excavation probes. The diagnostic pottery from this phase consists of 11 sherds, all of them locally made and dated to the EB III. The loci right below pavement SA 808 and SA 818 were numbered SA 809 and SA 820 respectively and were identified as fill. Both contained a few sherds of local EB III pottery, including pattern-burnished platters, a large krater, and one fragment of a KKW bowl. The latter, if not intrusive, may indicate the presence of KKW people at the site at the time of the construction of the building. The loci and features below SA 809 and SA 820 are W805 and a succession of earthen floors, all dated by their pottery to EB II. The lack of EB III floors below the building as well as the foundations that penetrate into earlier layers support the conclusion that the building marks the first EB III phase in this area and was 'inserted' into a former EB II domestic area; the perimeter foundation walls of the platforms and the circles were built as massive stone walls and planted into former layers, while the centres, including the circle partitions, were comprised of a relatively shallow layer of stones, thus creating a 'casemate' structure (Greenberg and Paz 2014: 44; S. Paz 2006b: 57).

Inner hall (Room 2)

The deposits excavated in Room 2 during the 1945/6 season could be divided into several loci and two layers based on their elevation and descriptions (***Table 3***). The elevation of Locus 4502004 seems to include accumulations on the original floor of Room 2. Its elevations (-197.01 and -197.30 m) seem to conform with the published elevations of the floor in Room 6 (-197.11 and -197.31) (S. Paz 2006b: Plan 3.3). The pottery in Locus 4502004 includes some diagnostic EB III sherds (10% clear EB III sherds and 2% local potter's sherds, which may be dated to EB III but could be EB II as well) and a very low proportion of KKW (2%). This paucity of KKW stands in contrast to the locus above it – 4502015. Locus 4502004 consists of a majority of storage jars, a relatively high proportion of platters (10%), hardly any cooking pots and some bowls.

Locus	*Description*	*Elevation*	*Pottery*[15]		
			Qty	*Periods*	*Types*
4502015	Fill above the floor (maybe a living surface?)	-195.30 to -197.00	88	56% KKW 9% MW[16] 9% EBA[17] 4% Hellenistic or later 4% EB I 1% local potter 17% undated	24% jugs and cups[18] 16% storage jars 10% bowls 5% cooking pots 3% others 42% unidentified
4502004	Room 2 floor and accumulations on it	-197.01 to -197.30	94	35% EBA 21% EB Ib 19% MW 10% EB III 2% local potter[19] 2% KKW 11% undated	40% storage jars (half are MW, the rest EB Ib) 11% bowls 10% platters 4% others 3% cooking pots 32% unidentified
4502014	Room 2 NW sounding top layer	-197.30 to -197.58	52	31% MW 31% EBA 27 % EB Ib 6% EBIII 2% KKW 4% undated	58% storage jars 10% bowls 10% cooking pots 5% pithoi 17% unidentified
4502052	Room 2 NW sounding middle layer	-197.58 to -198.50	140	37% EBA 31% EB Ib 26% MW 5% local potter 1% KKW	62% storage jars 10% cooking pots 3% bowls 1% pithoi 1% vat/krater 23% unidentified
4502053	Room 2 NW sounding bottom layer	-198.51 to -198.90	155	41% EB Ib 32% EBA 26% MW 1% EB III	50% storage jars 19% platters 5% cooking pots 3% bowls 2% others 21% unidentified

Table 3: Room 2 loci[20]

[15] The pottery was analysed both by period and form / type. Each of these categories thus totals 100% of the same assemblage. The percentage represents all the sherds appearing in the basket index that could be dated or their type identified.

[16] MW = Metallic Ware (NCMW).

[17] EBA = pottery assigned to the EBA, with no specific sub-period.

[18] KKW assemblages, unlike local tradition pottery, usually contain a large proportion of jugs, cups and small bowls.

[19] Local potter (LP) = local tradition pottery (neither KKW nor MW), dated either to EB II or EB III.

[20] Loci in this table as well as in the following ones are loci from secure contexts only.

Locus 4502015 is defined as ‘fill above the floor’, though since the card index descriptions usually use spatial terms only and do not define the contents of the deposits, it may have been a living surface of some sort and not a fill. 56% of the 88 identified sherds in this locus were KKW. As expected in a KKW assemblage, the type distribution is different from the locus below it, with a high proportion of cups and no platters.

Inner courtyard (Room 6)

The inner courtyard (tagged ‘Room 6’), was largely excavated by the 1945-6 expedition. In 2003 and 2007, soundings beneath the Early Islamic bathhouse that covered part of the building revealed previously unexcavated parts of the courtyard. Below, the recent results have been added to the new information gleaned from the older excavations (***Table 4***).

The courtyard is 6.9 X 11.0 m, and was covered with a fine cobblestone pavement, most of which was preserved when it was uncovered by the 1945/6 expedition. There are several later installations and architectural features built on this pavement: two flights of stairs that lead from the courtyard to the southern platform (situated in the south east and south west of the courtyard), a small kiln (found on the east side of the yard), and a plastered basin (found in the north west corner). Both the basin and the kiln were suggested by Paz to be parts of a KKW pottery workshop that was active in the courtyard in the building’s second phase of use (S. Paz 2006b). However, in view of the recent reconsideration of plaster installations found throughout the Circles Building and its environs (Greenberg et al. 2014), other explanations should be considered. Another “feature” found in the southwest corner of the courtyard was a large limestone bulb (S. Paz 2006b).

The courtyard seems to slope downwards from the south to the north; elevations taken in the south range from -197.16 to -197.20 (S. Paz 2006b: Fig. 3.3), while pavement elevations taken in the north of the yard during the 2007 excavation were much lower and are between -197.53 to -197.59. During the 2007 season, the excavator noted that the pavement in the north of the courtyard slopes down towards the east.

During the 2007 excavation, two walls were found lying on the cobble surface of the northern part of the courtyard pavement (the pavement is marked as SA 860 by the 2007 excavator). Both of them were built of stone foundations and a mudbrick superstructure; wall W833 is a north-south wall which connects to the Circles Building platform, and wall W834 is an east-west wall. The plastered basin found in the 1945/6 excavations was built against the western end of W8834. These walls, together with the building's platform sides, create a small rectangular chamber.

The 1945/6 basket index data regarding the courtyard excavations allowed for a division into four loci: 4502051, 4502012, 4502013 and 4502005 (***Table 4***). Locus 4502051 contains accumulations on the courtyard pavement. The majority of sherds from this locus are KKW (60%), most of the types of which could not be identified on the basis of the information supplied in the register. Pottery types could not be identified either and therefore the largest group is the unidentified sherds with 74%, followed by storage jars with 8%.

Locus/Loci	*Description*	*Elevation*	*Pottery*		
			Qty	*Periods*	*Types*
4502005	Room 6 fill above floor	-196.72 to -197.00	207	56% KKW 10% EB Ib 9% EBA 7% MW 2% local EB III 2% Hellenistic or later 14% undated	21% storage jars 12% bowls 6% cups 4% varia 4% cooking pots 2% platters 1% vat/krater 50% unidentified
4502012	Room 6 accumulations on/above floor (pavement)	-197.01 to -197.13	109	55% KKW 7% EBA 7% MW 3% EB Ib 28% undated	24% cups 11% storage jars 6% bowls 6% cooking pots 2% vat/krater 2% varia *(stands, andirons etc)* 50% unidentified
4502013	Room 6 accumulations near the 'oven' = kiln	-197.01 to -197.13	90	69% KKW 4% MW 4% EB Ib 2% EBA 20% undated	12% bowls 9% storage jars 7% cups 4% vat/krater 3% varia 2% cooking pots 1% pithoi 62% unidentified
4502012 and 4502013	Room 6 floor	-197.01 to -197.13	199	61% KKW 6% MW 5% EBA 4% EB Ib 24% undated	16% cups 10% storage jars 9% bowls 4% cooking pots 3% vat/krater 3% varia 55% unidentified

Locus/Loci	*Description*	*Elevation*	*Pottery*		
			Qty	*Periods*	*Types*
4502051	Room 6 accumulations on the pavement	NA	50	60% KKW 8% EBA 6% EB Ib 2% MW 2% local potter 22% undated	8% storage jars 6% cups 4% bowls 4% cooking pots 2% vat/krater 2% varia 74% unidentified
848, 853, 854, 862, 864, and 870	2007 excavations: Room 6 accumulations on floor	NA	40	70% KKW 25% local potter 5% undated	60% bowls 13% others 10% varia 5% jugs 5% vat/krater 4% pithoi 3% storage jars
821, 827, 832, 833, 834, 835, 836, 843, 844, 845, and 863	2007 excavations: Room 6 fill above the floor	NA	34	71% KKW 29% local potter	59% bowls 11% varia 9% vat/krater 9% others 6% cooking pots 6% storage jars

Table 4: Room 6 loci

Locus 4502012 consists of sherds found in the accumulations on and probably a bit above the pavement. Locus 4502013 consists of sherds from a similar context that were found next to the kiln. Due to their similar context and similar pottery reading results, they were analyzed together. The majority of the sherds in both loci was KKW (61%) and the major types were KKW cups and bowls (25%) and non-KKW storage jars (10%).

Locus 4502005 was defined as fill above the floor of Room 6 due to its elevation and the 2% of late material found in it. Its composition is similar to that of the lower loci, with

56% KKW and 18% bowls and cups but with a much larger percentage of non-KKW storage jars (21%) and some platter sherds (2%).

Based on the card index, several complete vessels found during the 1945/6 excavations, were located to the central area of the Circles Building. A KKW cylindrical jar found in basket 450200373 (square 15, elevation -196.30) was assigned to locus 4502034 (fill above central area of building, probably Room 2). A complete KKW bowl (numbered 450200314, see S. Paz 2006b: Fig 3.26:2) found in squares 4-14 (Room 6, elevation -196.90) was assigned to locus 4502005. A complete KKW bowl (numbered 450200538, see S. Paz 2006b: Fig. 3.26:3) found in square 15 (elevation -197.00) was assigned to locus 4502005. A complete KKW krater (numbered 450200254, S. Paz 2006b: Fig. 3.26:10) was found in square 15 “near the line of pavement”. Since its card does not specify an elevation, this krater was attributed to locus 4502051 based on the pavement reference (although this could be the pavement of the platform). Inside the kiln built in Room 6, two complete KKW vessels were found; a bowl (450202001, S. Paz 2006b: Fig. 3.26:1) and a stand (450202000, S. Paz 2006b: Fig. 3.27:9). Both were assigned to locus 4502013.

The pottery found during the 2007 season shows the same characteristics as that found in the earlier excavation (***Table 4***); the excavators identified an occupation layer on the pebble pavement and another layer, probably fill, above it. The composition of the pottery in both seems similar, with a majority of KKW (about 70%) and a minority (about 30%) of local pottery. The dominant type is bowls, consisting about 60% of the assemblage, and most of which are KKW. Other major types are varia (10%, all are KKW), which include many stands (some are very large), and vats and kraters (8%), some of which are sizeable. In spite of the predominance of KKW, some baskets consist of a majority of local non-

KKW pottery. These baskets could not be assigned a clear layer or area, and due to the small quantity of sherds found in them they may not be significant.

Interesting finds include two large KKW kraters found in locus SA 848, a local holemouth jar with a rich KKW-style burnish, and a very large partly restorable stand, whose sherds were found in locus SA 832 of Room 6 as well as locus SA 839 (which is assigned to higher layers on the platform). The dispersal of this stand between two loci hints that the KKW occupation of Room 6 and the top of the platform were contemporary. The complete vessels found in the 1945/6 excavations and assigned to fill layers L4502034 and 4502005 (above) may also be remains from the KKW occupation of the platform. These finds may suggest that there was no separating wall between the platform and Room 6 in the KKW phase of occupation.

Artefacts found in the courtyard during the 1945/6 excavations include two mace-heads, three flint blades and one worked bone, all in locus 4502012, and one fragment of a basalt ring in locus 4502013. Other items found in the area of the courtyard, but in less secure contexts are two grinding/hammer stones, one basalt stone ring and one flint blade. Artefacts found during the 2007 excavation include two stone artefacts and one pottery stopper in loci SA 870 and SA 848 (accumulations on the pebble floor), and one stone stopper in locus SA 836 (fill above the pebble floor).

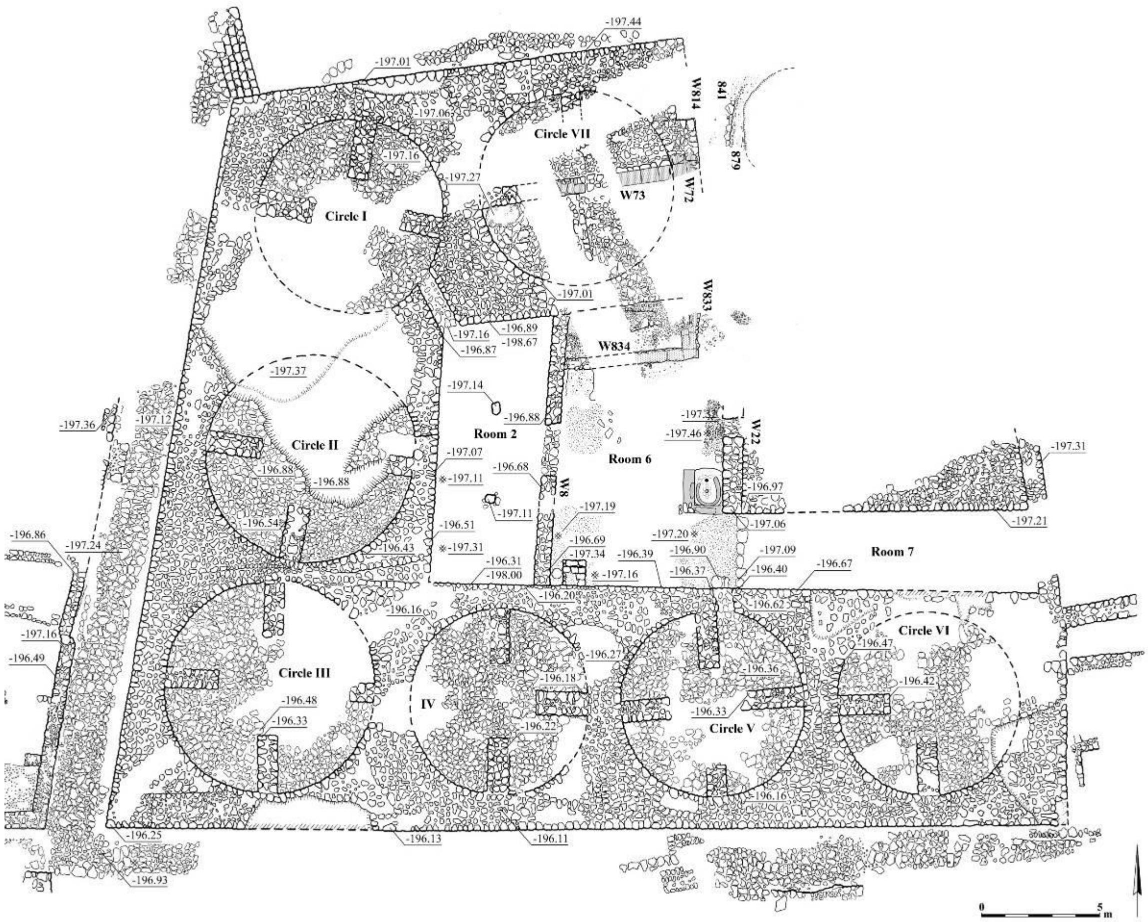

Figure 14: Updated plan of the Circles Building
(with feature numbers)

"Corridor" (Room 7)

The area east of Room 6 is bounded by the Circles Building platform to the south and by another structure, which was originally thought to be part of the platform, to the north. This area was thus termed the corridor or Room 7 (*Table **5***). During the 2007 it was found that the building does not have an eighth and ninth circle (see below), and therefore Room 7 is not a corridor in the building, but perhaps a part of an entrance structure.

Locus/Loci	*Description*	*Elevation*	*Pottery*		
			Qty	*Periods*	*Types*
4502035	Fill above floor	-197.00	66	30% KKW 27% EBA 14% Hellenistic and later 11% EB Ib 5% MW 3% EB III 3% local potter 7% undated	20% bowls 17% storage jars 6% cooking pots 6% vat/krater 5% jugs 4% platters 3% cups 3% varia 36% unidentified
4502016	Room 7 floor and accumulations above it	-197.30	58	33% EBA 22% EB Ib 21% MW 3% KKW 2% local potter 19% undated	36% storage jars 21% bowls 8% jugs 7% cooking pots 5% vat/krater 2% pithoi 21% unidentified
4502017	Room 7 under the floor (?)	-197.43 to -197.67	103	78% EBA 7% EB III 7% MW 2% KKW 2% Hellenistic and later 1% EB II 1% EB Ib 2% undated	35% bowls 16% cooking pots 8% storage jars 6% jugs 3% platters 2% vat/krater 30% unidentified

Table 5: Room 7 loci

Platforms and circles

The number of finds from the 1945/6 excavations that can be securely associated with a specific location on the platform or within the circles is not great. The loci assigned to this area and their breakdowns are shown in ***Table 6***.

A total of 340 sherds were found on the platform or within the circles during the 1945/6 excavations. Of these, 47% are KKW, and 9% are EB III or undated local tradition pottery. Major types are bowls (17%) and storage jars (15%). Types for 44% of the sherds found could not be identified. The various loci assigned to the platforms and circles exhibit similar assemblages, the only exception being locus 4502040 (finds from Circle II and its vicinity), which had a comparatively lower percentage of KKW (27%) and a higher percentage of local EB III material (14% EB III, and 7% local tradition sherds, which may be either EB II or EB III).

Artefacts found on the platform and which are from a secure context (locus 4502011) consist of four flint blades, three grinding/hammer stones, two stone vessels, two bronze objects and one limestone plate.

During the 2007 excavation, a small amount of indicative pottery was found in the vicinity of Circle VII (16 sherds). Even this small collection has a distribution similar to EB III assemblages from other areas, with 56% KKW and 75% bowls.

Locus/ Loci	*Description*	*Elevation*	*Pottery*		
			Qty	*Periods*	*Types*
4502011	Accumulations on Circles Building Platform (no specific position)	NA	17	Quantity is too small for analysis	
4502034	Fill above central area of Circles Building	-196.71 and above	19	Quantity is too small for analysis	
4502040	Accumulations on pavement of Circle II and around it	-196.10 to -196.53	104	37% EBA 27% KKW 14% EB III 7% local potter 6% MW 5% EB Ib 2% Hellenistic and later 2% undated	14% platters 14% storage jars 8% pithoi 7% varia 5% bowls 5% cooking pots 3% jugs 44% unidentified
4502041	Accumulations on pavement of Circle VII	NA	32	56% KKW 16% MW 6% local potter 6% Hellenistic and later 16% undated	28% bowls 16% storage jars 6% cooking pots 6% jugs 3% platters 3% varia 3% vat/krater 35% unidentified
4502042	Accumulations on pavement of Circle IV	Around -196.22	77	61% KKW 5% EB Ib 3% EBA 3% Hellenistic and later 28% undated	16% bowl 8% storage jars 6% cooking pots 5% varia 4% jug 1% vat/krater 60% unidentified
4502048	Accumulations on pavement of Circle III	-195.90 to -196.20	13	Quantity is too small for analysis	
4502047	Square 29 (SW of building), on the platform (?)	NA	78	60% KKW 10% MW 10% EB Ib 4% EBA 3% EB III 1% local potter 12% undated	24% bowls 22% storage jars 3% cooking pots 3% platters 2% vat/krater 1% varia 45% unidentified
All Platform	Accumulations on platform and circles	NA	340	47% KKW 16% EBA 6% MW 6% EB Ib 6% EB III 4% local potter 15% undated	17% bowls 15% storage jars 6% cooking pots 6% platters 4% varia 3% jugs 3% pithoi 2% vat/krater 44% unidentified

Table 6: Platform and circles loci

Circle VII

Circle VII was discovered during the 1945/6 excavations. Since it is sealed by the northwest corner of an Early Islamic bathhouse, only part of it was excavated. During the 2003 and 2007 seasons other sections of it, located under the bathhouse floors, were uncovered.

The lowest elevation reached was the original pavement of the circle. The material found on the floor (locus SA 758) consisted of worn EB III sherds, most of which were local ware, as well one small KKW sherd. The layer above it (locus SA 607) yielded no indicative pottery. The lowermost pavement dips towards the north, and this may be the reason for the addition of another layer of stones. This layer (dismantled as loci SA 606 and SA 605 in the south of the circle) seems to be thicker in the north of the circle and was laid in a rather haphazard fashion.

An east-west mudbrick wall, numbered W73, divides the circle into two parts. It was built on top of the upper pavement and had an opening in its centre, which was later blocked. Another stone and mudbrick wall, W72, was found on the eastern side of the circle; it is positioned on the platform and borders Circle VII. Three stone lined cavities were built into the upper floor. (SA 750, SA 739, and SA 756). They may have been post holes.

The layer above the upper pavement was excavated as loci SA 738, SA 823, SA 753 and SA 846. Finds from SA 753 include worn local potter's EB III sherds, no KKW, and a large quantity of flint production debris, including cores for production of ad-hoc tools.

The layers above Circle VII (SA 707, SA 729 and SA 747, north half of the circle) include large percentages of local EB III and KKW sherds and were identified as fill.

The layers above the platform to the south of Circle VII (SA 839, SA 842 and SA 749) were identified as fill. As mentioned above, fragments of the same stand were found in loci SA 839 and SA 832. The latter is situated in the small room at the north of the inner courtyard, just south of and below locus SA 839. Although these layers are fill, this may confirm the hypothesis that the activities on the platform and in the courtyard are contemporary. The occupation surface on the platform in this area was locus SA 846. It has one basket with local EB III pottery and with no KKW sherds.

The locus to the east of Circle VII is SA 810. It is a fill layer above wall W72, which contained a large percentage of KKW.

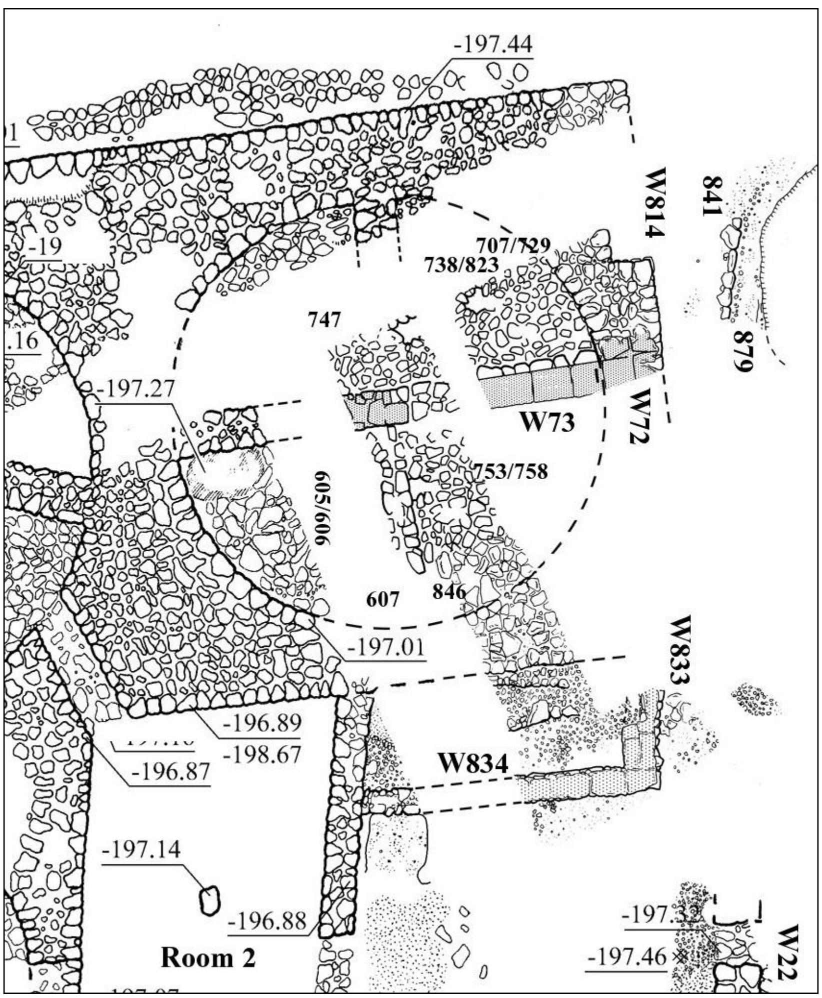

Figure 15: Circle VII loci

East side of the building

During the 2007 excavations, an attempt was made to find the reconstructed eighth circle in the northeast of the Circles Building. In order to do that, probes were dug in this area of the building, between the later-dating bath house remains. Circle VIII was not found; the northern platform of the building ends about 1.14 m from the eastern side of Circle VII with Wall 814. This wall forms a right-angled corner with the northern wall of the building. East of W814, two minor features were found (bounded on the east by a Hellenistic pit): W841 and pebble floor SA 879, both of flimsy construction (***Figure 14***). Floor SA 879 ascends from north to south and may have been a ramp built along the eastern façade of the building, leading to the paved courtyard. A wall or platform appears to have set apart the corridor, Room 7. Later intrusive activity and pitting prevent a more accurate analysis of this area.

The majority of pottery found in this area is KKW (74%), this in addition to 24% Local Potter's (LP) and 3% MW. The main type is bowls (68%), most of which are KKW. About 9% of the pottery found was storage jars and another 9% were vats/kraters. A meagre 6 sherds were found on floors or living surfaces (loci SA 879 and SA 856); half of them are KKW and the rest were produced in the local tradition.

The areas around the building

The paved streets around the Circles Building as well as the open area to the north yielded assemblages with a predominance of KKW pottery. Bowls and storage jars are relatively prominent in the repertoire although, unlike the typical KKW assemblage composition, their percentages usually do not exceed the 15% mark (*Table **7***).

Locus/Loci	*Description*	*Elevation*	*Pottery*		
			Qty	*Periods*	*Types*
4502003	Accumulations on the south street	NA	164	45% EBA 31% KKW 10% MW 7% EB Ib 5% EB III 1% EB II 1% Hellenistic	18% storage jars 10% bowls 10% jugs 3% cooking pots 3% pithoi 2% vat/krater 1% platter 1% varia 52% unidentified
4502024	Fill above the west street	-195.80 to -196.04	328	57% KKW 7% EBA 7% MW 7% Hellenistic and later 3% local potter 3% EB Ib 1% EB III 15% undated	19% cups 14% bowls 11% storage jars 7% vat/krater 4% cooking pots 2% jugs 2% varia 1% platters 40% unidentified
4502008	Fill above the west street	-196.10 to -196.50	313	71% KKW 17% EBA 5% MW 1% local potter 1% EB Ib 1% EB III 4% undated	11% bowls 8% storage jars 6% cooking pots 3% varia 1% jugs 1% platters 1% vat/krater 69% unidentified
4502002	Accumulations above the west street	-196.50 to -196.79	679	53% KKW 13% EBA 6% MW 4% EB Ib 3% local potter 3% Hellenistic and later 1% EB III 1% EB II 16% undated	13% bowls 12% storage jars 8% cups 7% cooking pots 3% platters 3% vat/krater 2% varia 1% jugs 51% unidentified
4502001	Layers north of the Circles Building	-197.27 to -197.40	433	55% KKW 13% EBA 11% EB Ib 6% MW 1% EB III 1% local potter 13% undated	17% storage jars 13% bowls 5% cooking pots 3% cups 2% platters 2% varia 2% vat/krater 1% pithoi 55% unidentified
4502010	Layers north of the Circles Building	-197.40 to -198.04	323	75% KKW 4% MW 4% EB Ib 3% EBA 1% EB II/III 13% undated	15% cups 14% bowls 9% storage jars 3% vat/krater 2% varia 2% cooking pots 1% platters 54% unidentified

Table 7: Loci around the building

A complete KKW bowl, numbered 45020427 (S. Paz 2006b: Fig. 3.26:4) was found in locus 4502038, which is defined as fill above the area north to the Circles Building. No elevation was registered (this locus does not appear in the table above since its provenance is doubtful).

The 'Plaza'

The area north of the Circles Building was partially excavated by the 1945-6 expedition (Maisler et al. 1952; S. Paz 2006b) and the Guy – Bar-Adon teams (Guy 1951; Y. Paz 2006c). The earlier excavations identified 'the north street', approached by a stairway from the higher western street. Finds here included a clay ring with two attached bull heads (Maisler et al. 1952; S. Paz 2006b: Fig. 3.30). During the Guy – Bar-Adon excavations, a sounding beneath the Early Islamic citadel revealed, amongst other things, a nearly complete andiron, two complete KKW stands and a non-KKW mother and child figurine. Y. Paz suggested that these finds, along with the clay bull heads ring, could indicate cultic activity (Y. Paz 2006c).

In the renewed excavations of 2009-2013, it was found that the area north of the Circles Building does not in fact contain a stone-paved street, but a large open area (Greenberg et al. 2014). The basal layer of this open court consists of a yellow, compact, hard and well sorted sediment. This surface is delimited by Wall 207 on the east, Wall 273 on the north, and another numberless wall on the west reconstructed on the basis of several short sections exposed in trenches excavated by Bar-Adon. This open area or 'Plaza' is reconstructed as a five-sided polygon, its sides measuring 18.4, 7.0, 20.7, 18.5 and 20.3 m. So far, 118 sq m of its reconstructed total area of 467 sq m (25%) have been excavated (***Figure 16***).

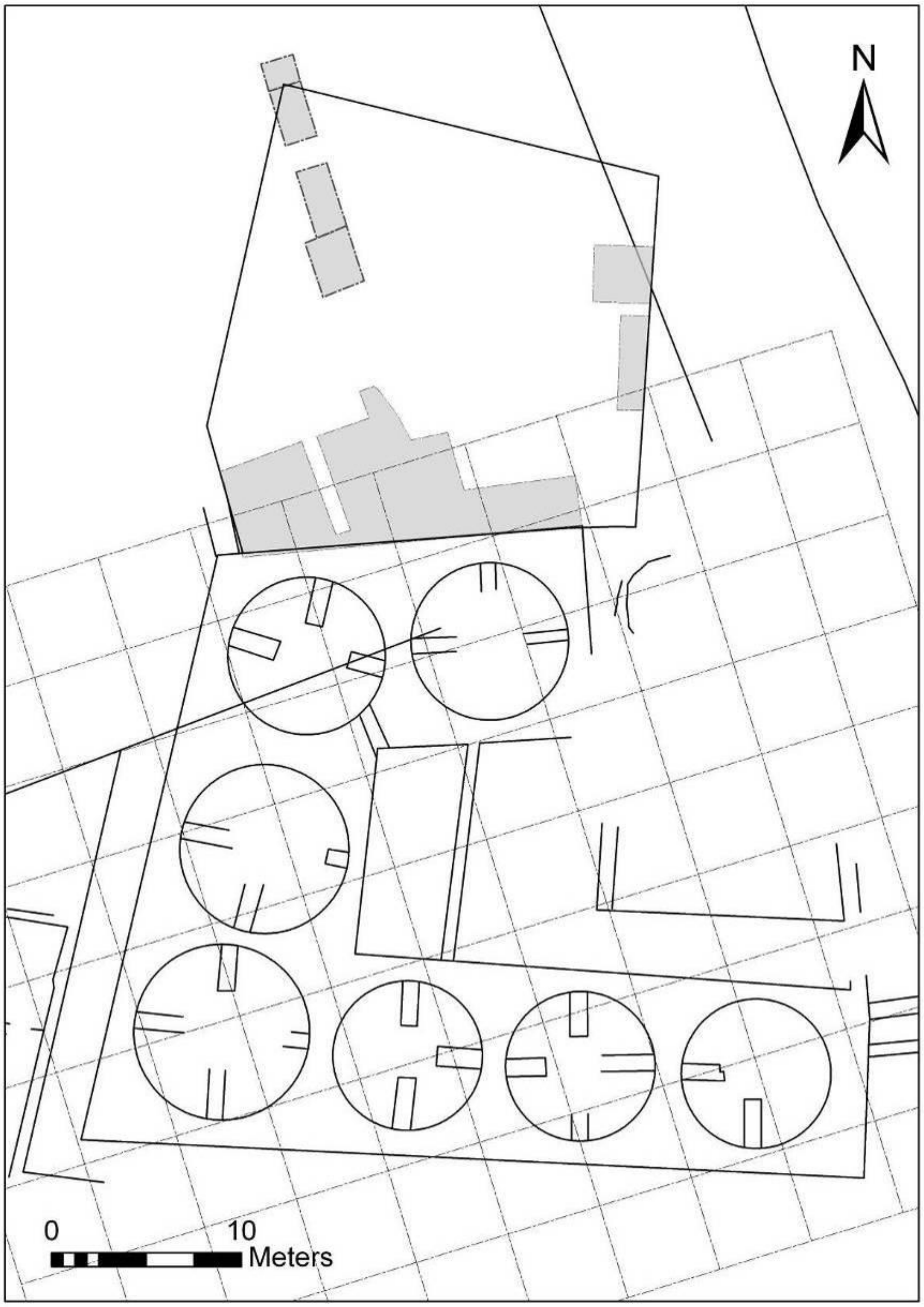

Figure 16: Reconstruction of the plaza
(excavated areas are greyed)

Above the basal surface were several phases of accumulation composed of layers of grey ashy or sandy sediment, bones, thin layers of a hard yellow sediment, and flat-lying pottery sherds. Most of the pottery in these accumulations is KKW which dates them to the EB III. The accumulations were deposited unevenly, testifying to various activities carried out in the plaza. They include well-trampled areas indicating pedestrian traffic, while some of the finds, especially the cattle bones, seem to be large primary midden deposits or areas that were only used in certain circumstances or during certain dates (Greenberg et al. 2014).

The pottery recovered from layers right beneath the plaza consists of a majority of EB I sherds. This allows us to conclude that the plaza was built in a similar manner to the Circles Building, with a removal of EB II layers prior to its construction.[21]

Another type of find abundant on the plaza surface is fragmented mace-heads. A total of 40 mace-head fragments were found in this area and another was recorded as a surface find (see ***Figure 19*** for a distribution map). No complete mace-heads were found in this area and very few fragments could be refitted, so the minimum number of artefacts appears to be close to 40 as well. The vertical distribution of all the mace-heads found in the area of the plaza (40 with known elevations) has a prominent peak at -198.40 to -198.30 m, where 33% of them were found. 75% of the mace-heads were found between -198.50 and -198.10 (***Figure 17***). This conforms to the lower elevations of the floors and surfaces identified during the excavation (e.g., Greenberg et al. 2014: Fig. 5).

[21] The 2015 excavations could support an EB II origin for the plaza.

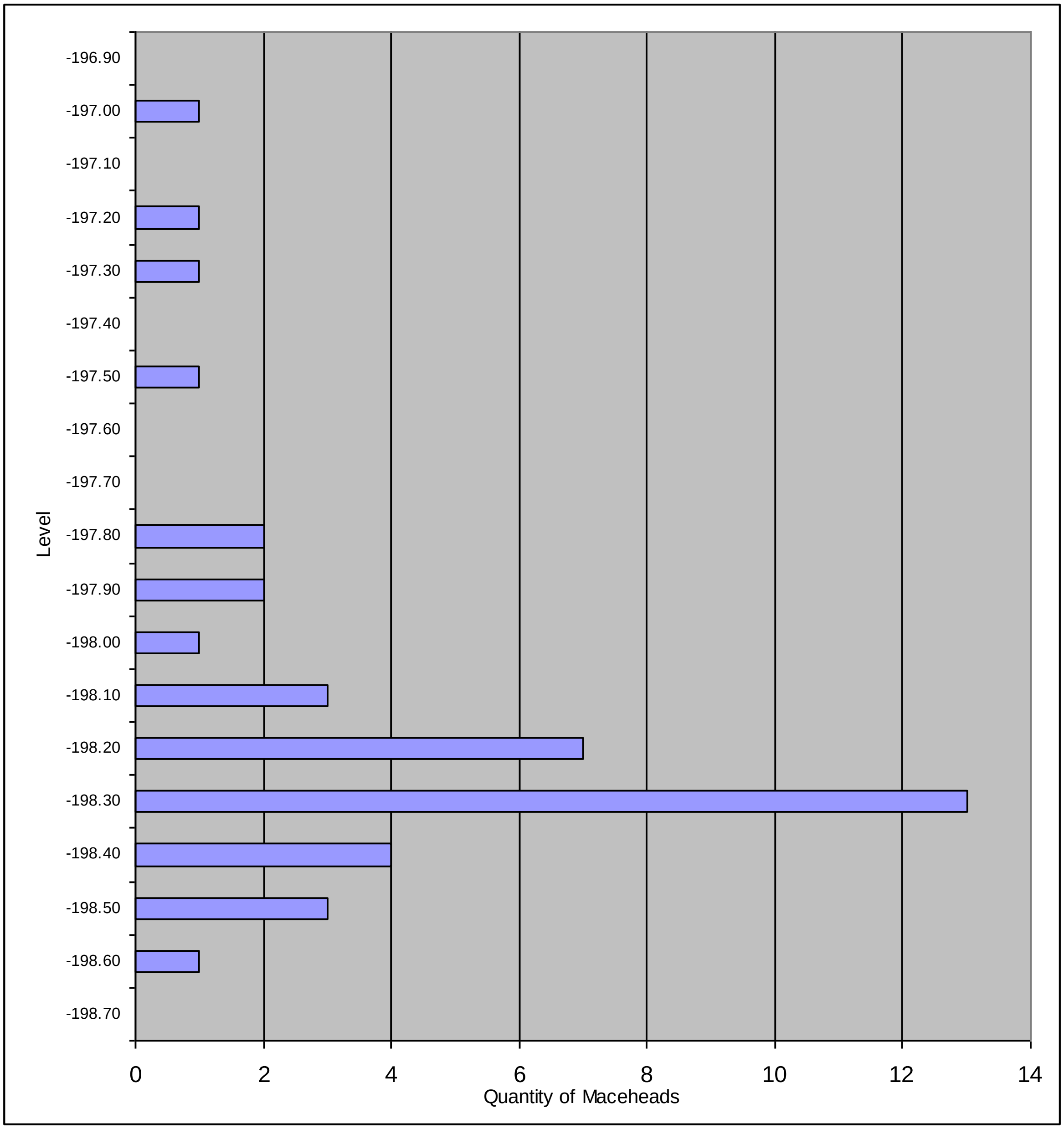

Figure 17: Vertical distribution of mace-heads in the plaza

Spatial analysis

The provenance of artefacts throughout the various excavations was determined using several methods, the method(s) used being dependent upon excavation documentation.[22] The large artefact database allows plotting of the spatial distribution of artefacts in the building and its environs. Many of these distributions represent activity associated with the KKW users, and while involving a secondary use of the building, may nonetheless provide some indication of earlier functions and use of the building.

The most remarkable spatial distribution pattern is that of the mace-heads (or rather, mace-head fragments) (***Figure 19***). No mace-heads were found on the platform while a few mace-heads were found in the inner courtyard (Room 6), in the entrance to Room 7, and in the west and south streets, and a large number of mace-heads (most of them broken) were found in the open area north of the Circles Building – the 'Plaza'. A total of 41 mace-heads and mace-head fragments were found in and near the Circles Building, most of them were found in the Plaza. This phenomenon will be discussed at length below.

Other distribution patterns that could be identified are the distribution of stone rings and the distribution of grinding and hammer stones. The stone rings, which may be part of a digging stick (an ancient form of a pickaxe) may be connected with digging activity and procurement of mud or clay. Four stone rings were found, all of them inside Rooms 6 and 7 of the building. This pattern may be connected with the possible pottery kiln and workshop found in Room 6.

[22] The provenance of artefacts found in the recent excavation could be accurately drawn, while those of the 1945/6 excavation were marked in the centre of the area specified in the text. The location of 20 (out of 214) artefacts from the 1945/6 excavation could not be determined.

Grinding and hammer stones were mainly found in the east and south parts of the building, both on the platform and in the inner areas. This may be connected with domestic activities or with raw material preparation for the above mentioned Room 6 pottery kiln and workshop. None were attributable to the primary use phase.

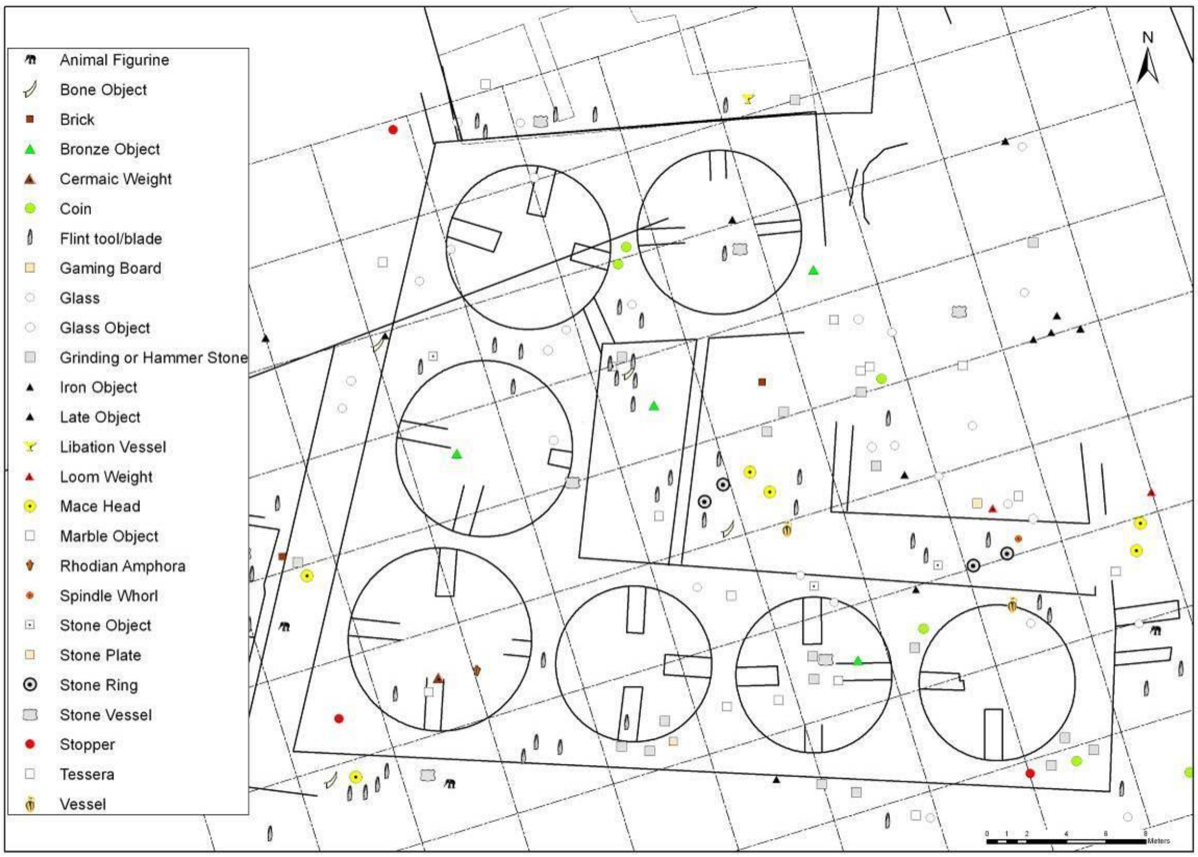

Figure 18: Artefact distribution (1945/6)

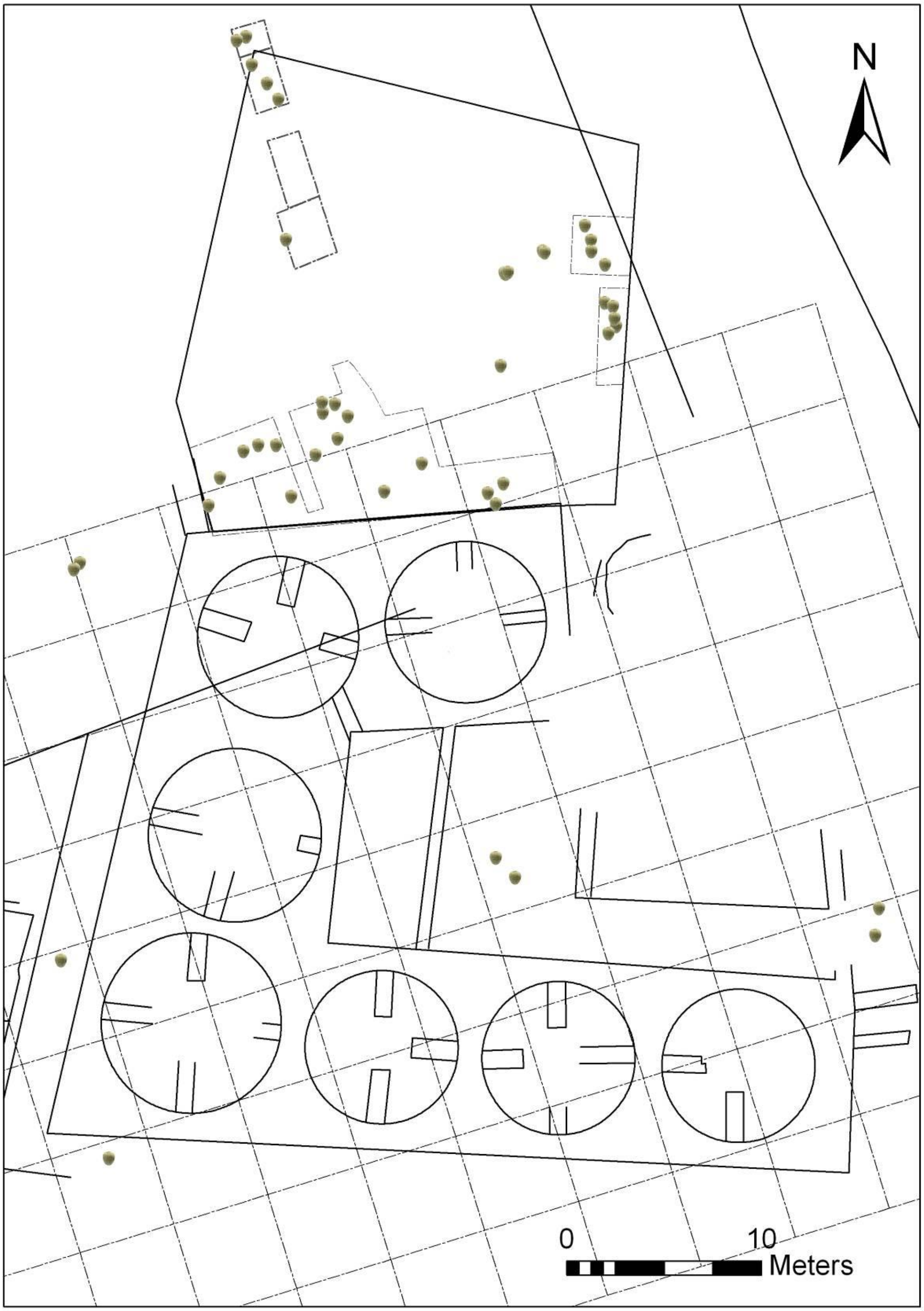

Figure 19: Mace-head distribution (1945-2013)

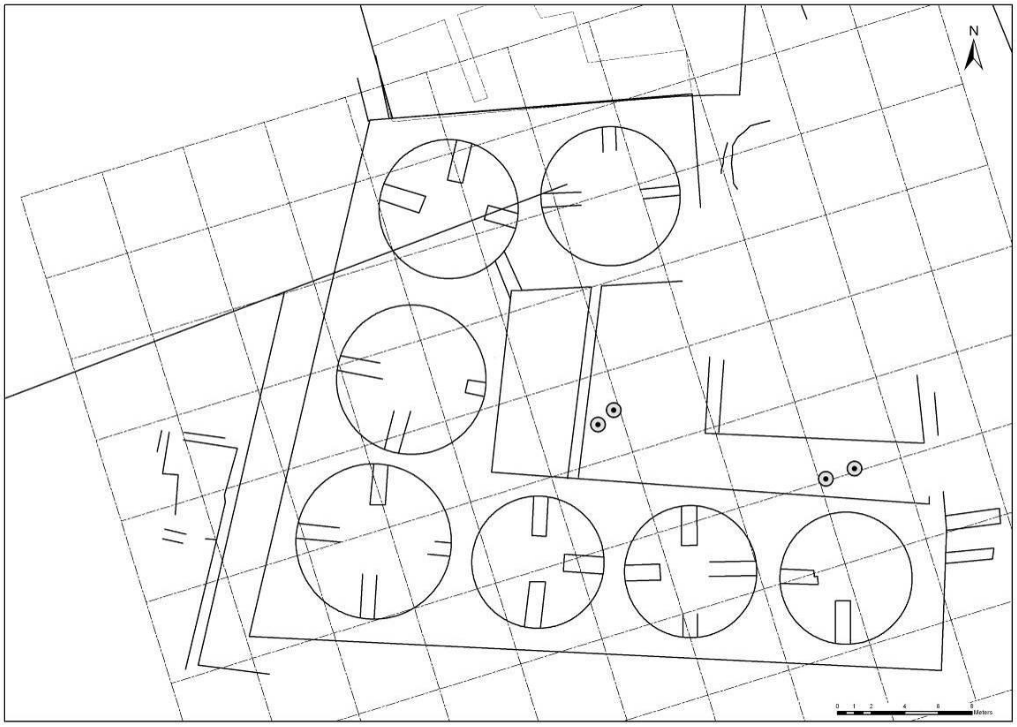

Figure 20: Stone ring distribution

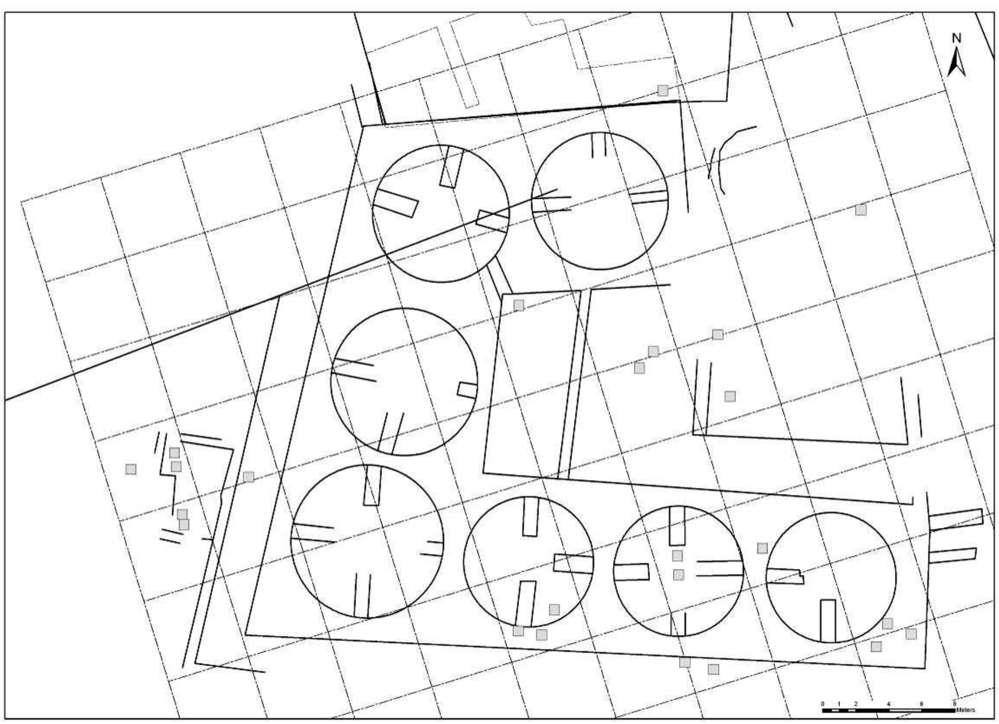

Figure 21: Grinding and hammer stone distribution

The stone rings and grinding and hammer-stones are probably remains from the secondary use of the building by the KKW-users. The presence of grinding stones on the south platform may indicate that there was no superstructure on the south end of the building when this activity took place. The large quantity of mace-head fragments in the plaza should probably be attributed to activity that took place before the arrival of the KKW people (see discussion in chapter 4.3).

Planning and metrology

Site planning

As mentioned above, planning of the TBY streets and layout had already begun during Period C (EB II). The Circles Building, built sometime at the beginning of the EB III, was worked into the existing Period C grid of domestic dwellings, most of which were removed and levelled prior to sinking the building's foundations (Greenberg and Paz 2006b, 2011, 2014; S. Paz 2010). The Circles Building and the plaza (assuming it is coeval with the building) provide the only evidence for EB III planning at the north of the mound; the majority of EB III planning activity was conducted either in the south of the mound or near the late EB III fortification wall, Wall C (Greenberg and Paz 2014).

Architecture, design and metrology

Standardized measurements are abstract terms – they are a simplification that does not necessarily give us an understandable quantification of the task in hand. The walking distance through a varied terrain measured in kilometres is less informative then human-related measurements like 'three cigarettes' or 'three rice cookings'. The same applies to land – knowing its area in acres does not provide the farmer with vital information like the quality of the soil, the amount of work needed in order to cultivate it, the quality of crops yielded from this plot, or the productivity of the area (Scott 1998: 25-27). Although today standard measurements seem to be 'natural' and to aim for objective accuracy, they are a political and subjective action (Scott 1998: 27-29), formed in order to control populations, holdings, harvests and wealth, and to achieve goals like tax collecting (Scott 1998: 24-27).

Ancient measurements were usually connected to the human body, based either on some physical part of the body like the palm, span, or cubit, or on some type of human activity such as with the basket-load or stone's throw (Miroschedji 2001; Scott 1998: 25).

The extent of the use of standard measurements may provide some indication of the complexity of ancient societies, where extensive usage of them may demonstrate a high level of social and institutional control. Limited use of standard measurements may indicate a lesser level of control or a primary stage of institutional control. Following de Miroschedji's work on the metrology of Yarmuth Palace B (Miroschedji 2001), I will examine the possibility that the planners and builders of the TBY Circles Building used standard measurements.

Technology

Simple dwellings were built using simple well-tried techniques and technology. When building monumental buildings and complexes, this technology was not enough, and therefore design and elaborate plans were needed (Miroschedji 2001; Yakar 2000: 136-64).

Miroschedji suggested that with the use of moulded standardized bricks builders became accustomed to some sort of planned construction. With proper planning, the number of bricks needed for a wall could be calculated in advance. Plans with 1:1 scale could be drawn on the ground or, using a smaller scale, on a tablet or papyrus. Monumental buildings necessitated a more advanced planning of size and quantity, an accurate placing of walls. and a technology of building with right angles. These buildings necessitated the employment of a new kind of specialist – the architect (Miroschedji 2001).

Various units of measure were employed in antiquity, but most attested measures post-date the Early Bronze Age (Miroschedji 2001: 467). Earlier uses of units of measure have been looked for in various places using a range of methods. Kubba laid several grids with different sizes on the plans of Ubaid buildings dated to the 5th millennium and suggested that the most appropriate grid was based on a unit of 0.72 m. This unit of measure may have been used during the 4th millennium BC at Yahya IVC in eastern Iran (Kubba 1990) and at the (almost) contemporary site of Habuba Kabira. This 0.72 m unit of measure is close to the 0.75 m Sumerian *kus-gal* or the 'large cubit' (Beale and Carter 1983). Other researchers found different units of measure at Habuba Kabira. The sizes were 24.77 m, 31.45 m (Kohlmeyer 1996), 0.62 m, and 0.75 m (H. T. Wright 2001). As described above (in chapter 2.1.4), using a grid method, Miroschedji has made a convincing case for the use of an 'Egyptian cubit' (0.52 or 0.525 m) in the Yarmuth Palace B1 and possibly at other sites such as Megiddo and Ai (Miroschedji 2001).

Other historical units of measure are the 0.3 m Sumerian foot, the 0.45 m 'short' cubit, created according to the distance from the elbow to the tip of the middle finger, the ca. 0.5 m 'regular' cubit (Miroschedji 2001; Powell 1992: 897), the long/royal/builders Egyptian cubit of ca. 0.525 m and the Babylonian *ammat arê*, which may be translated as the "cubit of the pace" and was approximately 0.75 m. The latter measured almost the same as the 0.74 m Greek *bēma*. Most of these units of measure were used both in Mesopotamia and Egypt and were standardized between ca. 2700 and 2200 BCE (Miroschedji 2001; Powell 1992). Cubits have subdivisions as well: two spans equal one cubit, and a palm is one sixth of a short cubit or one seventh of the royal cubit. One palm equals ca. 0.075 m or 4 fingers (Miroschedji 2001; Powell 1992). Larger units of measure were also in use, e.g., the

Pharaonic land measure which was based on 10 cubits, or the Biblical reed (*qnh*) which has derived from Mesopotamian origins and measured 6 cubits (Powell 1992). The above units of measure will be examined, below, against the measurements of the Bet Yerah Circles Building.

Circles Building metrology

Miroschedji was not able to demonstrate the use of a standard measure for TBY on account of the asymmetry of the building. In order to overcome this asymmetry, and in light of the strong evidence for planning in the construction of Circle Building (e.g., Greenberg and Paz 2006b), I have employed an alternative to the 'grid' method in order to identify the use of standard units of measurement. To this end, measures of parts in the building were taken either on site or by measuring the geo-referenced building plan in ArcGIS. The measurements considered were only those that were not limited by external factors like the city grid, earlier street layout, and the size and shape of the plot (For this reason the outer measurements of the building were not considered). These include circle radii, partition length and breadth, and additional elements that could be assumed to be independent of external factors. The 63 resulting measurements (see ***Table 19***) were compared against potential units of measure in order to identify those that were used in the planning and construction of the building. In order to cover all possible units of measure, including unknown ones, all measures from 0.23 m to 1.34 m, in 1 cm increments, were considered. Known units of measure not in this range, like 0.075 m (palm), 0.225 m (span), 0.2625 m (half Egyptian royal cubit) and 0.525 m (royal cubit) were tested as well.

Each unit of measure was tested against the actual measurements of the building according to the calculations presented in Appendix 6.16.2. The outcome of these calculations is a series of absolute gaps between each actual measurement of the building and the closest multiplication of the tested unit of measure. The next step was to identify the units of measure that stood out as having the lowest normalized average of gaps (henceforth *NorAVG*), the lowest normalized standard deviation of gaps (henceforth *NorSTD*), and the lowest number of gaps which were larger than 15% of the unit of measure (henceforth *Gaps15%*). If the builders of the Circles Building used a standard unit of measure, it should be the one returning the lowest figures for all these parameters. The following chart (***Figure 22***) and table (***Table 8***) summarize these units of measure.[23]

Looking at the chart, three dips can be discerned; 0.29/0.30 m, 0.45 m and 0.76/0.77 m. These stand out because their values are the lowest when comparing them to their immediate neighbours. Based on the chart, it seems the larger the unit of measure, the lower the return for all parameters. This can be clearly seen in the table, where the lowest three figures in every column were highlighted; here, the unit of measure that stands out is 0.77 m. Interestingly enough, the three measures with the lowest dips conform with, or are close to three known units of measure: the Sumerian foot (0.30 m), the small cubit (0.45 m) and the Sumerian/Babylonian cubit of the pace (0.75 m).[24]

[23] See Appendix 1.1.16.2.1 for a spreadsheet with all figures, units of measure and results of the statistical tests.

[24] The sum of the smaller two measurements of the Circles Building does not precisely equal the third. This precludes the possibility that the third stands out just because it is a sum of the two smaller ones.

Unit of Measure	NorAVG	NorSTD	Gaps15%	U/M Name
0.290	19.5%	24.1%	28	
0.300	19.1%	23.4%	36	Sumerian Foot
0.450	17.6%	22.2%	33	Small Cubit
0.460	18.4%	23.4%	33	
0.750	18.2%	18.4%	37	Sumerian/Babylonian Cubit of the pace
0.760	15.9%	**16.2%**	29	
0.770	**14.1%**	**17.2%**	**24**	
0.780	**14.3%**	**17.8%**	28	
0.790	**15.0%**	19.3%	**24**	
0.800	15.6%	20.3%	**21**	
0.810	15.5%	20.2%	**25**	
0.820	15.8%	20.5%	**24**	
0.830	16.8%	21.3%	28	
0.840	18.7%	22.7%	33	

Table 8: Units of measure with lowest parameters

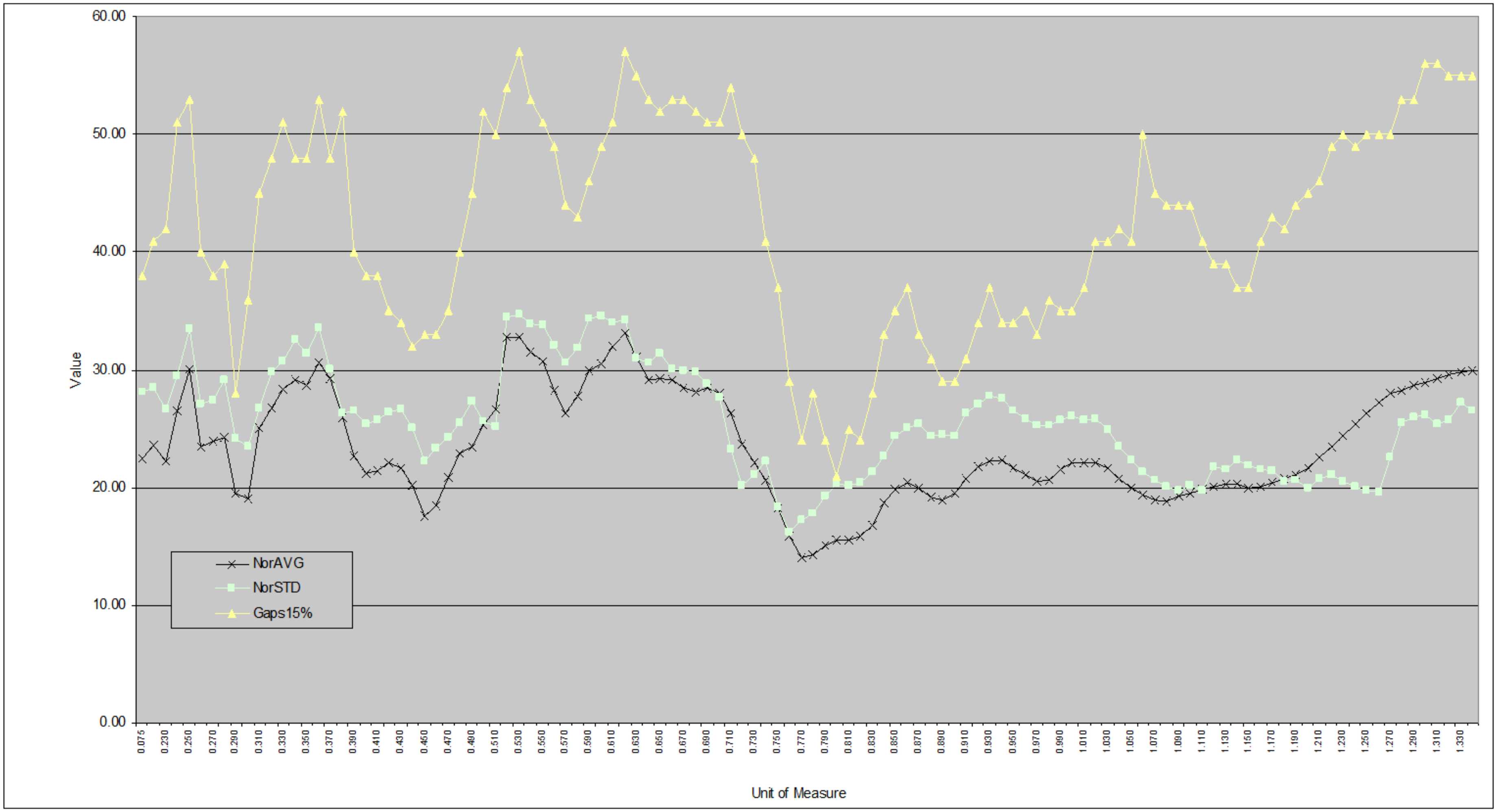

Figure 22: Normalized data chart of the Circles Building measurements

In order to check and validate the statistical relevance of this study, a statistical analysis was completed. (a detailed description of the process can be found in Appendix 6.2.2.) First, an ANOVA test was performed on all the figures shown above. This statistical test checks a null hypothesis arguing that all sets of unit of measure vs. measurements (i.e. the sets of the above mentioned parameters like *NorAVG* and *NorSTD*) are not significantly different. The results of this test rejected the null hypothesis with a probability reaching 100%. This figure means that there is significant variance or variances among the sets, but it does not specify which sets are not statistically equal. In order to do so, a paired T-Test was utilized. This statistical test examines the null hypothesis that two groups of repeated measurements are equal and the differences between them are random. The alternative hypothesis is that they are statistically different. Every probable unit of measure was tested against the others.

The results of the T-Test show that the 0.77 m to 0.83 m units of measure are significantly different from other units of measure, but are not significantly different among themselves. The 0.45 m unit of measure is statistically different from 0.47 m and above, and only from 0.30 m and below. The 0.29 m and 0.30 m units of measure show a similar pattern – they are statistically different from 0.31 m and above, and are not different from the units of measure below them, down to the limit of 0.225 m (the smallest unit of measure tested, aside from the palm unit measure, measuring 0.075 m).

The results of the T-Test strengthen the validity of the longer units of measure as the measure used for the construction of the building. The fact that the statistical data lumps together 0.77 m to 0.83 m may not be significant if we take into account ancient technology and low precision standards during the construction.

Although the other possible units of measure (0.45 m and 0.30 m), did show a lower statistical significance, the fact they are known from historical records may allow us to argue that their appearance is not random and there is a possibility that all three units of measure were used during the construction of the building. The smaller units' lower statistical significance may result from them being used less frequently, therefore having smaller populations.

Checking the four possible units of measure found above against the measurements of the Circles Building allows us to draw some conclusions regarding the way this building was built (a detailed list of the measurements vs. the possible units of measure appears in ***Table 19***). It seems that the width of the partitions inside the circles were drawn using the 0.77 m cubit of the pace, as the width of all of them is roughly 1 cubit of the pace, and their length is around 5 cubits of the pace. This cubit was also utilized for the planning other large sections of the building and its products appear in measurements of Room 2, Room 6, Room 7 and the platforms.

The radii of the circles were either nine short 0.45 m cubits or fourteen Sumerian feet (Circles I and VII), ten short 0.45 m cubits (circles II and III), or thirteen Sumerian 0.3 m feet (circles IV, V, and VI). Each of these groups of circles are positioned together on a different platform. It seems that the only other place where the 0.3 m Sumerian foot was utilized was for the width of W8 (exactly 2 Sumerian feet). In some cases the measurement of a section is not an exact product of one of the cubits. This may be a testimony of available technology standards of construction.

A test – the metrology of the TBY fortifications

In order to analyze the extent to which standard units of measure were used at TBY and to test the results found while working on the metrology of the Circles Building, similar tests were performed on the TBY fortifications. These fortifications were excavated during the 1950s (Greenberg and Paz 2005; Y. Paz and Greenberg 2006) and can barely be seen nor measured today. Therefore, their measurements were taken from the excavator's log and the contemporary plans. Wall sections and segments, wall widths, widths and lengths of square towers, as well as internal and external radii of round towers were all measured and analysed by means of the same method used for analysing the Circles Building measurements. As can be seen in *Figure 23*, no unit of measure stands out, as the normalized average and standard deviation are close to each other and the number of gaps larger than 15% is very high at about 60 out of 87 measurements. This shows that the fortifications were not built using a standard unit or units of measure. The same phenomenon was discerned by Miroschedji at Tel Yarmuth (Miroschedji 2001), although recent analysis may suggest otherwise (de Miroschedji, P. pers. com.)

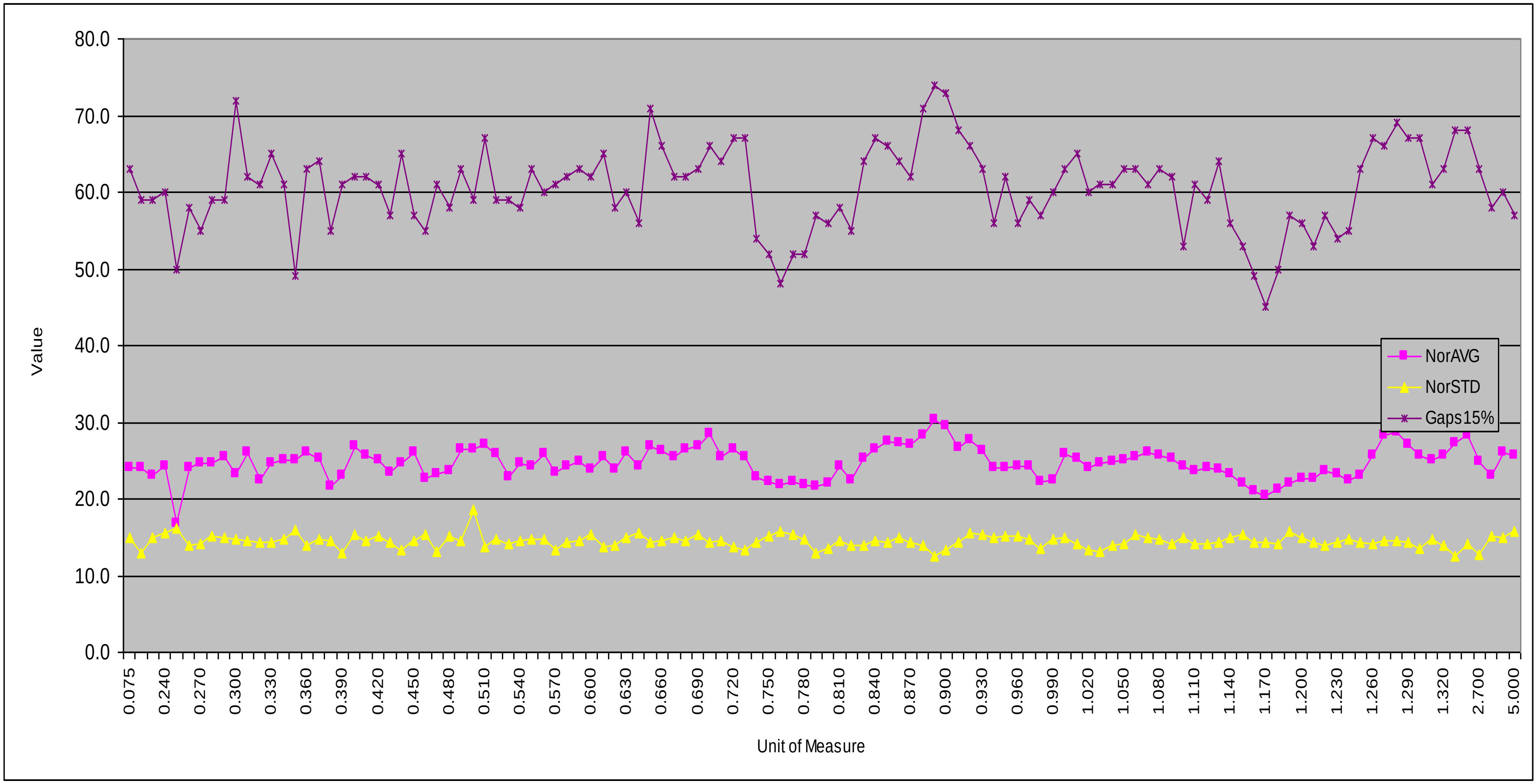

Figure 23: Normalized data chart of the fortifications measurements

Social cost

Having established that the structure was built early in EB III, using a fair degree of planning, the following section estimates the social cost and impact of the construction of the Circles Building. It deals with the quantifiable cost in order to compare it to other communal projects, either at TBY or other sites. The cost estimations are based on the reconstructed plan of the building regardless of whether it was actually completed, since our principal concern is to assess the resources and commitment needed for construction. Several variables need to be calculated or estimated in order to reach a plausible cost estimate. The variables are:

- The amount of raw material needed for the construction in terms of stones, mortar and mudbricks. This is based on the extent of the visible remains, an estimate of the depth of the foundations, and a reconstructed superstructure.
- How much labour is needed to prepare for construction (e.g., levelling, filling, razing of older building, and digging foundation trenches), for procurement and transportation of building material, and for the construction of the building itself.

The above variables lead to a labour cost estimate measured in workdays. The social cost is the effort these workdays will have on the population contributing them. The way to assess social cost is to assess the availability of workers for the project (i.e. population size and the amount of workdays this population could or should have contributed towards the project) under various scenarios.

Raw material

As described above, the building was built as a “casemate frame” sunk into the previous layers, thus having earth fill between its foundations. The circles were built with deep foundations around their perimeter and a cobblestone pavement laid over an earthen fill. The height of the stone platforms, including their foundations, is about 1.7 m (S. Paz 2006b: 60, 80). The casemate ‘walls’ may have been wide (as can be seen in S. Paz 2006b: Fig 3.3), leaving little space between the platforms’ frames and the circles’ perimeter walls. Based on this, the following calculations treat the building as having a solid stone foundation except for the area beneath the circles.

Based on the new excavations and analysis, the total area of the platforms and internal walls, less that of the circles themselves, comes to 378.1 sq m. Multiplied by an average height of 1.7 m, to which we may add the area of the circles multiplied by 0.5 m (maximum thickness of the circles’ pavement), we obtain a volume of 835.7 cu m of basalt stones (detailed calculations appear in Appendix 6.3).

Since the height of the mudbrick superstructure is debatable, an arbitrary average height of 2 m was chosen. This was extended over the circles as well, in order to compensate for the unknown quantities and workload involved in building their domed superstructure. This leads to a volume of about 1507 cu m of mudbrick.

Labour

Charles J. Erasmus' (1965) experimental work is foundational in estimating labour costs required for ancient stone constructions. Using a five-hour workday as the basis for estimating "voluntary and semi-festive labor" in a warm Mesoamerican climate (which may be applicable in the Middle East as well), Erasmus found that each cubic metre of stone fill (weighing about 1500 kg) will require one man-day for quarrying, three man-days for carrying the stones over a 750 m long road, half a man-day for preparing and laying the mortar, and two to four man-days for crude laying of the stones (i.e. the construction). These calculations add up to 6.5 to 8.5 workdays. I used the average figure of 7.5 workdays per cubic metre, or 0.13 cu m of stone per man per day (for quarrying, transportation, and construction).

A number of additional estimates been generated for construction projects in West and East Asia using ethnographic and experimental data, and have reached generally comparable results (Abrams 1989; Abrams and Bolland 1999; Helms 1981: 253; Mizrachi 1992: 202-07; Shelach et al. 2011). These estimates consider the weight of the raw material as well as the distance and elevation differences between the quarry and the building site. Among these, the outlying calculations of Helms are worth pointing out, in which, based on his experience in Jawa, Jordan, he argued for 0.27 cu m per man-day for small scale basalt buildings, 0.15 cu m per workday for basalt lower town fortifications, and 0.07 cu m per workday for upper town basalt fortifications (Helms 1981: 253). Shelach et al. suggested that doubling the transportation distance from 500 m to 1000 m would decrease the volume built in one man-day from 0.28 cu m to 0.17 cu m (Shelach et al. 2011).

Burke (2008) calculated an average of 1.8 cu m of mudbricks produced by a worker per day, and 0.9 cu m of mudbrick walling per day including both production and laying of the bricks. Burke's assumptions are based on labour requirements for the construction of the Nimrud expedition house during the mid-20th century (Mallowan 1966: 52-53).

Table 9 presents a summary of estimates for the construction of the Circles Building construction, based on the estimates and calculations presented above. A detailed analysis of these calculations appears in Appendix 6.3. The constants for the calculations are the volume of the stone foundation (835.7 cu m, as discussed above), and the labourer-days needed for the construction of the superstructure (volume of 1,507 cu m/0.9 cu m per workday=1674 workdays).

Reference	*Cu. m per man-day*		*Foundations workdays*		*Super-structure workdays*	*Total workdays needed*	
	Min.	*Max.*	*Min.*	*Max.*		*Min.*	*Max.*
(Erasmus 1965)	0.13	0.13	6,268	6,268	1,674	7,942	7,942
(Mizrachi 1992)	0.09	0.15	5,745	9,676	1,674	7,419	11,350
(Shelach et al. 2011)	0.17	0.28	2,988	4,805	1,674	4,662	6,479
(Helms 1981)	0.07	0.27	3,116	11,491	1,674	4,790	13,165
Average			4,529	8,060	1,674	6,203	9,734

Table 9: Circles Building labour costs

Based the on labour cost studies referenced above, estimates range from 4,662 to 13,165 man-days needed for the construction of the Circles Building, including its mudbrick superstructure. However, the higher figure, which is derived from Helms' assumptions on the construction of acropolis fortifications, does not apply to the Circles Building and the low acropolis of TBY.[25] Moreover, if the platform walls were significantly narrower than estimated, thereby making the platforms true casemate frames, the actual figures could have been much lower[26].

Population size

The next step in assessing the resources and commitment needed for the Circles Building project is to compare the workdays estimation to the available workdays at TBY, calculated as a function of the population size.

There is a plethora of methods and coefficients for the calculation of ancient population size, but the most workable ones are those based on settlement area, number of houses or dwelling floor area (Wilson 2011). One of the most commonly cited formulas is Naroll's constant, which calculates the population of a site as the dwelling floor area in square metres multiplied by 0.1 (Naroll 1962). This method can be used with fully excavated sites only and therefore researchers usually calculate population size according to site area. The latter method gives only a maximal estimation since sites were not usually fully populated for the entirety of a period (Renfrew 1972: 249-51).

Coefficients based on site area are usually calculated on the basis of contemporary examples of traditional settlements or on similar societies, and vary between 200 people per hectare in the Aegean Neolithic (Renfrew 1972: 249-51), 300 people per hectare in the

[25] Calculations were based on cubic metres per workday. Conversions between cu m/workday and ton/workday were based on 1 cu m basalt = 2.2 tons, except for in the case of Erasmus, who defined 1 cu m of stones as 1.5 tons.

[26] If 50% of the foundation of the Circles Building was empty, then the volume of the foundations should have been about 514 cu m, which is about 60% of the figure used above (see appendix 6.3).

Aegean Bronze Age (Renfrew 1972: 249-51), 250 people per hectare in the EB II-III (Broshi and Gophna 1984), 200-250 people per hectare in EB II Arad (Marfoe 1980), a square root of site area in hectares, multiplied by 146 (Hassan 1981: 63-77), or a figure between 100-250 in antiquity and specifically 200 people per hectare for EBA Tel Bet Yerah (Mazar 2001).

A coefficient of 200 people per hectare was chosen for TBY. This appears to be the preferred figure among the scholars cited above and seems a reasonable figure that can be used as an estimate for the population of TBY during the EB III. Due to abandoned areas found inside the settlement during the EB III (Greenberg and Paz 2014), this estimate should be treated as a maximal one.

Site size

There are several estimates of the size of the built area at TBY. Getzov et al. estimated 250 dunam, or 25 hectares (Getzov et al. 2001). Hestrin estimated 50 acres, or 20.2 hectares (Hestrin 1993). Mazar estimated the tell's area as 20 hectares (Mazar 2001).

Excavations conducted in 1967 by Ussishkin and Netzer on the west side of the site show streets and buildings truncated by the tell's western scarp. This is an evidence that during the EBA the mound was larger than it is today, and that parts of it have eroded into the Sea of Galilee since the EBA (Greenberg 2014b; Y. Paz 2006d).

Based on the GIS map generated for this study, the TBY site area was re-calculated. Wall B and C were used as the western border of the city and the scarp was used as the eastern border. Wall B is dated to the beginning of the EB III, while Wall C is dated to the end of the EB III. Since the Circles Building was built at the beginning of the period, Wall

C was used only in places where Wall B was not preserved. The area calculated was 285,930 sq m or 28.6 hectares. A possible reconstruction of the mound with the washed-away area intact (based on Greenberg 2014b) could amount to as much as 39 hectares. With a density factor of 200 people per hectare, the population of the site would have been between 4,000 (based on Hestrin's 20.2 hectare estimate) to 7,800 people (based on a 39 hectare reconstruction). Based on the contemporary site area (28.6 hectare) the estimated population was 5,720 people. Greenberg's assumption was 4,000-5,000 people (Greenberg 2011a).

Worker availability

The availability of workers in ancient societies is dependent on:

1. the percentage of the population which is physically able to participate in a project consisting of quarrying, transporting, and laying large stones and mudbricks,
2. the time these physically-able people were available, i.e. not occupied with other tasks and work like agriculture or other town-related tasks, and
3. how many of these people were actually willing to work on a communal project like the Circles Building, and the existence of labour recruiting institutions for communal projects.

The first two questions can be answered through the help of paleodemography and ethnographic estimations of the agricultural workload. The third question is society-, culture- and context-dependent and therefore is much harder to estimate. It will therefore be treated as an unknown variable in an equation. For comparative purposes it will be treated as equal on all sites to be tested.

Paleodemography has been studied directly, on the basis of mortuary remains, and indirectly, by means of historical mortality data and studies of contemporary non-urban societies (Chamberlain 2006), with the first and last categories best suiting the ancient Near East. Studies by Angel, Hassan, Weiss, Wittwer-Backofen, and Hershkovitz and Gopher (Angel 1969; Hassan 1981: 95-123; Weiss 1973; Wittwer-Backofen 1987) (Hershkovitz and Gopher 2008), provided a portrait of populations in the ancient Near East and the modern Mediterranean. Assuming that the suitable age for the hard work of construction lie between 15 and 44 years old, and based on the above studies, we arrive at a potential workforce that ranges between 31 and 47 percent of the total population, with most estimates falling within the 37-40 percent range. Excluding child bearing and child rearing women, and the sick and disabled, and taking into account that slightly more than half of the 15-44 age group were men (Wittwer-Backofen 1987), the maximum available workforce would have been about 2/3 of the 15-44 age group, or 20 to 30 percent of the total population. This translates, at Bet Yerah, to 1,000-1,500 persons (based on the 5,000 people population estimation), who would have been required to contribute between 5,000 and 13,000 workdays, all told, or about 3.5 to 13 days each, in order to complete the building.

In order to understand the magnitude of such a commitment, in terms of social cost, it is necessary to estimate the availability of these workers, which would have been largely governed by the seasonal agriculture workload (Zuiderhoek 2013). Antoun, Fuller, Golany, Gulick, Stavi, and Yakar (Antoun 1972; Fuller 1961; Golany 1967; Gulick 1955; Stavi

1946; Yakar 2000: 168-70) studied Mediterranean agricultural villages in Jordan, Lebanon, Turkey and British Mandate Palestine. They found that the traditional Near East farmer worked most of the year, with the exception being the rainy season and autumn.[27] The latter season, between September/October and the first rain in November/December was usually a time of holidays, celebrations, weddings, and preparation for the next year and for winter.

Since the rainy season is not suitable for construction, especially when dealing with mudbricks and mud mortar, the maximal potential workforce for construction may be defined as 20-30 percent of the population available for the 2-3 autumn months, which at TBY amounts to 60,000-135,000 available workdays (1,000-1,500 people working for 60-90 days), or 20,000-45,000 workdays (based on a more realistic assumption of 1,000-1,500 people working for 20-30 days).

The trickier question is that of the motivation of the population to participate in a communal project. I would assume that people in a very organized society would make an extreme communal effort when faced with a physical threat, whether it be from an approaching enemy or from their own government (e.g., Germany and USSR in World War II), while other less complex societies would behave differently in similar circumstances. In relation to military projects, like fortification walls, it would be logical to assume a high participation rate (even in a semi-hierarchical society), but a granary may or may not have been seen as a critically important project, and therefore a low participation rate would not be unlikely.

[27] Work included ploughing, sowing, harvesting and processing crops in two annual cycles. Apart from that, tasks included the burden of herding (usually entrusted on young men), and household activities performed by women like hauling drinking water and firewood, food grinding and cooking.

The maximal estimate above is a bit higher than Erasmus, who suggested that the number of workdays per year provided by a small five person household in a chiefdom society is 40 (Erasmus 1965). It is a bit lower then Burke's estimate, according to which three months could be required as corvée labour in Old Babylonian Period (Burke 2008: 141-42). It is also lower than Mizrachi's estimate, which suggests that one third of the population in the vicinity of Rujm el-Hiri was available for construction (Mizrachi 1992: 202-07), and lower than the estimate of Shelach et al., who proposed that a third of the population could contribute 100 days each for public works (Shelach et al. 2011).

Based on the above labour cost estimates, the number of workdays required for the construction of the Circles Building were between 3,000 (foundations only) to around 11,000 or less (considering the fact that the building was not finished and that at least part of its foundations were built as a casemate). A figure of 20 to 30 percent of a population of 5,000 (minimum estimation) – i.e., 1,000–1,500 persons – would be able to finish this project with a contribution of less than 20 days (i.e., between 1/3 and ½ of the seasonal availability of labour). Even with a low participation rate and involvement and with other simultaneous projects, the construction of the Circles Building did not demand a tremendous effort on the behalf of the TBY population and could have been completed within a span of two to three months.

The intended function of the Circles Building

As shown above, scholarly opinion has converged on the identification of the Circles Building as a granary. However, there is no specific material evidence for this use. As recent excavations in the environs of the building have uncovered considerable quantities of charred grain from domestic and other contexts, earlier, contemporary and later than the granary (Berger 2013), the lack of a notable amount of grain on, in or near the Circles Building is probably not an issue of preservation.[28]

Evidence for the existence of a superstructure is meagre as well; as noted above, the only evidence for a mudbrick superstructure is in the form of brick walls near and in Circle VII and evidence of eroded mudbrick material around and on the building. Other evidence may be the two pillar bases found in Room 2. They indicate the probable existence of a roof and therefore walls, and thus may indicate the existence of a superstructure above the stone foundations in this area. The fact that these bases are worked (Greenberg and Paz 2006b), may hint that they are part of the original construction.

As shown above, the building went through at least two major phases. It was first constructed by the local TBY people; only local pottery was found in its construction phase (S. Paz 2009: 204). Soon afterwards, possibly even before its construction was finished, the building was converted into a "small-industry precinct" characterised by large quantities of Khirbet Kerak pottery (S. Paz 2009: 204). This 'secondary use' or 'squatters' phase' was restricted to the Circles Building and the plaza. In contrast, the area west of the Circles Building was rebuilt during the EB III with relative continuity from the EB II and with only small quantities of KKW found in it (S. Paz 2009), thus hinting at continuity in

[28] Since the use of fire as a pesticide is a common practice in granaries (G. R. H. Wright 1985: 301), One would expect to see charred grain in the vicinity of a granary.

its sequence of occupation. Additional evidence in the form of stones removed from the platform to be used as steps leading from the inner courtyard to the top of the platform (S. Paz 2006b), and grinding stones found on the platforms (see above), may indicate that even if there was a mudbrick superstructure, it did not extend over the entire structure. This evidence leads me to agree with Greenberg and Paz (2006b; S. Paz 2006b, 2009) that the building may have not been completed and did not function as intended.[29]

That said, the plan of the Circles Building seems to conform to design rules of a granary. The elevated platform helps to reduce moisture, which is the most important factor for long-term storage. By elevating the grain from the ground, the platform allows for better drainage and a prevention of seepage of either ground water or surface run-off. The conical structures that were probably meant to be built above the circles would have prevented the penetration of rainwater in winter and overheating in the summer, both of which could have the undesirable effect of encouraging growth of microorganisms and insects in the grain. Another advantage of the massive above-ground stone structure is the prevention of underground intrusion by rodents. The central location of the Circles Building is another plus for a granary since a central location allows for easy access and transportation, as well as protection from outsiders (Currid 1985).

[29] This research is focused on the local EBA society and its development and change during the EB III. The abandonment of the unfinished building and the squatter phase of the KKW people in it is a marker of the changes in this period. The society of ETC people and their specific use of the building, especially when considering their non-urban lifestyles (Greenberg et al. 2014), is not within the scope of this thesis. Therefore, I will mainly deal with the intended function of the Circles Building, as it carries the original messages of the local EBA population and its elite.

Mazar estimated the inhabited area of TBY as 20 hectares, and the total population at 4000 souls. With an annual consumption of 200 kg and a loss of about 30% due to both rodents and the need to save some of the grain to be used as seeds in the next year, he reached a figure of 1040 tons of grain per year needed to feed the entire population[30] (Mazar 2001). According to Mazar's reconstruction, the nine granaries of the building could hold more than 1700 tons of wheat or 1370-1600 tons of barley (Mazar 2001). Converting Mazar's figures to the current reconstructed granary of seven circles gives us a capacity of 1300 tons of wheat or 1060-1240 tons of barley. The capacity estimate is still about 14% higher than the consumption estimate. This small gap may hint that the building was planned to meet the annual needs of the local TBY population alone. Roughly 60 percent of the agricultural hinterland of TBY (which Mazar suggested was about 2700 hectares), could meet these consumption needs while still being able to sustain other crops in the rest of the area (Mazar 2001).

[30] The actual number should be even higher; the 200 kg needed per person is actually the 70% left after the 30% loss, thus the calculation should be 0.2 x 4000 x 100/70 (and not 0.2 x 4000 x 130%), leading to a figure of 1140 tons.

Location, access pattern and focal point

The new information regarding the layout of the Circles Building requires a change in the interpretation of its position within the urban context. It now seems to be open towards the east with one wide entrance, or (if there was a structure in the middle of it) with two passageways – one of them being a 'corridor' (Room 7) and the other leading to the north of the courtyard (Room 6). Access to the circles was done through only one or two halls/spaces (see ***Figure 24***), and thus the building is not a closed complex with limited access, but a building which is open or almost open on one side. The evidence for a large and tall superstructure is meagre and therefore it may mean that the building was intended to appear more like Wright's reconstruction than Mazar's (compare ***Figure 10*** and ***Figure 11***). Additional evidence against Mazar's reconstruction is the lack of corridors leading to the base of the circles. Only the platform near Circle I has evidence for this kind of corridor. With a large superstructure and without corridors, the grain in each circle becomes inaccessible.

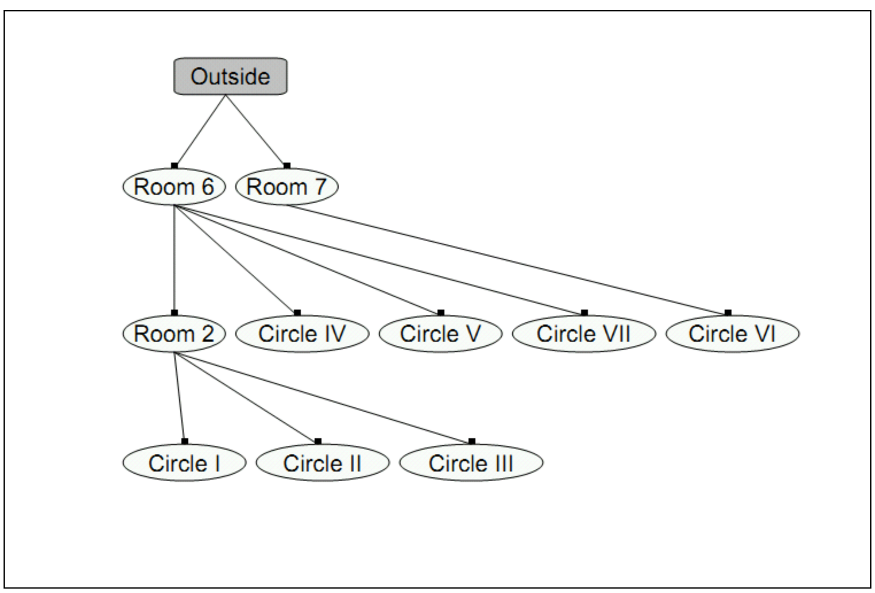

Figure 24: Circles building access analysis diagram

Comparing the Circles Building with other Ancient Near East granaries reveals important differences. A 12th Dynasty Egyptian granary model (***Figure 25***) shows a rectangular granary with one entrance only. This entrance leads to a room with scribes or clerks. This room has only one opening to the storage room itself, thus the only way to get into the storage room is through a room manned by administrative staff. This is an example of a storage facility in a highly complex society with a clear separation of the storage facility from the public. This separation is regulated by official clerks that control the access of people and goods going into and out of the building.

Figure 25: Egyptian Dynasty 12 granary model[31]

[31] From: http://www.metmuseum.org/collections/search-the-collections/545281?img=0

A model found at Melos (***Figure 26***), also apparently a granary (Hockmann 1975: Plates 53-54; Marinatos 1946), is another example of a restricted access granary. It is built as one complex with seven silos that form an impassable barrier around a central courtyard. The only possible entrance is through a roofed gate.

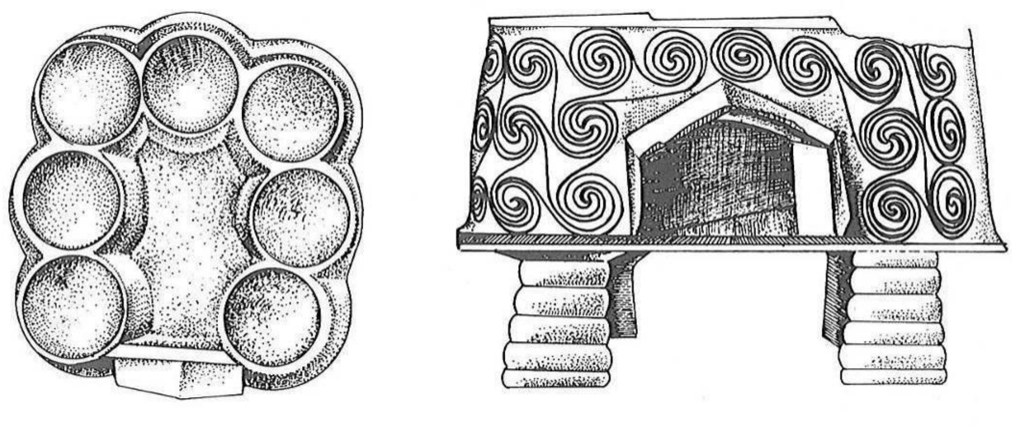

Figure 26: Melos granary

(Mazar 2001: Fig. 23.4)

Granaries found in a New Kingdom (14th century BCE) Egyptian fort found at Bir el-'Abd contained four round domes, each 3.8 m in diameter. The domes had mudbrick bases built into the ground while the domed superstructures stood above ground and were preserved to a level of 1.8 m. Their actual height was probably higher (Oren 1973). The granaries had no walls around them, but their position inside a fort maintained their separation from the public.

Badawy, who described models and paintings of granaries in ancient Egypt, noted the presence of enclosure walls around granaries. The model from the tomb of Meketre is a rectangular enclosure with a one-door opening. Badawy pointed out that the drawn granaries looked like the one dug by Petrie at Lahun (***Figure 27***): a square court surrounded by a serrated wall and one entrance, which enclosed several silos and other structures like water tanks and an altar (Badawy 1966: 31-35). This description applies to the First and Second Intermediate period and later, but also to Old Kingdom granaries (Badawy 1966: 47; Moeller 2012; Moeller and Marouard ND).

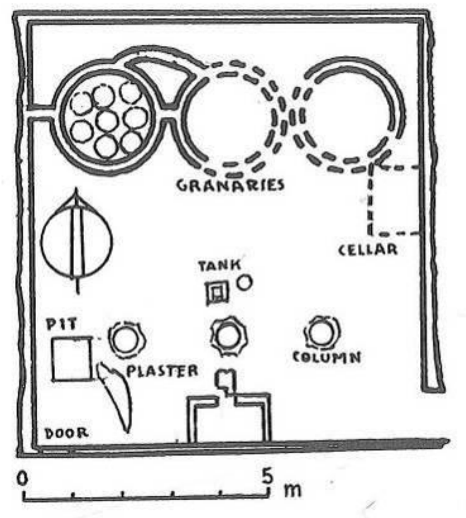

Figure 27: A granary at El-Lahun

(Badawy 1966: Fig. 16)

Seton (1933) reconstructed a New Kingdom (Amarna period) estate located at the workmen town of El Lahun and dug by Frankfort in the spring of 1929: four granaries located in a walled courtyard are accessed either from the estate itself or from a side entrance connected to the street which is different from the main entrance to the complex. People entering from this gate enter a small courtyard and have to pass through another opening in order to get to the granaries.

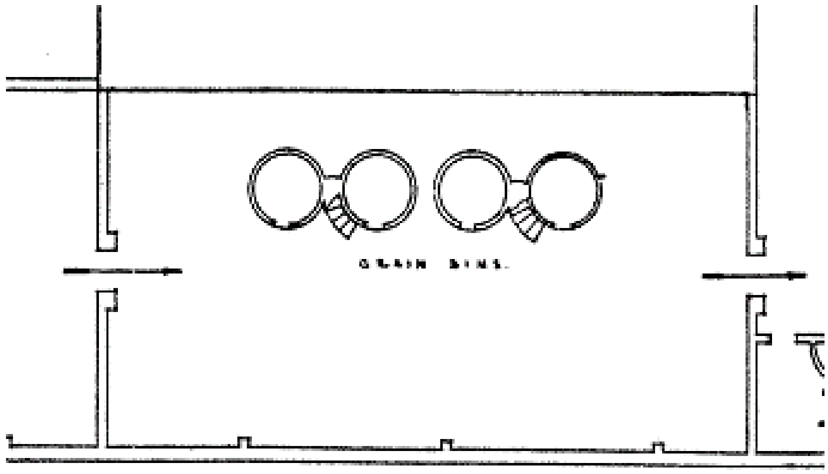

Figure 28: Granary in an estate at El Lahun
(Seton 1933)

The EB II site of Arad features several round platforms that may have functioned as household granaries (Currid 1985). In contrast to Bet Yerah, these platforms are positioned in different areas of the site, e.g., Platform 4307 from Stratum II or Platform 4683 from Stratum III (R. Amiran and Ilan 1996: 93, 95, Pl. 85, 93). The former is connected to Cell 4373 and its entrance or opening was probably from the cell. Other round platforms found at EB II Arad are Loci 1056, 1068, 1043, 1047 and 1072b in Area H, Stratum III (R. Amiran et al. 1978: Pl. 177). They are positioned close to each other but are not raised and no wall encloses them.

An EB III example of restricted access storage capabilities was found in Tel Yarmuth Palace B-1 (Miroschedji 2008) and is described below (Chapter 3.2.2).

Following Mazar (Mazar 2001) and Paz (S. Paz 2006b), it seems that the Circles Building was built as a granary. It is too large to be a private establishment and therefore it was probably intended to be a public storage facility in which local inhabitants of the settlement deposited their crops. The deposition was either made as a tax payment or deposition of one's crops in the hands of town authorities. It could also be a secure means of storing personal goods, i.e. a deposit in a central establishment that would store and keep the crops for the farmers until they were needed. In either of these cases, there would have been a need to persuade the public to deposit their grain in this structure. Building the Circles Building with two access ways, a low superstructure, and no outer perimeter wall, conveys a sense of a guarded but still accessible building. There are no high walls at the Circles Building, in contrast to the high impassable walls at the Melos granary (see ***Figure 26***), Egyptian complexes (see ***Figure 27*** or ***Figure 28***), or around Yarmuth Palace B1 – walls which communicate to the public that the enclosed structures have no intercourse with their environment or with unauthorized personnel. The lack of such a wall at the TBY granary may have been meant to show the people depositing their crops that their harvest was being placed in the hands of an approachable and accessible institution, possibly a corporate one, which would protect their harvest and allow access to it. If the building was a sort of central storage bank with personal accounts, one would expect many small granaries surrounded by high walls and an open public area for bureaucratic transactions, as in the architecture of modern banks, i.e. an open customer service area and a guarded area with safes. Since the architecture of the Circles Building is different, it was probably meant to be central storage of crops or taxes intended for some sort of redistribution. Its open architecture means that the central rule was far from being absolute and needed to persuade people to deposit their harvest.

Further implications of these interim observations are discussed in Chapter 4, where they will be compared to the Tel Yarmuth palace and to other urban institutions of the EB III.

3.2.2. The Tel Yarmuth Palace

Overview, planning and metrology

Tel Yarmuth, located in the southern Judean Plain (Shephelah), is an 18 hectare site with a stratigraphic record extending from the EB Ib to the end of the EB III (***Table 10***). A relatively large part of the mound was exposed during its excavations (Miroschedji 2000: 315). Major finds dating to the EB III include two superimposed palaces (B-1 and B-2), large and elaborate fortifications (mostly built during the EB II), a system of large terraces, and the 'White Building' that may have been a temple (Miroschedji 1999).

The finds from the excavations, and in particular the large and unique Palace B-1, suggest that Yarmuth played a major political role in southern Canaan (Miroschedji 2006).

Period	*Areas with these periods*
EB Ib	A, B, C, D
EB II	A, B, Bf, C, D, E, G, J, Jc, Acropolis
EB IIIa	A, B, Bf, C, D, E, G, J, Acropolis
EB IIIb/c	A, B, Bf, C, D, E, G, J, Jc, K, M, Acropolis
MB II	Acropolis
Late Bronze	Acropolis
Iron Age I	Acropolis
Iron Age II	Acropolis
Persian	Acropolis
Hellenistic	Acropolis
Roman	Acropolis
Byzantine	B, D, E, G, H, J, K, M

Table 10: Yarmuth strata

(After Miroschedji 2013)

During the last phase of the EB III at the site (termed EB IIIc), and after a violent destruction of level B-3/J-3/K-2 (dated to the EB IIIb), a new type of building appeared in area B, located in the southwest corner of the lower town of Tel Yarmuth. The first building, called Palace B-2, was built on a 0.6 m terrace that was constructed over the destruction layer and part of the EB II fortifications in this area (Miroschedji 2006, 2013;

Regev et al. 2012a: 507). Palace B-2 covers an area of roughly 1750 sq m. It was razed after a short period of time (still during the EB IIIc), and a new building, Palace B-1, was built over it. The new palace had an internal area of 6000 sq m and was well constructed, with an encircling buttressed wall, lime-plastered walls and floors, worked stones, a system of channels, and a cistern. It was peacefully abandoned at the end of the period (Miroschedji 2000; 2013: 780). Palace B-1 was well-planned and symmetrical in its design, with right angles between walls, identical inner buttresses positioned in equal intervals, and evidence for the use of standard measurements in its construction (Miroschedji 2001). Miroschedji describes 40-50 rooms, corridors, and courtyards arranged in several functional areas:

1. an official area in the east consisting of the main entrance to the building (L2112, see ***Figure 29***), a hypostyle hall (L1965), a forecourt (L1970) and a large reception hall with lateral benches (L2011),
2. an economic activity area in the centre of the building consisting of about 20 rooms (excavated or reconstructed: L1580, 1586, 1616, 1618, 1619, 1626, 1632, 1636, 1637, 1638, 1646, 1655, 1708, 1749, 1751, 1752, 1783, 2012, 2015, 2024, 2043, 2051) positioned around the northeast courtyard (L2097),
3. a domestic area in the northeast with kitchens and hearths (L72-76, 83, 80), and
4. a main courtyard which encompassed all of the west side of the building (about 50% of its area; L1901 and its area).

Miroschedji also suggested that a second floor, used as residential area, was built over the east side of the palace, The only existing evidence for this upper floor is a staircase found in the official area (Miroschedji 2006).

Finds in the building included more then two hundred complete vessels (most of them storage vessels), a cistern in the centre of the northeast courtyard, and a round silo in the south of it (Miroschedji 2006; 2008: 1795).

The following analysis is based on published as well as unpublished data supplied by the excavator. Using similar methodologies used in the TBY Circles Building analysis presented above, I will deal with the metrology, social cost and access pattern of the palace. Later I will use this analysis to understand its social roles and functions, and compare it to the Circles Building.

Function

The large size of the building, elaborate planning involved, and the wealth of finds discovered made Miroschedji argue that Palaces B-2 and especially B-1 were the seat of the leadership of a polity that controlled a large swathe of territory in the south-central foothills (Miroschedji 2001; 2006: 61; 2013). Ancient palaces are usually defined as an institute that extracted wealth from the population and used it for its own benefit and/or redistributed it to other sectors of the society. The wealth was extracted and produced in the form of taxes, corvé, real estate, share of crops, manufacturing, and trade. The palace housed the rulers that got their power from their social status, wealth, religion, and coercion backed by monopoly over power. It also housed the additional facilities needed to exercise their rule and 'palace economy' such as storage, specialized craft workshops, and literate administration. Palaces in archaeology are usually identified as large buildings with evidence for the above facilities in the form of reception suites, archives, specialized craft workshops, valuable imports, cylinder seal impressions and other signs of administration, as well as elaborate artistic representations, particularly self-glorifying depictions of the rulers and their actions (Broodbank 2013; Finley 1957; Yasur-Landau et al. 2015). Although not all of the above criteria were identified in Bronze Age “palaces” of the west Mediterranean, they are still considered as such if they exhibit a certain amount of the economical traits associated with palaces (Broodbank 2013; Yasur-Landau et al. 2015). Yarmuth Palace B-1 seems to be one of these cases in which the relative wealth of the building marks it as the seat of the local ruler (Herzog 1997; Mazar 2001; Miroschedji 2006; Philip 2008: 174).

The volume of goods stored in or directly controlled by the palace was estimated by Miroschedji as follows: 17,000 litres in ceramic vessels found during excavation (pithoi, basins, and jars), 4,000 litres from reconstructed storerooms, 4,000-5,000 litres stored in perishable material containers stored in rooms that were found empty, and 3,800 litres stored in a silo positioned in the southern corner of the building (Miroschedji 2006). Total storage capacity was close to 30,000 litres, probably composed of various goods and foodstuffs. Other economic assets were large numbers of livestock presumed to be held in the large courtyard and a 9.3 cu m water cistern (Miroschedji 2006, 2013). These figures exceed the annual needs of the inhabitants of such a building (Miroschedji 2006), but are much lower then the TBY Circles Building storage capacity, which was estimated by Mazar to be 240,000 litres per circle (Mazar 2001: 455). Even if Mazar over-estimated the capacity of the Circles Building, the gap is still considerable.

Figure 29: Palace B-1
(excavated squares are shaded)

Distribution analysis

Based on the Tel Yarmuth database and daily logs and maps, all finds were positioned on a GIS map. Using the GIS *Spatial Analyst*, distributions and densities of the finds were calculated.

Finds in the palace yielded no evidence of administration: there are virtually no sealings, seal-impressions, counters or other indicators of systematic oversight. The only abundant find that could be ascribed some sort of regulatory function were potsherds with ‘potter’s marks’ (Miroschedji 2006). A comparison between the distribution of these sherds and the distribution of all the pottery sherds found, brought to light noticeable differences. The marked pottery had several pronounced concentrations, some of which were located where the overall density pottery is relatively low. This may suggest that these concentrations are not random.[32] The peaks are located in storage rooms (L2015, L1783, L1708, and L1752) and in a room connected to the official area on the east side of the building (L2015). The only access to the latter is through several other rooms.

The composition of the marked vessels is interesting as well. Similar to other sites in the Southern Levant (Genz 2001), many of the Yarmuth Palace marked vessels are holemouth jars, which may be connected with cooking and not storage. The aforementioned concentrations of marked pottery are composed mainly of other types of vessels, with hardly any marked holemouth jars among them.

This distribution conforms to other studies (e.g., Van den Brink 1992 on Early Dynastic potmarks) and suggests that at Yarmuth the so called “potter’s marks” were actually connected to economic and administrative activity which took place in storage areas and official areas. Genz’s hypothesis that they were used to mark the contents of vessels (Genz 2001) cannot be ruled out, although at Tel Yarmuth their function may have been different.

[32] Locations for which notable concentrations of both marked pottery and all other pottery were found (the cistern) were ignored since the abundance of marked pottery in these spots was probably random and not connected to administrative activity.

Figure 30: Palace B-1 marked pottery (top) vs. all pottery (bottom) distribution[33]

[33] All sherds belonging to the same vessel were counted as one.

Domestic activities seem to have taken place in the large western courtyard and the northeast courtyard, where several hammer-stones, grinding stones, pestles and mortars were found. Notable is the southern corner of the palace, next to the round silo, where large number of grinding/pounding implements were found as well as four spindle whorls. Few grinding/pounding implements were found in the storerooms, but their presence was probably related to the northeast courtyard. Strangely, the northern area, in which traces of domestic activities in the form of kitchens and hearths were found, yielded only one hammer-stone. Support for the domestic activity argument is the total lack of marked pottery in this area despite the overall density of pottery sherds being high.

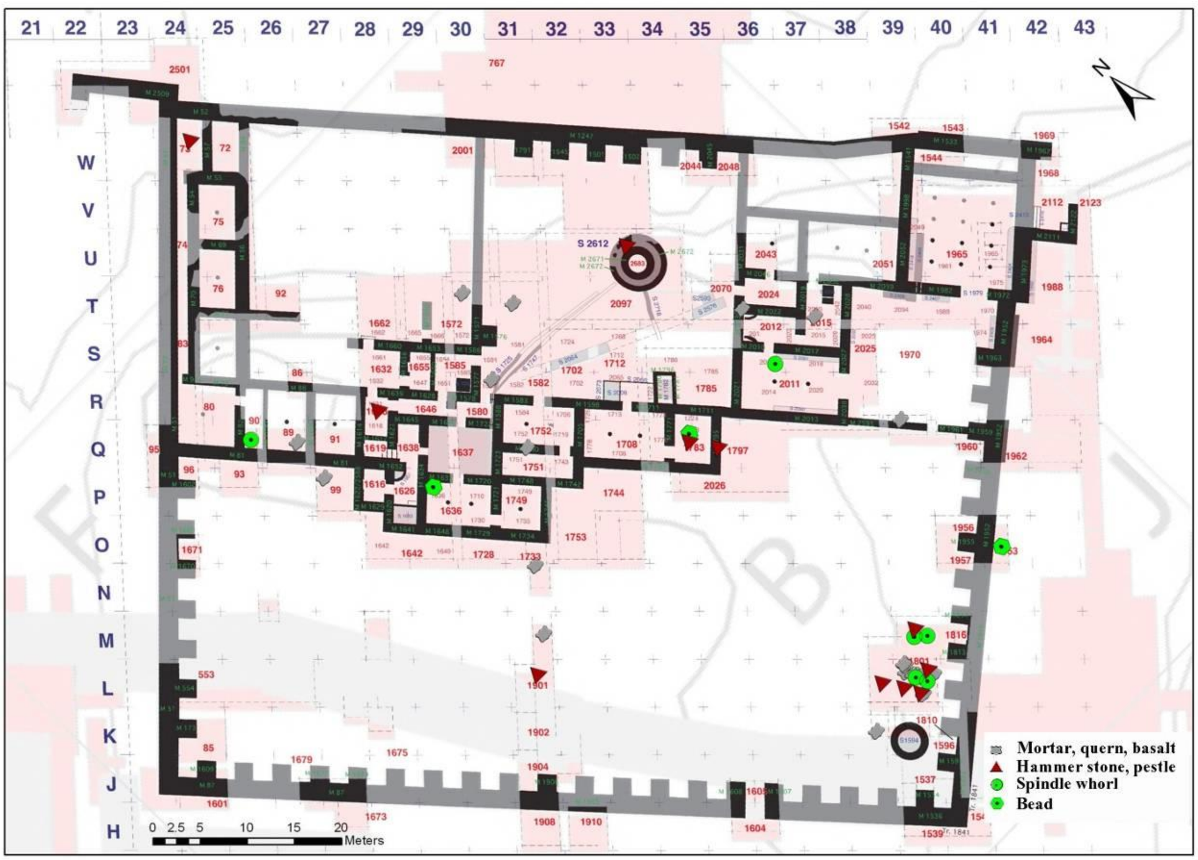

Figure 31: Palace B-1 domestic activity

Social cost

Since my working assumption is that the palace was a hub of a strong local polity, with functions related to this role, I would expect to see high investment in planning and materials and, compared to the Circles Building, higher social cost involved in its construction.

Raw material

The structure of Palace B1 is composed of thick peripheral walls (with a total length of 332 m) with inner buttresses, and inner walls of various widths (Miroschedji 2001) with a total length of 526 m. The total area of walls and buttresses is 1337 sq m (width of inner walls is 0.53-1.5 m, width of peripheral wall is 1.85 m, buttresses dimensions are 1.83X1.83 m). Assuming 2.5 m high stone foundations for the peripheral walls, 1.5 of these being below ground (based on Miroschedji 1999: 10), 1 m high stone foundations for the rest of the walls, and a 2 m high superstructure above all foundations, the total volume of the palace walls was 2,260 cu m of stone and 2,674 cu m of mudbrick superstructure. Another floor with slimmer walls and a lower ceiling may have been built over the roofed areas, totalling a volume of 810 cu m of mudbrick (500 m total length, 0.53-1.06 m width, 2.5 m high).

Labour

Labour calculations were based on the same assumptions discussed above (Chapter 3.2.1) and resulted in an average of about 14,500 – 16,000 workdays for the stone foundations, 3,000 for the ground floor superstructure and 900 for the first floor. The averaged total is from 18,500 – 21,200 workdays with a possible range of about 12,000 – 28,000 workdays.

Except for the construction of the structure itself, other tasks that required workdays were: the razing of Palace B2 and levelling of the area, digging and construction of the water cistern and drainages, plastering the walls and paving the courtyards.

Reference	*Cu m per man-day*		*Foundations workdays*		*Superstructure workdays (ground+1st floors)*	*Total workdays needed*	
	Min.	*Max.*	*Min.*	*Max.*		*Min.*	*Max.*
(Erasmus 1965)	0.13	0.13	16,953	16,953	3,872	20,825	20,825
(Mizrachi 1992)	0.09	0.15	14,128	23,794	3,872	18,000	27,666
(Shelach et al. 2011)	0.17	0.28	8,082	12,996	3,872	11,954	16,868
(Helms 1981)	0.07	0.27	8,429	15,540	3,872	12,301	19,413
Average			14,609	16,095	3,872	**18,481**	**21,193**

Table 11: Palace B1 labour costs

Population size and worker availability

Based on the coefficients discussed in the previous chapter, the population of Tel Yarmuth for the period in question would have been about 3600, or 200 people per hectare over the site's 18 hectares. Worker availability, with 39% of the population at the age of 15–44 years old (54% of them able males and 23% able women), could have come to approximately 1,080 persons (30% of the whole population). If 20-30% of the whole population would have worked for 20–30 days during the low season of the autumn, the number of available annual workdays would have been between 21,000 and 32,000.

The amount of work needed for the Bet Yerah Circles Building was roughly 5,000–13,000 workdays. With a total available workdays figure of 20,000–45,000 (similar assumptions as in Yarmuth) this was an attainable project, even with a lower participation rate. Palace B1 required a more considerable effort from the Tel Yarmuth population (12,000–28,000 workdays needed) approaching the total number of available annual workdays (21,000–32,000), under the assumptions of corvée labour. Although it was a much larger project, it was not an enormous one, if a reasonable number of town inhabitants participated. The only variable that needs to be considered in the labour requirements of Palace B is the level of the participation. In contrast to communal projects like fortification walls or the TBY granary, which were probably viewed as public buildings intended for everyone, Palace B-1 was probably constructed for the benefit of one family or a small group (see also below) and therefore voluntary participation levels would presumably have been less than those in the case of other public buildings. This may have necessitated a more aggressive recruitment strategy.

Location, access pattern and focal point

Palaces B-2 and B-1 were located in the lower town at Tel Yarmuth. Palace B-1 covers an area of about 6600 sq m (including floor area and wall area), which is a considerable amount (3.7%) of the total area of the site. Although the area of the acropolis is large enough to accommodate it, the palace was located in the lower part of the town, which may have been inferior in comparison to the acropolis. This may be due to the fact that this was the only area available due to the destruction of level B-3/J-3/K-2, or perhaps there were other advantages to this location such as its proximity to the town gate or it being a flatter surface. In spite of its ‘inferior’ position, and thanks to the terrace it was built on, the palace still rose above the neighbouring domestic quarter to its northeast.

The multi-roomed palace was accessed through its east corner and possibly also through a gate in its western buttressed wall. The palace’s centre of gravity lies in its eastern side, where the main entrance and storage facilities were located. The storage area was located at the centre of the palace, with most of its rooms situated west of the northeast court. It seems the storage area was enclosed in the middle of the structure, almost inaccessible from the outside. It was only accessible from the northeast courtyard, which was also enclosed and inaccessible (see ***Figure 32*** in comparison to the Circles Building access diagram ***Figure 24***). Although in the first phase of the palace there was a door between the reception hall and the northeast courtyard (Miroschedji 2006), it was later blocked and the current reconstruction (***Figure 29***) shows no other connection to the entrance area, the main court, or the domestic area. The only probable access to it from the outside was through the upper floor or a series of rooms on the east side of the palace (L2015-2051-2043-2024). Access from the inside could also be from rooms on the north side of the palace (L1632-1618) or from the north part of the northeast court (currently reconstructed as a wall with no openings). In other words, access to most of the storage rooms was easily controlled (Miroschedji 2006: 66-67) as they were accessible only through another room. Other evidence of the increasing segregation in Palace B-1 is wall W2595/1961 between the main courtyard and Court 1970 (“avant cour”). This wall was built in a later phase (Miroschedji 2013) and turned Court 1970, and therefore the entrance/reception area, into a closed space with only a narrow door to connect it to the main courtyard.

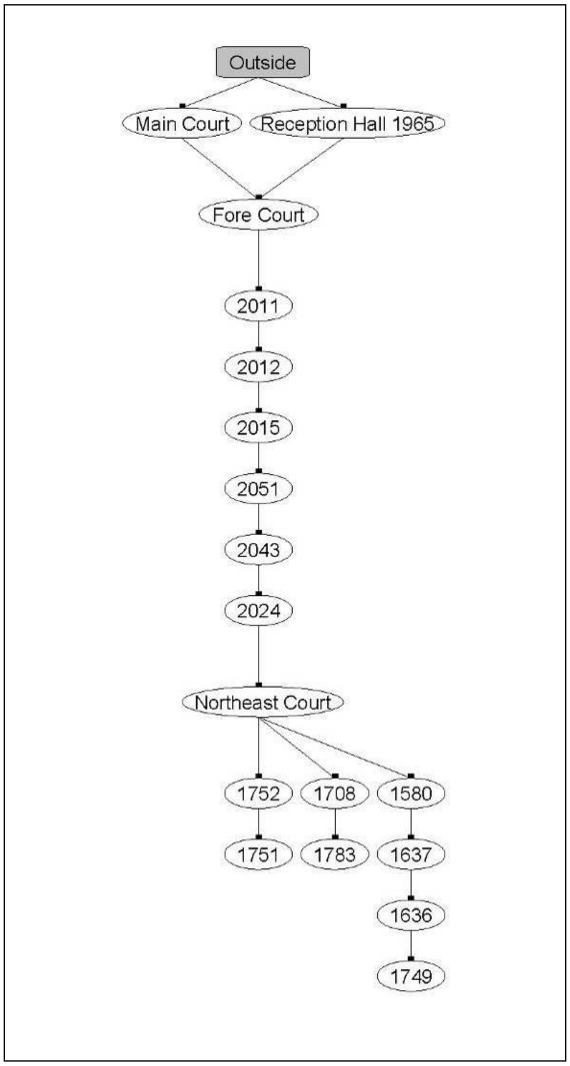

Figure 32: Yarmuth Palace B-1 access analysis diagram

The above analysis shows that we are dealing with two different types of public monumental structures. The Circles Building was mainly intended for storage of one type of commodity, while Palace B-1 had various functions like food processing, cooking, habitation, reception, and storage of various products and water. Palace B-1 is also much less accessible, much larger and the effort involved in its construction is larger, especially for the smaller population of Tel Yarmuth. These differences represent two different EBA phenomena, which will be dealt below (4.1). Other non-cultic buildings, like the Megiddo

Building 3177 (A. Kempinski 1992a: 75-78), Zeraqun's possible palace (Douglas 2011), or other monumental buildings at Yarmuth (Miroschedji 2006, 2014; Regev et al. 2012a: 507), may be the subject of similar analysis, but were not analysed since they are much smaller than Palace B-1 or TBY Circles Building (Zeraqun) or due to lack of data on their dimensions and duration of construction (Yarmuth buildings were not excavated, data on Megiddo Building 3177 is lacking).

3.3. Conflict, Defence and Warfare: Analysis of the Physical Evidence

Warfare and other forms of inter-societal conflict are considered to have an important role in the rise and formation of complex societies. The existence of conflict, whether internal or external, appears to be a corollary of social change and stratification, and periodic conflicts and organised warfare had an intra-social role in the formation of warrior classes, leaders, elites, and stratification, and affected the built environment in the form of fortifications and other military-oriented structures (Arkush and Stanish 2005; Joffe 1993; Knauft 1991; Monks 1997). The impact of warfare, whether actual or only anticipated, on architecture is apparent in the southern Levantine EBA in the form of large and elaborate fortifications built throughout the period and an increase in their complexity and sophistication towards the end of it (A. Kempinski 1992a). In spite of the abundance of fortifications, other markers of warfare, such as weapons or skeletal trauma, are few. In order to understand the role of violence and warfare in the formation and maintenance of complex societies, this chapter attempts to study and evaluate the actual existence of warfare in the southern Levantine EB III. It contains: general guidelines for the identifying physical evidence of warfare in antiquity (3.3.1), a detailed study of fortification design principles, functions, and siege tactics (3.3.2), an analysis of available EB III weapons (3.3.3), and a detailed analysis of EB III sites (3.3.4). The two latter sections are based on guidelines and principles studied in the first two sections.

3.3.1. Identifying Warfare in Antiquity

Identifying warfare in the archaeological record is a difficult task, especially for the pre- and proto-historic periods, since presumed evidence of warfare can be equally attributed to other processes: destruction layers may be the outcome of natural catastrophes or mishandling of fire, skeletal trauma can be caused by interpersonal violence or accidents, and weapons could have been used solely as status symbols. This section deals with this issue and describes methodologies for recognizing warfare in antiquity.

Markers of war and conflict

Scholars dealing with the archaeology of warfare and violence, including Arkush and Stanish (2005), Le Blanc (1999: 64), Vencl (1984), Monks (1997), Earle (1997: 117), Paz (2011), and Walker (2001), have identified several indicators of warfare and violent conflicts in archaeology. These indicators can be grouped into five classes: artistic representations, weaponry, architecture and site design, occupation, and settlement patterns, and bio-archaeological and mortuary data.

Artistic representations include representations of warriors and weapons as in, for example, rock art. The presence of **weaponry** may be another indication. **Architectural structures** indicative of military fortifications and warfare are: fortification walls with parapets[34], towers and bastions[35], fortification wall and tower constructions that allow

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[34] A parapet is a small wall built on top of a fortification wall and towards the front of it. It is also called 'breastwork'. The top of the parapet is battlemented with wide slits to facilitate firing from it. The sections of the wall between the slits are called 'merlons'. Crowns worn by Assyrian queens carried a representation of a city wall. This icon, featuring merlons and firing slits, is known today as the king's crown. (Van De Mieroop 1999: 51-52) (de la Croix 1972; Seymour 1991)

[35] Bastions are large firing platforms that project from a fortification wall to allow enfilading fire. They are usually larger and shorter than towers. They were part of the fortification wall or stood next to it as a free-standing structure. The sections of the fortification wall between bastions or towers are called 'curtain walls'. Bastions started to appear in the EB II and flourished during the EB III. According to Herzog, they were used not only as fortification towers, but also as military barracks, headquarters, storage for weapons, water and

enfilading fire on the approaching attackers, defensive gate designs or narrow gates, and multiple defensive lines. A defensive site location with restricted accessibility, a prominent location, and compact housing are additional markers, as are changes to the primary design and architecture of the site, e.g., hastily built walls, gate blockages, and newly-built walls enclosing part of the site.

Settlement patterns pertaining to and indicating enduring conflict may be the obvious frequent destruction layers and site abandonments, as well as location of sites in marginal areas and frequent changes in a site’s population. Conspicuous settlement proximity patterns such as clusters of sites with empty buffer zones around them, as well as widely spaced sites where the environment does not necessitate it, may serve as indicators of conflict as well. A large proportion of sites built on hills or peaks is another possible marker.

Bio-archaeological data consists of traumatic injuries like healed and unhealed fractures and changes in bones and joints caused by damage to the soft tissue that surrounds them. **Mortuary** evidence include mass graves and non-standard age distributions in cemeteries (Walker 2001).

Arkush and Stanish argued that the presence of several of the above indicators means warfare was prevalent. Their absence in a well excavated and documented area may negate the existence of organized violence (Arkush and Stanish 2005: 15). They, as well as Keeley, suggested that the most important markers among those noted above are

food, as additional firing platforms, observation points, and last ditch fortresses for the elite (Herzog 1997: 96) fortifications and skeletal trauma inflicted by weapons (Arkush and Stanish 2005: 14; Keeley 1996: 36).

Over against these assertions, Martindale and Supernant have pointed out that evidence considered as an indication of warfare can be misleading; skeletal evidence resulting from violent conflict may be similar to that resulting from accidents and mishaps while weapons may be used for hunting or display. They therefore developed a method of measuring the 'Defence Index' of sites, based on the site's visibility, elevation, accessibility, and area. They proposed that the calculated values can be used to measure and evaluate the scale of conflict in antiquity (Martindale and Supernant 2009). This index has not had much of an impact on archaeological research for several reasons: (1) it can only be used on sites which have been extensively excavated, (2) it is biased toward small sites, and (3) it is based on a quantification of human behaviour. Specifically, it is not very useful for south Levantine sites since it does not accommodate tells, i.e. large sites that may be situated in a non-strategic location due to historic and economic reasons, but were still heavily defended and engaged in warfare.

The following is an attempt to collate, from the broad literature on the subject, the main markers of war that might be relevant to the 3rd millennium southern Levant:

Fortifications and site location

It seems that the most conspicuous marker of endemic conflict is the presence of fortifications. However, appearances can be misleading; Topic and Topic (1987) illustrated this with the site of Chankillo, situated on the southern edge of Casma-Sechin oasis, Peru. This site has massive wide walls and several indirect access gates. However, the bolts of the gates are located on the <u>outside</u> of the settlement, hence the defenders of the site could not close the gates from the inside (!). Many Late Medieval castles of England only seemed to be fortified, built more to display and communicate competence and wealth than to be a real military stronghold: Cooling Castle has an elaborate gatehouse with two large and impressive towers. However, these towers have no back walls – they are hollow, and Johnson (2002) described them as “stage setting” or as “frauds”. Garrison manoeuvring on the walls of Cooling Castle and other contemporary castles was very limited due to a narrow wall walk. Similarly, Bodiam Castle looks very impressive but is situated on inferior ground, its moat can be easily dried by the besiegers, its firing slits are inefficient archery, and its parapets are low and inaccessible (Johnson 2002: 23-24).

Fortifications may not necessarily match the common image of curtain walls and towers. For example, Hamblin and Kern have used Neolithic Çatal Höyük as an example of a settlement built so as to impede intruders – its houses were contiguous and the entrances were from the roofs. Intruders who breeched one of the outside houses found themselves in a closed room with the defenders located on the roof above them (Hamblin 2006: 25; Kern 1999: 10).

Basic requirements for the identification of a defended site and an effective fortification wall are as follows (Arkush and Stanish 2005; Topic and Topic 1987) :[36]

1. The site should be situated in a defensible location with restricted access (e.g., steep ridge, isolated hilltop, or slope of a hill).
2. If the topography near the site is flat, there should be a dry moat outside the wall.

[36] Arkush and Stanish argued that their conclusions from the Andes can be applied globally, since warfare impose a universal set of constrains: the stakes are high and the choices of the defenders are relatively few (Arkush and Stanish 2005: 16).

3. A wall should have parapets[37] so the defenders standing on it will have cover from enemy fire. If the wall is not preserved up to its parapets, it should be either wide enough to carry them or composed of several thin walls attached together so the outer could have been higher, thus serving as a parapet.

Other markers of an effective fortification are bastions and defended gates. Keeley et al. (2007) asserted that a fortification wall should have bastions incorporated into it, a defended gate structure (either an indirect access gate, or a gate with towers or bastions on both sides), and a V-section ditch in front of it. If a wall has one or two of these elements, it may have had a defensive function. Walls not having any of the above features were probably built for other reasons - ritual purposes, containment, or economic control.

Multiple simple gates or walls that do not completely encircle the site may be ineffective since both offer easy entry for a determined enemy. Very long walls may be ineffective as well, since they require a very large garrison to defend them. On the other hand, not building a fortification where the terrain does not allow breaching, e.g., near a cliff or a river, was a reasonable and functional solution. Multiple gates can be blocked in times of crises or used as sally ports or posterns to attack the flanks of the sieging enemy (Arkush and Stanish 2005: 4-8).

Sites without an internal source of water may not be able to withstand a siege longer than a few days, but in periods or societies where siege warfare was uncommon, the importance of an internal water source was negligible. Arkush and Stanish assert that without a professional army and accompanying military logistics, siege warfare was not

[37] I.e., in places where walls were preserved to their full height, which seems to be common in the Andes.

possible. They cite several reasons for this, including a lack of supplies needed to sustain the army, the lengthy time commitment of siege warfare which leaves the homeland territory undefended, and the economic loss created by taking non-professional soldiers away from their original productive tasks.

The upshot appears to be that fortifications cannot be assigned a function according to a fixed set of rules, but rather, as with many cultural creations, should be analyzed cautiously with the above criteria serving only as a guide.

Weapons

The presence of effective battle weapons makes war possible and present (Otterbein 2004: 65-66). Such specialized weapons, designated solely for use against people, may be classified as ‘shock weapons’. Maces are an example of such a weapon, which could have had little use in daily life (Keeley 1996: 50). Other weapons used for short-range fighting would have been clubs. Pointed and bladed weapons were rare and were probably used only by specialized warriors, not by the majority of the combatants who formed a part-time militia (Topic and Topic 1987). Specialized weapons were particularly lacking in non-state societies, so that agricultural tools or hunting implements would have served as weapons in times of war. Warriors in these societies would have had to manage with projectiles (Arkush and Stanish 2005: 20; Martindale and Supernant 2009).

As long-range weapons, projectiles have a central role in attacking or defending a fortified city, especially in the siege and penetration stages. Projectiles include arrowheads, spearheads, and sling-stones. The latter, when found in piles on fortification walls, can testify to the attempt to actively defend a site (Topic and Topic 1987).

Skeletal evidence

Data from mortuary contexts can contribute to understanding the nature and extent of violence. The most obvious evidence of violent conflict is signs of impact by projectiles (Y. Paz 2011), especially when the projectiles are still embedded in the skeleton. An example for this is the 11th Dynasty (21st century BCE) grave found at Deir el Bahri, Egypt where at least 10 out of 60 interments showed arrowhead impact (Winlock 1945). However, while such impact is an indication of violence, it is not necessarily evidence of warfare and organized conflict. With regard to skeletal evidence, it is the collective nature of the evidence that argues for its origin in warfare, such as in the case of a late Chalcolithic mass grave found at Tell Brak which served McMahon et al. in their argument for “a well-developed ideology of warfare” existing by the late 4th millennium BCE (McMahon et al. 2011: 202).

Gasperetti and Sheridan stress that cranial fractures located above the ‘hat brim line’ are the result of blows to the head rather than accidents (e.g., falls). When dealing with this kind of impact, they take into account not only the sheer number of occurrences but also the diachronic change in them. A growing rate of postcranial injuries may serve as a sign of increasing violence as well, although accidents can also result in this type of impact (Gasperetti and Sheridan 2013).

3.3.2. Fortifications and Siege Warfare in Antiquity

Since fortifications provide the preponderance of evidence for the existence of conflict and warfare in the EB III Levant, a closer look at the tactical and technical requirements of functioning fortifications is in order. The following review is based on the studies of Yadin (1963), de la Croix (1972), Kern (1999), Keeley (1996; Keeley et al. 2007), Burke (2004, 2008), and Rey (2012) with input from Vitruvius' classic *De Architectura* (1960), from which a series of general principles for successful defensive fortification can be obtained. Clearly, 3rd millennium fortifications, created in the infancy of organized state conflict, can hardly be expected to answer to all of these principles; yet it is instructive to view their qualities relative to the military ideal.

Walls and Towers

The primary military function of a fortification wall is to serve as an obstacle to the mobility of the attacker. A fortification wall cannot function by itself since, without a defending garrison producing fire power, it can be easily breached or scaled. To facilitate its defence, defenders should have shielded firing platforms on the fortifications, favourably at the top of the wall, i.e. parapets or breastworks. The wall should be wide enough to prevent breaching and to allow manoeuvring on it. It should also be high enough to prevent scaling (Yadin 1963: 19-20). High walls should be wide enough to be stable, as much as half to two-thirds of their height (Kern 1999: 10). Walls built on the edge of a tell site should be even wider, in order to maintain stability.

The firing platforms should allow firing towards the front as well as enfilading fire on the flanks of the approaching enemy. Enfilading fire is best achieved by firing from projecting towers or bastions or from offsets along the wall. Round towers and walls are usually regarded as better than square ones since they do not have blind spots and allow a wider field of fire. They are also harder to demolish, since they do not have sharp angles which are vulnerable to battering rams or siege poles. Their downside is the extra effort needed for their construction. However, a circular city wall offers an advantage to the besiegers – it allows a small force to have a field of view over large stretches of the wall. Angles may force the besiegers to split their forces due to their restricted field of view. The larger the circumference of the fortification wall, the more difficult it is to defend, in terms of manpower and internal communications. Another key defence feature is a *pomoerium* – an open area or street which is parallel to the inner side of the fortifications and allows defenders easy movement and access to all parts of the wall.

The distance between two towers should not be larger than twice the firing range of the defenders' bows so that the whole area outside the wall is covered by their projectiles (Yadin 1963: 19-20). Keeley et al. (2007: 72) argued for 'universal' spacing between towers of 25-40 m, which should apply to any pre-gunpowder fortification, as determined by available weapon ranges. The gaps between towers could be longer in areas where the threat was lower, as with a wall built above a steep slope. Another cost saving, though much less effective, option was to build a saw-toothed (inset-offset) wall, where every offset functions as a bastion; offsets may stabilize the fortification wall, as each section supports the adjacent ones.

According to Vitruvius the foundations of fortification walls should be as deep as possible and the builders of the foundations should try to dig down to a "solid bottom"

(Vitruvius 1960: 21-24). Building the foundations on bedrock also prevented sapping under the fortifications.

Glacis

Soil, plaster, stones, and mudbrick glacis reinforce the slopes below the fortification walls. They prevent natural erosion and weathering, processes which may cause the sloped surface to become irregular and scarred with gullies that could be used by attackers in their approach to the city. They also create a slippery surface which is difficult for the approaching enemy to ascend and make sapping under the walls more difficult (Burke 2004: 113-15; Herzog 1992; 1997: 96; Parr 1968: 43; Reich and Katzenstein 1992) .[38] A glacis also makes scaling with ladders harder since it forces the attackers to put the base of the ladder further away from the base of the wall, creating an unwanted large angle with the ground and necessitating the use of longer and thus more vulnerable ladders (Eph'al 1996). It is similarly effective against battering rams and siege towers, which are most effective on a flat surface.

Gates

As the weakest point of the fortification wall, there should be as few gates as possible and these should be fortified and protected by two towers, one on each side. Gates should require indirect entry and the access ramp to the gate should approach it from the right so

[38] A glacis is a surface and should not be confused with a rampart, which is an earthen embankment or mound that appeared in the southern Levant only during the Middle Bronze Age (Burke 2004: 95-97)

that attackers, who usually hold their shields with their left hand and their swords with the right, will advance along the road with their right side exposed to the defenders.

A postern is a small gate in a fortification wall that may be used as a sally port for the defenders during sorties. Posterns should be obscured from outside sight and built in pairs so that the soldiers using them can exit through the left postern and retreat via the right, thus never exposing their unshielded right side to the enemy (Sidney 1955).[39]

Siege tactics and techniques

Conquering a fortified city was possible by scaling its walls with ladders, by breaching the walls or gates, by siege, by sapping and tunnelling under its fortifications, or by infiltrating the city. Y. Paz has argued, however, that the lack of evidence for siege machinery during the EBA together with the large quantity of attackers needed for a siege (six times larger than the defenders' force) points to the unlikelihood of siege warfare in this era. Most of the EBA battles would have taken place in the open or in the form of ambushes and raids, explaining the absence of destruction layers at many of the sites (Y. Paz 2011).

Before the invention of siege engines and artillery with the ability to breach fortification walls, the attackers of a fortified city could only use scale-ladders and towers. Neither were very effective and required heavy cover fire by archers (Eph'al 1996). A relief from the 24th century BCE (late 5th Dynasty in Egypt) shows Egyptian soldiers raising a scaling-ladder against the walls of a fortified city and using battering poles for breaching the fortified city gate (Yadin 1963: 146). Another 23rd century BCE wall painting shows a

[39] Burke on the other hand, argued that since fast war chariots were not introduced to the southern Levant before the middle of the MBA, there was no need for building an indirect entrance gate before that period (Burke 2004: 53-56)

mobile scaling-ladder being used against a city wall (Yadin 1963: 147). Several scholars have argued that siege engines used for breaching, namely the battering ram and the siege tower, existed prior to the Middle Bronze Age II. Humble (1980: 13) notes that the battering ram is mentioned in the Gilgamesh epic, dated to around 2500 BCE. Burke (2004: 91) proposes that simple bows and primitive versions of battering rams or siege poles may have been in use before 2400 BCE; siege poles were used in Egypt to tear apart walls prior to the 2400 BCE date, but they were not very effective against well-defended, massive fortification walls. Composite bows, which had a longer range and better penetration force, as well as battering rams, were introduced into the area during the Early Bronze Age IV (ca. 2400-2200 BC) and were regularly used during the Middle Bronze Age alongside another new innovation – the siege tower. Siege towers did not appear in the Ancient Near East prior to 2400 BCE. These siege engines functioned both as large siege ladders with the aim of scaling the wall and as elevated firing platforms at the foot of the fortifications. The height of a high-quality siege tower would have been about 30 m (Burke 2004: 78-92)..

Another way to overcome a fortification wall is by tunnelling beneath them. Sapping is a tactic in which the attackers mine a tunnel under the fortifications and support this tunnel with wooden beams. When the tunnel is finished, the beams are set on fire and consequently the tunnel and the fortifications above it collapse. This tactic was not feasible when the fortifications were built on bedrock (Arkush and Stanish 2005: 20). Tunnels can also allow attackers to infiltrate the besieged town (Seymour 1991).

Burke has noted that to date, there is no clear archaeological evidence of tunnelling or sapping during the Middle Bronze Age, but this may only be due to the limited exposures of defences dated to this period (Burke 2004: 74). Earlier evidence of tunnelling or sapping is likewise absent from the archaeological record in the southern Levant.

Other functions of fortifications

Fortifications have functions other than the obvious military ones. Some of these, as Ristvet (2007) has pointed out, were practical, such as protection against floods. Other functions were less practical and more symbolic and social (Arkush and Stanish 2005: 6; Thompson 1977: 41), and were targeted to outsiders as well as to the inhabitants of the city. The main function of fortifications may be to defend the city, but they also symbolize the might of the city and the ruler, they separate the town and its inhabitants from their surroundings and other populations, they control and limit movement and accessibility, and they constitute a distinct place in the city. In addition, the collective activity of building the fortifications, when performed by the inhabitants of the town, contributes to a sense of identity and town unity.

A symbol of the city and its might

Fortifications provide the first impression of the town to approaching visitors. Their prominent location, height and mass, and symmetry (i.e. vast stretches of high walls and evenly spaced towers or bastions) are intended to strike the eye in a manner that cannot be ignored. In Mesopotamia, fortifications were identified with the city itself (Ristvet 2007) and, to this day, the merlons on town walls continue to represent kingship in the form of the king’s crown (Van De Mieroop 1999: 51-52). Even as early as the late fourth millennium BCE fortifications served as symbols of towns and regimes, as shown by Yadin in his analysis of three Egyptian palettes dated to the end of the pre-dynastic periods and to the reign of Narmer. In these palettes, towns are symbolized by a square top-plan of a fortification wall (Yadin 1963).

Finkelstein has argued that large-scale stone and earthworks, of the type prevalent in the Levantine Middle Bronze Age, testify to an efficient, strong, and stable bureaucracy, economy, and political structure. Only a large and stable political entity could control the production and transfer of surplus, and the taxation and mobilization of the large groups of people involved with this type of project. For this reason, the large MBA earthworks, even – or perhaps especially – where their defensive value is debateable, served as an expression of the ruler's power, wealth, and legitimacy (Finkelstein 1992: 210-13). This is in accord with other scholars who argued that fortifications send messages to the outside and inside world; they constitute a testimony of the potency and numbers of its builders, a message which is directed toward people on the outside, while showing insiders the power of solidarity and the need for leadership, and serving as a warning of the fearful outside (Arkush and Stanish 2005: 6; de la Croix 1972: 9; Keeley 1996: 57) (Dickinson 1994: 160-63). Other researches has suggested that fortifications were able to defend sites by virtue of their sheer size; it conveys a message of power and awe which deters possible attackers (Hope Simpson and Hagel 2006: 23).

Because the cost of fortifications includes not only their initial construction, but also that derived from their maintenance, a well-maintained wall serves not only a defensive function but also displays the city's wealth and power. It suggests that the city has something worth defending and that it possesses the ability to do so (Ristvet 2007).

The fortifications of the southern Levantine EBA were the largest monumental buildings of the period, with hardly any equivalents from earlier periods in magnitude, shape, or function. With commoner dwellings only rarely rising to a height of more than one story and a limited number of temples, palaces, and other monumental buildings, fortification walls were the largest and most prominent structures in the southern Levant. The unique nature of these structures increased and intensified their psychological impact. Approaching a wall as grand as this in a period where the tallest building was only a few metres high would undoubtedly have been a striking and humbling experience, similar to the effect of a modern urban skyline on a rural visitor.

Separation and control

Fortification walls define borders between a town's population and the environment. They define the identity of inhabitants as a community, separating and distinguishing them from the outside world, from villagers, and from other walled communities, creating a sense of 'inside' and 'outside', 'owners' and 'usurpers' (Arkush and Stanish 2005: 6; de la Croix 1972: 9; Keeley 1996: 57; S. Paz 2010). An analogy may be drawn from a much later, but more documented, period: during the Middle Ages, the walls of a town became a symbol of good and transformed the area inside into "a region of order and justice" in contrast to the 'bad' countryside (de la Croix 1972: 34).

Another important function of fortification walls and gates was to control traffic entering and exiting the settlement. Gates channelled traffic entering the town, thus allowing surveillance, taxation, and the control of people and goods. They served as a liminal or border entity, allowing intercourse between town-dwellers and outsiders and asserting the ruler's authority over the countryside as adjudicator of disputes (Herzog 1997: 133-35; Keeley et al. 2007; Ristvet 2007; Smith 2003: 216).

The wall as a place

Beyond the gates and their associated spaces (G. R. H. Wright 1985: 191), the fortifications themselves are a 'place' within the town; a broad wall, with its bastions and towers, can account for some 10% of the built-up area of a typical town, allowing for permanent military or other presences on it and making it more than a mere barrier (S. Paz 2010: 171-73). In addition, the *pomoerium* – an open area or street that runs parallel to the wall, on its inner side, allowed defenders easy movement and access to all parts of the fortifications (de la Croix 1972: 18-19, 120), and also contributed to the consideration of fortifications as a geographic and social 'place'.

The dependence of the 'other' functions on the military function

As mentioned earlier and discussed later, there is a debate over the nature of warfare during the EBA and whether the actual function of the EBA fortifications was military and defensive. This raises questions whether the other functions of these fortifications depended upon or were derived from their defensive function or, alternatively, if they could have existed exist without a military function.

Keeley asserts that while fortifications are symbols of the town's military might and the leader's power, the potency of the symbol derives from and depends on the functional aspect. If fortifications were not functional, then their symbolic power would have been null. If they were used in battle, then their symbolic value would increase. During the Renaissance, with the introduction of modern artillery, castles lost their functional value and, as a consequence, they lost all of their symbolic value; thereafter, elite status was reflected through unfortified mansions and palaces (Keeley 1996: 57). Arkush and Stanish agree and suggest that fortifications do have symbolic meaning but that it derives from their primary function, which is to protect (Arkush and Stanish 2005: 20). If this is the case, fortifications, with their defensive capabilities, also symbolize the safety of the city versus the dangers of the world outside.

Monks has also suggested that defences may be built for other reasons. These reasons can be political (showing power, maintaining autonomy, self-aggrandisement), economic (protecting animals or surplus), social (preventing social disintegration), or ritual (protecting ritual complexes or holy sites). Walls, banks, and ditches should not be classified as fortifications without additional evidence such as protective towers, bastions, or ramparts (Monks 1997). Smith argued that the city wall differentiated the town from the countryside and was used as a marker of what was included in the town and what was excluded from it. It also symbolized political autonomy. When an Ur III king took over a city, he razed its walls to remove any obstacle to controlling and re-conquering it if needed, but also in order to symbolize the subservience of the city to an outside ruler (Smith 2003: 210-11). According to Collins, fortification walls during the Uruk period were used mainly for symbolic purposes – as a symbol of civilization, order, and how society should be (Collins 2000: 39-40). Evans and Rasson, as well, see features like walls, fences, ditches, and banks as serving symbolic purposes, intended more to create a sense of community than to actually defend the city (Evans and Rasson 1984: 720).

Based on the above, it seems that fortifications must have had a functional defensive value. They also had additional functions and possessed symbolic value. Saying they played a role in defence does not mean they were actually used in battle however, and their existence does not necessarily imply that the EBA was, as Kempinski suggested, a militant period (A. Kempinski 1992a: 73). The arguments presented above are based on relatively recent periods, while the EBA is a primal period in which hierarchy, urbanism, and organized conflict had only started to evolve; therefore EBA fortifications may have had different functions and purposes than their later counterparts.

Following the above detailed introduction to the ways in which organised violence and warfare might be materialised in the archaeological record, and the review of the tactical and technical requirements of functioning fortifications, the following sections analyse evidence for the existence of warfare during the EB III. This evidence is ambivalent, showing an obvious concern with defence, while not appearing to answer several of the criteria for the presence of endemic conflict: Chapter 3.3.3 deals with the question of weapons and their importance for siege or for fighting over fortifications, while Chapter 3.3.4 includes a closer look at various sites and evidence, in order to contextualize the conflict in EB III society and politics.

3.3.3. Weapons of the EB III in the Southern Levant

Long-range weapons

The first contact between the defenders standing on the fortifications and the attackers below them occurs at a distance, and therefore long-range weapons like slings, bows, and, to a lesser degree, lances and spears, are mandatory in siege warfare. Other substances that could be used as weapons are boiling pitch or quicklime (Seymour 1991: 2). Short-range weapons like maces, swords and axes could be utilized only after the attackers had scaled or breached the fortifications, infiltrated the town or were attacked by sallying defenders. Despite the noticeable absence of weapons in the Levantine EBA (see 2.1.5), the very existence of fortifications has led to circular arguments such as that of Helms, who argued that the massive investment in towers and their constant rebuilding is a proof that long range weapons existed and were in use (Helms 1976a: 205).

The sling can be an accurate weapon, but only with a very skilled operator. It is not considered a very lethal weapon (Keeley 1996: 51). Slings are normally represented in the archaeological record only by their projectiles, and even these might be any natural pebble (Burke 2004: 58-59; Helms 1976a: 206-08). Y. Paz suggested that rounded stones found in the Leviah destruction debris were slingstones (see below in site analysis section 3.3.4).

The bow is also a rare find and, barring exceptional finds like the bow from 'The Cave of the Warrior' (Schick 1998), is absent from the archaeological record of the southern Levant. It is, however, found in Egypt in later periods (e.g., J.G.D. Clark et al. 1974: 325; McLeod 1982) and also depicted on many Egyptian monuments dated to the 4th millennium BCE (Yadin 1963: 46). The more powerful composite bow (Rogers 1940) may have been introduced in the Near East at the end of the EBA; the Akkadian king Naram-Sin is seen holding what Yadin claimed is a composite bow (23rd century BCE; Yadin 1963: 47, 150). Composite bows appeared in Mesopotamia in mid 3rd millennium BCE (Philip 2003b), arriving in the Levant only during the Middle Bronze Age (Burke 2004: 68).

Lithic arrowheads, rare after the Neolithic (Philip 2003b), are absent from the archaeological record of the non-desert areas of the EBA (S. A. Rosen 1997). Even assemblages associated with KKW people lack arrowheads, in contrary to the commonly found arrowheads in ETC assemblages of the Anatolian and south Caucasian sites (Greenberg et al. 2014). Helms suggested that roughly worked flints were used as arrowheads during the EBA (Helms 1976a: 206-08), however rough points would have low accuracy and poor penetration. Copper arrowheads would have been too dear and inefficient, while bronze tips appear only in the 2nd millennium BCE (J.G.D. Clark 1963: 71; Philip 2003b).

Wood-tipped arrowheads were common throughout prehistory and history; they were found in archaeological excavations as well as recorded in anthropological studies throughout the world (e.g., J.G.D. Clark et al. 1974: 338-42; R. Miller et al. 1986; Pope 1962: 60-61; Rausing 1967: 9, 166-67; Wachsmann 1970; Wiessner 1983: 261-62). Rosen thinks that wooden arrow heads may have been enough for warfare (S. A. Rosen 1997: 155). A mass grave from the 11th Dynasty (21st century BCE) found at Deir el Bahri, Egypt contained about 60 soldiers, at least 10 of them were hit by ebony-tipped arrows. No flint arrowhead was found in the grave (Winlock 1945). Bone, horn and ivory could also be used for arrowheads (Helms 1976a: 206-08; R. Miller et al. 1986: 190). Given the available plant materials in the Levant (in contrast to African and East Asian settings, where the use of materials such as ebony and bamboo and techniques such as poisoned darts are attested), it seems that wooden or similarly tipped arrowheads would have been suited primarily for small-game hunting mainly due to their low penetration force (Bergman 1993; Ellis 1997; Guthrie 1983; Otterbein 2004: 65-66; Pope 1962; Wachsmann 1970).

Based on the above, the most efficient long-range 3rd millennium weapon against humans would have been stone projectiles. The absence of arrows, javelin-heads and other pointed projectiles in the south Levantine EB III, although the technology of their production was known and available, means that the bows, arrows and large projectiles were not a standard feature of the EB III field of battle and the only long range weapon available was the sling.

Short-range weapons

While the mace-head is typically considered a weapon, and is the only apparent one found in considerable numbers in EBA contexts (2.1.5), its function in combat during this period is debatable. Hamblin suggested that in Early Dynastic Mesopotamia, maces had already lost their military importance to the axe and had become ritual and symbolic items (Hamblin 2006: 60). According to Shimelmitz and Rosenberg, round or piriform Levantine mace-heads used during the Neolithic and Chalcolithic Periods were not lethal due to their small size (smaller than that of the EBA mace-heads), thin shaft, and lack of a sharp edges (as, for example, in discoid mace-heads or mace-heads with protruding knobs). Shaft bores of these early mace-heads had an average diameter of 1.17 cm, and a wooden handle inserted to this narrow shaft would not be able to withstand the shock of a strong blow or constant use. They therefore suggest that maces were used for subduing, rather than killing adversaries, as illustrated by the image of the king subduing his enemies on the Narmer

Palette (and, by analogy, by the clubs used by modern law-enforcement forces(Rosenberg 2010; Shimelmitz and Rosenberg 2013). Sebbane argued that the mace-head was a weapon (Sebbane 2009), but that it also had ritual value and was therefore a common temple offering (e.g., in the Chalcolithic Nahal Mishmar hoard; Sebbane 2008).

Shimelmitz and Rosenberg point out that mace-heads, sling stones, and transverse arrowheads appear in the archaeological assemblage only after hunting of wild game ceased, i.e. during the Pre-Pottery Neolithic B and C periods. As a consequence, and based on their low lethality (in contrast to pointed arrowheads and disk-shaped, or protruding knob mace-heads) and meagre osteological evidence of violent death during the Neolithic and Chalcolithic, they suggest these weapons were used for relatively non-lethal ritual fights and contests. These festive-like and controlled rituals were a social mechanism to control aggression and to renew social identity. Duels also played a role in solving disagreements between groups and were used to demonstrate qualities such as the bravery or fitness of participants (Rosenberg 2010: 214; Shimelmitz and Rosenberg 2013).

Other items that could potentially be used as weapons were agricultural tools (Y. Paz 2011). Gasperetti and Sheridan claimed that even sickle blades (!) may have served as weapons (Gasperetti and Sheridan 2013: 396). Arkush, Stanish, Topic and Topic suggested that in the absence of specialised weapons, slings, clubs, agricultural tools, and other similar-type instruments were used as weapons in close-range fighting. Specialised pointed and sharp-sided weapons in "non-state societies" were rare and were probably used only by specialized warriors and not by the majority of combatants who formed a part-time militia (Arkush and Stanish 2005: 20; Topic and Topic 1987).

3.3.4. Detailed Analysis of EB III Fortifications

The fortifications of the EBA reached a climax during the EB III: They were built around every major settlement and were elaborate and monumental structures reaching widths of 8-15 m and including sophisticated military architectural features like glacis, towers, bastions, and gates (Herzog 1997: 94-96; A. Kempinski 1992a: 68; Mazar 1995). Most scholars dealing with the Early Bronze Age Levant have taken it for granted that the sole function of the period's fortification walls was to act as a defence against enemies: neighbouring cities or Egyptian armies (e.g., Helms 1976a; A. Kempinski 1992a). However, recent research has begun to question this hypothesis. Joffe, Greenberg, Paz, and Philip, among others, have acknowledged the symbolic and social function of fortifications and of the construction process itself, and some of them have even doubted their defensive value (Joffe 1993: 71; S. Paz 2010; Philip 2003a: 112-13). Following this line of thought, and in addition to the above analysis of EB III (lack of) weapons, the analysis below deals with the question of organized violence in EB III. It does so by examining the period's fortifications and other conflict-connected issues. It aims to show that when looking closely at the period's fortifications they are not as efficient and sophisticated as they appear to be at first glance, and that their functional value as military fortifications is debatable. Several sites have been taken as test cases: Bet Yerah, Yarmuth, Bab edh-Dhra‘, Leviah, Zeraqun, Ai and Hebron. These sites were chosen due to their size, the size of their fortifications, and the amount of data available from excavations. Fortifications of each site are examined with the aim of understanding their military value. Other site-specific issues, such as mace-heads found at TBY, the cemetery of Bab edh-Dhra‘, and the destruction level at Leviah are examined as well.

Tel Bet Yerah

As the site was built on a small peninsula bordered by the Jordan river on the west and by the Sea of Galilee on the east (Greenberg 2014b), its EBA fortifications were built first on the south and then along the west flank, apparently leaving its north and eastern flanks protected by the river and lake (Greenberg and Paz 2005; S. Paz 2010) .[40] Other sites where fortifications were built on the easily accessible side only include most of the EBA Golan 'enclosures', Tell el-Far'ah North, Bab edh-Dhra', and Zeraqun (Douglas 2011; Herzog 1997; Y. Paz 2003; Rast and Schaub 2003).

Three successive fortification walls were identified at TBY (***Figure 33***). The latest was excavated to its full length, and the earlier only in short segments, mainly by P. Bar Adon during the 1950s (Bar-Adon 1953, 1954, 1955; Greenberg and Paz 2005; Greenberg and Eisenberg 2006; Maisler et al. 1952; Y. Paz and Greenberg 2006). The walls were dated by Greenberg and Y. Paz to the various phases of the EBA: Wall A was assigned to the EB II, with construction beginning as early as the EB Ib, Wall B to the beginning of EB III, and Wall C to the latter phases of the same period (Greenberg and Paz 2005).

Wall A was built of mudbricks, with no stone foundations (S. Paz 2010). It was unearthed in the southern part of the mound only, and consisted of three bonded walls (Greenberg and Paz 2005) that together reached a maximum thickness of 8 m. Greenberg argued that it was 5-7 m high (Greenberg 2014b: 9). No towers were found in this wall, but it was breached by a paved, direct-access gate, located in the south-east of the mound. The

[40] During the EBA, the Jordan River passed to the west of the site. The course changed to its current position in relatively recent times (Greenberg 2014b).

gate was in use throughout the EB II and blocked at the beginning of EB III, prior to the construction of Wall B (Greenberg and Paz 2005: 89).

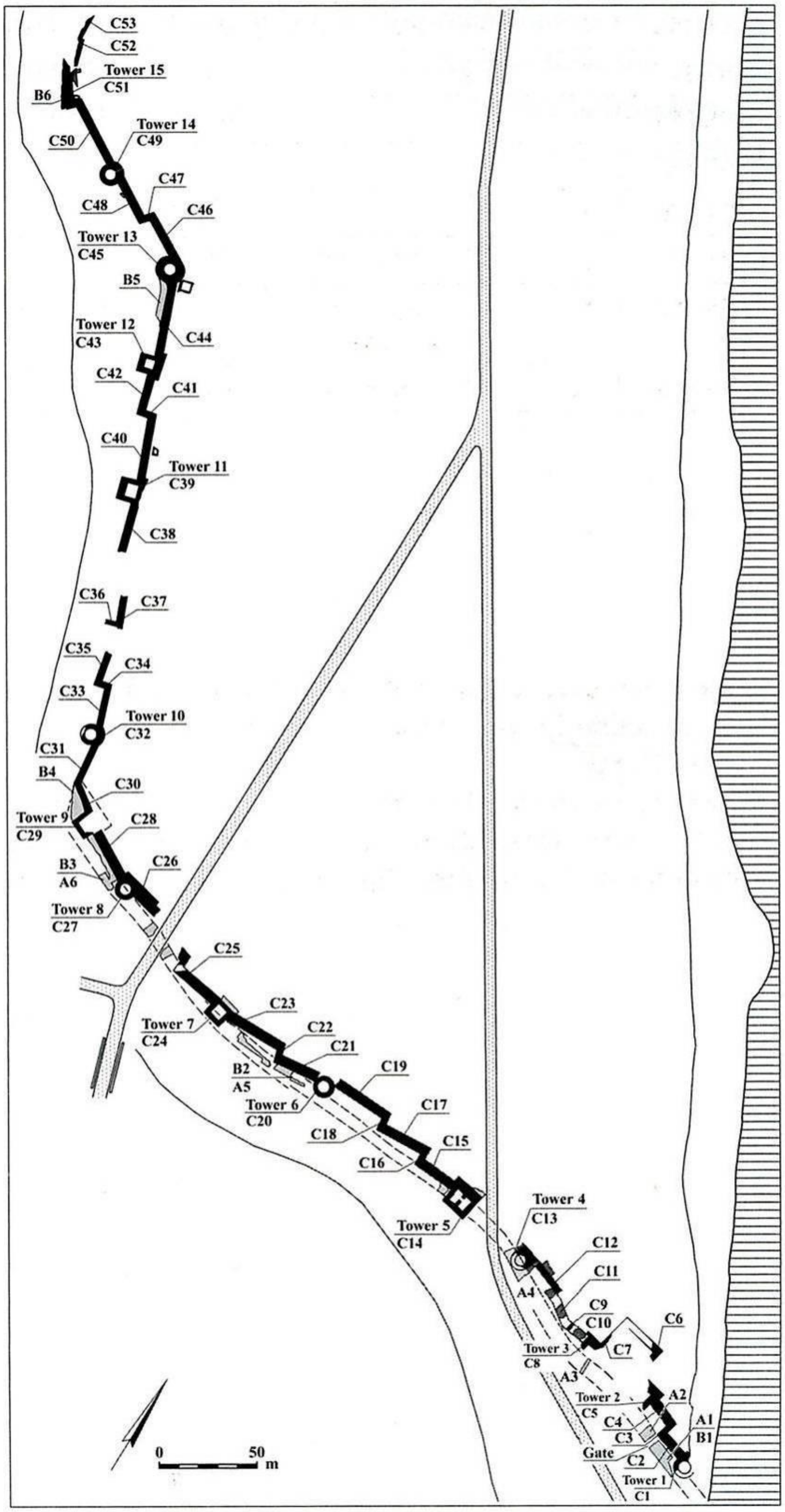

Figure 33: TBY fortifications

Walls A,B shaded grey, Wall C in black, modern roads dotted, Sea of Galilee hatched

(Y. Paz and Greenberg 2006: Plan 6.1)

Wall B was built at the beginning of TBY Period D (EB III) in order to replace Wall A, due to the latter's deterioration and possibly on account of destruction caused by an earthquake (Greenberg and Paz 2005). S. Paz suggested that the deterioration was so bad that at the beginning of the EB III the town of TBY may have been unfortified (S. Paz 2006a: 50). Wall B had low stone foundations (one to three courses only) and a width of 3.5-5 m with an average of about 4 m. Only short stretches of Wall B were found, probably because sections of Wall A were utilized in its construction and since Wall C builders dismantled it. No towers belonging to this wall were found. Wall B was in use during the first part of EB III (Y. Paz and Greenberg 2006).

Wall C was built during the latter part of the EB III; excavations in Area BS found that it was constructed in the second phase of Local Stratum 8 (the penultimate EB III stratum), positioned over buildings dating from the first phase of this stratum. Wall C was built with stone foundations and a mudbrick superstructure (Greenberg and Eisenberg 2006; Y. Paz and Greenberg 2006). Some sections of the stone foundations were preserved to a height of over two metres while the mudbrick superstructure was preserved in some places to over one metre (Y. Paz and Greenberg 2006). The wall is usually 4 m wide, with some segments measuring anywhere from 3 m to 7 m (Greenberg and Paz 2005: 94). In contradiction to the previous walls, Wall C is somewhat separated from the settlement with an open area on the inside of it and no structures abutting it (Greenberg and Eisenberg 2006). The line the wall followed was not always the most tactically favoured one – some sections in this wall were constructed on ground inferior to the location of Wall B. *Figure 34* shows sections of Wall C and Tower 1 that were built over a domestic area which was slightly lower than the nearby Wall B. Not only did Wall C have a small mound in front of it (the remains of Wall B), which hampered its tactical superiority, the preserved walls of Tower 1 were also lower than the Wall B remains. If the builders of Wall C wanted to build it on the highest grounds available, they should have built it over the remains of Wall B. The technical issues involved in building a new wall over existing remains was not a problem, since it was in any case built over existing domestic structures.

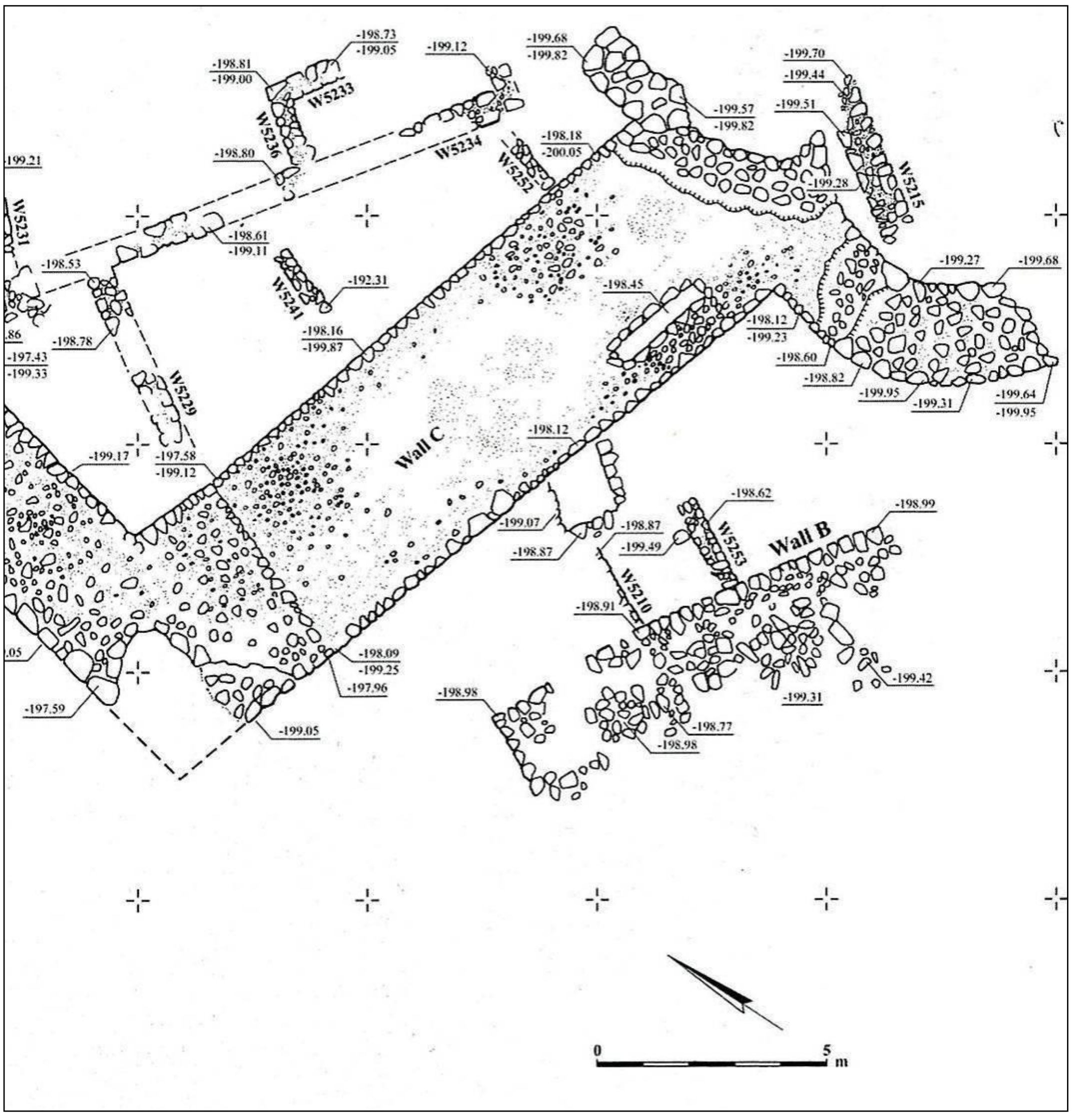

Figure 34: Wall C, B and Tower 1, Area BS, Local Str. 8
(Greenberg and Eisenberg 2006: Plan 5.11)

Wall C seems to have been built in sections, with many seams and additions, as well as gaps in the stone foundations, which were filled with mudbrick construction (Greenberg and Paz 2005: 94). Fifteen towers were found along this wall, some round, some of the horseshoe variety, and some square. None of them had ground access and therefore may have been used for storage. Gaps between towers ranged from 27.5 to 80 metres. Wall C is built in a saw-tooth pattern which may allow fire-coverage along all segments of the wall (Y. Paz and Greenberg 2006). The house grid in the late EB III city plan changed and seems to align with Wall C fortifications (S. Paz 2006a: 50) in spite of the aforementioned gap between the houses and wall. This gap may have been a military requirement (a pomoerium, described above; cf. Helms 1976a: 202).

A gap between Towers 4 and 5 may have been the location of the city gate. This area suffered from modern interference and the only hint of its existence is the elaborate Tower 5, which is a two room bastion, and the lower ground in this area (Greenberg and Paz 2005: 94).

As Greenberg and Y. Paz point out, Wall C "exhibits a curious combination of planned military engineering and *ad hoc* construction" (Greenberg and Paz 2005: 94). It is indeed a mixture of outstanding military engineering features together with not-so-outstanding ones. Based on the fortification design principles presented above, I would suggest that although onlookers would have perceived the TBY fortifications as an impressive structure, the walls did not actually form a very effective barrier, in their various phases, against attackers. The first design principle described above is the function of the wall as a barrier and obstacle. The first wall, Wall A, was not found to extend beyond section A6, while Walls B and C may have reached further north and were almost twice as long; it therefore seems that any defence provided by Wall A was less than the latter ones. Another reason to question the efficiency of these fortifications is the possibility that the site stood virtually unfortified for a time at the beginning of the EB III, since Wall A had stopped functioning as an effective obstacle due to erosion and lack of maintenance (Y. Paz and Greenberg 2006: 247). Furthermore, as shown above, the positioning of segments of Wall C on inferior lower ground, as compared to Walls A and B, decreased the defensive value of this wall.

Wall C was built in a zigzag or saw-tooth pattern and included at least 15 towers. This may indicate careful military planning since the zigzag pattern strengthens the structure and allows enfilading fire from sections that are perpendicular to the approaching or scaling enemy. The towers could have served as elevated firing platforms and, by protruding from the wall, as enfilading fire platforms as well. The distances between the sections and the towers were different however than the conventional 30 m (see above) – distances between Wall C towers were always more than 30 m with the smallest gap being 36 m and the largest 128.9 m. The average gap between towers (excluding the exceptional value of 128.9 m) amounts to 56.7 m.[41] As already noted, corners of the offsets could be used as firing platform instead of towers, even though they would not have been very efficient given they lack the elevation, firing angles, and cover of a tower. If we measure the length of the segments from one corner to the next or from one corner to the centre of the next tower,

[41] Distances were measured on a digital map produced by the ArcGIS. In contrast to data in the excavation report (Y. Paz and Greenberg 2006), distances were measured between corners of the wall or centres of towers, regardless if they were actually found or just reconstructed. The largest gap of 128.9 m is between Towers 10 and 11. If section C36, located in the centre of this section, is a part of another tower, than this section should be divided into two gaps of about 53 m and 75 m, which conforms with the average calculated above.

the distances are distributed between 4.2 m to 51.7 m. Of the 45 segments measured, ten were longer than 30 m. The above measurements mean that the ‘standard’ bowshot gap of 30 m, which allows for covering fire over all sections of the wall as well as on other towers (should they be scaled by the enemy), was not kept. Therefore, it seems reasonable to conclude that this may not have been deemed important by the designers or the builders of Wall C.

The positioning of some of the towers is inadequate as well. Tower 13 is positioned in the most concave section of the wall, where its defenders would have had the worst firing angles. Tower 9 is positioned about 20 m from the best possible location – the corner of the wall where it changes orientation from northwest to north. If Tower 9 would have been positioned in this spot, its garrison would have had a firing and viewing angle of about 220 degrees and a commanding view of large sections of the wall to the north and south. In its current position, the available viewshed of soldiers manning this tower consists only of a limited section of the southern wall.

The ground plans of Wall C towers are either rounded or square. As shown above, rounded towers are considered more effective in terms of viewing angles and resistance to breach. The existence of square towers in Wall C may be another indicator of indifference to strategic considerations. This being said, the existence of square towers at other sites and in different periods (Burke 2004: 128-30) may suggest that the qualities of rounded towers were not always appreciated and that a direct inference regarding the functionality of fortifications with square towers is not necessarily possible. Other features of the TBY fortifications that contributed to their reduced efficiency are the lack of a glacis, the relatively thin outer walls of the Wall C towers, and the fact it did not encircle the whole site.[42]

Social cost

The built length of TBY Wall C, as measured using the ArcGIS map, is 985 m.[43] The standard width was 4 m (see above), and its height was calculated as at least 6 m, [44] comprised of 2-3 m of stone and 3-4 m of mudbrick. This leads to an estimated volume of 9,850 cu m of stone and 13,790 cu m of mudbrick.[45] Based on calculations described earlier (Chapter 3.2.1), the total number of workdays needed for the construction of this wall is roughly between 50,500 to 151,000.[46] This is a considerable figure and would have demanded a massive effort on behalf of the inhabitants of TBY. Moreover, the current excavators of TBY have indicated that late EB III Bet Yerah was most likely not occupied over its entire extent, as late EB strata have not been found in several excavation areas (Greenberg 2014b: 11).

[42] One feature that was ignored in this analysis is the 'Sortie Tunnel' (Y. Paz and Greenberg 2006). Due to its construction and the use of dressed ashlars, it seems that it should be dated to the Hellenistic period.

[43] Measured from section C1 to C53, including all towers and unpreserved sections; measured at the centre of the wall.

[44] Based on the assumption that the width of the wall is 70% of its height (Kern 1999: 10).

[45] Greenberg and Paz estimated even higher volume for the wall (40,000 cu m) (Greenberg and Paz 2014). If their assumptions are true, this will only strengthen my conclusions.

[46] The same figures were used in the calculation of labour costs for the construction of the Circles Building, see the subchapter on *Social cost* above.

Reference	*Cu m per man-day*		*Foundations workdays*		*Superstructure workdays*	*Total workdays needed*	
	Min.	*Max.*	*Min.*	*Max.*		*Min.*	*Max.*
(Erasmus 1965)	0.13	0.13	73,875	73,875	15,322	89,197	89,197
(Mizrachi 1992)	0.09	0.15	114,053	67,719	15,322	83,041	129,375
(Shelach et al. 2011)	0.17	0.28	56,631	35,218	15,322	50,540	71,953
(Helms 1981)	0.07	0.27	135,438	36,729	15,322	52,051	150,760
Average			**94,999**	**53,385**	**15,322**	**68,707**	**110,321**

Table 12: Wall C labour costs

Based on the paleo-demographic calculations presented above, only 20-30% of the inhabitants are physically able to participate in such a project and they are available for about two months per year. Assuming they would contribute 20-40 workdays each, the total available workdays per annum equals 16,000-48,000 (based on a population of 4,000), or 10,000-30,000, based on the presumably reduced population of late EB III (2,500 people). This means this project would have lasted up to fifteen years. Alternatively, based on Erasmus' estimates for chiefdom societies (40 available workdays per year for every household of five), the wall could have been constructed in up to 7.5 years. All the above estimations are based on the unreasonable assumption that all available workdays would have been dedicated to the construction of the wall alone. Other synchronous projects, lower population estimates, lower participation rates, or a higher foundation/wall are all variables that would increase the construction time estimates considerably. The workload on the population may have been even higher when we consider the maintenance requirements of fortifications after they have been built (Greenberg and Paz 2014: 46) –

mudbrick fortification walls had no roof overhang to protect them (Jerome et al. 1999; Stavi 1946) and thus were exposed to rain and probably underwent rapid deterioration.

The garrison needed for manning the fortifications is another issue involving high social costs. Based on El-Amarna texts (see el-Amarna letters 137, 244, 289 in Albright's translations: Albright 1969), Joffe proposed that southern Levantine LBA cities could be defended with as few as one hundred (trained Egyptian) troops (Joffe 1993), but a small garrison could not defend the long TBY wall. Topic and Topic note that sling-stones found on fortification walls are usually found in piles positioned at 2-3 m intervals (Topic and Topic 1987). This may allow us to conclude that the garrison stationed at a walled town should have some presence every several meters along the wall. Bachrach argued that during the Norman invasion of the British Isles, a garrison needed one man for roughly every 1.25 m (Bachrach 1985), while the Roman garrisons utilised 8 men in freestanding towers and 50 in bastions (Jęczmienowski 2012). According to these calculations, the site of TBY, with its 15 towers, approximately 1 km of fortifications, and 1.8 km of unfortified sides, needed at least 2,300 people to protect the whole circumference of the site (one man every 1.25 m). These calculations are performed without considering the vulnerability of the unfortified sides, which would have required more manpower to protect, and without considering other functions requiring manpower like tactical reserves or logistics. Since during the Levantine EBA the only available 'military' force was probably a civilian militia, where citizens were drafted only when needed (Helms 1976a: 206), the load placed on civilians in case of a war was considerable. Tel Bet Yerah, with less than 40% of the population between the ages of 15 and 44 years old, and only a bit more than half of them males, could supply at most 1,600 able-bodied men (based on the highest estimated population size), and probably much less.

Tel Bet Yerah, although not very high above its surrounding, was a prominent place in the landscape due to its location and fortification walls (S. Paz 2010). It seems that its fortification walls, although very impressive for the period, were not as functional or effective as they appear at first glance.

Mace-heads

Tel Bet Yerah is unique in the large quantity of mace-heads found over the course of the various excavations conducted at the site, and especially so in the recent excavations. A total of 66 mace-heads and their fragments were found between 1946 and 2013. Every item has been measured and weighted. Measurements consisted of the bore shaft diameter and the item's weight. The bore diameter of fragments was taken by comparing the fragment to a set of complete circles, the same way pottery sherds are measured in order to estimate vessel or rim diameter. Since the bores were usually drilled from both ends of the mace-head, the shafts are not uniform; thus for every artefact minimum and maximum values were obtained. From these measurements, the maximum effective diameter of the shaft was estimated; that is, if the minimum diameter of the bore is measured at the top of the mace-head and the maximum at the bottom, then the shaft is considered to have an effective diameter equal to the maximum bore diameter. However, if the minimum diameter of the bore is in the centre of the mace-head, then the shaft's effective diameter is equal to the minimum diameter of the bore. Only complete artefacts and fragments constituting at least 50% of the complete item were weighed.

38 items could be measured for their bore diameter. The maximum diameter was 2.5 cm and the minimum was 1.0 cm, with an average of 1.6 cm and a median of the same value. Identical average and median values mean that the values are well distributed without large variances. Of the 38 measurable items, 30 could be measured for a minimal bore diameter, and 21 mace-heads could be analyzed for an effective shaft diameter. Only seven mace-heads could be weighed and their total weight estimated. Weights were found to be between 234 gm and 526 gm. The results are summarized in Table 13.

	Bore Diameter (cm)	Minimal Bore Diameter (cm)	Effective Shaft Diameter (cm)	Weight (gram)
Maximum	2.5	1.9	2.0	526
Minimum	1.0	0.9	1.3	234
Average	**1.6**	**1.3**	**1.7**	**318**
Median	1.6	1.4	1.7	256
Count	*38*	*30*	*21*	*7*

Table 13: Mace-head measurements

The results show that most of the mace-heads have a very narrow bore, which only allows for a thin and slender shaft. This, combined with a relatively heavy body, would lead to the mace breaking quickly, rendering it useless. This is in accord with Fischer, Shimelmitz and Rosenberg's thesis (P. M. Fischer 2008: 359-60; Shimelmitz and Rosenberg 2013) regarding the low value of mace-heads as an effective close-range weapon. That most of the mace-heads at TBY were found in the 'plaza' next to the Circles

Building, rather than in strategic defensive locations, is additional evidence for these items having a function related to ritual/ceremonial combat or other non-martial activities.

Evidence of warfare at TBY is lacking. The site's fortifications seem impressive at first sight, but closer examination reveals that their defensive properties are less than remarkable. The fortifications encircle only part of the site and have several design flaws. The most impressive 'features' of the fortifications are the considerable social effort required for their construction and their prominence on the landscape. Other markers of war such as destruction levels and effective combat weapons are also lacking.

Tel Yarmuth

Tel Yarmuth had two sets of fortifications (Wall A and Wall B), which went through three phases of construction. The first phase was the construction of Wall A at the beginning of the EB II. Its width was 4.25 m to 5.60 m and reached a maximum of 6.4 m. It was preserved in places to a height of 4.5 m (Miroschedji 2008, 2013). Wall B was built at the end of the EB II. It had a width of 2.60 m. Wall B was built with cyclopean-sized stones, well outside of Wall A. The area between them was then filled with earth and stones, which brought the total breadth of the fortifications to as much as 40 m (Miroschedji 2014). Wall B was preserved to a height of 7 m and de Miroschedji reconstructs it as having stone foundations set on bedrock, a kind of a casemate stone wall above this, and a mudbrick superstructure at the top. The height of the parts made of stone was 6 m and the superstructure contributed another 2 m, making the wall 8 m high in total (de Miroschedji, P. pers. com.).

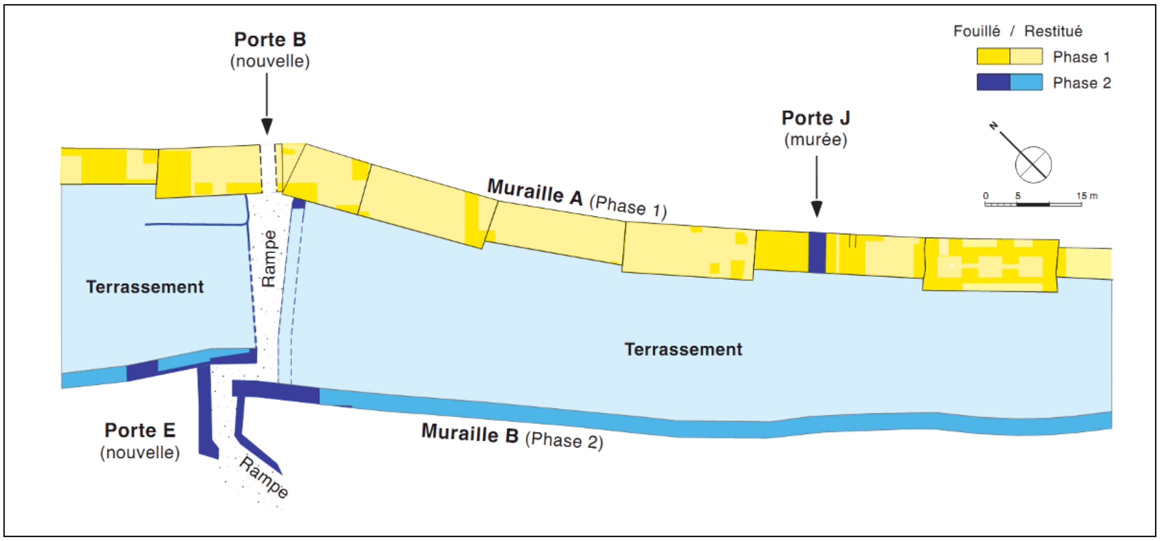

Figure 35: Tel Yarmuth Fortification A and B

Wall B encircled the whole site and had a length of about 1.8 km. Gate E is an indirect access gate with a ramp leading to it from the outside. It is positioned in Wall B, and aligns with a parallel gate in Wall A, labelled Gate B. The ramp continues between the gates. The fortifications went through a third phase after Wall A was buried and went out of use. Some of this wall was buried under Palace B-1. Probably at the beginning of the EB III, a series of isolated platforms, most likely bastions, were built in the west corner of the city, between the two walls. Bastion K, which is a part of Wall A continued to be used during most of the EB III, until the K-2 violent destruction, dated to the EB IIIb (Miroschedji 2006; 2008: 1796; 2013). It seems that, unlike other Levantine sites, relatively little effort was put into Yarmuth's fortifications during the EB III.

The Yarmuth fortifications required very large quantity of raw materials and a large workforce. Only a strong polity could mobilize such considerable manpower. Miroschedji argued that at some point in time the fortifications of Tel Yarmuth were larger than what was really needed for defence and that their primary function was as a prestige structure to show the power and status of the city and its rulers. During the last phase of the fortifications, dated to the EB III, a part of Wall A and possibly one of the bastions were dismantled in preparation for the construction of Palace B-1. The EB IIIc fortifications were thus made weaker in exchange for the establishment of a more prominent symbolic structure in the form of the large palace (Miroschedji 2006: 70; 2013).

The fortifications at Tel Yarmuth have architectural features that are militarily sound as well as features that would be less than effective in combat. The distances between wall towers and bastions conform to the 'bow range' rule and are between 12 m and 32 m. The gate is an indirect access gate; however access is not from the right, as it should be if the builders wanted to achieve maximum military effectiveness. The weakening of existing fortifications in order to construct Palace B1 is bewildering as well, since a new palace with large storerooms full of surplus (Miroschedji 2008) would have made the settlement much more attractive to attackers, thus requiring stronger protection than before . The internal bastions, positioned between Walls A and B are another ineffective feature: as discussed above, a tower or bastion should protrude out of the wall in order for it to be an efficient firing platform.

Another issue is the garrison required to man the fortification walls. This garrison should have been between 720 to 1400 (based on Bachrach 1985; Topic and Topic 1987) in times of military threat. With a site size of about 18 hectares and a population of about 3600 people (200 per hectare), Tel Yarmuth only had about 760 able-bodied men (39% between 15-44 years old, 54% of them men). This amount of men would hardly have been enough for protecting the town.

The small population of the town raises another question regarding the workload needed for the construction of the fortification. The Yarmuth fortification walls, with widths of 2.6-6.4 m, a length of 1.8 km, and stone foundations of 6-7 m high, would have demanded a tremendous effort on behalf of the small population of the site (compare it to 4,000-7,800 people TBY, where Wall C was about 4 m wide, 1 km long and its stone foundation presumed to be only 2.5 m high). This suggests a long period of construction and a very high degree of recruitment. It is interesting to note that this endeavour took place during late EB II, while during the EB III the efforts went to building the palace and the western bastions.

Bab edh-Dhra'

Bab edh-Dhra' is located east of the Dead Sea, on the south bank of Wadi Kerak. The site was inhabited throughout the EBA and includes a walled settlement, extramural habitations, and a cemetery. Two walls were built during the EB II and EB III. Wall B, dated to the EB II, is a 2.5 m wide mudbrick wall that was only found in limited locations around the perimeter of the site. This might be due to erosion and preservation issues, removal of this wall by the builders of the later EB III wall (Wall A), or because in places, where steep ridges existed, no wall was built at all (Schaub 1993).

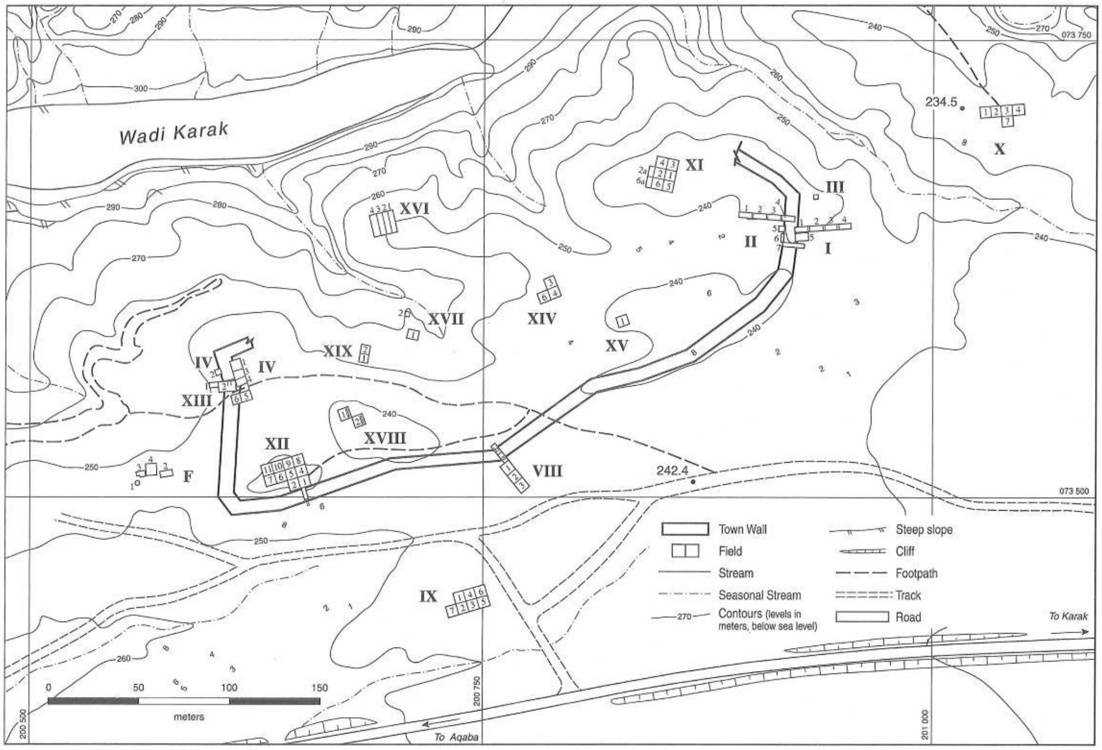

Figure 36: Bab edh-Dhra' site, fortification wall, and excavation areas (Rast and Schaub 2003: Fig. 1.4)

Wall A was built during the EB III and had stone foundations and a mudbrick superstructure. It is 7-8 m wide (Rast and Schaub 2003: Figs. 10.12, 10.24; Schaub 1993). It encircled the whole site, except for the north side. Schaub believed that its absence on this side is due to later erosion (Schaub 1993), while Rast and Schaub considered other possibilities like recent activity or that it was never actually built on this side because of its steep slope . The only structure related to the northern fortifications if they did exist, was found in excavation Field XI, situated in the northeast corner of the site. It is a large building built with stone foundations and a mudbrick superstructure. Rast and Schaub suggested that this structure was actually comprised of two towers and may have either been part of the eroded wall or free standing towers built to compensate for the lack of a wall in this area (Rast and Schaub 2003). It could also have been a gate, as it is depicted in the excavation site plans (Rast and Schaub 2003: Fig.10.1), or in an ‘artistic re-creation of the townsite’ (Gasperetti and Sheridan 2013: Fig. 2). Gasperetti and Sheridan think that this structure was a pair of observation towers (Gasperetti and Sheridan 2013).

The stone foundations and probably the mudbrick superstructure as well were built in 7-15 m long segments, differentiated by seams and different building material (Rast and Schaub 2003: 270-72; Schaub 1993). A simple direct access gate is located on the west side. It was blocked in a later phase of the EB III. The wall encircled an area of 2.8 hectares. Apart from the walled settlement, there was extramural settlement to the south, east, and west of the town. The total population was estimated as 600-1000 people. The EB III archaeological record ends with a destruction layer, but the site was inhabited again during the EB IV, though most of this latter period’s settlement was located next to the ruined town (Rast and Schaub 2003; Schaub 1993). Lack of data on the fortifications of Bab edh-Dhra‘ prohibits drawing definite conclusions on the social cost of building them, but suffice it to say that a 7-8 m wide wall with a length of 0.5-0.6 km is a considerable effort for a small population.

Bab edh-Dhra‘ is the only EB III site containing mortuary remains that have been studied with the aim of identifying evidence for interpersonal violence (Gasperetti and Sheridan 2013). Material evidence for violence at Bab edh-Dhra‘ consists of metal daggers found in graves and burnt layers, especially the ones that mark the end of the EB Ib (Gasperetti and Sheridan 2013; Rast and Schaub 2003). Only two mace-heads were found at Bab edh-Dhra‘, both of them complete. One was a surface find and the other was associated with Area F graves (Lee 2003). Gasperetti and Sheridan suggest that in addition to dedicated weapons, like daggers, there was an abundance of other tools that could be used as weapons, e.g., sickle blades (*sic*.) (Gasperetti and Sheridan 2013: 396).

In a study of a single charnel house, A22, which spans the EB II and III, 200 crania were examined. These showed a relatively large number of cranial fractures. Gasperetti and Sheridan proposed that fractures to the cranium above the “hat brim line” should be interpreted as resulting from blows to the head and not from accidents like falls. In comparison to other sites, the percentage of skulls with depressed cranial trauma was high, and in most of these the trauma was to the front of the skull. That said, the rate of cranial injuries in their sample did not increase during the EBA; the increase in site size, social complexity, and the construction of fortifications did not change the rate of cranial trauma. The rate of postcranial trauma, mainly to the ulna and radius, grew from 0% during the EB Ia to about 5% during the EB II and EB III. These injuries are not necessarily due to violence, and may have been caused by the increased density of the site and due to houses being built on a steeper topography, causing a higher rate of accidents (Gasperetti and Sheridan 2013).

Although Gasperetti and Sheridan argue that the data indicate a high degree violence and conflict at EBA Bab edh-Dhra‘(Gasperetti and Sheridan 2013), it is difficult to relate this violence to warfare or other external threat. Evidence for the absence of an external threat is the incomplete circuit of the fortification wall, described above. Unlike at TBY, where the Sea of Galilee may have functioned as some kind of a barrier, the steep topography on the northern side of Bab edh-Dhra‘ did not prevent the construction of domestic houses on that side and therefore could not serve as an effective barrier replacing a fortification wall. Other telling evidence is the extramural construction of houses. If the threat of violence was high, no houses would have been built outside the walls.

The Bab edh-Dhra‘ cemetery is the only true EB III cemetery known in the southern Levant,[47] and it has yielded only meagre evidence of inter-personal violence. The cemetery's remains also suggest that violence did not increase during the EBA, in spite of what seems to be contradictory evidence in the form of growing fortifications during the period.

Leviah

The Leviah 'enclosure' is a 9 hectare fortified settlement situated in the south-west of the Golan Heights (Y. Paz 2011: 8). It is located on a spur and is cut off from the plateau to the east by two fortification walls. The eastern wall (the 'outer wall') is 16 m wide, and the 'inner wall' (situated 250 to the west) is 10 m wide. Both have gates on the same axis (Kochavi 1993; Kochavi and Paz 2008; Y. Paz 2011). The height of the outer stone wall was at least 6 m above bedrock. It also had a mudbrick superstructure, and Paz assumes that it was at least 10 m high (Y. Paz 2003: 25).

The other sides of the settlement, which overlook the relatively steep gorges of the wadis to the north and south, were probably fortified as well but with a thinner, 3-4 m wide wall. Remains of this wall were found in excavations in Area B (Y. Paz 2003) and in a survey (Paz, Y. pers. com.). Y. Paz has recently suggested that these fortifications had towers and buttresses (Y. Paz 2011), though no plan of these features is available.

[47] The only other EB III "cemetery", at Jericho, contained only 8 tombs; its skeletal data was never published.

During the EB II, the site was inhabited only in the area delimited by the inner wall, which was built during this period (Kochavi and Paz 2008). Paz sees the fortifications of the site as "careful military planning" (Y. Paz 2011).

Leviah was violently destroyed during the EB III. Paz claimed that the evidence for violence and human-caused destruction are built blockages of the two gates, burnt mudbricks, layers of ash and debris, and hundreds of sling stones found around the outer gate passage (Y. Paz 2003: 27; 2011). If this is so, then it is the only documented battle for EB III. On the other hand, the reported find of sling-stones in the debris is debatable since they seem to be buried in different levels of the gate collapse (Y. Paz 2011: Fig.5) and not resting on its surrounding surfaces and floors, as would be expected.

Kokhavi and Paz claimed that the inhabitants prepared for the conflict by blocking the outer gate with a 3 m wide wall (Kochavi 1993) that was erected over a destruction layer (Y. Paz 2003: 27-28), and by depositing 24 miniature votive bowls near the fortifications (found in excavation). The large quantity of these bowls made Paz suggest they were connected with the preparation of the town for a siege or war (Y. Paz 2011). Other possible evidence of war is one complete mace-head and the fragment of another, both found near the gate. This allowed Paz to suggest that the attack on Leviah was directed at one weak point – the gate (Y. Paz 2011).

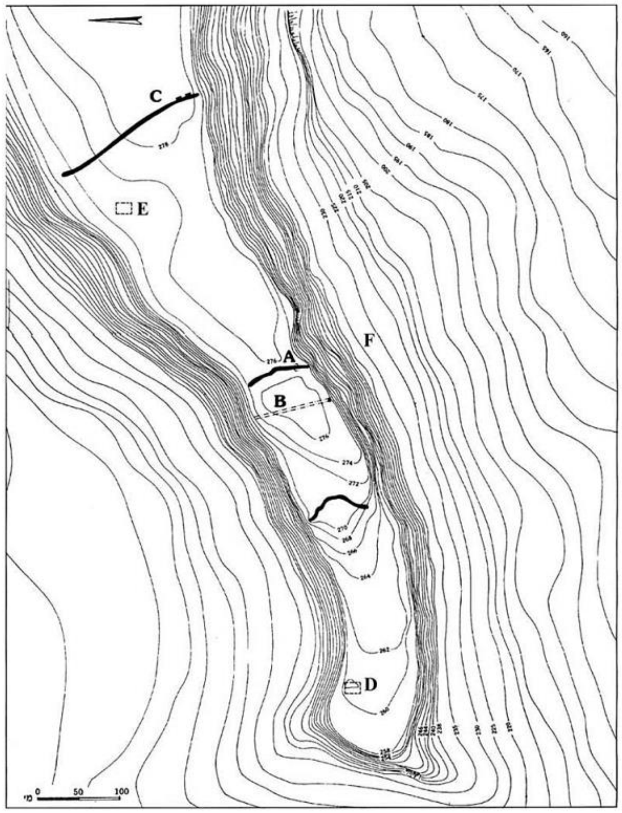

Figure 37: Leviah (excavation areas marked by Roman letters)

(Y. Paz 2011)

Leviah seems to be a highly fortified site. Lack of data regarding dimensions of the fortifications and the actual site size does not permit an accurate assessment of the costs involved with constructing the fortifications, but the long walls encircling a narrow and relatively small site must have demanded a considerable effort from a small population (no more than 1800 people). The large basalt fortification walls built all around the site (even where the topography is steep), the 'hill-fort' nature of the settlement, and the indication of destruction near the gate, may point to the existence of a real threat. The location of the site in a marginal area may be also connected to this threat.

The possible battle near the blocked gate with sling-stones and mace-heads raises questions regarding the nature of warfare in the period: a 'hill-fort' site positioned in a marginal area and fortified to the teeth with impressive walls eventually yields to attackers armed with sling-stones and inefficient mace-heads (see above). Furthermore, the attacked point is the fortification's obvious weak point, and its blockage shows an attack was expected. It seems that the threat to Leviah was in fact of limited magnitude, in terms of numbers and siege technology, so that the defenders relied entirely on the sheer scale of their fortifications to deter possible attackers.

Zeraqun

Khirbet ez-Zeraqun is an 8 hectare site, which makes it one of the largest EBA sites in Jordan (Douglas 2011; Ibrahim and Mittmann 1989). It has an acropolis and a lower city and was surrounded by a fortification wall on the northern and western sides, and probably on the southern side as well. No wall was found on the eastern side, looking out at Wadi esh-Shallaleh. Douglas proposed that this may be due to either the steep eastern slope that was good enough for protection, or to erosion of the fortifications on this side of the site (Douglas 2011). Three stepped shafts led to the water table from inside the fortifications: one of them was 100 m long and led to the base of the adjacent wadi (Ibrahim and Mittmann 1989).

The fortifications were initially built during the EB II and were used, with modifications, during the EB III until the abandonment of the site during this period (Douglas 2011). About 147 m of the fortifications in the upper and lower town were excavated. A total of two main gates and seven posterns were found between both areas. The first phase of fortifications consisted of a 3-4 m wide wall, a 2.5 m wide gate at the acropolis, and another one in the lower town. Six of the seven posterns built in this phase were positioned in the acropolis' wall, two of them next to the main gate. Their width was approximately 80 cm (Douglas 2011). During the EB III, the wall was widened to 6-7 m, the posterns were blocked, and outer towers and bastions were added. Douglas suggested that the open area outside the lower town gate was used as a market area during the EB II (phase 4). After the destruction of Phase 3 (dated to the transition from EB II to EB III) and during the following Phase 2, an external half tower and a wall were built and turned the gate complex into an indirect access gate with a right handed approach. In the last stage of the fortifications (Phase 1), the lower town main gate was blocked, and a ramp and stairs were built leading to a passageway that was <u>on top</u> of the fortification wall (Douglas 2011).

Zeraqun is another example of a site whose fortifications mix effective military features with weak ones. While the fortifications at Zeraqun were impressive, with wide walls, an indirect access gate (during its phase 2), and an internal water system, the lack of walls in its eastern side is perplexing. The construction of a passageway on top of the fortification wall during Phase 1 is even more so. It seems that Zeraqun fortifications were pointed towards the south west with all efforts of rebuilding, blockages, and additions concentrated on this side, while neglecting the east. Since the unfortified east actually renders the impressive western fortifications useless, it may be testimony to their non-military nature or to their declarative purpose – it proclaimed power and strength, but was not supposed to stand a real siege or attacks.

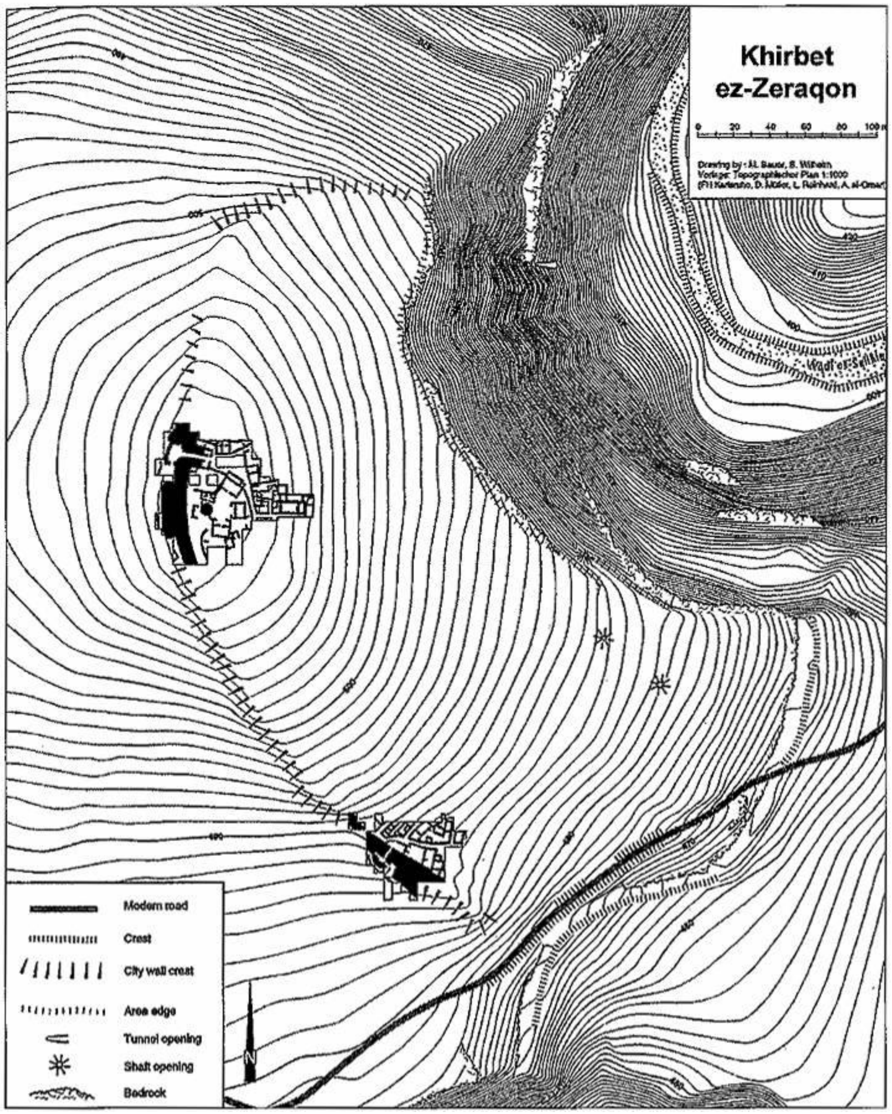

Figure 38: Zeraqun
(Douglas 2011: Fig. 2)

'Ai

The site of et-Tell, identified as biblical 'Ai, is located in the Samarian Hills north of Jerusalem and next to the modern village of Deir Dibwan. It is an 11 hectare site that was settled from the EB Ib to EB III. Callaway dated the first fortifications built around the site (Wall C) to the end of the EB I, which he termed EB Ic (Callaway 1993), but they probably should be dated to the EB II (Herzog 1997: 67). Another wall, termed Wall B, was built in a later phase of the EB II (Callaway 1980: 18).

During the first phase of the EB III (Phase VI), the fortifications were doubled by adding another wall (Wall A), built with large stones and positioned 3-4 m in front of the older EB II fortification walls (Wall C and B). The EB II fortifications were renovated and the gap between the walls was filled with debris. A one-meter gap was left without fill and Callaway suggested that it was used as a communication walkway between strongholds in the wall. The width of the wall averaged about 8 m and it was preserved to a maximum height of 7 m (Callaway 1993). The external semicircular tower of Site L (excavation area L), built in the previous period, was encircled by the new wall, which was built in front of it. The width of the fortifications at this spot reached an impressive 11-15 m. An internal tower, possibly connected with a gate complex, was found in Site C (i.e., excavation area C) and named Tower 75-76 (Callaway 1980; Marquet-Krause 1949). Another internal bastion, termed Citadel A, measuring 30 x 8-9 m was built in Site A (Callaway 1980: 152). Callaway suggested that the reason for building Wall A in Site C was to protect the houses of Phase VI, which were built on higher ground due to the accumulated fill from previous periods and were therefore not protected by the older wall (Callaway 1980: 155).

Another addition to the fortification wall was built during Phase VII. This involved a 2 m wide addition built along parts of Wall A and was designated as Wall A^1 by the excavator (Callaway 1980). The Phase VI walkway between the walls was cancelled in Phase VII, as was the Site C Tower 75-76 (Callaway 1980: 189). The cancellation of this tower seems to contradict the defensive efforts as it reduces the efficiency of the fortifications.

Throughout all periods, the gates in the walls of ‘Ai seem to have been built like posterns – they were very narrow simple gates (Herzog 1997: 67). Wall A (Phase VI) had a 1.5 m wide gate in Site C (area C) and did not have a parallel gate in the renovated inner Wall B (termed A^N in this phase). The only possible gate in this wall was about 4 m east of the Wall A gate. One would enter the town through the gate in Wall A, turn right (east), and walk 4 m within the walkway to reach the gate of Wall B (Callaway 1980: 157, Fig. 100).

Callaway thought the EB III a violent and hostile period. He based his argument on the elaborate fortifications of the period and the two destruction layers dated to this period found at Ai (Callaway 1980: 147). He proposed that the EB IIIa (Phase VI) settlement was ended by an assault in which 10 m of the town wall was torn down and Citadel A was burnt. Another destruction level was identified at the end of the EB III (Callaway 1993).

Callaway suggested that the appearance of long-range weapons during the EB III is the reason for the construction of internal towers instead of the “vulnerable” external ones (Callaway 1980: 147-52). However, since the long-range composite bow was not introduced yet (see above), and most other sites used external towers, this explanation is not satisfactory. As shown above, internal towers and bastions have narrower field of view and are less practical than external ones.

It seems that the inhabitants of ‘Ai were deeply concerned about the defensibility of their site and were therefore constantly improving their fortifications by adding more and more walls and additions. They were also making the site’s gates more complex and harder to breach. Since during the EB III no new monumental/public buildings were built, and only the old temple was renovated, it may be safe to conclude that that the first priority was the site’s fortifications. In contrast, the additions to the fortifications either cancelled towers and bastions or reduced their efficiency by building walls in front of them. Another interesting point is Site C Phase VI houses which were exposed prior to the construction of Wall A. It seems that tactical considerations were not always followed at ‘Ai, and, as in other sites, the emphasis was on width (and therefore on height) of the fortifications and not on their actual tactical efficiency.

Hebron

The site of Hebron is located on a spur on the eastern side of Jebel Rumeida. It is situated on a tactically inferior position since it is dominated by the higher grounds of this mountain (Eisenberg 2011; Ofer 1993).

Eisenberg excavated the site in 1999 and found a large ‘Cyclopean’ fortification wall (marked ‘Wall A’) in Stratum XI. It dates to the EB III, with ^{14}C dates of 2700-2460 cal. years BCE. Its width is 6.2 m at its base and 5.7 m at its top; Eisenberg argued that this width is retained throughout the wall’s perimeter (Eisenberg 2011).

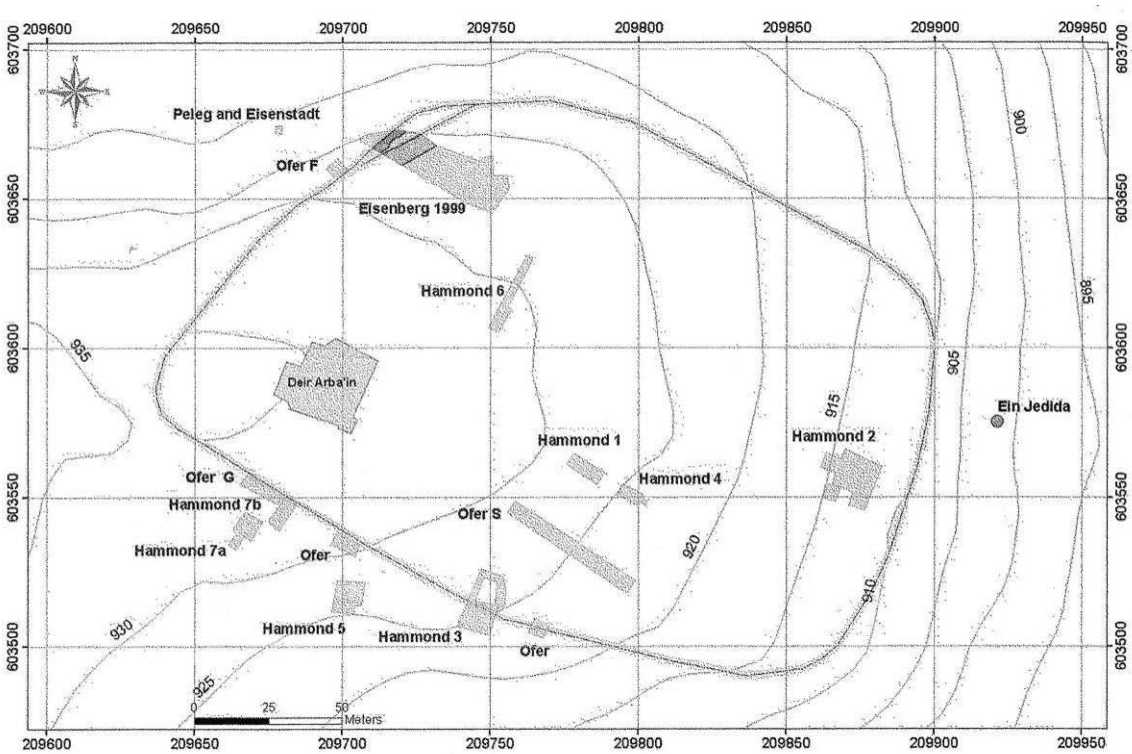

Figure 39: Hebron excavation areas and a reconstruction of the fortification wall (Eisenberg 2011: Fig. 17)

The wall was preserved to a height of 3.1 m and Eisenberg claimed this is only a third of its original height. The outer side of the wall is built of large rocks measuring 1.8 m long and weighting 1-1.5 ton. The inner face of the wall is built of much smaller stones – 40-80 cm long. The space between the two faces is filled with smaller stones and earth. Traces of plaster found on the wall testify that it was plastered white on the outside face and reddish on the inner side. A seam found between two sections of the wall indicates it was built in sections. The foundations of at least part of the wall rest on bedrock (Eisenberg 2011).

Stratum XI ended in a major destruction and heavy fire. During the next phase, Stratum X, dated to the EB III as well, Wall A was reused, the area inside the wall was levelled and raised by 2.6 m, and a staircase leading to the gate complex was built. Based on Stratum

XI dating and on correlations from other sites, Eisenberg assumed that Stratum X ended around 2400 BCE (Eisenberg 2011).

The impression made by the fortification wall of Hebron was enhanced by the large rocks and the white plaster on its outside face. It was probably an impressive monument, visible from a long distance. The staircase positioned next to the wall allowed easier scaling of it and limited its effectiveness as a fortification. The location of the site on lower grounds is also a tactical weakness. It seems the builders of Hebron's fortifications stressed impressiveness over functionality.

The cases described above, representing the most prominent and extensively excavated fortifications of the EB III, may be considered representative of the phenomenon of EB III fortification. [48] Early Bronze III sites have an impressive array of fortifications built according to conventional fortification design rules, and consisting of wide walls, bastions, towers, and in some cases, indirect access gates and some form of glacis. In most cases, strategic locations of sites also argue for defensive planning. This picture changes when looking at the detail: EB III fortifications have many weak points, such as undefended sides, long stretches of walls without towers, towers positioned in impractical positions, or long walls that demand an unfeasibly large garrison. In addition, other markers of warfare are absent and include a lack of weapons (especially the long-range ones), a lack of siege engines, and lack of skeletal evidence. The lack of weapons also implies the likely absence of armies who might besiege the fortified towns. The possible evidence for a battle near the gate of Leviah indicates that whatever battles that did occur were probably waged at

[48] Other fortified sites are numerous and include sites like Tel Dan, Tell el-Hesi, Tel Halif and Numayra, which appear to repeat the characteristics of the sites described above.

the gates, which were the weak point in the wall. The inevitable conclusion is that most of the EB III towns were both over-fortified and under-defended: as the Leviah case shows, even highly fortified sites could succumb to an anticipated attack. This was probably due to an emphasis on the size and height of the fortifications, at the expense of their tactical qualities. The possible reasons for this preference are discussed below, in Chapter 4.2.

3.4. Analysis of Economic and Ritual Conduct and their Correlations

The following chapter will deal with the nature of Early Bronze III economic and ritual behaviours, especially as regards their roles in a period of emerging hierarchies and growing settlements. The economy is, in this analysis, viewed more as a means of financing and garnering social power and influence rather than as a practice of subsistence, while the symbolic and the ritual are treated as actors and agents in the social and economic field. The mutual treatment of these topics is based on their dependencies and correlations, as with regard to temples and their role in the economy, seal impressions that may have had both economic and symbolic functions, or prestige objects, like ivory bulls' heads, that may be understood as markers of both social and economic capital.

3.4.1. Economic Base, Trade and Specialisation

An EB III economic model

Several economic models have been suggested for the EBA. In most of them, the main sub-period dealt with, was the EB I and its Egyptian – Canaanite connections (e.g., Braun 2002; Yekutieli 2002). Philip (2008) recently suggested that the economy of the EBA was based to some extent on *staple finance*, which is a social system in which power is gained from manipulation and control of products of subsistence production (Earle 1997: 70-71). This type of economy can be recognized by intensified agriculture and storage and by transport facilities. According to Philip, intensification of the EBA subsistence economy can be seen in the usage of irrigation that allowed larger areas to be exploited, the use of ox-drawn ploughs and metal tools that enabled extensive cultivation, the increase of tree crops (mainly olive and vine), and the widespread employment of the donkey as a pack animal. Philip noted evidence of public storage facilities (which were more prominent during the EB III, i.e. at Zeraqun, Yarmuth, and TBY), as well as storage at the level of the household. While a staple economy is usually associated with a centralised bureaucracy and redistribution of staples, Philip argued for kinship-based corporate groups in the EB III that kept each other in check, thus creating a stable social system (Philip 2001: 188-89; 2008). This economy, with its absence of prestige items, stands in contrast to the Chalcolithic *wealth finance* model, in which political power is based on access to valued materials and products (Earle 1997: 73; Philip 2001: 188-89; 2008). Other scholars have suggested similar models for the EBA – Wilkinson and others for the southern Levant, and mainly the Jordan Valley (Wilkinson et al. 2014), and Fischer, who suggested a large centrally controlled grain storage facility based on large amounts of charred grain found in the EB II period at Tell Abu al-Kharaz (P. M. Fischer 1997: 164).

Genz advocated for a somewhat different arrangement, which he termed a "*cash crop*" economy (Genz 2003a). This economy is based on high-value commodities, mainly olive oil and wine, but also cereals. These "cash crops" were collected as the palace's share of the total harvest, stored in jars and pithoi in palaces like those at Yarmuth and Zeraqun and formed the main source of these institutions' social power (Genz 2003a). Based on various olive pressing installations accompanied by vessels connected with olive oil production (mainly spouted vats and combed jars) (A. Kempinski et al. 1993: 185; Miroschedji 1999), as well as botanical evidence from installations found at Ras-Shamra (Courtois 1962), and the first appearance of lamps, Genz argued that large scale olive oil production was a common phenomenon during the EBA, with greater amounts of evidence dated to the EB

III (Genz 2003a). The same may apply to wine production (Genz 2003a), although to a lesser extent (Bunimovitz and Greenberg 2004; Philip 2008).

Based on Genz's model, I suggest a somewhat different approach, with more emphasis on the changes from the EB II to EB III. It is based on a transition from an economy based on staples during the EB II to an economy which can be defined as a scaled-down and limited wealth economy during the EB III. In the latter 'semi-wealth' economy, the economic means by which the elite acquired and maintained their social role is the manipulation and use of a restricted range of valued and symbolic items as well as valued commodities – olive oil and wine.

Economic base

Using TBY as case in point, the site's EB II social structure seems to have been based on a corporate society with very little evidence of stratification in the architecture, pottery, or in items representing symbolic or economic capital (see above). This social order culminates at the end of the EB II and the beginning of the EB III, with the construction of the Circles Building which, although built at the beginning of the EB III, should be seen as a product of concepts dominant in EB II. This building was destined to function as a central granary that would allow those controlling it to have social leverage and power based directly on the staple goods amassed by the population at large.

At the beginning of the EB III, the trend toward a managed staple economy was interrupted and transformed. The major indication is the fact that this building was never completed. Another indication is Berger's observations on grain processing at TBY (Berger 2013). According to her study, the grain consumed by the EB II population at TBY came with less production debris (chaff and weeds) than in EB III. This is because the EB II grain probably came from storage (Greenberg et al. 2012: 102), and/or because the crops were pre-processed outside the site, with the cereal arriving in households in the form of clean grains. During the EB III, the amount of intramural processing increased significantly, with large amounts of weeds and chaff indicated for local-tradition households, and a somewhat different pattern evidenced for the Khirbet Kerak Ware-using community, indicating communal onsite processing. Berger saw this as proof of diminishing central authority as one moves from the EB II to the EB III, since the pre-processing of grain before distribution indicates the work of a central authority that organized and supervised the process and the human-resources needed for it.[49] Berger's finds may be in accord with Greenberg and Y. Paz who suggested that during the late EB III, the focal point of the site moved from its centre to the periphery; that is, from the central Circles Building, to the fortification wall with its large towers that may have functioned as store rooms or small granaries (Greenberg and Paz 2005: 101-02).

A similar pattern appears to be indicated in meat consumption: while EB II mammal bones are all of young animals, indicating planned herd management, EB III species are more diverse and age profiles more evenly distributed, indicating occasional expedient slaughter of farm animals.[50]

Another indication for the decentralisation of TBY economy after the EB II are the diminishing numbers of NCMW during the EB III (Greenberg and Porat 1996; Greenberg and Iserlis 2014). This phenomenon marks a move from a centralised production and

[49] These changes may have had another outcome: the diminishing number of sickle blades and Canaanean blades during the EB III at TBY (Shimelmitz and Rosen 2014: Table 4.2) may attest to a lower yield.

[50] Berger n.d., Exploring Urban Economy at Early Bronze Age Tel Bet Yerah; poster presentation, UCL.

distribution of a limited range of vessels used extensively by the TBY population, to a dispersed system of several industries, namely the local pottery tradition and KKW.

The disappearance of donkey figurines in EB III (I. I. Milevski 2005; I. Milevski 2011; Ovadia 1992; S. Paz 2014) and the appearance of the bull's heads (Beck 1995; Greenberg 2014a) may be seen as a symbol of the changing economy and the move from staple finance, in which donkeys carry and mobilise staple products, to an economy where power, symbolised by the bull (Beck 1995; Greenberg 2014a), wealth, and status became important and prominent. The desertion of the Circles Building at the beginning of the EB III and the construction of a large enclosure in the southeast corner of the mound (Greenberg and Paz 2014: 45-47), near which an ivory comb and a bull's head were found, is a good example of this change and of the shift to a 'semi-wealth' economy: the southeast enclosure may have been connected with the production of these prestige goods (S. Paz 2014: 238), and may have been the seat of an affluent group. It is interesting to note that the changes were not always unidirectional; late in Period D (late EB III), Wall C was constructed over this large southeast enclosure (Greenberg and Paz 2014).

The patchwork of seams and additions in Wall C may hint it was a communal effort of a corporate society. As noted earler, its fifteen hollow towers may have been used as silos (Greenberg and Paz 2005; Greenberg and Paz 2014). If this was indeed the case, the total internal area of the towers was about 741 sq m. If 2.5 m out of the 6 m reconstructed height of the wall (see above, Chapter 3.3.4) was used for grain storage, then the total amount stored in the towers would be about 1850 cu m, or 1420 tons of wheat. This is roughly the amount that could have been stored in the Circles Building (see above, Chapter 3.2.1). The distribution of the towers along the fortification wall was directed by tactical considerations, but it could also have served the storage needs of different kinship groups, with each tower (or few of them) serving a ‘barrio’ or a neighbourhood populated by the same group (Greenberg 2011a). This decentralized organization of a corporate society is reflected also in the segmental construction of Wall C where each group probably built a different segment.

Other sites supply more evidence for the ‘semi-wealth’ economy; of these, Tel Yarmuth Palace B-1 is the most prominent. This palace had a granary in its southern corner (Locus S1594), with an inner diameter of 2.4 m. Miroschedji estimated its capacity as 3800 litres (Miroschedji 2006), assuming a 2 m high cone. Based on Egyptian granaries, whose height exceeded their diameter (Badawy 1966), and on the reconstruction of the Circles Building (see above), a higher cone is a reasonable assumption. The volume of a 3 m high cone is about 6000 litres. With a wheat weight of 770 kg per cu m and an annual per capita consumption of 200 kg (Mazar 2001), the capacity of this granary is 4620 kg wheat, which amounts to the annual consumption of about 23 people. Though the internal area of the palace was 6000 sq m, most of it was either courtyards or storage rooms, so it is safe to conclude that it was populated by a small group of people, probably an extended family. The above data and figures mean that cereals stored in the southern silo of Palace B-1 were solely intended for the consumption of the palace inhabitants and their retainers. The 14 restricted-access storerooms at the centre of the palace, containing 182 pithoi, 2 large basins, and 21 jars, with a total capacity of 17,000 litres, were intended for other produce. A combination of olive oil in the more external rooms and more expensive produce in the internal, less accessible, rooms is a reasonable assumption, bolstered by the fact that most of the smaller storage jars were found in rooms accessed only through other rooms (1783 and 1749), while the pithoi are on the relatively external rooms. The more expensive produce may have been perfumed oil, resin, or wine. 17,000 litres of valued produce is a large quantity that was definitely not intended for the consumption of the palace inhabitants. Its high value precludes the possibility of staple redistribution. It seems safe to conclude that it was used as a valued merchandise with an economic and a social value in a ‘semi-wealth’ economy.

Another large compound/palace with some storage capacity is Zeraqun’s upper town palace, where 16 storage jars and 14 pithoi were found in unit B0.8 (Douglas 2011; Genz 2003a). This small storage would not have been for redistribution on a city-wide level, but for the consumption of the palace inhabitants and the elites.

The site of Numayra, located southeast of the Dead Sea, is another noteworthy phenomenon in this complex landscape of economic models. This small (half hectare) fortified site is characterised by many small domestic storage installations (M. S. Chesson and Goodale 2014). It may indicate a decentralized staple economy model which was practiced in smaller sites without prominent internal social and economic differentiation, where cooperation was limited to large projects like the encircling fortification wall.

Specialisation and prestige items

Despite the general poverty of artistic expression and the dearth of prestige objects in the EBA (Beck 1995; Yekutieli 2014), there seems to be a relative abundance of these items during the EB III, including the aforementioned bulls’ heads, as well as decorated bone tubes, clay bed models, and shrine models. Bulls’ heads and decorated bone tubes appear in various forms and materials, while maintaining similar outlines and style (Miroschedji

1993b; S. Paz 2014). This variety suggests local manufacturing in several workshops (Beck 1995; Miroschedji 2011). Although none of these workshops has been identified, to date, it is safe to suggest that since the items were connected with status and wealth (see above, and also Genz 2003b), the workshops were connected and even controlled by the elites. The small quantities and variety suggest that the workshops and their specialisation were small and modest, as were the elites.

Bed models, not uncommon in EB III, are connected with domestic ritual (Beck 1993, 1995), which may signify stratification of ritual (see 3.4.2 below for an analysis of small shrines versus large temple complexes as a sign of a growing differentiation in ritual and in society). Two shrine models found in EB III contexts (Miroschedji 2011; S. Paz 2014) are another testimony to an increase of symbolic representations during the period. These models, found in domestic contexts were probably connected to domestic ritual and therefore may be another testimony for a stratification of religion.

Another possible prestige commodity, in certain, localized contexts, is Khirbet Kerak Ware, and especially the more elaborate vessels like kraters (Greenberg 2000: 189-90; Miroschedji n.d.; Ziv-Esudri 2012: 267-68). When these vessels are found at sites with no prominent assemblage of KKW, it may mean that they were imported or produced for the use of local elites. This may have been the case in Leviah, were a large and impressive KKW krater was found in Structure 618 (Y. Paz 2003), or at Tel Erani, where several KKW sherds, one of them of a krater, were found (Zuckerman et al. 2009). It is interesting to note that the Levi'a vessel and some of the Erani sherds where produced from local clay (Y. Paz 2003; Zuckerman et al. 2009). This may hint at itinerant ETC potters producing for the local elites.

Further evidence for increasing stratification during the EB III was recently found at Megiddo: traces of EB III food serving and consumption vessels were found in the north part of area J (levels J-5/J-6), as well as an impressive red pottery sherd floor, all of which may be connected to a wealthy area near Palace 3177 (M. J. Adams 2013a). Another recent contribution comes from a study of lithic tools at TBY. Shimelmitz and Rosen (2014: 154, 159) found that the population of TBY used Canaanean sickle blades of varying quality, as well as non-Canaanean blades. This led them to conclude that there were economic differences between people at the site which even expressed itself in sickle blade usage (Shimelmitz and Rosen 2014: 165).

The economy of conspicuous food consumption

During the EB III, platters and ledge-rim bowls, already in use for hundreds of years, became larger, thicker and flatter. A pattern burnish, perhaps simulating basketry, was applied to many of them (Greenberg 2000: 186; Greenberg and Iserlis 2014: 86-87) (Bunimovitz and Greenberg 2004). The largest platters often reached diameters of 75-90 cm, and on rare occasions diameters of up to 105 cm were found. These were heavy and unwieldy vessels. In contrast to the high-fired NCMW platters of the EB II, they were friable; many were found with repair holes (Bunimovitz and Greenberg 2004), attesting both to their fragility and value. In contrast to large settlements like TBY, peripheral sites like Levi'a had a smaller percentage of platters with a smaller average sizes (Bunimovitz and Greenberg 2004; Y. Paz 2006d).

The increase in the diameter of EB III platters resulted in an exponential increase in their capacity; a moderate increase in average diameter from 32 cm to 42 cm between EB

II and III, as posited by Bunimovitz and Greenberg (2004: 21), is equivalent in a 72% increase in the area of the platter and a 126% increase in its above-rim-line capacity (i.e. more than two times the original capacity). Taking into account the general trend of flattening of the EB III platters, if the depth of the platter was reduced from 5 to 2.5 cm, the overall capacity increase would be 72%. If the depth stayed the same, the total capacity increase would have been 105%. The large flat 80 cm diameter platters of the EB III will hold at least 5 times more food than the large EB II (40 cm) platters. A comparison between a TBY Period C (EB II) platter with a diameter of 48 cm and a Period D (EB III) 76 cm platter (Greenberg and Iserlis 2014: Figs. 3.41-7, 3.57-1) shows a 178% increase in the capacity (*Figure **40***, *Table **14***)[51].

[51] Platter capacity was based on the following assumptions and equations:

The above-rim capacity was calculated as the capacity of a very rounded peak cone. The slope of the cone was assumed to be 30°, thus the height of the cone was calculated as h=tan(30°)*r. The volume of the rounded top cone was calculated as the volume of a cone multiplied by 1.3. The equation is: $V=(h*\pi*r^2/3)*1.3$, where V=volume, h=height, and r=radius. The 1.3 multiplying factor is in order to account for the extra volume near the rounded top. The volume of the vessel below the rim was either calculated with the ARCANE Project Pot_Utility 1.05 software (for platters with a drawn profile) or as a paraboloid: $V=(\pi*h*(2*r)^2)/8$, where h=depth of the vessel and r= its radius.

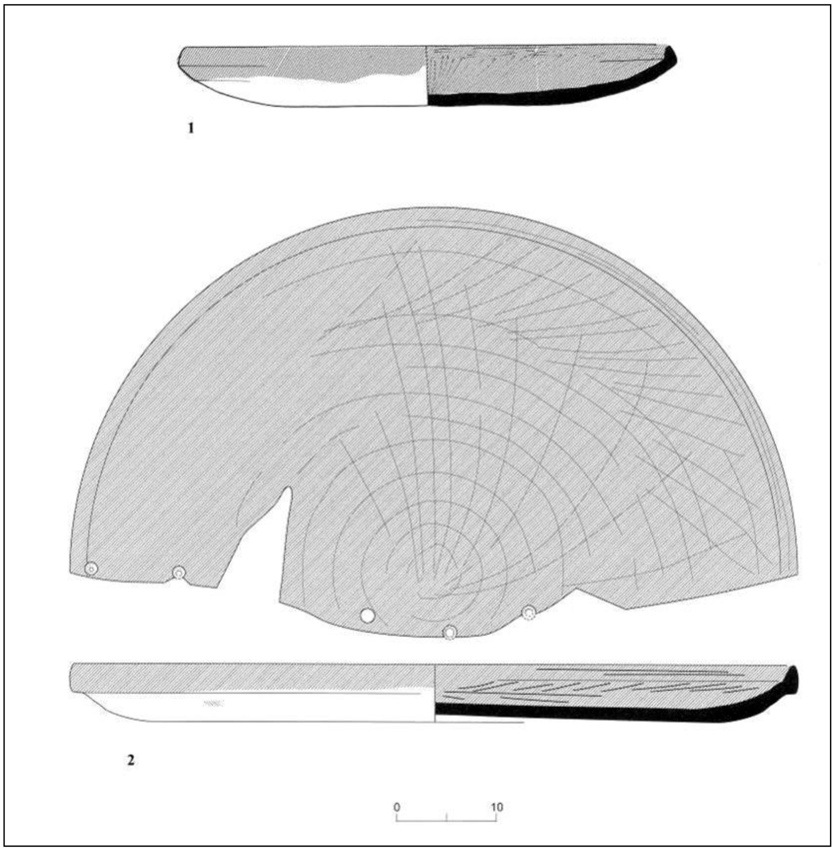

Figure 40: TBY EB II and EB III platters

Period	Reference	Diameter (cm)	Total Capacity (ltr)	Remarks
EB II	NA (hypothetical platter)	32	5.2	5 cm deep
EB III	NA (hypothetical platter)	42	9	2.5 cm deep
EB II	NA (hypothetical platter)	40	11.3	5 cm deep
EB III	NA (hypothetical platter)	80	50.5	Flat (0 cm deep)
EB II	(Greenberg and Iserlis 2014: Fig. 3.41-7)	48	17.5	5 cm deep
EB III	(Greenberg and Iserlis 2014: Fig. 3.57-1)	71	48.7	4 cm deep

Table 14: Platter size comparison

It is generally accepted that platters were used for serving large quantities of food during feasts and banquets (Bunimovitz and Greenberg 2004). These feasts were connected with "big man" lavish hospitality (Sahlins 1963) and copious consumption of food in ceremonial events (DeMarrais et al. 2002) that were used to establish leaders' identities by status rivalry and the actual control of the events. They may have also used as a risk reduction strategy in which extra surplus was consumed during feasts and was used to create ties between groups – ties that would foster mutual support in times of stress or threat (Hayden 2009). The larger quantities of platters found at major sites may be evidence of a more elaborate social structure in these settlements, one that led to, and required constant negotiation.

As shown above, the flattening of the platters moderated the increase in their capacity. This was not a functional change, such as making them lighter to carry, since this could have been easily achieved by not enlarging them at all. Also, the flattening was not done due to functional structural reasons, since a rounded structure is less susceptible to bending and tension stresses (Connor and Faraji 2013) and thus stronger than a flat one. This means that the increase in size was more important than the ease of use, and leads me to conclude that the increase in size was needed for social reasons, and that flattening allowed for maximal presentation of food.

The increase in capacity and the growing need for food presentation was probably connected with the less centralised processing and distribution of crops noted above; as these were not centralised during the EB III, it gave the wealthier households/social groups an opportunity to expand their social power and participate in the 'semi-wealth' economy suggested above. This participation expressed itself by leading ceremonial events and feasts in which the households could present their wealth and their control of large quantities of grain and produce, as well as showing their generosity by distributing large amounts of food.

Food was not the only commodity that was conspicuously consumed. The broken mace heads found in the TBY plaza may be regard as such (see also below), as well as the construction of fortifications. Bunimovitz argued that monumental architecture, with its scope and sophistication exceeding its practical and functional requirements, can be classified as conspicuous consumption (Bunimovitz 1992: 225-30). This may also be true to the EB III elaborate fortifications.

3.4.2. Cult, Ritual and Symbolism

Temples and cult structures appear to have played an important role in the reproduction, maintenance, and representation of the EB III social order. They may have had a role in the economy as well. In contrast to EB II temples, which were usually small and incorporated into the domestic landscape (A. Kempinski 1978: 33-34; S. Paz 2010), it seems that many EB III temples were large and prominent, although others retained a more domestic character. The large rebuilt temple at Ai (A. Kempinski 1992b: 57), the White Building of Yarmuth (Miroschedji 1999), the cultic complex on the acropolis of Zeraqun (Douglas 2011; Ibrahim and Mittmann 1989; Philip 2008), and the cultic complex of Megiddo (Ben-Tor 1992a; Finkelstein 2013; Mazar 1990) are all examples of elaboration, monumentality, and intensified complexity of cultic practices. The smaller complexes that existed on the same time at Ai, Bab edh-Dhra‘, and Zeraqun are all testimony to a more modest cultic activity. These variations may mark representations and reproductions of the social order, as shown in the following interpretation.

Religion helps maintain the social order by asserting the existence of a similarly ordered heavenly world. Thus, stratified societies tend to have stratified gods with the priest as the agent of the gods (Haviland 1993: 347-48, 55-57). In this way, religion legitimizes the rulers by claiming their rule is an expression of divine will (Joffe 1993; Macionis 2001: 492). Insofar as this holds true, the elaboration of cultic construction evidenced at Kh. ez-Zeraqun, with its four 'broad-room' structures positioned around a courtyard and a circular platform (Philip 2008: 172, Fig. 6.2), may be an indication of an increasing complexity of the local pantheon, reflecting increasing social complexity. Miroschedji argued that, in contrast to the Chalcolithic period and the beginning of the EBA, when the main deity was a female fertility goddess, during the EBA a male god joined her, as it was "needed" due to the emergence of city-states ruled by a masculine political authority (Miroschedji 2011).

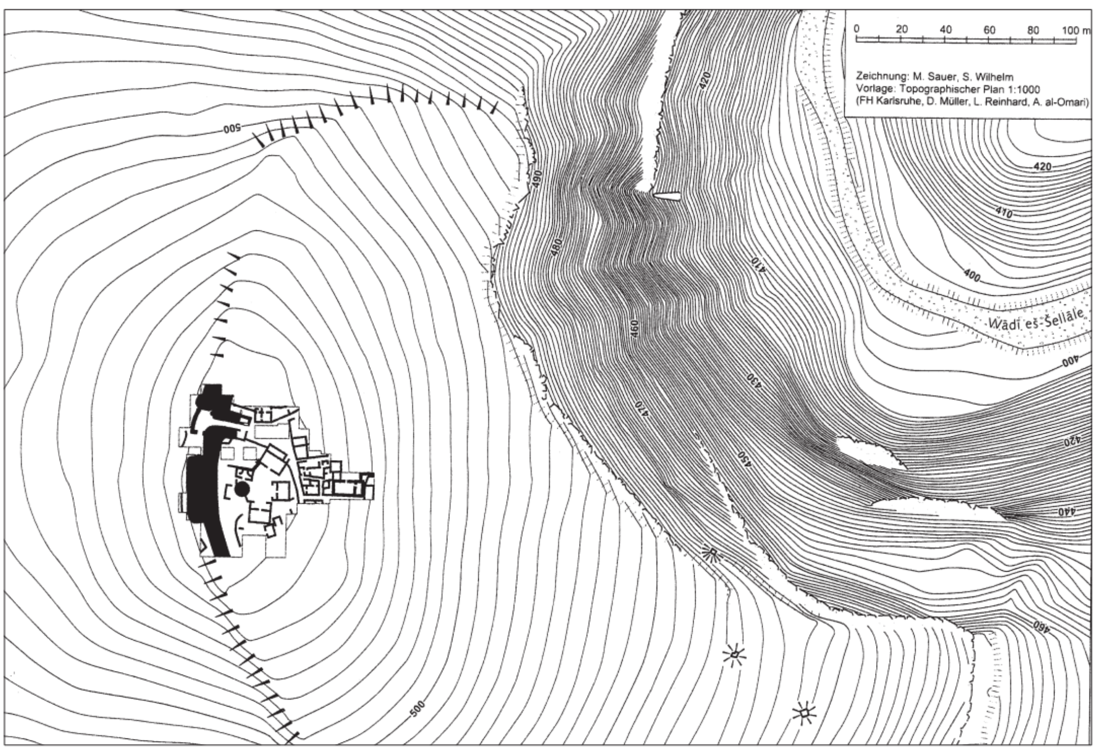

Figure 41: The cultic compound on the acropolis of Zeraqun
(Genz 2002: Fig. 1)

The cultic complex of Megiddo, with its elaborate temples, is another example of this process. Three temples were built atop the former EB Ib Great Temple precinct (Ussishkin 2015). The early temple was very large, but was probably dedicated to one deity only. The question of which period to date the three-temple complex to (M. J. Adams 2013a; Finkelstein 2013; Ussishkin 2015) seems to be answered in favour of the EB III, since this is the period where multiple deities were actually "needed" to validate the social order. [52]

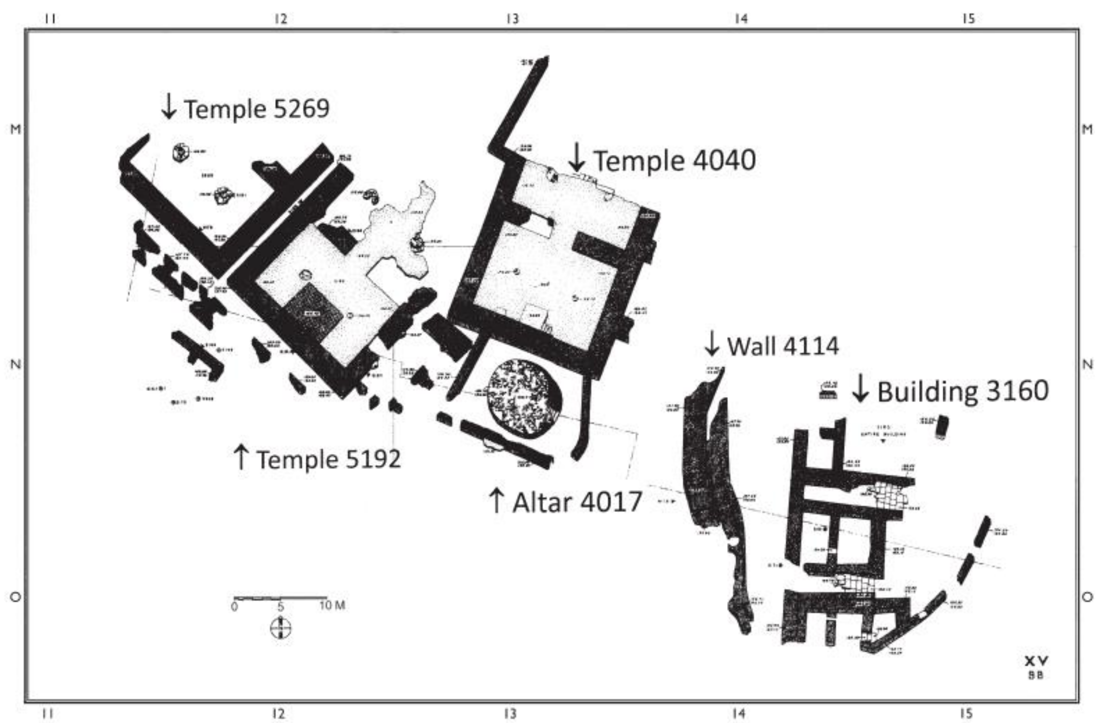

Figure 42: The cultic compound of Megiddo
(Loud 1948: Fig 394)

The small domestic temples found at Ai (Callaway 1972; 1993: 44), Zeraqun's lower town (Philip 2008: 172) and Bab edh-Dhra' Field XVI (Philip 2008; Rast and Schaub 2003)

[52] The large cultic complexes may have been incrementally-built or changed during the EB III (e.g. the temple of 'Ai), a process which may attest to the progression of religious practices and social structure. As there is no detailed publication dealing with the evolution of cultic complexes in sites like Zeraqun or Megiddo, this needs further research.

have recently been interpreted as reflecting a domestic and democratic religion that precludes the existence of elites (Philip 2008). When comparing these buildings to contemporary large complexes *found at the same sites,* they may be interpreted as shrines devoted to minor cults practiced by the lower classes, or as a local domestic shrine. The existence of such shrines or cults may have been aimed at contravening the lower control of the lower classes over the cultic ritual (Haviland 1993: 347-48). Their existence also reproduced and maintained the social order, in which the large cultic compound on the acropolis of Zeraqun was the place of the higher gods, intended mainly for the elite and accessed by the commoners only during special events and dates. Meanwhile, the small shrine in the lower town was an accessible daily portal for the lower gods. The bed model found in Ai's Sanctuary A has been interpreted as a domestic cultic object (Beck 1993, 1995; Miroschedji 2011). Its discovery in this sanctuary is another testimony to the nature of the domestic cult in the smaller shrines.

Unlike other areas and periods, the role of temples in the EB III economy is poorly articulated. Joffe suggests that, during the EB II, the religious institutions had some economic power and received surplus from the agricultural producers (Joffe 1993: 84). Philip argues that there is no indication of storage or administrative facilities in the cultic structures (Philip 2008: 173), or of cultic offerings and goods in the cultic areas (Philip 2008: 174). Herzog proposes that stone platform 4017 at Megiddo, usually interpreted as an altar, was actually the base of a silo, as its size is excessive and its enclosed location impractical for an altar. Such a granary, connected with the temple, could hold 200 tons of grain (Herzog 1997: 81). A similar argument is made in the case of the circular platform found at Zeraqun (Herzog 1997: 93-94).

Although the large size of platform 4017 may have prevented it from being roofed without inner support (as found in the TBY Circles Building), its rear and segregated location may indeed testify to the use of this structure as a granary. The only possible way it could have been used as a public altar is if it was connected to a temple that stood to its (unexcavated) south (Ussishkin 2013). Comparing the sizes of the Megiddo and Zeraqun platforms to other platforms (see ***Table 15*** below), the Megiddo platform stands out with its much larger size and capacity, similar to that of the circles in the TBY Circles Building. If the platform was indeed a temple granary, it seems that the temples of Megiddo had significant, but not immense, economic power. Other temples would have had even less.

Site	**Location/identification**	**Size (sq m)**	**Possible Volume (cu m)**
Megiddo	Platform 4017	67.5	287 [53]
Zeraqun	Acropolis Temple platform	33.2	65 [54]
Yarmuth	White Building platform	8	16 [55]
Yarmuth	Palace B-1 S1594 silo	4.5	3.8 [56]
Bab edh-Dhra‘	Sanctuary A platform	6.5	Must be altar due to other evidence
TBY	Circles Building, Circle I	42.6	255 [57]
TBY	Wall C, Tower 1	34	85 [58]

Table 15: Platform sizes

[53] The volume was calculated for a half ellipsoid, minus walls of 0.5 m. The height was calculated as 8 m (a bit less than the smaller diameter). V=(w*l*h*π)/6, where w=width, l=length, h=height.
[54] The volume was calculated for a paraboloid, minus walls of 0.5 m. The height was calculated as 5.5 m (a bit less than the diameter). $V=(h*\pi*r^2)/2$, where h=height, r=radius.
[55] Assuming a height of 2 m.
[56] The volume was calculated for a paraboloid where h=1.7 m.
[57] V=floor area X 6 m (see above), the circle has the median volume value of all circles.
[58] V=inner area X 2.5 m (see above), the tower has the median volume value of all towers.

Another issue for which there is meagre evidence is the power relation between cult and regime, as the number of sites with evidence for the simultaneous existence of both a palatial and cultic complex is small. The only sites with such evidence are Ai, Megiddo, Zeraqun and Yarmuth, but all of them suffer from issues with either the identification of the complexes as palatial or cultic, their stratigraphy and chronology, or the quality of information (see above). Area J at Megiddo housed the cultic area as well as Building 3177, which may have been a palace. In level J-7, this building was removed and replaced with a monumental staircase leading to the three temples (M. J. Adams 2013c: 95; Herzog 1997: 85; Loud 1948). Herzog proposed that the larger size of the Megiddo Temple 4040 and its higher position means that the religious institution was stronger than the palace, probably because of its large granary (Herzog 1997: 85). Miroschedji argued that the location of cultic structures inside settlements is a sign of centralization and control of religious activities by the elite (Miroschedji 1989a: 69). The inferior location of the Yarmuth White Building in comparison to the palaces, and its later replacement by a large, unrelated complex, may be an example of a similar situation.

Symbolic representations and behaviour

Complementing the cultic structures are objects and behaviours that carry more symbolic attributes and consequences than economic ones. These include the destruction of mace-heads found recently at TBY plaza, and the lack symbolic representations and mortuary practices. As part of a cultural toolkit that must have a physical form in order to be perceived and being used by various groups in society (DeMarrais et al. 2002: 349; Joyce

2000: 71-72; Swidler 1986; White 1940) symbols supply an opportunity to understand past societies.

One of the prominent symbols of the EBA was the mace-head. As shown above, mace-heads were made "more for appearance than use" and were "recognisable symbols of status" (Clarke et al. 1985: 11-12). As described above, a total of 67 mace-heads and their fragments were found at TBY, the majority of them in the vicinity of the Circles Building and the plaza. Of these, 41 were found in the TBY plaza and dated to the EB III[59]. These numbers are particularly impressive when comparing them to the quantities found in other parts of the Southern Levant. Few mace-heads were found at Megiddo: one in the recent excavations (Blockman and Sass 2013) and three in the Chicago excavations (Finkelstein 2013), all attributed to the EB III. The number of mace-heads found at Tel Beth-Shean amounts to 17-18 in all EBA strata; only three of these are securely dated to the EB III and four were found broken in half along their axis, an action interpreted as intentional and indicative of a 'ritual killing' (Mazar and Rotem 2012: 365-68). In Sebbane's comprehensive compilation of Levantine mace-heads, 22 mace-heads are securely dated to the EB III, 12 to the EB II/III, 20 to the EB II, 18 to the EB I/II and 59 to the EB I (Sebbane 2009: 100-09, 402-04). Most of the EB III mace-heads (15 of 22) were found complete (Sebbane 2009: 402-04). This list shows an expected decrease from a peak in the number of mace-heads in the Chalcolithic Period and relatively equal numbers in the EB II and EB III. The quantities found in the TBY plaza are even more impressive when looking at the distribution of mace-heads dated to the EB II/III and EB III – they are restricted to the south and centre of the Southern Levant, with no mace-heads found north of Megiddo in

[59] Roughly 25 more mace-head fragments were found in the plaza during the recent 2015 season, but were not analysed yet.

Israel or of Zeraqun in Jordan. In the Jordan Valley, the northernmost site with EB II or III mace-heads was Abu al-Kharaz (Sebbane 2009: Pl. 63).

Compared to other EB III mace-heads found in Israel, it seems that the mace-heads found in the TBY plaza were meticulously smashed and broken into small pieces. The quantities found make this act one of the most substantial EBA symbolic acts evidenced to date in the archaeological record.

The economic implications and consequences of removing so many mace-heads from circulation are not insignificant and can be compared to an act of conspicuous consumption. Based on unfinished limestone mace-heads found at sites like Bet Shean, Erani, and Arad, Sebanne suggested that they were produced on-site by local artisans. Mace-heads produced of hematite and other rock types were produced off-site or imported (Sebbane 2009: 62-64), but are rare in the EB III (Sebbane 2009: 402-04). This is reflected at TBY, where most of the mace-heads were made of limestone with only a few made from basalt or alabaster.

The scarcity of symbolic and artistic representations in the EBA has long attracted notice (Beck 1995; A. Kempinski 1978: 32; Mazar 1990: 136; Yekutieli 2014), especially when contrasted with the icon-rich Chalcolithic Period. Yekutieli has attributed this lack of symbolic expression to an iconoclastic 'revolution' or reformation that occurred at the end of the Chalcolithic period (Yekutieli 2014). Philip has suggested that the once prestigious items of the Chalcolithic became insignificant, since the staple economy of the EBA stressed land, labour, and stored commodities over prestige items (Philip 2008). As shown above, probing the sub-phases of the EBA, and especially the EB III, reveals several contradictory undercurrents that could be associated with Yekutieli’s iconoclastic and Philip’s economic scenarios, but which must also be related to ideology and stratification. An example of this is the gate shrine at Tel Bet Yerah that existed throughout the EB II and was covered in the EB III. This large pierced stele was completely covered during the end of the EB II, and by the EB III was replaced by a “carefully laid semicircular structure” (Y. Paz and Greenberg 2006: 245-47). The erection of this symbolic shrine in EB II stands in contrast to Yekutieli’s iconoclasm, while its obliteration counters the trend toward intensification of symbolic representation and ritual during EB III.

Another item which decreased in quantity during the EB III is the tabular scraper. These were practical and possibly symbolic items that were associated with the Bab edh-Dhra‘ Temple and the Mizpeh Shalem ritual site. They carried various incised designs and were possibly used for ritual (butchering) (Philip 2008; Rast and Schaub 2003: 321-41; S. A. Rosen 1989b: 202-04). They are found through the Chalcolithic and the EBA, but disappear before the IBA (S. A. Rosen 1989b: Table 1). The same phenomenon is seen at TBY, where less EB III tabular scrapers were found than in previous periods (Shimelmitz and Rosen 2014: Table 4.2).

Mortuary practices

Mortuary rituals may serve to legitimize the interests of groups in society (Shanks and Tilley 1982), and therefore the general lack of evidence for such rituals during the EB III is striking. The Bab edh-Dhra‘ cemetery, with its charnel houses and numerous disarticulated burials, is the only large EB III cemetery found (Jericho was another small cemetery with only eight burial caves, and dolmens are hard to date). Philip argued that the cemetery served to preserve the symbolic presence of ancestors and was connected with the rise of kin-based corporate units (Philip 2001: 199). Chesson and Schaub identified differentiation among the houses that may indicate group-based variance versus a truly hierarchical society. They suggested that the above-ground graves were connected with the reshaping of the landscape and the creation of enduring monuments (M. S. Chesson and Schaub 2007: 256-59). This is line with widespread assumptions about the link between mortuary construction, collective memory, ancestors and territoriality (Bogucki 1999: 277; Renfrew and Bahn 2004: 202-03). It is not in accord, however, with the fact that non-monumental, above-ground mudbrick structures will not survive for a great length of time. Since other long-standing monuments like fortification walls and dolmens were known and constructed during the EB III, the only way to understand the lack of preserved EB III cemeteries is that they were never intended to serve as permanent memorials. The most probable explanation for this burial practice is the need to subsume and include the people in something bigger. The burials and the people interred therein were not supposed to last forever, unlike the city and its walls.

4. Discussion

The previous chapters have been devoted to an analysis of material culture and architecture of EB III. Using fresh data and synthesizing past studies I have shown gaps between function and need, between appearance and capabilities, characterized changes and differences from EB II, and pinpointed areas of higher social expenditure. The following discussion builds on these insights and offers an explanation for the existence of these gaps and differences, with the aim of showing the various ways by which the physical environment mirrors the social structure.

4.1. EB III Monumental Architecture: Power and Persuasion

4.1.1. Architecture of Persuasion at TBY: The Circles Building and Plaza

Writing about the politics of public space, Setha M. Low discerns two aspects in the creation of social space: the 'social production of space' and the 'social construction of space'. The former is the physical and material creation of space and includes all the social, economic, ideological, and technological factors that result in constructed physical spaces. The latter is the transformation of the material space into a landscape that conveys and holds social meaning. This transformation is accomplished through the actions of agents in the material space, actions that include the daily use of the space, social exchange, and the creation of memories. The movements of agents in the space are restricted and monitored by the material settings and help maintain the dominance of one group over the others (Low 2000: 127-99). An analysis of the urban environment can facilitate an understanding of meaning, values, and processes adopted by the contemporary society as well as the forces and powers operating within it. The meaning of public space and architecture are not straightforward and the interpretation of them should be conducted within their socio-political, historic, and economic contexts (Low 2000: 49-50). A large storage building like the Circles Building, constructed in a period and geographical area in which these kinds of buildings are rare conveys special meaning and messages to the local population.

Construction

The construction of the Circles Building was not labour-intensive. As shown above, the number of workdays needed for the construction of the stone foundation was between 3,000 to less than 10,000 workdays, while construction of a 2 m high mudbrick superstructure would have required less than 1,700 workdays.

Using the lowest site population estimate of 4,000 people, and a low participation rate of 20-30 percent of the population with each participant contributing 20-30 days each, the total available man power equals to 16,000 to 48,000 workdays. This leads to a project doable in less than one autumn. Even factoring in a low participation rate and involvement in other simultaneous projects, the construction of the Circles Building did not demand tremendous effort on the part of the TBY population (figures are summarised in *Table 16*): the construction would have required no more than one third of the site's available annual corveé. This estimation was calculated using the high-end estimates for the building and foundation volume and low-end estimates of productivity, population size, and available workdays. The real figures may have been much lower.

	Foundations workdays	Superstructure workdays	Available workdays (annual)	Years to finish project
Min. needed, min. available workdays	2,988	1,674	15,856	0.29
Min. needed, max. available workdays	2,988	1,674	48,048	0.10
Max. needed, min. available workdays	9,676	1,674	15,856	0.72
Max. needed, min. available workdays	9,676	1,674	48,048	0.24

Table 16: Circles Building project duration in several scenarios (population estimation of 4000 people)

Shelach et al. reached a similar conclusion in their research on the fortified second millennium BCE site of Sanzudian, in northeast China. They were surprised to find out that even the small population of the site (183-308 people) could have finished the site's elaborate fortifications within a reasonable timeframe. It should have taken them 0.16 to 3.58 years, depending on the estimate used for the number of workdays needed, population size, participation rate, and available number of workdays per year (Shelach et al. 2011).

The physical act of constructing a building has a central role in the recurrent and recursive process of the formation and reproduction of social structure (Ristvet 2007; Shanks and Tilley 1993 [1987]: 178-80; Souvatzi 2008; Tilley 1982). Each of the agents who work on a building encounter many other individuals working for the same cause and purpose. This gives the agent a feeling of being part of an important process and a great organization. If other people in the agent's workgroup do not express objection to the process, any objection the agent has will be suppressed in most cases (e.g., Ristvet 2007).

Thus, constructing the Circles Building helped to create a shared sense of cause and goals between the workers and called for a communal effort centred around the building. The action of constructing the Circles Building, presumably by the same people who were destined to deposit their crops in it, legitimised the building and its function. The construction effort had consequences for the society as a whole, since the agents carried with them the shared cause and objective even when their work was completed. If the building would have been completed, then the natural and obvious outcome would have been its operation as a granary.

Design, planning and metrology of the Circles Building

As shown above, the Circles Building was built into a plot bounded and restricted by buildings and streets from previous periods. During the construction of the building, one or more units of measure were used – a unit of 0.77-0.83 m, and probably also units of 0.45 m and 0.29-0.30 m. These units of measure are known from the Ancient Near East, and especially from Mesopotamia. It is interesting to note the apparent use of Mesopotamian units of measure at TBY stands in contrast to the use of the Egyptian cubit at Yarmuth (Miroschedji 2001: 475).

The diameter of the Circles Building's circles were about 9 cubits of the pace (Circles I and VII), 10 small cubits of 0.45 m (Circles II and III) or exactly 13 times the 0.30 m Sumerian foot (Circles IV, V and VI). Each of these groups of circles were positioned together on a different platform. This information, together with seams observable on the platforms (S. Paz 2006b: Plan 3.3), may indicate the building was built by work groups. It seems that the large sections of the building where measured using the larger cubit of the pace while the small ones where measured using the smaller cubits.

No units of measure can be established for the construction of a roughly contemporary monumental structure, Fortification Wall C. The limited use of units of measure at TBY and their inconsistent application may be attributed to the technical limitations of the builders, though the use of accurate and uniform units of measure at Tel Yarmuth (Miroschedji 2001) may indicate that lack of proper contemporary technology was not the reason.

Complex societies need standard measurements in order to regulate, control, and communicate. James Scott has pointed out that "food supply was the Achilles heel of the early modern state". In order to control it, the state had to standardize measurements that would enable it to gain reliable and accurate information about markets, demand, and crop yield, as well as regulate supplies and create an efficient and fair tax collection system. Other factors that increased the need for standard units of measure were large- scale or long-distance commerce (Scott 1998: 29-30). A building constructed on a uniform unit of measure will look more standardized, uniform, and symmetric. Such a building will transmit a sense of stability, order, and control; these would be attributed to the builder or the owner of this building, i.e. the ruler/s.

The use of standard units of length, weight and volume may indeed hint at the existence of a complex society of some form, or of large-scale/long-distance trade. During the EB III mainly units of length were used,[60] and in very limited circumstances, i.e. for monumental buildings closely connected with central rule (like Palace B at Yarmut) or food supply

[60] Some evidences for the use of weights in the southern Levantine EBA were found at Tell Fadous-Kfaradiba and Jericho (Ascalone 2006; Genz 2011).

(Circles Building at TBY). They were not used to build other symbols of power such as fortifications. This indicates a limited evolution of complexity during the EB III, and an ability (or interest) in standardization only in areas closely connected to, influenced by, or controlled by the regime.[61] The three units of measure employed at TBY, their limited use, and their relative inaccuracy may indicate that the level of complexity at TBY during the EB III was somewhat restricted. What seems to be a haphazard use of units of measure may be indicative of either a weak or incompletely centralised rule, or of a rule that did not want to advertise its presence. In a period where centralization and rule was a novel phenomenon, the latter explanation can be a valid one. The building's 'loose' access pattern, described below, may reinforce this argument.[62]

The area surrounding the Circles Building differs from other excavated areas at the site. It is bordered by paved streets on two sides – the south and the west. The north side of the building is bordered by a plaza, while the east side is damaged by later activity. The streets are carefully constructed, paved with packed gravel foundations and flat stones and furnished with drainage channels along their edges (Greenberg and Paz 2011; S. Paz 2006b). Another area with carefully paved streets is the southern city-gate (Y. Paz and Greenberg 2006). Other streets on the site are either unpaved or have a simple cobble surface (Getzov 2006; Y. Paz 2006d; S. Paz and Paz 2006). This strongly suggests that the meticulously paved streets were laid out in areas with heavy traffic or of high importance, such as the vicinity of major public buildings. Since the streets were paved during the EB

[61] Another explanation may be connected to the later dating of the TBY fortifications and a change in the regime (see discussion below).

[62] An interesting feature in the design of the Circles Building is the number of circles in it – seven. This number is known to be an important mythological number in the eastern Mediterranean and the ANE (Friberg 1992). The Melos granary model has seven circles as well. This number may allude to another message meant to be conveyed by the building, a message with ritual meaning behind it.

II and before the construction of the Circles Building, it seems that these areas were public areas already during the EB II or, alternatively, that the building was planned well in advance. S. Paz has suggested that the Circles Building was not the only public building in the north of the tell, noting the presence of a large unexcavated building near the south-west corner of the Circles Building (S. Paz 2006b: 70). A recently discovered massive wall bordering the north side of the plaza[63] may be another indication of the importance of the area. Greenberg and Paz suggested that the shift from a public area used for various activities, to public areas dedicated to specific activities (like paved streets, garbage disposal areas, or gathering areas) indicates a society with an urban ideology that tried to shape the behaviour of its people (Greenberg and Paz 2011).

Monumentality and access pattern

As shown above, the Circles Building was designed as a large structure with an open east side and a tall, but not overpoweringly massive, superstructure. While EBA circular granaries in Egypt usually measured 5 m high and 2-3 m in diameter and were often constructed in one or two rows (Currid 1985), the circles of the Circles Building had diameters of around 8 m, and were probably designed to reach a considerable height. This makes the building somewhat squat in its proportions, with tall domes on top of it. This architecture made the building look accessible while still being monumental and large. The grand size of the granary conveyed a sense of stability and security, and was a promise that the crops would remain intact, while the relative accessibility could allay suspicions of farmers depositing their crops that their harvest being appropriated by an unapproachable

[63] Discovered in the 2015 excavation season.

institution. This may be additional evidence for the weakness of the central rule or the need of it to persuade people to comply. The Circles Building stands in contrast to public buildings and granaries with impassable walls like the Egyptian granaries, the Melos granary, or the EB III palace at Tel Yarmuth.

The accessibility of the Circles Building, its modest scale, and the lack of segregation and encircling walls are a reminiscent of the EB II ideology of ‘communal action’ (Greenberg 1999, 2002, 2014a). The EB II preparations for its construction in the form of defined plot and street pavement is another indication that the building may be a creation of the earlier EB II society, executed at the beginning of the EB III. Like EB II NCMW, it is a modest but highly functional creation of a society that accentuated the communal and the community while playing down hierarchy, aggrandising, and individualism.

Location

The Circles Building is open towards the east and the north-east. As Currid (Currid 1985) has noted, granaries, and especially large ones, should be located in an accessible area, since large quantities of crops need to be transported into them. As no EB III gate has been yet excavated, the contemporary excavators of the site can only speculate that these gates were located at the southern tip of the mound (between Towers 3 and 4, or near Tower 5), or on the west side (south of Tower 11) (Greenberg 2014b: 13). A southern gate would conform with Mazar’s argument for the location of the agricultural fields of TBY in the fertile area known today as Biq’at Kinrot, situated between the Sea of Galilee, the Yarmuk River and the Jordan River (Mazar 2001). However, the location of the gates and the agricultural fields seems to contradict the eastern focal point of the Circles Building; if easy access was a major concern, a southern entrance to the building would have been a better solution. The reasons the builders may have chosen a not-so-obvious location for the Circles Building entrance may been practical: The wider streets leading from the southern gate may have been positioned in the east of the mound, along the Sea of Galilee shore. Farmers bringing grain to the granary would have headed directly north, before turning west to the granary. Another option is that a gate existed on the eroded eastern side of the mound.

Alternately, the existence of a sea route for supplying produce may be posited. The current reconstruction of TBY is of a site with fortification walls on two of its three sides, and an eastern flank that has been severely eroded since its abandonment (Greenberg 2014b). It is possible that TBY could have been laid out in a manner similar to that of Habuba Kabira South, on the Syrian Euphrates (Kohlmeyer 1997), i.e. with an eastern side open to the lake (or the river in the case of Habuba Kabira). If this was the case, the town would have been oriented towards the lake-shore, and its harbour would have functioned as an economic hub. Supporting evidence for this proposition, and for the important role of fishing and seafaring at TBY, comes from the anchor-shaped stele that stood at the southern, EB II city-gate (Y. Paz and Greenberg 2006) and many net-sinkers found at the site (Rosenberg and Greenberg 2014: 204). In a lake-oriented town, the Circles Building may have been oriented towards the seashore and harbour for several reasons: (1) because this was a ritually important direction that overruled practical and functional considerations, (2) because this was the ‘natural’ direction in the eyes of the seafaring inhabitants of the site, or (3) due to functional reasons, as grain would have been transported into and out of the site by boat. The existence of important EBA sites in the

Golan (e.g. Leviah, Kochavi and Paz 2008) may contribute to the validity of the sea-transport hypothesis, although further evidence is needed to confirm it.

Evidence of central authority and storage

The Circles Building, with its large storage capacity, seems to have been planned as a central storage facility for Tel Bet Yerah. In Esse's words, the large granary "indicates a high level of organization and undoubtedly reflects a strong central authority" (Esse 1991: 53), while Mazar (2001) is confident that the grain for this large storage facility originated in fields tilled by the site's local population.

In order to obtain all or a portion of the crops, the central authority had to persuade people to hand over the fruits of their labour. Some of the methods of persuasion took the form of architecture and access patterns, as shown above. Other methods, which do not leave an archaeological record, may be inferred through indirect evidence detailed below.

There are few indications of domestic storage of grain at TBY. Area BH was dug in 1976-77 at the east of the central area of the tell. Phase 7 of this area, dated to the EB Ib, consisted of two elaborate circular buildings with pebble-paved floors. The buildings were not complete and their reconstructed diameter was 4 m. These buildings may have been granaries (Greenberg and Paz 2014; S. Paz and Paz 2006: 476-78). Another segment of a stone-lined silo was found in local Stratum 13 in Area BS, which is dated to an early phase of the EB II. Found on the edge of the excavated area, most of this feature was not excavated (Greenberg and Eisenberg 2006: Figs. 5.6, 5.8; Greenberg and Paz 2014).

There is a paucity of storage vessels in Area UN, Stratums 2-3, dated to the EB III (Y. Paz 2006d: 299). This is an interesting piece of evidence which may hint to the existence of other means of storage during this period.

As shown above (Chapter 3.4.1), archaeobotanic analysis suggests that the grain consumed by the EB II population at TBY probably came from storage, and was most likely processed outside the site. During the EB III, the amount of extramural processing decreased significantly. This seems to be connected with the diminishing power of the central authority(ies) from the EB II to the EB III, and the move of the site's focal point from its centre to the periphery – i.e., from the central Circles Building and acropolis area to the fortification wall and its towers (Berger 2013; Greenberg and Paz 2005: 101-02; Greenberg et al. 2012: 102).

Additional evidence of the power of a central authority at TBY during the EB II and its subsequent weakening during the EB III, are the streets near the Circles Building. Accumulations on these streets, paved during the EB II, included a large percentage of KKW pottery (see above). This means that during the EB II a potent central authority was able to clean the streets, or prevent people from dumping their refuse on them. The appearance of a layer with KKW refuse signifies that the power of the central authority was in decline during the EB III. The Khirbet Kerak Ware-using squatters in the unfinished Circles Building may have been contributors to this decline, or merely took advantage of the situation.

The Plaza

Plazas and public open areas are not an uncommon phenomenon in antiquity (e.g., Herzog 1997: 176; G. R. H. Wright 1985: 159). Large open areas inside towns existed also in the EBA, though most of them were of a different nature than the TBY plaza. EB II Arad has several open areas situated near public buildings; the most obvious of these is the area between the palace and the temple. Amiran et al. (1997:46) thought that it might have been used for gatherings or religious rituals. It is roughly a 20 m x 15 m triangle with an area of about 150 sq m (R. Amiran and Ilan 1996: Pl. 86). Contrary to the plaza at TBY, its borders are neither regular nor straight, and it has a small architectural feature in the middle of it. Another open area was excavated at Arad in Area T, on the west side of the town. This area is bordered by the city wall on the west and the palace on the east. Its dimensions are approximately 20 m x 25 m (500 sq m) and it was used during the Stratum II and III time periods. Based on the area's structure and its proximity to one of the city-gates, Arad researchers suggest it could have been a market area (R. Amiran and Ilan 1993; R. Amiran and Ilan 1996: 63-73, Pls. 85, 86; R. Amiran et al. 1997). It has several buildings, walls and other architectural features in it, and therefore does not resemble the TBY plaza.

Another open area in Arad, is the Strata III-II 'Water Reservoir' (R. Amiran and Ilan 1996: 105-27, Pls. 96, 97). Its width and length are 20 m and 80 m respectively, and its area is 900 sq m (R. Amiran et al. 1997: 45). Since only 150 sq m (about 10%) of the area is a 10 m deep artificial depression (R. Amiran et al. 1978: 14), it could have been used as an open area for public activities. If this is the case, the 'Water Citadel', with its thick wall and narrow long rooms, may have served as a storehouse in a similar manner to the Circles Building at TBY. Although this area may be comparable in some aspects to the TBY plaza, the two are not constructed in the same manner; The ‘Water Reservoir’ does not have regular straight sides (i.e., some of the buildings on the sides open towards the open area) and its surface is not paved in the same way.

The Chicago expedition to Megiddo excavated an open area in front of the two ‘megaron’ temples numbered 5192 and 5269 (Stratum XV/Level J-7). This open area can be seen in the plans, but there is no indication of it in the report (Loud 1948: 78-84. Fig. 180). The date of the two temples, though controversial, is currently assigned to the end of the EB III or the Intermediate Bronze Age (M. J. Adams 2013b; Finkelstein and Ussishkin 2000b: 590-91; Kenyon 1958; Ussishkin 2013). The Megiddo 1948 excavation report does not mention any pavement, and since it does not have a regular structure, it seems to be an area left vacant after the construction of the ‘megaron’ temples, i.e. it was not planned or constructed.

Another open area was located at EBA Ai in area D, situated on the acropolis of the town where a large temple opens into a large courtyard. The building was dated to the EB Ic, which corresponds with the EB II (A. Kempinski 1992b: 57), and was rebuilt during the EB IIIa (Callaway 1993: 41-42). Again, this courtyard is different from the TBY plaza in its irregular plan and its direct association with a temple.

The only other planned and constructed EBA open area found to date is the Megiddo EB I ‘picture pavement’ and its sub phases. This is an open area at the east of the mound next to the EB Ib temple (Stratum XIX/Level J-2). The first phase of this open area is paved with irregular limestone slabs, some of which are incised. It was marked as pavement 4008 by the Chicago Expedition and is also known as the ‘graffiti floor’ or the ‘picture pavement’. This is a large and elaborate open area, delimited by a wall. It has a steep slope and may have been used as a ramp or as the temple courtyard (Keinan 2013; Loud 1948: 61, Fig. 390; Yekutieli 2005). It has two more phases, identified recently: a pavement above the 'picture pavement', connected with a curving wall (coded Wall 08/J/21 by the renewed excavations) and contemporary with Level J-3 and temple 4050, and clay surfaces contemporary with the monumental temple of Level J-4 (dated to the EB Ib). All of the phases seem to be planned and constructed. The latter J-4 pavement with its clay surface seems somewhat similar in its construction to the TBY plaza (Keinan 2013; Loud 1948: 61, Fig. 390; Yekutieli 2005).

The TBY plaza, adjacent to the Circles Building, probably had a function of enhancing the effect of the building: writing about the architectural landscape of Andean kingdoms, Jerry D. Moore from the California State University, demonstrates how the impact of a monument is dependent on its surroundings. Creating a low-lying open area in front of a monument makes the monument seem larger and more impressive (Moore 1996: 98-107). In order to enhance the impact of a monument on the viewers, it should be viewed and comprehended at a glance; the impact of monuments that *cannot* be viewed at once, like the Nazca lines, is weaker than the impression made by monuments like the Giza pyramids. The angle of view in which the whole building can be easily seen, as well as the distance to the building, should be as small as possible (Moore 1996). The construction of the plaza and the Circles Building meets the criteria set out by Moore: The elevations of the Circles Building vary from -197.44 to -197.01 on the north side (elevations of the top of the northern platform) to -196.11 in the south of the building (highest area of the platform) (S. Paz 2006b), while the elevations of the plaza vary from -198.45 to -197.80 in the south area of the plaza (Greenberg et al. 2014: Fig. 4), and from -198.40 to -198.01 in the north of it. The effect was even stronger when these structures were first erected since the lower levels seem to be the original surface of the plaza right after its construction. Since the unfinished Circles Building was supposed to have a superstructure of at least 2 m high (as reconstructed above) with the tops of the domes towering above it, this would have led to a structure rising at least four metres above the surface of the plaza. The effect of such a tall, massive building in a society where most of the buildings known to its members were one-storied dwellings would have been immense and could have contributed to the perception of the elites as capable rulers.

As noted above, plazas and open areas are not rare in the EBA and the ancient Near East, but the best examples of elaborately constructed (and researched) plazas could only be found in modern Latin American plazas and in the Main Plaza of the pre-Columbian site of Monte Alban. The latter plaza is roughly 300 m x 150 m and is bounded by high platforms and public buildings. Residences for the nobility were located around the north platform but did not face the plaza itself. The plaza and its precinct was one of the first areas to be built at the site, which was founded around 500 BC. It was accessible to the commoners, who participated in the public ceremonies that took place in it. The nobles who lived next to the plaza led ceremonies that created a shared corporate identity and bound the commoners to the contemporary social order and rulers. The role of the nobles in ceremonies contributed to their separation from the masses. By the Classic Period, as political authority and ideology became more established and the power of rulers increased, they gained more control over the plaza and over the rituals taking place in it. The plaza became a less accessible area, the ceremonies became restricted, and the area turned into an elite residential precinct and a place of restricted rituals (Joyce 2009). Contemporary

Latin American plazas are an arena for diverse social groups and classes and are a source and symbol of civic power and cultural activity. They are located in the geometric centre of the town with the most important cultural institutions located around them (Low 2000).

Although chronologically and spatially remote, some of the behaviours described above can help us understand the TBY plaza: the location of the Circles Building, the possible unexcavated large building next to it, and the recently found large wall at the north of the plaza may indicate a central place in the settlement, that was used for ritual or symbolic activity (e.g. ritual breaking of mace heads), and was (partially) controlled by the elites (the northern wall). Open public spaces can be a locale for gatherings and ceremonies that serve as a tool for creating shared experience, enhancing the unity of the community, enforcing the supremacy of rulers, and presenting and promoting the ruling ideology (DeMarrais et al. 2002; Earle 1997: 152-54). It seems that the plaza was planned for these purposes and may have functioned as such in its first phase.

The inhabitants using the TBY plaza changed during the EB III from the local indigenous population to a KKW-using community (Greenberg et al. 2014). This is the commonly held conclusion based on the large quantities and percentages of KKW pottery found at the site, especially when compared to area SA-S, where KKW pottery quantities and percentages are low (Greenberg et al. 2014). It seems that this community, originating in the southern Caucasus, took control of the unfinished Circles Building and the adjacent plaza. The "KKW people", with their communal, kin-based lifestyle (Greenberg et al. 2014), had a social system which may have been less stratified than the local system. They were able to take control of the Circles Building and the adjacent plaza because of the weakening of the indigenous TBY elite. The "KKW people" preserved the vitality of this space by their presence and actions in it (as in Low 2000: 48), and, judging by the quantities of large bones found in it, may have retained its planned purpose as a gathering and feasting area.

4.1.2. Architecture of Power at Yarmuth

The palaces at Yarmuth were built during the last phase of the EB III over a former domestic area that was destroyed by fire during the mid-EB III. Palace B-1 covered a large tract of 6.6 dunam, an impressive 3.6% of the site's area. The area covered by the palace, as well as the effort needed for its construction were considerable. It was a large investment for a relatively small community of no more than 3600 people (compared to TBY's minimum estimation of 4000 people). The builders of the palaces changed the topography by levelling the area and building an artificial terrace. However, the elite's power may not have been infinite as they did not build their palaces on the acropolis, where only domestic buildings were found (Miroschedji 2008). The palaces seem to have been built after the construction of the fortifications ceased, but a large, poorly preserved complex covering about 10,000 sq m was found on terraces J, K, and M and may have been contemporary, thus increasing the demand put on the local workforce.

Yarmuth Palace B-1 seems to be different from the TBY Circles Building in almost every aspect. The builders of the latter razed EB II domestic dwellings in the centre of town in order to construct a 940 sq m building and a 467 sq m plaza. The Circles Building had a large capacity, relatively open plan, accessible circles and inner hall, and the cost of its building was relatively modest (see above). The builders of Palace B-2/B-1 took advantage of a destruction of a former EB III domestic area near the city gate and constructed a large terrace, on which a large, closed and segregated structure was built. Although Palace B-1 was almost eight times larger than the Circles Building, its storage capacity was much smaller. The differences between these buildings attest to different functions and status; while the Circles Building was probably understood by TBY inhabitants as a mutually beneficial structure intended for the wealth of the community as a whole, the Yarmuth Palace was constructed for the wealth of a small group only, as attested to by the restricted access to it (see also access diagrams ***Figure 24*** and ***Figure 32***).[64] It seems that the TBY leaders could persuade enough people to leave their houses in the centre of town in order to build the relatively small Circles Building and the plaza, while the Palace B-2/B-1 builders had to take advantage of a previous destruction and built a much larger building, if on inferior ground. The Circles Building needed much less effort to be built than did the Yarmuth palace, and the latter occupied a more significant tract when compared to the total area of the settlement. The above differences attest to two different political/social structures existing in the EB III: a less-hierarchical structure dependent on collective mobilization at TBY, versus a more hierarchical structure capable of mobilizing and operating a large, albeit possibly reluctant, workforce at Yarmuth.

[64] The analysis is based on (Foster 1989).

4.2. The Social Role of War, Conflict, and Defence during the EB III

As shown in chapter 3.3, the physical presence of fortifications in the EB III and the amount of work invested in building them was impressive, while other markers of war were very rare. In the following discussion I will suggest that it was the perceived – if not actual and imminent – threat and expectation of war in the Southern Levant was leveraged to greater effect, inducing the population to build fortifications that were used more as a vehicle of social recruitment and spatial delineation than as actual defences in battle.

4.2.1. Arguments For Warfare

As the examples presented in Chapter 3.3.4 show, military features are prominent in Levantine EBA architecture and site planning. Their appearance, for the first time, in this region, has led scholars to the seemingly inevitable conclusion that violence and war were prevalent in this period.

Destruction layers and rebuildings

The massive fortifications themselves, and evidence for their recurrent renovation, reconstruction, and expansion, as well as destruction layers and abandonments at sites, have all been taken as signs of violence, conflict, and social strife (Rast and Schaub 2003; Richard 2003). Y. Paz and Richard have referred to recurrent destructions at sites like Bab edh-Dhra‘, Jericho, Tel Halif, ʹAi, Taanach, and Leviah as characterizing the EBA, and especially its final stage. Although these destructions were not necessarily the result of war-related violence, and may have had other causes, including natural ones (Y. Paz 2011; Richard 1987: 28), they see the reconstructions, improvements, and alterations to fortifications as a response to threats of violence and perhaps to actual attacks. Kempinski even suggested that the EBA was a "militant period" (A. Kempinski 1992a: 73).

Population movements

Another potential indicator that the EBA, and especially the EB III, was a turbulent period are population movements. Richard suggested that during the EB III the population abandoned some of the EB II settlements and moved to the "relative safety of the massively fortified regional centers" (Richard 2003). Greenberg identified a similar phenomenon of village abandonment in the Hula Valley as well as in the rest of Israel (Greenberg 2002, 2003). Richard claimed that these population movements, as well as the refortification of cities and Egyptian texts describing raids and military actions, may reflect a politically unstable period with many violent conflicts. On the other hand, Richard acknowledged that abandonment with no sign of destruction at highly fortified sites like Yarmuth may indicate that warfare was not a major factor during the period (Richard 2003).

Strategically positioned sites and water systems

An additional indication of the EBA being an unstable period is the strategic positioning of sites in topographically dominant locations and in proximity to water. Helms (1976a) even suggested that the springs of Jericho and maybe those of Erani were encircled by the sites' fortifications, although no evidence of this has been found. At 'Ai there was a reservoir for rain water, but it was not built in the first stages of the town, which could exist without it. Helms even claimed that TBY got its water from the Sea of Galilee (Helms 1976a: 165-66, 99-200). Zeraqun is the only known site of the period to have a stepped shaft leading down to the water table from inside the fortifications (Ibrahim and Mittmann 1989), although its dating to the EBA may be debatable (Philip 2008: 170).

Indirect access gates and blockage of gates

Another indication of warfare during the EBA are elaborate indirect access gates at EBA sites: outside of Israel at the site of Jawa (Helms 1976a: 174), and inside Israel/The Palestinian Territories at Yarmouth (Miroschedji 2008), Tel Dothan, and possibly at the northern site of Rosh Hanniqra, where a chambered gate and possibly a tower were found (Helms 1976c: 176; 1976b; Tadmor and Prausnitz 1959).

While EB I and II fortification walls had many posterns and gates built into them (Greenberg and Paz 2011; Philip 2008: 170; Topic and Topic 1987), most of these were blocked by EB III. Being the most vulnerable spot in the fortifications, the hardest place to defend, and the natural target for attackers, openings were usually limited by planners of fortification walls. Their existence may attest to the limited defensive capacities of EB I and II fortifications, while their blockage may be another testimony to the existence of warfare during the EB III.

Investment in construction and maintenance

One of the strong arguments for the presence of warfare is the heavy investment in building and maintaining fortification walls. First, the building process required a tremendous effort from the local population in terms of physical labour and the number of workdays required. As shown above, in the analysis of the TBY fortification, even if all of the theoretically available workdays of the site's population were dedicated to this single project, it could have lasted as long as nine years. This is a large investment, especially when compared to the labour needed to build a structure such as the Circles Building.

Building a fortification wall could also drag on for many years for purely technical reasons. Ethnographic studies show that in order to let the mortar dry properly, Palestinian brick houses were built in 30-40 cm daily increments. In Yemen, where multi-storied adobe houses are still being built, only one storey is built per year (Jerome et al. 1999; Stavi 1946: 23-24). Building a wall several meters high is probably comparable to the high-rise mudbrick houses of Yemen and probably took a considerable amount of time.

Maintenance of the walls was costly as well. As shown above, the mudbrick superstructure needed constant maintenance, especially against damage caused by rain-water. Since maintaining high-rising walls was not easy, the solution was probably to rebuild and thicken the fortifications.

Building and maintaining fortification walls were projects that required a large share of the town's resources, and many scholars believe that no town would invest so much in a non-practical feature (e.g., Herzog 1997; G. R. H. Wright 1985; Yadin 1963: 54).

The existence of enemies

Egyptian armies or punitive raids may still have been a threat to Canaanite cities at the end of the EBA (Redford 1992: 53-55; Richard 2003), although recent radiocarbon-based chronology suggests that their possible war campaigns against the 'Asiatics' should be dated to a later period (see above, Chapter 2.1.2). Herzog, on the other hand, claimed that the existence of walls which did not encircle the whole site (like at Bet Yerah, and Tell el-

Far’ah North) means that the expected attacks on the site were by of bands of robbers, rather than a trained army (Herzog 1997: 74).

4.2.2. Arguments Against Warfare

Low effectiveness of the fortifications

Apart from the mere existence of large fortification walls and defensive complexes, clear evidence for organized warfare is scarce throughout the EBA (Y. Paz 2011: 18), and in the EB III in particular. Even the fortifications may have been less effective than they seem. A detailed analysis of these fortifications reveals that although they incorporate design rules based on military knowledge, their implementation is not always efficient, as in the TBY example given above, where some of the towers were placed in spots where their effectiveness would have been severely hampered, or the situation at several sites where the distances between towers was more than the conventional and effective 30 m (see above). Another impressive, but militarily deficient, feature is the construction of internal towers or bastions, as at Yarmuth or Ai (see above). Towers that do not project outside the line of the wall are not able to be used for enfilading fire, one of the key tactical functions of a tower.

The fortifications at several site were rendered, for considerable stretches of time, non-functional or ineffective due to physical deterioration: TBY may have been unfortified at the beginning of the EB III; the Phase VI dwellings of Site C at Ai were exposed before the construction of Wall A; Yarmuth’s fortifications in the last phase of the EB III were reduced, although they defended a palace full of surplus; and in its last phase, Zeraqun's lower town gate consisted of a passage *over* the wall, which could easily be accessed by outsiders. Fortifications at several sites did not encircle the whole site, e.g., Zeraqun, Bab edh-Dhra', and TBY (see Chapter 3.3.4).

The low effectiveness of fortifications may be explained by the small size of the EBA settlements, the nature of the existing military threats, and the extent of the assets that had to be defended. Philip argued that settlements in arid areas, especially with their small agricultural surplus, had little to defend and their fortifications had little practical use (Philip 2003a: 112-13). These arguments are weakened by the low efficiency of fortifications in large sites like TBY and Yarmuth and by the only clear violent conflict found to date, which was fought over the gates of a site located in a marginal zone – Levi'a.

The constant need for improvement and enhancement of EB III fortification walls was interpreted as a response to a growing military threat (see above), but it can also be due to a mere need for constant maintenance, since mudbrick superstructures without roofs have been subjected to constant deterioration (Helms 1976a: 170; Jerome et al. 1999; Stavi 1946).

Lack of water security

Another feature that undermines the effectiveness of EB III fortification is the lack of "water security" (Philip 2003a: 111). Yadin once noted that the criteria for the location of cities in the Middle East were conflicting – tactical considerations demanded the city should be positioned on a higher ground, while the water sources were in the valleys. Yadin argued that in spite of these contrasting needs, fortifications needed to allow access to water

(Yadin 1963: 18). Except, possibly, for Zeraqun (see above), no clear water system has been found to date at EBA sites and many EBA settlements were located as much as several hundreds of meters from the nearest water source. Philip postulated that cultural concerns that demanded a prominent town location may have been more important than an accessible water source (Philip 2003a: 111). Other reasons could include the need for tactical higher ground described by Yadin, or the low probability of long sieges.

Lack of weapons and siege engines

The main issue that needs to be addressed when dealing with the possibility of warfare during the EB III is the absence of evidence for military hardware. The contrast between the elaborate and sophisticated fortifications and the scarcity of actual weapons, especially long-range ones, is remarkable. Even if the military threat to EB III fortified settlements was not a local one (e.g., Egyptian raids), one would still expect to see evidence of the weapons used by the defenders, or, in the case of unequal conflict, for evidence of foreign weapons in the destruction layer. Even if the weapons were usually collected by the winners, as Y. Paz argued in the case of mace-heads at Levi'a (Y. Paz 2011: 11), some arrowheads should have been left behind in the destruction layers. The lack of weaponry is striking when comparing the EBA to the succeeding period, the Intermediate Bronze Age, where fortifications disappear and a wealth of weapons, like spear heads and daggers, are found (Dever 1995; Höflmayer et al. 2014; Shay 1981).

Another explanation for the lack of weapons is that the enemies were bands of marauders or people from another settlement, using agricultural tools and simple weapons that were not preserved in the archaeological record (such as wood-tipped arrows or wooden clubs). In this case, what then would justify such elaborate and sophisticated fortifications?

In addition to the lack of weapons, and specifically the long-range ones, the possible besiegers did not have any siege engines. The evidence for the use of battering rams, siege towers, and even siege poles postdates EB III and comes from Mesopotamia and Egypt alone. Siege tactics such as tunnelling and sapping appear even later (Burke 2004: 74-92; Humble 1980: 13; Kern 1999: 16; Yadin 1963: 17, 147, 59). As the absence of professional armies and logistic capabilities prevented long sieges (Arkush and Stanish 2005: 8), the only effective tactics against a fortified town were attacking its weak points (e.g., the gate of Leviah), scaling the walls with ladders, and deception.

The rare example of Leviah's destruction, as described by Y. Paz (2011), can be instructive as to the nature of conflict in EB III. If Paz's reconstruction is accurate, this highly fortified site was captured by assailants who forced their way in through the gate. The attack was anticipated by the defenders, as can be inferred from the blockage of the gate and the deposition of votive vessels next to it. If a long-anticipated attacker armed with sling-stones and ineffective mace heads could enter this 'hill-fort' through its main gate, it is only because the town-dwellers perception of the actual threat posed to them was normally so low, as to preclude the organization of a proper fighting force. It seems that the defenders of the site of Leviah, and presumably of other sites as well, placed their faith in the power of the fortifications themselves to deter any possible enemies. As in the case of the Mycenaean fortifications suggested by Hope, Simpson and Hagel (2006: 23), one of the aims of the EB III fortifications was to protect the settlement by virtue of their sheer size, which conveyed a message of power and awe and deterred possible attackers.

Lack of skeletal trauma

Although the major reason for the lack of evidence of skeletal trauma is the lack of EB III burials in general, it is nonetheless noteworthy that at Bab edh-Dhra‘, where evidence is available (Gasperetti and Sheridan 2013), could not demonstrate the existence of warfare or organized violence. Even if EB III mortuary practices led to the complete decomposition of the skeletons, we would expect a turbulent period to provide some skeletal evidence in the form of skeletons in destruction layers or of mass burials. The lack of evidence is more striking when comparing the situation in the southern Levantine EB III to the evidence in neighbouring regions where there are traces of violent conflicts, in the form of weapons and of skeletal traumas induced by them (e.g., McMahon et al. 2011). Mass graves and elaborate fortifications are abundant in these cultures.

Unfeasibly large garrison

Another demanding aspect of maintaining a fortification wall is its garrison. During times of peace, the wall was probably manned by a small number of guards or perhaps none at all. In order to be an effective obstacle in the case of war, the long stretches of wall built around the large EB III towns had to be manned with a quantity of soldiers that would have largely exceeded the number of the town’s able men (e.g., TBY where at least 2,300 men were needed, while only 1,600 able men were available, not considering other military needs like tactical reserve or logistics, see also Chapter 3.3.4). The gaps between the needed garrison size and the available men are so large that even recruiting defenders from nearby villages would have not solve this issue.

Gates, which are the weakest spots in fortifications and the main target for attackers, have the same need for large garrisons to protect them. Each EBA town needed to allocate a large proportion of their manpower to man their multiple gates. Even blocking these gates, as was done at many sites, still left a weak area in the wall, and naturally blocking could be done only when the attack was expected.

4.2.3. The Purpose of EB III Fortification Walls

All of the above seem to show that war was actually a rare phenomenon in the EB III. Considering the fortification walls as an exaggerated reaction to a minor threat, the lack of siege engines, long-range weapons, and professional armies, in comparison to the overly large and elaborate fortification walls of the EB III, make this reaction not only 'exaggerated', but actually an extreme one. Beyond the wish to deter possible enemies by their sheer size, there must be another explanation for these walls.

Warfare and the expectation of violence are major factors in enhancing the prestige of leaders and elites (Brumfiel 1992: 557). Unsurprisingly, it is still used today, as can be seen in contemporary southern Levantine politics. Theories of conflict link the beginning of warfare to the emergence of agricultural societies and to the need or desire for new resources, in the wake of population growth (Bogucki 1999: 268-69; Haviland 1993; Keeley 1996; Monks 1997; Otterbein 2004). Philip argued that the long process of growing olive trees necessitated long-term ownership of land and stability. The long term-investment and delayed return led the people feeling a connection to the familiar landscapes like dams and olive groves, and to the previous generations that created these landscapes (Philip 2003a: 106-09). This may lead to stability in some cases and to conflicts in other. It seems that the situation in the southern Levant was closer to the former. Otterbein explained this stability when he suggested that states or centralized polities cannot emerge in a state of warfare and that usually no evidence of warfare was found during the formation of the first states (Otterbein 2004: 96-97).

In Mesopotamia, the king evolved as a military leader side by side with a religious leader. The military leader was initially elected by the elders or by a democratic assembly of the entire male population, but eventually gained power and a monopoly of authority (Mann 1986: 99). Kern connects fortification construction at Mesopotamian cities with their emerging monarchy. He pointed out that both took place at the same time, ca. 3000 BCE (Kern 1999: 10). The situation in the southern Levant is different – warfare was not a major factor, and there is no firm evidence of a military leader, religious leader, or a king. The monumental fortifications served similar purposes, but the complexity of the social system was lower.

It seems that the period's fortification walls, together with the act of building and maintaining them, had social and political significance, which stressed their practical goals (Gasperetti and Sheridan 2013: 396; S. Paz 2010). Their social goals, roles and outcomes were:

1. The fortifications were symbols and tools of the elite, used to reinforce their ideology, status, and legitimacy. In the words of Joffe, they "were built because they *could* be built"; when the elite have social power, they have to use it in order to maintain it. During the EBA the social power to manipulate labour grew, as did fortifications (Joffe 1993: 71; S. Paz 2010).
2. The fortifications created borders between 'inside and outside', forming separation between the settlement and the surrounding rural area, as well as between the town and other fortified towns (Joffe 1993: 71; S. Paz 2010).
3. They created classification of 'ours' and 'not ours', referring to people and products (S. Paz 2010; Philip 2003a: 113). This was in conjunction with the 'parcelled' landscape of divided plots and donkey routes between them, that was formed since the introduction of olives, grapes, and donkeys to the region (Philip

2003a: 108), and the need for long term rights over plots, needed for the growing of olives (Joffe 1993: 71; Philip 2003a, 2008).

4. Fortifications constrained the movement of the body through space and made people use and perceive locales and the landscape in different ways. Monuments were used to enhance or reconfigure the existing identity of a landscape, and thus they changed the way space was perceived and experienced and, as a result, changed interpretation (J. S. Thomas 1991: 41; J. Thomas 2001: 173-79).
5. The impressive monumental fortifications, and the communal labour required to build them fostered group identity and linked the community with the town, landscape, and its resources (Joffe 1993: 71; S. Paz 2010; Philip 2003a: 112).
6. The walls were ‘expressive monuments’ that stressed an ideology of large scale and quantity (Philip 2003a: 112). They eventually became “monuments to chiefly authority and community structure.” (Earle 1997: 195).

The increase in fortification sizes throughout the EBA may be explained with Joffe, as a product of a ‘competitive emulation’, in which towns built larger and larger walls to show each other their greater power or wealth, and thus acquire higher status (Joffe 1993: 70). This explanation is similar to Bunimovitz’s view of the large Middle Bronze Age enclosures, surrounded by ramparts: he suggested that they were the outcome of competition between neighbouring groups and that the ramparts might also have served to enhance the unity of the group and the status of the leaders (Bunimovitz 1992: 228).

Following Earle, the fortifications can be interpreted as a materialization of the ideology of the elites, which is crucial to the institutionalization of a ranked society. If, in Early Bronze Age Thy (Denmark), ideology was materialized through symbols of military might, like swords (Earle 1997: 168-169), in the Levantine EBA, the ideology of segregation between settlements and the beginning of a ranked society was mainly materialized through the fortification walls.

The perceived threat

EB III fortifications should not be seen merely as a social apparatus: In order for the elite to be able to persuade commoners to cooperate and participate in the large effort of fortifying a settlement, as well as to make them congregate in fewer settlements, there must have been a real threat, or at least a perceived one. As shown in Chapter 3.3.2, even the social and political roles of fortifications could not be effective without them being a potent barrier against some kind of a threat. In Chapter 3.3 I showed that building and maintaining a large defensive system is a time-consuming and expensive project. Time is a major factor in this process – since construction of a fortification system may last several years, this project is the outcome of an anticipation of violence, more than the experience of it. The landscape which is formed by building the fortifications is an image of this anticipation and not necessarily positive evidence of conflict (Gasperetti and Sheridan 2013: 396; Martindale and Supernant 2009: 194). As shown above, the effectiveness of the EBA fortifications is debateable, and therefore the perceived threat must have been greater than the actual one. Because of this expected threat, people were willing to agree to and participate in the large scale project of building and maintaining fortifications. The small number of other types of monumental buildings in EBA Canaan may indicate that this cooperation ceased when the elite tried to channel their subjects' workforce toward other monumental projects.

EB III fortifications were meant to look large and formidable. Their size, height, and multiple military features were meant to be highly visible and threatening. One can see it in the multiple towers of TBY (which had thin outer shells and were built in less than effective positions) or the white plaster on the walls of Hebron. The tactical qualities were neglected, as can be seen in Bab edh-Dhra, TBY or Zeraqun, with fortification walls encircling just part of the site. The large and impressive fortifications were used to deter attackers and to compensate for the lack of armies. The case of Leviah, where attackers armed with slings and maces could gain access to a highly fortified town may show how weak were the communities behind the large walls.

Since there is no evidence of invasion or of a foreign military presence during the EB III, the threat may have been other towns or mobile components of the society. The evidence of Leviah, situated in a marginal area, may suggest that the mobile population were those who threatened the towns.

4.3. Social Aspects of EB III Economy and Symbolic Conduct

4.3.1. Semi-Wealth Economy

During the EB II the economy tended to be based on staple finance, in which grain had the most important role, as manifested in the TBY Circles Building. This is in line with its definition as a corporate society (M. Chesson and Philip 2003; Philip 2008), or, more specifically, a corporate strategy on the part of its leadership (Blanton et al. 1996: 7). During the EB III, the strategies changed and, while the subsistence base stayed relatively stable, the political economy put a greater premium on prestige items, olive oil, and conspicuous food consumption (feasting). As I argued before, this economy may be called a 'semi-wealth' economy, since staples were probably still the main focal point, with the addition of a non-staple 'prestige crop' (olive oil) and several prestige items. The unearthing at Yarmuth and Zeraqun of large complexes which contained large quantities of pithoi and storage jars, but which lacked large silos, shows that the elite who built these complexes received their economic power via control of prestigious crops and produce. These consisted mainly of olive oil, with the possible addition of resin and wine. The uneven distribution of "potter's marks" in the Yarmuth Palace B-1 may indicate that the control was accompanied by some form of mnemonic device.

Prestige items included ivory bull's-heads, decorated bone tubes, maces, and at certain sites – large KKW vessels. Prestigious activity included conspicuous food consumption that left its mark in the archaeological record in the form of large platters, with sizes peaking during the EB III. The typical flat-based platters produced during this period stressed social roles over functional ones: their flat bases were structurally-weaker, but enhanced food presentation. This indicates that the growth in size derived from a social need to maximize presentation of the food they held. They were used by households or other social groups that sought to increase their social power and participating in the 'semi-wealth' economy.

The economic and social changes were not 'evolutionary' and their direction changed, even throughout the course of the EB III, with synchronic contradicting vectors. The southeast enclosure at TBY, for example, was destroyed during late Period D (late EB III), with the construction of Wall C (Greenberg and Paz 2014). In spite of the competence of a society that could destroy such a complex and carry out such a construction project, it seems that the wall's multiple seams and additions testify to a corporate society with no central rule. Furthermore, if its fifteen hollow towers were used for storage (Greenberg and Paz 2005; Greenberg and Paz 2014), it means that this society completely deserted the EB II idea of a centralized staple economy and was composed of multiple groups, with every faction maintaining its own silo. Since no towers were found in previous walls (A and B), this situation might have characterized only the EB III.

4.3.2. The Social Role of Cult, Ritual and Symbolism

Cult structures of the EB III can be classified into two groups. The first consists of large structures, like those of Ai (the acropolis temple) and possibly Yarmuth (White Building), as well as large complexes composed of several temples or units like the ones found at Megiddo and on the acropolis of Zeraqun. The second group is small neighbourhood shrines, sometimes active synchronously with the larger ones, such as the Bab edh-Dhra‘ Field XVI shrine, Sanctuary A at ‘Ai, and the lower town cult structure at Zeraqun. The temples and shrines, with their variability in size and intra-site hierarchy, are a reflection of the emerging hierarchical social structure. It seems possible to conclude that the social system of the EB III demanded and inspired a pantheon of deities that reflected, legitimised, and justified differences between elites and others. Large temples, presumably under control of the elites, would have housed the more important and influential deities, while the small temples, housing the minor gods, and were run and used by the commoners and lower classes.

The economy of the EBA temples is an under-researched subject with limited data. Large stone platforms were found outside many of the temples. These platforms are usually identified as altars, although the large size variance between them (***Table 15***) and the walls that encircle some of them raise a question regarding their function. It seems that at least the largest ones could have been used as granaries to store grain obtained from temple devotees or fields, as suggested by Herzog (Herzog 1997: 81-94).

The issue of granaries/altars leads to another question regarding the temple’s social and economic power. It might be suggested that some temples were influential and powerful institutions, possibly even more so than the contemporary palace. Such as is the case at

Megiddo where Palace 3177 was replaced by the end of the EB III by a monumental staircase leading to a cultic complex at the top of the mound. In other places temples were weaker, as at Yarmuth where the White Building was replaced by another complex during the EB III.

Broken mace-heads found in the TBY Plaza north of the Circles Building are additional evidence of changing social structure. These mace-heads, found in EB III layers of the TBY Plaza, encompass a large percentage of all mace-heads found in Israel. Sebanne described 132 rounded EBA mace-heads found throughout Israel, and only 35 of these dated to the EB III or EB II/III (Sebbane 2009). The fragments found in the Plaza layers increases this count by more than double, as they belong to at least 41 different mace-heads. The rounded EBA mace-heads, with their narrow shafts and lack of pointed ends, were more symbolic than functional and probably acted as an elite symbol of power and rule. The manner in which they were forcefully fragmented suggests a purposeful symbolic action that was directed against the symbolism behind them. The large quantities found, especially when compared to the rest of the region, may be indicative of an organised effort and not merely an act of resistance performed by a small group. The plaza layers in which the mace-heads were found were recently ^{14}C dated to the beginning of the EB III (Greenberg, R. pers. com.), a period characterised by the increased appearance of status symbols and signs of differentiation (see above). While they could be remains of ritual battles (Shimelmitz and Rosenberg 2013), the large quantity and small size of the fragments make this option less feasible. It seems that the ritual destruction of mace-heads, probably performed in a series of events, expressed a resistance to these symbols of status, power, and leadership. It either denounced these values or the group holding them. Their destruction may have been conducted by a small group or by the ETC people, but the large quantities found suggest a more influential and central organization.

The destruction of the mace-heads is a significant example of materialization of culture through both ceremonial events and symbolic objects (DeMarrais et al. 2002, see above), as well as of the way ideology is explained and interpreted through experience (Earle 1997, see above). It may also be a rare example of an ideology of resistance.

The last issue concerning cultic and symbolic behaviour is the dearth of evidence for these behaviours, and especially the meagre evidence of symbolic and artistic representations and mortuary practices of the EB III. Lack of evidence is evidence in itself and should be treated as such, especially when dealing with symbolic behaviour. Yekutieli ascribed the low quantities of EBA artistic representations to religious iconoclasm (Yekutieli 2014), while Philip suggested a reason connected to the staple economy of the EBA which played down prestige items (Philip 2008). It seems that there were contradicting trajectories of symbolism during the EBA and especially the EB III, as can be seen through the moderate rise in symbolism during the period together with contradicting vectors like the destruction of mace-heads at TBY, the decrease in some symbolic items, and even in the desertion of the Ai, Zeraqun and Yarmuth temples during the EB III (Callaway 1993; Douglas 2011; Ibrahim and Mittmann 1989; Miroschedji 1999; Philip 2008). Evidence of EB III mortuary practices are also lacking in the archaeological record. In fact, apart from few cemeteries located in marginal areas, the evidence is virtually non-existent. The lack of finds is not coincidental, as proven by the example of Tel Yarmuth; the surroundings of this site, intended for construction of new neighbourhoods, were thoroughly surveyed and excavated in recent years (Dagan 2011), but yielded no EB III cemetery. The reason the sedentary population of the EB III did not build cemeteries that were able to withstand time, when other populations built dolmen fields and they themselves built monumental fortification walls, is connected with the lack of prestigious items and personal ornaments: it seems that individual people were not supposed to to stand out, and their remains were not intended to be remembered and preserved. This is in contrast to the city and its fortification walls, which were seen as permanent and eternal.

5. Summary and Conclusions

Mann has stated that “societies are much messier than our theories of them” (Mann 1986: 4), and in this thesis I have touched on only a small part of the EB III ‘mess’, focusing on sites and remains that are sufficiently prominent, and on archaeological data sets that are sufficiently robust, to allow systematic study and a refined definition of the period. Viewing the EB III period as a distinct archaeological entity reveals its salient attributes: (1) an increase in stratification of both people and households, (2) an increase in construction of large monumental structures (fortifications, temple complexes, and palaces), (3) an economy based on semi-precious goods (olive oil and possibly wine), some prestige goods, and conspicuous consumption of food, and (4) stratification of ritual and cult.

The detailed treatment of two monumental structures – the Circles Building (Granary) at Tel Bet Yerah and Palace B-1 at Yarmuth – offers a series of significant insights into the nature of EB III social power, its modality, and its diachronic change. These two buildings were found to represent two architectural, ideological and economic extremes, coexistent in the EB III. The Circles Building is a relatively open structure that was intended to be used as a granary. The society that built it started by clearing a domestic area for its construction, then elaborately planned and built the foundations of the structure and its surroundings, using standard units of measure. But although the labour costs involved with its construction were relatively modest, the project was left unfinished and non-local squatters were allowed to settle within its confines.

The intended function of the building as a communal granary, together with its accessible design, allows us to interpret the Circles Building as a product of a corporate society that, although hierarchical, maintained an ideology that channelled inequalities and ambitions for the benefit of the whole community. The open, unfortified character of the building suggests that the accumulation of surplus underlying the staple finance economy that characterized this society was based on principles of persuasion, rather than coercion. In a sense, this corporate society appears to align itself with EB II values and social ideologies, rather than being a new EB III creation.

In contrast to the Circles Building, Yarmuth Palace B-1 reflects a more stratified society that did not disguise its non-egalitarian nature. The construction of this building, intended for the use of a small part of the population, involved a large investment in terms urban space and labour. It was a restricted-access building, with storerooms that were probably intended for relatively high-value commodities like olive oil, testifying to a 'semi-wealth' economy (see 3.4.1 and below). In contrast to the builders of the Circles Building, who could build on an inhabited plot in the centre of the settlement, the builders of the Yarmuth Palace built it in a deserted area, positioned on inferior ground below the acropolis. This may suggest that although Yarmuth was a more stratified society, the social power of the palace was limited.

Social structures of other sites lay between the two extremes exemplified by Bet Yerah and Yarmuth, sometimes with the addition of another institution – the temple (e.g. Zeraqun with its temple complex and possible small palace, or Megiddo with its large temples and palace).

In attempting to assess the role and function of the massive fortifications that characterise the EB III, it has emerged that the occurrence of systematic violent conflict, and especially siege warfare, cannot be substantiated in the archaeological record.

Although south Levantine urbanisation is often compared and correlated with broadly synchronous processes in other parts of the ancient Near East (e.g., Esse 1989a; Finkelstein and Gophna 1993), the present study confirms what several recent studies of south Levantine developments have indicated (e.g., M. S. Chesson 2003, 2015; S. Paz 2010); that is, that the initial EB II urbanisation, and the particular direction that it took in EB III, show their own, peculiarly regional approaches to the negotiation of power and the conduct (or containment) of violent conflict. These approaches included the construction of large fortifications that had an imposing appearance, but were not designed to withstand siege warfare. It seems that there was a violent threat during this period, but it was more a possibility than a reality, especially due to the lack of suitable hardware. Organized warfare was prevalent in the neighbouring regions and may have threatened the southern Levant, but this threat did not materialize, with evidence only for sporadic attacks on sites, probably by militias and small bands.

The threat of violence seems to have been exploited by elites to enhance their power and social control and to institutionalize hierarchic structures. The elite induced the population to invest thousands of workdays (see 3.3.4) and build fortifications that looked more impressive than they actually were: a close examination shows that their military value was questionable. The de-facto role of these fortifications was to serve as ideological instruments and symbols of the emerging social order. Their effect, intended or not, was a change of perception and attitude towards the landscape, the external area outside of the town, and other settlements and communities. Connecting elaborate fortifications with warfare and identifying them as markers of war is a reasonable deduction in later periods, but this logic is not necessarily valid in the Levantine EBA where social stratification, organized conflicts, and warfare were in their primary stages.

As can be deduced from the storage capacities exhibited in Yarmuth Palace B-1, the elites dealt with and possibly controlled expensive commodities like olive oil and wine. This, together with the exchange of small quantities of prestige items, resulted in the creation of a ‘semi-wealth’ economy that financed their activities, allowed them to host feasts and accumulate social capital. A large number of broken mace-heads in the TBY Plaza might suggest an act of resistance to power through the despoliation of prestige symbols. It adds to the picture of a dynamic social landscape composed of forces working in contradictory directions.

The social structure of EB III is also reflected in the period’s temples. These were usually either large and elaborate, or small and domestic. Some of the larger ones were composed of several units, possibly to accommodate various deities, while the smaller shrines probably housed minor gods and were intended for use by commoners. This structure mirrored and reproduced the social structure of the EB III.

The general lack of symbolic and artistic representations, together with the almost complete absence of cemeteries, testify to a desire to subsume the individual into the group and town and to show that only urban monuments, such as fortification, can withstand the test of time. Individuals were probably meant to be part of the larger society. This tendency towards a unified society was an important ideology, but not the only one, as can be seen from the modest increase in the use of symbolism and crafts during the EB III. This increase indicates that in the shadow of the dominant ideology, which saw the individual as a mere part of the whole, grew a society in which individuals gained more and more power and prestige. The change of burial customs during the IBA , in which many cemeteries with elaborate burials and grave goods were found (Dever 1995), marks a significant change in the way status of individuals was expressed in material culture. This change may have its roots in EB III.

Complexity and social organisation can take various forms (Drennan et al. 2010), and EB III society appears to have experimented with many of them. One example is TBY with its attempt to establish a redistributive institution based on the accumulation of staple products. It is unclear why this model failed, but even in the later phases of EB III, where more evidence of social inequality can be seen (in the form of prestige objects, competitive feasting, and structural segregation), the corporate model does not seem to have been abandoned (as witnessed by the character of the fortifications and their apparent use for grain storage). The palace at Yarmuth was another experiment, one that was characterised by more elaborate and pronounced stratification that seems to have lasted longer and may have been closer in spirit to societies of later periods.

The increasing investment required for the construction of fortifications and monumental buildings during the EB III recalls the tendency of complex societies to elaborate their institutional structures in times of stress—a strategy that causes diminishing marginal productivity and the decline of marginal returns (Tainter 1988: 86-93). In the southern Levant this elaboration took the form of a 'knee-jerk' response to perceived outside threats, i.e., doing more of the same (building walls). This may have been one of the reasons for the collapse of the social systems of the EBA. In the relatively poorly integrated world of south Levantine EB III towns, it is likely that people in walled settlements could still choose to leave the confines of a town and join the extra-mural component of society (Dever 1995; Regev et al. 2012b).

Based on the available evidence, both the structure and trajectory of the EBA southern Levant diverged from those of neighbouring regions (M. S. Chesson 2015; Miroschedji 2013), while absorbing some of their innovations. Thus, the concept of a fortified skyline was adopted from neighbouring cultures, but no matter how massive, south Levantine walls differed from those of Mesopotamia, for example, in their defensive function, which was not a critical concern locally.

Kenneth Ames has suggested that inequality is inherent in the human condition, so that the presence of archaeological evidence for inequality and social ranking should never come as a surprise – it is just a ‘crystallization’ of a given phenomenon (Ames 2010). However, even if some form of inequality is ‘natural’, its institutionalization is not. Rather, this is the outcome of social negotiations between individuals and groups over long periods of time and, as can be seen in the EBA of the southern Levant, these negotiations do not necessarily lead to a higher degree of complexity.

6. Appendices

6.1. Circles Building Locus List

Locus	Square	Description	Open Elevation	Close Elevation	Provenance/ Grade	Locus Type
4502001		Layers North of the Circles Building- (no street exists) level of stairs (combine w/4502010?)	-197.27	-197.40	Clean	NA
4502002	29,19,9,8,08, 07	Street West of the Circles Building	-196.50	-196.79	Mixed	Occupational Debris
4502003		South street			Clean-	Occupational Debris
4502004		Inner Hall (Room 2) of the Circles Building-floor and accumulations above it	-197.01	-197.30	Clean	Occupational Debris
4502005	4,13,14,24,15	Inner courtyard (Room 6) of the Circles Building: Fill above floor	-196.72	-197.00	Clean-	Occupational Debris
4502006	22, 23	Inner Corridor (Room 7) of Circles Building - Fill		-197.00	Mixed	Fill
4502007	09,027?,028	West of the West street	-196.30		Clean-	Fill
4502008		West of Circles Building (above the street)	-196.10	-196.50	Clean-	Fill
4502009		Wall 19 and area			Clean	Occupational Debris
4502010	023,024,026,027	North of the Circles Building (Plaza?) (combine w/4502001?)	-197.40	-198.04	Clean	NA
4502011		Accumulations on the Circles Building's Platform (no specific position)			Clean	Occupational Debris
4502012	13,14,24	Inner courtyard (Room 6) of the Circles Building: Accumulations on/above floor (pavement)	-197.01	-197.13	Clean	Occupational Debris

Locus	Square	Description	Open Elevation	Close Elevation	Provenance/ Grade	Locus Type
4502013	13,14,24	Inner courtyard (Room 6) of the Circles Building: accumulations near the "oven" = kiln	-197.01	-197.13	Clean	Occupational Debris
4502014	5	Inner Hall (Room 2) - NW sounding trench	-197.30	-197.57	Clean	Occ+Fill
4502015	14,24,25,15	Inner Hall (Room 2) of the Circles Building - fill above floor		-197.00	Clean-	Fill
4502016	22	Inner Corridor (Room 7) of the Circles Building - Floor and accumulations on it		-197.30	Clean	Occupational Debris
4502017	22	Inner Corridor (Room 7) of the Circles Building - Under floor? or 1st phase of the building??	-197.43	-197.67	Clean-	Fill
4502018	024	CANCELED				
4502019	10, 20, Room 9	Deep Cut	-197.33	-200.25	Clean-	Fill
4502020		Room 3 floor	-197.00	-197.10	Clean	Occupational Debris
4502021	10, 20	Accumulation above floors in Rooms 3 and 9	-196.63	-196.83	Clean-	Fill
4502022	10, 20	Fill under the floors in Rooms 3 and 9	-196.84	-197.18	Clean	Fill
4502023	10, 20	Area West of Rooms 3 and 9	-196.95		Clean	Fill
4502024	9,19,29	Fill above the West street, level of circles (+ -)		-196.04	Mixed	Fill
4502025	28,36,37,38,39,44	Fill above the South street, level of circles		-196.45	Clean-	Fill
4502026	06,6,07	Late pit between Circles I and II			Mixed	Fill
4502027	All excavation	Bath House and other late remains			Mixed	Occ+Fill
4502028	028	Top layers West of the Circles Building	-195.80	-196.04	Mixed	Fill
4502029	13,14,24	Inner courtyard (Room 6) of the Circles Building: Floor (pavement) makeup	-197.14		Clean	Fill
4502030	All excavation	Top layers and top soil			Mixed	Top Soil
4502031	All excavation	Baskets with no data (data and pottery may appear in other basket)			Mixed	NA
4502032	Room 4	Room 4-between walls W18 and W18a			Clean	Occ+Fill
4502033	13, 14, 24, Room 6	Inner courtyard (Room 6) of the Circles Building: unknown level			Clean-	NA
4502034	5,15,14,24,23	Fill above central area of the Circles Building		-196.71	Clean	Fill

Locus	Square	Description	Open Elevation	Close Elevation	Provenance/ Grade	Locus Type
4502035	22,23,32	Inner Corridor (Room 7) - Fill above floor	-197.00		Mixed	Fill
4502036	08	Hellenistic pit?	-196.42		Mixed	Fill
4502037	27,28,16	Area of water pipe to the bath-house (from SW of building to bath-house)			Mixed	Fill
4502038	025,026	Fill above North street			Mixed	Occupational Debris
4502039	05,015,016,026, Circle I	Surface of Circle I and corridor from Room 2 to Circle I			Clean-	Occupational Debris
4502040	Circle II, 7	Accumulation on pavement of Circle II and around it			Clean	Occupational Debris
4502041	Circle VII	Accumulation on pavement of Circle VII			Clean-	Occupational Debris
4502042	Circle IV	Accumulation on pavement of Circle IV	-196.22		Clean-	Occupational Debris
4502043	Circle V	Accumulation on pavement of Circle V			Mixed	Occupational Debris
4502044		CANCELED				
4502045	35,36,37,38,24,34	South of the platform, on the pavement, not including the circles			Mixed	Occupational Debris
4502046	04,05	Fill above the North side of the building	-196.30		Clean-	Fill
4502047	27,28,29	Square 29 (SW of the Circles Building), unknown elevation (on the platform?)			Clean	NA
4502048	Circle III	Circle III	-196.20	-195.90	Clean	Occupational Debris
4502049	Circles Building	Top soil above the Circles Building		-195.70	Mixed	Fill
4502050	E of building	Fill above the East of the Circles Building, near Wall 18	-197.12			Fill
4502051	Room 6	First floor of the inner courtyard???			Clean	Occupational Debris

Locus	Square	Description	Open Elevation	Close Elevation	Provenance/ Grade	Locus Type
4502052	Room 2	Inner Hall (Room 2) - NW sounding trench Mid Layer	-197.58	-198.50	Clean	Fill
4502053	Room 2	Inner Hall (Room 2) - NW sounding trench Bot Layer	-198.51	-198.90	Clean	Fill

Table 17: Circles Building Lous List

6.2. Metrology Calculations

Each combination of unit of measure and measurements were tested according to the following calculations:

$$\delta ij = MSi - UMj * Round(MSi/UMj)$$
$$\Delta ij = ABS(\delta ij)$$

Where MSi is a specific measurement i, UMj is a specific unit of measure j, Round is a function that rounds a number to the next integer, and ABS is a function that returns a positive value. Δij is the gap between the actual measurement (i) and the measurement of this section in case it was built using unit of measure j. e.g., the radius of Circle I is 4.05 m. If we compare it to a unit of measure of 0.29 m, we will get the following calculation:

$$\delta_{4.05,0.29} = 4.05 - 0.29 * Round(4.05/0.29) = 4.05 - 0.29 * Round(13.97) =$$
$$= 4.05 - 0.29 * 14 = -0.01$$
$$\Delta_{4.05,0.29} = ABS(-0.01) = 0.01$$

For each unit of measure j, all absolute gaps Δij were summed and averaged. Other parameters calculated were standard deviation, variance and the number of absolute gaps (Δij) which are larger than 15% of the unit of measure. The average, variance and standard deviation were also normalized, in order to allow comparisons. Normalization was done by dividing the result by the unit of measure. For example, for every unit of measure j normalized average was calculated in this way:

$$NorAVGj = \frac{AVGj}{UMj}$$

Where UMj is unit of measure j, AVGj is the average of all Δij (absolute gaps, see above), and NorAVGj is the normalized average for unit of measure j. NorAVG has no units and is a percentage of the average from the unit of measure; e.g., a figure of 19.1%

for the unit of measure 0.300 means that the average of gaps for this unit of measure is 19.1% of it and equals to 0.0564 m.

The next step was to identify the units of measure that stand out, with the lowest normalized average of gaps (henceforth *NorAVG*), normalized standard deviation of gaps (henceforth *NorSTD*) and lowest number of gaps which were larger than 15% of the unit of measure (henceforth *Gaps15%*). If the builders of the Circles Building used standard unit of measure, it should be the one with the lowest parameters.

6.2.1. Metrology Calculations Output

	Measurment (m)	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #
CB Section/U/M		0.08	0.23	0.26	0.30	0.45	0.50	0.53	0.72	0.75	0.76	0.77	0.78
Circle I radius	*4.05*	0.00	0.00	0.11	0.15	0.00	0.05	0.15	0.27	0.30	0.25	0.20	0.15
Circle I E Partition width	*0.88*	0.02	0.02	0.09	0.02	0.02	0.12	0.17	0.16	0.13	0.12	0.11	0.10
Circle I N Partition length	*2.2*	0.03	0.05	0.10	0.10	0.05	0.20	0.10	0.04	0.05	0.08	0.11	0.14
Circle I N Partition width	*0.9*	0.00	0.00	0.11	0.00	0.00	0.10	0.15	0.18	0.15	0.14	0.13	0.12
Circle I W Partition length	*2.39*	0.01	0.09	0.03	0.01	0.14	0.11	0.24	0.23	0.14	0.11	0.08	0.05
Circle I W Partition width	*1.13*	0.00	0.00	0.08	0.07	0.22	0.13	0.08	0.31	0.37	0.37	0.36	0.35
Circle II radius	*4.45*	0.02	0.05	0.02	0.05	0.05	0.05	0.25	0.13	0.06	0.12	0.18	0.24
Circle II E Partition width	*0.79*	0.03	0.11	0.00	0.11	0.11	0.21	0.26	0.07	0.04	0.03	0.02	0.01
Circle II S Partition length	*2.4*	0.00	0.08	0.04	0.00	0.15	0.10	0.23	0.24	0.15	0.12	0.09	0.06
Circle II S Partition width	*0.9*	0.00	0.00	0.11	0.00	0.00	0.10	0.15	0.18	0.15	0.14	0.13	0.12
Circle II W Partition length	*2.32*	0.00	0.07	0.04	0.08	0.07	0.18	0.22	0.16	0.07	0.04	0.01	0.02
Circle II W Partition width	*0.91*	0.01	0.01	0.12	0.01	0.01	0.09	0.14	0.19	0.16	0.15	0.14	0.13
Circle III radius	*4.46*	0.04	0.04	0.00	0.04	0.04	0.04	0.26	0.14	0.04	0.10	0.16	0.22
Circle III E partition width	*0.83*	0.01	0.07	0.04	0.07	0.07	0.17	0.22	0.11	0.08	0.07	0.06	0.05
Circle III N partition length	*2.38*	0.02	0.10	0.02	0.02	0.13	0.12	0.25	0.22	0.13	0.10	0.07	0.04
Circle III N partition width	*0.82*	0.01	0.08	0.03	0.08	0.08	0.18	0.23	0.10	0.07	0.06	0.05	0.04
Circle III S partition length	*2.35*	0.03	0.10	0.01	0.05	0.10	0.15	0.25	0.19	0.10	0.07	0.04	0.01
Circle III S partition width	*0.85*	0.03	0.05	0.06	0.05	0.05	0.15	0.20	0.13	0.10	0.09	0.08	0.07
Circle III W partition length	*2.29*	0.03	0.04	0.07	0.11	0.04	0.21	0.19	0.13	0.04	0.01	0.02	0.05
Circle III W partition width	*0.88*	0.02	0.02	0.09	0.02	0.02	0.12	0.17	0.16	0.13	0.12	0.11	0.10
Circle IV radius	*3.90*	0.00	0.07	0.04	0.00	0.15	0.10	0.23	0.30	0.15	0.10	0.05	0.00
Circle IV E partition length	*2.25*	0.00	0.00	0.11	0.15	0.00	0.25	0.15	0.09	0.00	0.03	0.06	0.09
Circle IV E partition width	*0.98*	0.01	0.08	0.07	0.08	0.08	0.02	0.07	0.26	0.23	0.22	0.21	0.20
Circle IV N partition length	*2.35*	0.03	0.10	0.01	0.05	0.10	0.15	0.25	0.19	0.10	0.07	0.04	0.01
Circle IV N partition width	*0.9*	0.00	0.00	0.11	0.00	0.00	0.10	0.15	0.18	0.15	0.14	0.13	0.12
Circle IV Partition width	*0.83*	0.01	0.07	0.04	0.07	0.07	0.17	0.22	0.11	0.08	0.07	0.06	0.05
Circle IV Partition width	*1.00*	0.03	0.10	0.05	0.10	0.10	0.00	0.05	0.28	0.25	0.24	0.23	0.22
Circle IV Partition width	*0.92*	0.02	0.02	0.13	0.02	0.02	0.08	0.13	0.20	0.17	0.16	0.15	0.14
Circle IV S partition length	*2.35*	0.03	0.10	0.01	0.05	0.10	0.15	0.25	0.19	0.10	0.07	0.04	0.01
Circle IV S partition width	*0.9*	0.00	0.00	0.11	0.00	0.00	0.10	0.15	0.18	0.15	0.14	0.13	0.12
Circle V radius	*3.90*	0.00	0.07	0.04	0.00	0.15	0.10	0.23	0.30	0.15	0.10	0.05	0.00
Circle V E partition length	*2.4*	0.00	0.08	0.04	0.00	0.15	0.10	0.23	0.24	0.15	0.12	0.09	0.06
Circle V E partition width	*0.9*	0.00	0.00	0.11	0.00	0.00	0.10	0.15	0.18	0.15	0.14	0.13	0.12
Circle V N partition length	*2.45*	0.02	0.02	0.09	0.05	0.20	0.05	0.18	0.29	0.20	0.17	0.14	0.11
Circle V N partition width	*0.9*	0.00	0.00	0.11	0.00	0.00	0.10	0.15	0.18	0.15	0.14	0.13	0.12
Circle V S partition width	*0.87*	0.03	0.03	0.08	0.03	0.03	0.13	0.18	0.15	0.12	0.11	0.10	0.09
Circle V W partition length	*2.07*	0.03	0.04	0.03	0.03	0.18	0.07	0.03	0.09	0.18	0.21	0.24	0.27
Circle V W partition width	*0.87*	0.03	0.03	0.08	0.03	0.03	0.13	0.18	0.15	0.12	0.11	0.10	0.09
Circle VI radius	*3.90*	0.00	0.07	0.04	0.00	0.15	0.10	0.23	0.30	0.15	0.10	0.05	0.00

	Measurment (m)	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #	Gap from round #
CB Section/U/M		0.08	0.23	0.26	0.30	0.45	0.50	0.53	0.72	0.75	0.76	0.77	0.78
Circle VI E partition width	*0.96*	0.02	0.06	0.09	0.06	0.06	0.04	0.09	0.24	0.21	0.20	0.19	0.18
Circle VI W partition length	*2.2*	0.03	0.05	0.10	0.10	0.05	0.20	0.10	0.04	0.05	0.08	0.11	0.14
Circle VI W partition width	*0.86*	0.04	0.04	0.07	0.04	0.04	0.14	0.19	0.14	0.11	0.10	0.09	0.08
Circle VII radius (E-W)	*4.14*	0.01	0.09	0.06	0.06	0.09	0.14	0.06	0.18	0.36	0.34	0.29	0.24
Circle VII radius (S-N)	*4.08*	0.03	0.03	0.12	0.12	0.03	0.08	0.12	0.24	0.33	0.28	0.23	0.18
Circle VII E partition length	*2.3*	0.02	0.05	0.06	0.10	0.05	0.20	0.20	0.14	0.05	0.02	0.01	0.04
Circle VII E partition width	*0.85*	0.03	0.05	0.06	0.05	0.05	0.15	0.20	0.13	0.10	0.09	0.08	0.07
Circle VII N partition width	*0.83*	0.01	0.07	0.04	0.07	0.07	0.17	0.22	0.11	0.08	0.07	0.06	0.05
Circle VII W partition width	*0.85*	0.03	0.05	0.06	0.05	0.05	0.15	0.20	0.13	0.10	0.09	0.08	0.07
Width of S platform	*9.7*	0.03	0.02	0.01	0.10	0.20	0.20	0.25	0.34	0.05	0.18	0.31	0.34
Width of N platform	*10.76*	0.04	0.04	0.00	0.04	0.04	0.24	0.26	0.04	0.26	0.12	0.02	0.16
Corridor to Circle I	*0.79*	0.03	0.11	0.00	0.11	0.11	0.21	0.26	0.07	0.04	0.03	0.02	0.01
Corridor to Circle V	*0.78*	0.03	0.11	0.01	0.12	0.12	0.22	0.26	0.06	0.03	0.02	0.01	0.00
Corridor's width (E)=Room 7 width (E)	*3.49*	0.03	0.11	0.08	0.11	0.11	0.01	0.19	0.11	0.26	0.31	0.36	0.37
Corridor's width (W)=Room 7 width (W)	*3.18*	0.03	0.03	0.03	0.12	0.03	0.18	0.03	0.30	0.18	0.14	0.10	0.06
E of room (all)=Wall 8 length	*11.50*	0.03	0.03	0.05	0.10	0.20	0.00	0.05	0.02	0.25	0.10	0.05	0.20
S of W8=E of room 1	*4.62*	0.03	0.11	0.11	0.12	0.12	0.12	0.11	0.30	0.12	0.06	0.00	0.06
Opening in W 8=E of room 2 (entrance)	*2.13*	0.03	0.11	0.03	0.03	0.12	0.13	0.03	0.03	0.12	0.15	0.18	0.21
N of W8=E of room 3	*4.65*	0.00	0.08	0.08	0.15	0.15	0.15	0.08	0.33	0.15	0.09	0.03	0.03
N wall of room 2	*4.60*	0.02	0.10	0.13	0.10	0.10	0.10	0.13	0.28	0.10	0.04	0.02	0.08
S wall of room 2	*4.50*	0.00	0.00	0.04	0.00	0.00	0.00	0.23	0.18	0.00	0.06	0.12	0.18
Opening in W 22=Small entrance to courtyard	*0.73*	0.02	0.05	0.06	0.13	0.17	0.23	0.21	0.01	0.02	0.03	0.04	0.05
W wall of room 2	*10.78*	0.02	0.02	0.02	0.02	0.02	0.22	0.25	0.02	0.28	0.14	0.00	0.14
Wall 8 width (inner wall)	*0.60*	0.00	0.08	0.08	0.00	0.15	0.10	0.08	0.12	0.15	0.16	0.17	0.18
Sum of absolute values		1.06	3.35	3.89	3.61	5.00	7.97	10.83	10.76	8.60	7.62	6.85	7.01
Average of abs values		0.02	0.05	0.06	0.06	0.08	0.13	0.17	0.17	0.14	0.12	0.11	0.11
avg of abs values/length of UM		0.22	0.24	0.23	0.19	0.18	0.25	0.33	0.24	0.18	0.16	0.14	0.14
STD/length of unit of measure		28%	29%	27%	23.4%	22.2%	26%	35%	20%	18%	16%	17%	18%
How many gaps are large>15%*U/M (=yellow)		38	41	40	36	33	52	54	50	37	29	24	28
How many gaps %		60%	65%	63%	57%	52%	83%	86%	79%	59%	46%	38%	44%
U/M Name		Palm	Span	1/2 Royal cbt	Sumerian foot	Small cbt	cubit	Royal cbt	Ubaid U/M	Cubit of the pace			

Table 18: Metrology calculations of several units of measure (U/M)

6.2.2. Metrology Calculations Statistical Tests and Results

In order to check the statistical relevance of this study, the following procedure was followed: first, an ANOVA test was performed. This statistical test checks a null hypothesis arguing that all sets of unit of measure vs. measurements (i.e. the sets of the above mentioned parameters like *NorAVG* and *NorSTD* for every unit of measure) are not significantly different. The results of the ANOVA test performed on all the sets were T=10.84 and P-value=1.72 E-171. P-value is the probability that the null hypothesis is true. Such a small P-value means that the null hypothesis can be rejected with an almost 100% probability. The results of the ANOVA test show that there is significant variance or variances among the sets, but it does not specify which sets are not statistically equal.

In order to find which groups are not statistically equal, a paired *t*-test was utilized. This statistical test, examines the null hypothesis that two groups of repeated measurements are equal and the differences between them are random. The alternative hypothesis is that they are statistically different. Repeated measurements are measurements of the same population under different treatments, e.g., crop yields of the same plot with different methods of fertilization. This test fits our case, where the Circles Building measurements are the population and testing them with different units of measures are the different treatments. The paired *T-test* assumes normal distribution, which can be assumed for populations larger than 30. The result of the *T-test* is the P-value, which is the probability (between 0-1) that the null hypothesis is true. When the P-value is lower than 0.05 the null hypothesis can be rejected in favour of the alternative.

t-testing the 0.77 m unit of measure against other units of measure shows that it is significantly different from smaller units of measure and from units of measure larger than

0.83 m (P-values are 0.01 and lower), but it is not statistically different from the 0.78 to 0.83 m units of measure. Testing each of the 0.78 to 0.83 m units of measure against the rest brings similar results; each unit of measure between 0.77 and 0.83 is statistically different from units of measure smaller than 0.77 and larger from 0.83, but is not statistically different from the 0.77 to 0.83 units of measure.

The 0.45 m unit of measure is statistically different from 0.47 m and above, and from 0.30 m and below. The 0.29 and 0.30 m units of measure show a similar pattern; they are statistically different from 0.31 m and above, and are not different from the units of measure below them, down to the limit of 0.225 m (the smallest unit of measure tested, except 0.075 m)[65].

[65] For further reading on statistics: (Walpole et al. 2012).

Measured Part of the Circles Building	***Measurement (m)***	How many 0.29	How many 0.3	How many 0.45	How many 0.77
Circle I radius	***4.05***	13.97	13.50	9.00	5.26
Circle I East Partition width	***0.88***	3.03	2.93	1.96	1.14
Circle I North Partition length	***2.2***	7.59	7.33	4.89	2.86
Circle I North Partition width	***0.9***	3.10	3.00	2.00	1.17
Circle I West Partition length	***2.39***	8.24	7.97	5.31	3.10
Circle I West Partition width	***1.13***	3.90	3.77	2.51	1.47
Circle II radius	***4.45***	15.33	14.82	9.88	5.77
Circle II East Partition width	***0.79***	2.72	2.63	1.76	1.03
Circle II South Partition length	***2.4***	8.28	8.00	5.33	3.12
Circle II South Partition width	***0.9***	3.10	3.00	2.00	1.17
Circle II West Partition length	***2.32***	8.00	7.73	5.16	3.01
Circle II West Partition width	***0.91***	3.14	3.03	2.02	1.18
Circle III radius	***4.46***	15.38	14.87	9.91	5.79
Circle III East partition width	***0.83***	2.86	2.77	1.84	1.08
Circle III North partition length	***2.38***	8.21	7.93	5.29	3.09
Circle III North partition width	***0.82***	2.83	2.73	1.82	1.06
Circle III South partition length	***2.35***	8.10	7.83	5.22	3.05
Circle III South partition width	***0.85***	2.93	2.83	1.89	1.10
Circle III West partition length	***2.29***	7.90	7.63	5.09	2.97
Circle III West partition width	***0.88***	3.03	2.93	1.96	1.14
Circle IV radius	***3.90***	13.45	13.00	8.67	5.06
Circle IV East partition length	***2.25***	7.76	7.50	5.00	2.92
Circle IV East partition width	***0.98***	3.38	3.27	2.18	1.27
Circle IV North partition length	***2.35***	8.10	7.83	5.22	3.05
Circle IV North partition width	***0.9***	3.10	3.00	2.00	1.17
Circle IV Partition width	***0.83***	2.86	2.77	1.84	1.08
Circle IV Partition width	***1.00***	3.45	3.33	2.22	1.30
Circle IV Partition width	***0.92***	3.17	3.07	2.04	1.19
Circle IV South partition length	***2.35***	8.10	7.83	5.22	3.05
Circle IV South partition width	***0.9***	3.10	3.00	2.00	1.17
Circle V radius	***3.90***	13.45	13.00	8.67	5.06
Circle V East partition length	***2.4***	8.28	8.00	5.33	3.12
Circle V East partition width	***0.9***	3.10	3.00	2.00	1.17
Circle V North partition length	***2.45***	8.45	8.17	5.44	3.18
Circle V North partition width	***0.9***	3.10	3.00	2.00	1.17
Circle V South partition width	***0.87***	3.00	2.90	1.93	1.13
Circle V West partition length	***2.07***	7.14	6.90	4.60	2.69
Circle V West partition width	***0.87***	3.00	2.90	1.93	1.13
Circle VI radius	***3.90***	13.45	13.00	8.67	5.06
Circle VI East partition width	***0.96***	3.31	3.20	2.13	1.25
Circle VI West partition length	***2.2***	7.59	7.33	4.89	2.86
Circle VI West partition width	***0.86***	2.97	2.87	1.91	1.12
Circle VII radius (E-W)	***4.14***	14.28	13.80	9.20	5.38

Circle VII radius (S-N)	***4.08***	14.07	13.60	9.07	5.30
Circle VII East partition length	***2.3***	7.93	7.67	5.11	2.99
Circle VII East partition width	***0.85***	2.93	2.83	1.89	1.10
Circle VII North partition width	***0.83***	2.86	2.77	1.84	1.08
Circle VII West partition width	***0.85***	2.93	2.83	1.89	1.10
Width of South platform	***9.7***	33.45	32.33	21.56	12.60
Width of North platform	***10.76***	37.10	35.87	23.91	13.97
Corridor to Circle I	***0.79***	2.72	2.63	1.76	1.03
Corridor to Circle V	***0.78***	2.69	2.60	1.73	1.01
Room 7 width (E)	***3.49***	12.03	11.63	7.76	4.53
Room 7 width (W)	***3.18***	10.97	10.60	7.07	4.13
W8 length	***11.50***	39.66	38.33	25.56	14.94
S of W8	***4.62***	15.93	15.40	10.27	6.00
Opening in W8	***2.13***	7.34	7.10	4.73	2.77
N of W8	***4.65***	16.03	15.50	10.33	6.04
North wall of Room 2	***4.60***	15.86	15.33	10.22	5.97
South wall of Room 2	***4.50***	15.52	15.00	10.00	5.84
Opening in W22	***0.73***	2.52	2.43	1.62	0.95
West wall of Room 2	***10.78***	37.17	35.93	23.96	14.00
Wall 8 width (inner wall)	***0.60***	2.07	2.00	1.33	0.78

Table 19: Circles Building measurements

6.3. Labour Cost Calculations

Foundations Volume = [(Platforms and Walls Area)-(Circles Area)]*1.7 m + (Circles Area)*0.5m = [753.37-375.27]*1.7+375.25*0.5 = 835.7 cu m of basalt stones.

If foundations were a casemate, then Foundations Volume = [(753.37-375.27)*1.7]/2+375.25*0.5 = 514.3 cu m of basalt stones.

Superstructure Volume = (Platforms, walls and circles area)*2m = 1506.74 cu m of mudbrick.

Reference	Cu m per workday		Weight of 1 cu m basalt (tons)	Ton stones per workday		Circles Building volume (cu m)	Cu m of mudbrick superstructure per workday	Circles Building mass (tons)	Superstructure Volume	Superstructure workdays	Foundations workdays (calculation by volume)		Total workdays needed (calculation by volume)		Foundations workdays (calculation by weight)		Total workdays needed (calculation by weight)		% of available corvée (population = 4,000, household = 5, corvée = 32,000)		% of available corvée (population = 5,720, household = 5, corvée = 45,760)	
	Min.	Max.		Min	Max						Min	Max	Min	Max	Min	Max	Min	Max	min	max	min	max
(Erasmus 1965)	0.13	0.13	2.2	0.20	0.20	835.7	0.9	1,838	1,507	1,674	6,268	6,268	7,942	7,942		9,192		10,867	25%	25%	17%	17%
(Mizrachi 1992)	0.09	0.15	2.2	0.19	0.32	835.7	0.9	1,838	1,507	1,674	5,745	9,676	7,419	11,350	5,745	9,676	7,419	11,350	23%	35%	16%	25%
(Shelach et al. 2011)	0.17	0.28	2.2	0.38	0.62	835.7	0.9	1,838	1,507	1,674	2,988	4,805	4,662	6,479	2,988	4,805	4,662	6,479	15%	20%	10%	14%
(Helms 1981)	0.07	0.27	2.2	0.16	0.59	835.7	0.9	1,838	1,507	1,674	3,116	11,491	4,790	13,165	3,116	11,491	4,790	13,165	15%	41%	10%	29%

Table 20: Labour cost calculations according to different researchers

People per hectare	Estimated TBY area (hectare)	Population	Area according to	# of households of 7	Available workdays per year (40 per household)	Required workdays for foundations (based on Erasmus) / Available workdays (%)	Required workdays for casemate foundations (based on Erasmus)/ Available workdays (%)	Required workdays for superstructure (based on Burke)/ Available workdays (%)	Foundations + Superstructure	Workdays per household	Casemate foundations + Superstructure	Workdays per household
200	39	7800	GIS max. (with reconstructed washed area)	1114	44,571	14%	9%	3.8%	17.8%	7.1	12.4%	5.0
200	28.6	5720	GIS min. (current tell)	817	32,686	19%	12%	5.1%	24.3%	9.7	16.9%	6.8
200	25	5000	(Getzov et al. 2001)	714	28,571	22%	14%	5.9%	27.8%	11.1	19.4%	7.7
200	20	4000	(Hestrin 1993)	571	22,857	27%	17%	7.3%	34.7%	13.9	24.2%	9.7

Table 21: Labour cost calculations for households of seven

People per hectare	Estimated TBY area (hectare)	Population	Area according to	# of households of 7	Available workdays per year (40 per household)	Required workdays for foundations (based on Erasmus) / Available workdays (%)	Required workdays for casemate foundations (based on Erasmus)/ Available workdays (%)	Required workdays for superstructure (based on Burke)/ Available workdays (%)	Foundations + Superstructure	Workdays per household	Casemate foundations + Superstructure	Workdays per household
200	39	7800	GIS max. (with reconstructed washed area)	1560	62,400	10%	6%	2.7%	12.7%	5.1	8.9%	3.5
200	28.6	5720	GIS min. (current tell)	1144	45,760	14%	8%	3.7%	17.4%	6.9	12.1%	4.8
200	25	5000	(Getzov et al. 2001)	1000	40,000	16%	10%	4.2%	19.9%	7.9	13.8%	5.5
200	20	4000	(Hestrin 1993)	800	32,000	19.6%	12%	5.2%	24.8%	9.9	17.3%	6.9

Table 22: Labour cost calculations for households of five

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Hebrew Abstract

1. מבוא

תקופת הברונזה הקדומה (ב"ק) 3 מהווה את שיאה של התקופה העירונית הראשונה של דרום הלבנט. למרות חשיבותה ואורכה אין התייחסות מספקת אליה במחקר, ולעיתים רבות היא נתפסת כהמשך של תקופת הב"ק 2. לפיכך, יש צורך בהגדרת מאפייניה של התקופה, חשיבותה, וההבדלים בינה ובין התקופה הקודמת.

המעבר לעירוניות ולחברה מרובדת הוא מהלך שאינו מובן מאליו ובו אנשים מסכימים לאבד את האוטונומיה שלהם ולציית לאליטות חברתיות, כלכליות, או דתיות. מעבר זה לא היה בכפייה והתבסס על לגיטימציה ואידיאולוגיה, ואולי גם על איום חבוי. הסמכות, שכיום נחבאת בתוך התרבות החומרית, הייתה גלויה בהרבה בתקופות בהן התחילה לצמוח. לפיכך, תקופת הב"ק 3 היא כר פורה לחקירה ולהבנה של הדרך בה התפתחו חברות מרובדות. בעבודה זו אשתמש בחומרים וגישות חדשים על מנת לבחון את ההנחה שתקופת הב"ק 3 יכולה להיות מוגדרת בפני עצמה כטיפוס ייחודי של עירוניות ואנסה להבין את אריכות הימים שלה, כמו גם את הסיבות האפשריות לקריסתה. העבודה מתבססת על חומרים ישנים וחדשים מתל בית ירח ותל ירמות ועל גישות פרשניות וביקורתיות על מנת להגדיר ולהבין את השינויים המבניים והפיזיים שחלו בתקופת הב"ק 3, את הדרך שבה עוצמה חברתית התקיימה ותוחזקה, את השתקפותה של אותה עוצמה בממצא החומרי, ואת האידיאולוגיות של התקופה.

2. רקע ומסגרת המחקר

2.1 תקופת הברונזה הקדומה 3: הגדרה ותיאור

2.1.1 היסטוריה של המחקר

ג.ה. רייט היה הראשון שהגדיר את תקופת הב"ק 3 כתקופה נפרדת, בהתבסס על כלי בית ירח (KKW). למרות גילויים של מאפיינים אחרים, ונדירותם ה-KKW בדרום הארץ, הם ממשיכים לשמש כמאפיין העיקרי לתקופה. זוהי אולי הסיבה מדוע רבים מתייחסים לתקופה במצורף לתקופה הקודמת לה, כתקופת "הב"ק 2–3", ולא כישות בפני עצמה. למרות פרסומן של מספר עבודות מעודכנות שדנות בתקופת הב"ק 3 בנפרד, מספרן עדיין אינו גדול.

2.1.2 כרונולוגיה

כרונולוגיה על בסיס קרמיקה: בנוסף ל-KKW, מאפיינים קראמיים בולטים נוספים לתקופה זו בצפון ישראל הם הירידה בהיקף התעשיות הקיראמיות הגדולות, דוגמת הקרמיקה המתכתית, ועליה של תעשיות מקומיות, טסים גדולים ושטוחים יותר, ממורקים במירוק רשת, פכים מחופים אדום, וקעריות המיספריות. בדרום אופיינה מגמה דומה בטסים, בנוסף לשימוש רב יותר במירוק וחיפוי, כמויות גדולות של Spouted vats, גימור איכותי יותר ו-lime wash.

כרונולוגיה יחסית: בעוד שבתקופות הב"ק 1 ו-2 נמצאו עדויות רבות לקשרים בין כנען ומצרים, נראה שקשרים אלו לא המשיכו מעבר לשושלת הראשונה ותקופת הב"ק 2. לפיכך יש צורך ב*כרונולוגיה מוחלטת (רדיומטרית)*: מחקרי פחמן 14 מעודכנים מצאו שתקופת הב"ק 2 הייתה תקופה קצרה יחסית, בעוד שתקופת הב"ק 3 צריכה להיות מתוארכת ל-2800/2900 עד סביבות 2500 לפנה"ס. אתרים רבים עברו נטישות ויישוב מחדש וסיום התקופה לא היה בו-זמני בכל האזור. תקופת הב"ק 3 מקבילה לסוף השושלת הרביעית או תחילת החמישית במצרים ולא לשושלת השישית ומסע המלחמה של פרעה פפי I.

2.1.3 דגם יישוב

במהלך תקופת הב"ק 3 ננטשים יישובים קטנים רבים ורוב האוכלוסייה מתרכזת ביישובים גדולים ומבוצרים. גודל השטח הבנוי אינו משתנה משמעותית בין תקופות הב"ק 2 וה-3, ואורכה של האחרונה מעלה אפשרות של צימצום בגודלה של האוכלוסייה יושבת הקבע. בסופה של התקופה ננטשים כמעט כל יישוביה, והיישובים של התקופה העוקבת מיוסדים במקומות חדשים. מפת היישוב בתקופת הב"ק 3 מאופיינת במקבצי יישובים ושטחים לא מיושבים ביניהם. הירכיה יישובית הייתה נדירה ומערך היישוב היה של קבוצות של יישובים בעלי כוח פוליטי דומה (הטררכיה).

2.1.4 ארכיטקטורה ותכנון העיר

אחד המאפיינים העיקריים של אתרי תקופת הב"ק היה הביצורים שהקיפו אותם. לאורך התקופה ביצורים אלה גדלו והפכו מורכבים יותר ויותר. בעבר טענו רוב החוקרים שמטרתם של ביצורים היא הגנתית בלבד, אולם כיום יש הטוענים שהיו להם גם מטרות פוליטיות וחברתיות. שאלה זו נבחנת בהמשך העבודה. נראה שמאפיינים אחרים של תכנון עירוני כמו רחובות איבדו מחשיבותם.

מעט מבנים מונומנטאליים שאינם ביצורים או מקדשים נמצאו. בין המבנים הידועים נמצא בניין המעגלים בבית ירח, מבנה 3177 במגידו והארמונות של ירמות. חלקם נבנו תוך כדי שימוש ביחידות מידה קבועות. בניגוד לתקופות אחרות, קשה לאפיין בית מגורים טיפוסי לתקופת הב"ק 3. חלק מיחידות הדיור כללו מספר חדרים וחצר. במספר קטן של אתרים ניתן לראות בתי מידות שנבדלים במעט מהשאר.

2.1.5 תרבות חומרית

כלי החרס המקומיים של התקופה יוצרו באופן מבוזר ובהשקעה פחותה. צורות אופייניות כוללות קערות, טסים, קנקנים, סירי בישול, פכים, פכיות פיטסים, ואגנים. כלי בית ירח מקושרים למהגרים מאזור הקווקז ומאופיינים במגוון גדול של צורות וטיפול מסיבי בפני השטח. תעשיות הצור של תקופת הב"ק כוללות להבי מגל כנעניים, מגרדי מניפה וכלים המיוצרים אד-הוק. לא נמצאה מעורבות של אליטות או שלטון מרכזי בתעשיות הצור. ראשי חיצים ומיקרוליתים הם ממצא נדיר, כמו גם כלי נשק, כשהנפוץ ביותר הוא ראש האלה.

2.1.6 כלכלה

כלכלת התקופה הייתה ים-תיכונית אופיינית. השימוש בחמורים ובבקר להובלה ומשיכה היה חידוש שאפשר הגדלה של התוצר החקלאי וניידות רבה. הבעלות על אמצעי הייצור והעודפים הגדילו את הריבודיות וגרמו לחלק מהקבוצות שהרכיבו את קהילות התקופה, להיות בעלות עוצמה רבה יותר. ההתבססות על כלכלת מטעים, דוגמת הזית, הצריכה יציבות פוליטית וביטחון, כמו גם זכויות ארוכות טווח על הקרקע. הסחר היה ברובו בקנה מידה קטן וכלל מעט פריטים. אין עדות למבנים כלכליים ריכוזיים המתבססים על מוצרי יסוד (*staple finance*) או מוצרי יוקרה (*wealth finance*). מספר חוקרים הציעו שכל יישוב בב"ק הורכב ממספר קבוצות שהתחרו ביניהן, אך גם שיתפו פעולה. ההנהגה הייתה משותפת, ולא היו הבדלי מעמדות משמעותיים.

2.1.7 פולחן וסמליות

מבני הפולחן של תקופת הב"ק 3 מהווים את רוב הממצא הריטואלי. חפצים סמליים זוהו לרוב כסמלי סטאטוס או כקשורים לפעילות כלכלית. מספרם וגודלם של המקדשים עלה בצורה מתונה בתקופת הב"ק 3. בחלק מהאתרים נמצא בנוסף למקדש הגדול, גם מקדש קטן וצנוע שנבנה בין בתי העיר.

הממצא הסמלי של תקופת הברונזה הקדומה ככלל והב"ק 3 בפרט הוא מועט ודל. הוא כולל בעיקר תווי יוצר, שפופרות עצם מעוטרות, ראשי פרים משנהב ואבן, דגמי מיטה ומבחר קטן של צלמיות ופסלונים אחרים.

מספרן של קבורות הב"ק 3 שנמצאו הוא קטן מאוד. רוב המידע מגיע מבית הקברות של באב א-ד'ראע, בו נמצאו מבנים על-קרקעיים מלבניים בתוכם נקברו בקבורה משנית נקברים רבים לאורך תקופת זמן ארוכה. דולמנים וטומולי שימשו אולי כקברים לקבוצות של נוודים, אך תיארוכם בעייתי. מיעוט הקבורות בתקופת הב"ק 3 אינו יכול להיות מוסבר על ידי בעיית השתמרות וההסבר הסביר ביותר הוא שהמתים של תקופת הב"ק 3 נקברו בצורה שלא תשאיר עקבות חומריים לאורך זמן.

2.1.8 שינוי אקלימי

דעות סותרות לגבי האקלים נשענות על נתוני נטיפים וזקיפים ממערות, נתוני פולן מגלעיני ים ותיארוכי פחמן 14 וטוענות לירידה במשקעים, יציבות, או עודף משקעים בתקופת הברונזה הקדומה 3.

2.2 גישות בארכיאולוגיה של היררכיה, עירוניות, והברונזה הקדומה של דרום הלבנט

הארכיאולוגים שפעלו בתחילת המאה ה-20 ובהמשכה הושפעו מתיאוריות של *culture history* ועסקו בכרונולוגיה, סינכרוניזמים, והסברים דיפוזיוניסטיים. ה"ארכיאולוגיה החדשה" (תהליכית) הגיעה ללבנט באיחור – בשנות ה-70 וה-80 של המאה העשרים ומשפיעה עד היום על הארכיאולוגיה של האזור.

התגובה הביקורתית לארכיאולוגיה התהליכית הגיעה לדרום הלבנט בסוף המאה ה-20. גישה זו ביקרה את ההתייחסות של הארכיאולוגיה התהליכית לחברתי כמערכת קלט-פלט להתמודדות עם הסביבה, את העדר הביקורתיות והאובייקטיביות המדומה שלה, ואת אי יכולתה להסביר את החברתי ואת השינויים החלים במערכת. מחקרים שנעשו בהשראתה של גישה זו כוללים ניתוחים לתופעות ואתרים כמו באב א-ד'ראע, נומיירה, KKW,

הקרמיקה המתכתית, עירוניות, והארכיאולוגיה של ירדן. למרות הריבוי היחסי של מחקרים פרשניים של התקופה, קיים חוסר במחקר דומה הבודק את טבען של החברה והישויות הפוליטיות של תקופת הב"ק 3.

2.3 תיאוריות של קונפליקט

ריבוי הביצורים בב"ק 3 מעלה את שאלת מקומם של אלימות וקונפליקט בחברה. בעוד חלק מהחוקרים טוענים שיושבי קבע נוטים לצאת למלחמה בשל רכושם ונכסיהם הלא ניידים, אחרים טוענים שלוחמה לא הייתה כה נפוצה ושישויות פוליטיות ריכוזיות אינן יכולות לצמוח במצב של לוחמה. מלחמות שימשו לשרידה של הקבוצה, אך גם להשגת יתרונות כלכליים או מטרות חברתיות. הן היוו זרז להיווצרותה של מנהיגות גברית, לגדילתן של קבוצות, ויצירתה של חברה ריבודית.

2.4 התיאוריה במחקר זה

2.4.1 מבנה וסוכנות

ארכיאולוגיה פרשנית רואה את המבנה החברתי כשדה של אפשרויות, חוקים חברתיים, סמלים, ומשאבים. הוא נוצר ומתוחזק על ידי הפרקטיקות והיחסים של הסוכנים החברתיים המאכלסים אותו. המבנה משתנה על ידי פעולותיהם של הסוכנים ותוך כדי כך גם מגביל ומשנה אותם. הסוכנים מפנימים את חוקי המבנה ופועלים על פיהם, אך יש להם שליטה מסוימת על פעולותיהם וביכולתם לנצל את המערכת לצרכיהם.

2.4.2 עוצמה חברתית, אידיאולוגיה ולגיטימציה

עוצמה חברתית היא היכולת של אנשים בחברה לגרום לאחרים לבצע את רצונותיהם. עוצמה המבוססת על כפייה אינה יציבה לטווח ארוך ויש צורך לבסס אותה על *לגיטימציה*. לגיטימיות היא מוסד חברתי שמטרתו לשמור על הסדר הקיים על ידי שהוא מציג אותו כטבעי וקבוע. היא מושגת כאשר מטרות השלטון נראות זהות למטרותיהם של הנשלטים. *אידיאולוגיה* היא אחד הכלים להשגת לגיטימציה: היא עושה זאת על ידי פרקטיקות שמסוות ניגודים בין האינטרסים של השלטון והנשלטים. אסכולת פרנקפורט טוענת כי אידיאולוגיה היא מערך של רעיונות, לרוב כוזבים, שנוצרו על ידי האליטות כדי למסך אי-שוויון וניצול ולשמור על שלמותה של החברה. האליטות יוצרות מונופול על הנורמות והמשמעויות החברתיות, וכך הן שולטות באידיאולוגיה ודרכה בחברה, ללא כפיה או אלימות. מכיוון שהאידיאולוגיה היא חיצונית לאנשים שמאמינים בה היא צריכה להתגשם בעולם בצורה של תרבות חומרית ופרקטיקות חברתיות. אלה כוללות טקסים, מונומנטים, מנהגי קבורה וממצא חומרי.

2.4.3 עוצמה, כפייה, וציות

ניתן להגדיר שתי אסטרטגיות של עוצמה חברתית: מתבדלת (exclusionary) ומשתפת (corporate). בראשונה העוצמה מוחזקת על ידי קבוצה קטנה או יחיד/ים, בזמן שבשנייה העוצמה נחלקת בין כמה קבוצות או מגזרים. גם בקבוצה בה מתקיימת האסטרטגיה השנייה אין בהכרח שוויון והכלים להשגת לגיטימציה יכולים להיות דומים לראשונה. עוצמה חברתית היא גורם מרכזי במבנה החברתי והיא נשענת על לגיטימציה וכפייה, המתורגמות לקשרים, כוח כלכלי, כוח צבאי ואידיאולוגיה. שכנוע וחיזוק קבוע של הלגיטימיות והסמכות של

השלטון מביאים ליציבותו. חברות מורכבות ומורכבות למחצה קדומות לא היו הומוגניות והורכבו מקבוצות אוטונומיות למחצה שהתחרו ביניהן ובתוכן. מדינות קדומות היו קטנות והתקיימו בתוך מערכת של ישויות שוות-מעמד (*peer-polities*) שלהם תרבות ומבנים חברתיים דומים.

2.4.4 הפיכת החברתי לחומרי

ארכיאולוגיה פרשנית טוענת כי לממצא החומרי יש משמעות מעבר לתכונותיו הפיזיות והפונקציונאליות: התרבות החומרית נושאת עימה משמעויות חברתיות ומעצבת את הדרך בה אנשים תופסים את הסובב אותם. לבניינים יש תפקיד חשוב בהקשר זה בכך שהם מעצבים תפיסות של זמן וחלל. החברתי הופך לחומרי בתהליך בו התרבות החומרית מקבלת משמעויות. משמעויות אלה נשארות פעילות למשך תקופת זמן ארוכה. ארכיטקטורה, למשל, משקפת את החברה, אך גם מעצבת אותה בכך שהיא משדרת יציבות, עוצמה, ערכים, וסטאטוס. מונומנטים הם שחקן מפתח בתהליכים אלו בשל גודלם ונוכחותם במרחב לאורך זמן. הביטוי החומרי נותנת לאידיאולוגיה צורה קונקרטית והופכת אותה למקור חשוב של עוצמה חברתית.

3. ניתוח חברתי של התרבות החומרית והארכיטקטורה של הברונזה הקדומה 3

3.1 שיטות: מציאת החברתי בתרבות החומרית של הב"ק 3

הניתוח מתבסס ברובו על תל בית ירח ותל ירמות, שנבחרו בשל היותם אתרים גדולים ושונים זה מזה, ובשל איכות וכמות המידע שנאסף בהן, לעומת אתרים אחרים.

3.2 ניתוח הארכיטקטורה המונומנטאלית

3.2.1 בניין המעגלים בבית ירח

בניין המעגלים ממוקם בצפון תל בית ירח, אתר בגודל של כ-280 דונם שהיה מיושב לכל אורך תקופת הב"ק. הבניין, שהתגלה בחפירות שטקליס ואבי-יונה שנערכו ב-1945/6, מורכב משלוש פלטפורמות אבן המקיפות חללים פנימיים. על גבי הפלטפורמות נמצאו שבעה מעגלים משוקעים ושוחזרו שניים נוספים. הסברים אפשריים לייעודו של הבניין האניגמטי נעו בין מגורים לאנשי בית ירח, מקדש ו/או ממגורה, כשרוב החוקרים מעדיפים את ההסבר האחרון. מאז 2003 החל להצטבר מידע נוסף על הבניין – מחפירות שבוצעו בו בשנים האחרונות ומנתוני חפירות 1945/6 שהתגלו בארכיון. נתונים אלה עובדו במסגרת מחקר זה על מנת למקם את הממצאים שנאספו בקונטקסטים הנכונים וליצור מפות פיזור שלהם.

בניין המעגלים נבנה כמבנה סוגרים שיסודותיו הושתלו לתוך שכבת הב"ק 2. הוא פתוח לכיוון מזרח וכולל שבעה מעגלים בלבד. זיהינו בו שתי פאזות של שימוש המתוארכות לתקופת הב"ק 3 – שכבת כלים מקומיים על הרצפה המקורית ומעליה שכבה נוספת שאופיינה בריבוי של KKW. מצפון לבניין נמצא שטח פתוח ששכבותיו מתקופת הב"ק 3 מורכבות מסדימנט צהוב וקשה ועליו שכבות של אפר, סדימנט חולי, עצמות וחרסי ב"ק 3 משוכבים. שטח זה מכונה ה'פלאזה'. ממצא נוסף שהיה נפוץ בפלאזה, אך לא באזורים אחרים, הוא שברים רבים של ראשי אלה.

תכנון ומטרולוגיה: הבניין והפלאזה מהווים עדות מסוימת לתכנון עירוני בתקופת הב"ק 3. נראה שרובו של התכנון העירוני, בצורה של רחובות, בוצע בתקופה הקודמת.

השימוש במידות סטנדרטיות (מטרולוגיה) יכול להעיד על שלטון מרכזי. מירושדג'י מצא עדויות לשימוש באמה המצרית בארמון B-1 של תל ירמות, המתוארך לתקופת הב"ק 3. בדיקה סטטיסטית מקיפה שנערכה במסגרת מחקר זה על מידותיו של בניין המעגלים מעלה שבוניו השתמשו ב'צעד' השומרי/בבלי (cubit of the pace) (0.75 מטר), ואולי גם באמה השומרית (0.3 מטר) והאמה הקצרה (0.45 מטר).

עלות חברתית: העלות של בניית בניין המעגלים נובעת מכמות חומרי הגלם ומספר ימי העבודה שהושקעו בפרויקט. העלות החברתית של הפרויקט היא המאמץ שנדרש מהחברה שבנתה אותו והיא נובעת מכמות ימי העבודה התיאורטית שיכלו תושבי האתר לתרום. כמות חומרי הגלם שנדרשו לבניין כוללת 835 מ"ק אבני בזלת ו-1507 מ"ק של לבני בוץ. כמות העבודה שהייתה דרושה לבנייתו נעה בין 4,700 ל-13,200 ימי עבודה. גודל האוכלוסייה, שחושב לפי צפיפות של 20 איש לדונם ושטח של 200 דונם, 280 דונם (שטח התל כיום), או 390 דונם (כולל חלקי התל שנשטפו לים מאז נטישתו), היה 4,000, 5,700, או 7,800 נפשות (בהתאמה).

ניתוח נתונים פליאו-דמוגראפיים מראה כי כ-37-40 אחוז מהאוכלוסייה היו בגילאים המתאימים לעבודה פיזית. בניכוי נשים הרות, מטופלות בילדים, חולים ונכים ניתן להניח כי רק כ-2/3 מאוכלוסיה זו היו מסוגלים לעבוד בעבודת בניין, או 20-30 אחוז מכלל האוכלוסייה. בבית ירח מדובר על 1,000 -1,500 איש.

מקובל להניח שבחברות חקלאיות של המזרח הקדום חודשי הסתיו היו פנויים יחסית. תושבי בית ירח יכלו לתרום באופן תיאורטי לפחות 20,000 ימי עבודה במהלך חודשים אלה. גם אם רמת ההשתתפות והמעורבות של תושבי היישוב הייתה נמוכה, ניתן להניח שבניין המעגלים יכול היה להיות מושלם בזמן קצר יחסית.

ייעודו של הבניין: בחינה מחודשת של הבניין ונתונים חדשים אודותיו מראה שהוא נבנה כממגורה, שהייתה יכולה לאחסן כמות השווה לצריכה השנתית של אנשי האתר, אולם בנייתו נפסקה ומבנה העל שלו לא הושלם או הושלם בחלקו. לאחר הפסקת הבניה השתלטו עליו אנשי KKW והשתמשו בו למטרות שונות.

מיקום, גישה ומרכז כובד: ניתוח דרכי הגישה לבניין מראה שהכניסה אליו הייתה רחבה ומבנה העל שלו היה אמור להיות נמוך יחסית. בהשוואה לממגורות דומות מהמזרח הקדום, שהיו מוקפות לרוב בחומה גבוהה ומבודדות מסביבתן, בניין המעגלים היה מחובר לסביבתו והגישה אליו הייתה קלה. הדבר נעשה בוודאי על מנת להציג את הבניין והמוסד הכלכלי/פוליטי שמאחוריו כנגיש ופתוח, וגרם להפקדת היבולים בבניין להראות כהפקדה ולא כתשלום מיסים. בשל כך נראה שמטרתו של הבניין הייתה ממגורה בה אוחסנו מיסים לצרכי חלוקה מחדש (*redistribution*) על ידי שלטון מרכזי שלא החזיק בכוח אבסולוטי.

3.2.2 הארמון בתל ירמות

תל ירמות ממוקם בדרום השפלה וגודלו כ-180 דונם. בסוף תקופת הב"ק 3 נבנה בפינה הדרום מערבית של העיר התחתונה מבנה גדול בן כ-1,750 מ"ר (ארמון B-2). מבנה זה נהרס לאחר תקופת זמן קצר ובמקומו נבנה ארמון B-1 ששטחו היה 6,000 מ"ר. ארמון מוקף חומה זה כלל כ-40-50 חדרים וחללים פנימיים, מחולקים

לכמה אזורי פעילות, והיה בנוי בצורה סימטרית תוך כדי שימוש במידות סטנדרטיות. מחסניו הפנימיים הכילו יותר מ-200 כלי חרס, מרביתם פיטסים וקנקנים. רוב החוקרים טוענים שהמבנה היה מקום מושבו של שליט העיר והאזור, למרות שלא נמצאו בו סמלי שלטון ברורים. כלי האגירה בארמון יכלו להכיל כ-17,000 ליטר ומירושדג'י משחזר כושר אחסון נוסף של כ-13,000 ליטר בחדרים שלא השתמרו. זוהי קיבולת מרשימה, אם כי עדיין קטנה בהרבה מבניין המעגלים עם נפח של כ-24,000 ליטר בכל מעגל.

ניתוח GIS של פיזור "תווי היוצר" בארמון העלה שריכוזיהם הגבוהים ביותר נמצאים בחדרי האחסון. בנוסף, בניגוד לממצא מאתרים אחרים, הם מופיעים בעיקר על כלים שאינם פערורים. לפיכך, ניתן להסיק שהיו אלה סימונים שנועדו למטרות אדמיניסטרטיביות או כלכליות.

כמות החומר שנדרשה לבניית הארמון הייתה 2,260 מ"ק אבן וכ-3,500 מ"ק לבני בוץ. כמות ימי העבודה הדרושים לבניית המבנה הייתה 12,000–28,000 ימים. אוכלוסיית היישוב מנתה 3,600 איש שיכלו לתרום לכל היותר 21,000–32,000 ימי עבודה בשנה. בהשוואה לבניין המעגלים, הארמון של ירמות דרש מאמץ גבוה. להבדיל מבניין המעגלים שנתפס כנראה כמיועד לכלל האוכלוסייה, הארמון בירמות יועד לקבוצה קטנה וההשתתפות בבנייתו הייתה בוודאי פחות נלהבת.

ארמון B-1 תפס אחוז נכבד יחסית משטח התל (3.7%), אולם מוקם באזור נמוך יחסית. הוא הוגבה והופרד מסביבתו על ידי הטרסה הגבוהה שעליה נבנה והחומה שהקיפה אותו. כדי להגיע לחדרי האחסון במרכזו היה צורך לעבור דרך שורה של חדרים אחרים, דבר המרמז על ניהול ריכוזי. השוואת ארמון B-1 לבניין המעגלים מראה שמדובר בשני בניינים ציבוריים שונים ביותר: בניין המעגלים יועד לאחסון סוג אחד של מוצרים, בעוד שארמון B-1 שימש למגורים, הכנת מזון, ואחסון של מספר סוגי מוצרים. הארמון הינו פחות נגיש מבניין המעגלים והמאמץ הכרוך בבנייתו היה גדול בהרבה. בניינים אלה מייצגים שתי תופעות שונות שיידונו בהמשך.

3.3 קונפליקט, הגנה, ומלחמה: אנליזה של הממצא

3.3.1 זיהוי לוחמה בממצא הארכיאולוגי

סימנים רלוונטיים ***למלחמה* ואלימות** בדרום הלבנט באלף השלישי לפנה"ס הם:

ביצורים: לא כל ביצור נועד בהכרח למטרות מלחמתיות. ביצורים יעילים דורשים מיקום נוח להגנה, חומות שאינן ארוכות מידי בעלות מיגון למגנים ובסיסי אש יעילים, שער מוגן, מקור מים וחפיר במקרה הצורך.

כלי נשק, ובעיקר כלי נשק המיועדים לשימוש נגד אדם, כמו אלות. כלי נשק לטווח רחוק כגון חיצים, חניתות ואבני קלע ממלאים תפקיד מרכזי בלוחמת מצור.

ממצא אנתרופולוגי-פיזי: ממצא פגיעות מחיצים ושברים בחלקה העליון של הגולגולת הם עדות לפעילות אלימה. הכמות, התכיפות והשינוי הדיאכרוני בהם מאפשרים לזהות קיומם של קונפליקטים מאורגנים ולוחמה.

3.3.2 ביצורים ולוחמת מצור בעת העתיקה

התפקיד העיקרי של ביצורים הוא לשמש כמכשול לכוחות האויב. על מנת להיות מכשול יעיל, דרוש כוח מגן המייצר כוח אש משמעותי. לשם כך יש צורך ב*חומות* עבות וגבוהות שיספקו מיגון בפני טיפוס, פריצה וקעקוע

והגנה למגנים. בסיסי האש, לרוב על גבי *מגדלים* ובסטיונים צריכים לאפשר אש לחזית ולאגפי האויב. המרחק בין מגדלים סמוכים צריך להיות 25–40 מטר, על מנת שהמגנים יוכלו לכסות את כל השטח מחוץ החומה באש. *חלקלקה* היא חיזוק של המדרונות מתחת לביצורים על מנת למנוע יצירה של שטחים מתים, חפירה מתחת לחומה ושימוש בסולמות וכלי מצור אחרים. *שערים* הם הנקודה החלשה בחומה וככזו הם צריכים להיות מעטים ככל האפשר ומוגנים על ידי מגדלים וכניסה לא ישירה. הדרך *לכבוש עיר מבוצרת* היא על ידי טיפוס על סולמות, קעקוע ופריצת החומות או השערים, מצור, חפירת מנהרות על מנת להפיל את החומות או להיכנס לתוך העיר, או הסתננות בעורמה. נראה שלמעט הסולמות, כל סוגי כלי המצור האחרים לא היו קיימים בב"ק, לא נמצאה עדות לחפירת מנהרות, מצור הצריך צבא מאורגן והשימוש בסולמות דרש חיפוי מסיבי של קשתים.

התפקיד העיקרי של הביצורים היה הגנה, אולם היו להם גם *פונקציות חברתיות וסמליות* כגון הפגנת כוחם של העיר והשליט, הפרדה מהסביבה ושליטה על התושבים, ו"מקום" גיאוגרפי וחברתי בעיר. *התפקידים האחרים של הביצורים תלויים בתפקידם המלחמתי* וממנו הם מקבלים את חשיבותם. למרות זאת, עצם קיומם ויכולתם הטקטית אינו מעיד בהכרח על קיומה של מלחמה בתקופת הברונזה הקדומה.

3.3.3 כלי הנשק של הב"ק 3

כלי נשק ארוכי טווח: המגע הראשון בין המגנים העומדים על הביצורים ותוקפי היישוב נעשה ממרחק ולכן כלי נשק ארוכי טווח הינם הכרחיים בלוחמת מצור. כלי הנשק ארוכי הטווח האפשריים היחידים בתקופת הב"ק היו אבני הקלע או חיצים בעלי ראש עץ. כלי נשק אלה נחשבים לבעלי יעילות נמוכה.

כלי נשק קצרי טווח היחידים שניתן למצוא במספרים משמעותיים במכלולי תקופת הב"ק הם ראשי האלות. מידת יעילותם של אלה מוטלת בספק בשל הקדח הצר שלא אפשר להרכיבם על מוט עבה וחזק ומבנם חסר הקצוות. יתכן שהיו פריטים סמליים בלבד. כלי נשק אחרים יכלו להיות כלים חקלאיים או אלות עץ.

3.3.4 ניתוח ביצורי הברונזה הקדומה 3

ביצורי תקופת הב"ק הגיעו לשיא בתקופת הב"ק 3 בה הם נבנו סביב כל אתר גדול, הגיעו לגדלים מונומנטאליים, והכילו אלמנטים צבאיים מתוחכמים. עד לשנים האחרונות רוב חוקרי התקופה ראו את הביצורים כאמצעי הגנה נגד אויבים, אולם מחקרים עדכניים החלו להטיל ספק בכך. בהמשך לקו מחשבה זה, פרק זה בודק את ביצורי התקופה במספר אתרים ומראה שערכם הטקטי היה נמוך.

תל בית ירח: בתחילת הב"ק 3 נבנתה חומה B, ובסופה חומה C, שתיהן הקיפו רק חלק מהאתר. חומה C כללה בסיס אבן, מבנה-על מלבני בוץ, לפחות 15 מגדלים, ורוחבה נע בין 3 ל-7 מטר. החומה נבנתה במקטעים, ולעיתים על בתי מגורים מתחילת התקופה. המגדלים לא כללו כניסה, כך שיתכן ושימשו לאחסון. למרות שכללה מאפיינים צבאיים כמו בניה בצורת שיני מסור או שטח לתנועת כוחות מאחוריה, היא לא הייתה יעילה מבחינה טקטית מכיוון שלא תמיד הוצבה במקום הגבוה ביותר, לא הקיפה את כל האתר, המרחק בין המגדלים היה גדול מ-30 המטרים המקובלים כמרחק האופטימאלי, ומיקום המגדלים לא תמיד היה יעיל מבחינת זוויות ראיה וירי. העלות החברתית הכרוכה בבנייתה הייתה משמעותית ביותר וגם בהתגייסות מרבית של אנשי האתר זמן הבנייה

היה יכול להגיע ל-15 שנים. אורכה הגדול של החומה גרם לכך שחיל המשמר שהיה דרוש לשמור עליו בעת מלחמה היה מעבר ליכולות אוכלוסיית האתר.

בחפירות באתר נמצאו עשרות ראשי אלה, רובם המכריע נמצא על גבי ה'פלאזה' כשהם שבורים. ניתוח של גודל הקדח בהשוואה למשקל הפריט מעלה שראשי האלה לא היוו נשק אפקטיבי מכיוון שהמוט המחזיק אותם היה נשבר לאחר מכות בודדות.

תל ירמות: ביצורי האתר כוללים שתי חומות ושלושה שלבים. חומה A נבנתה בתחילת תקופת הב"ק 2 וחומה B נבנתה בסופה. החומה המאוחרת נבנתה לרגלי המוקדמת והחלל שביניהן מולא באבנים ועפר שהביא את רוחב הביצורים לכ-40 מ'. בתקופת הב"ק 3 יצאה חומה A משימוש ונקברה בחלקה תחת ארמון B-1, ונבנו בסטיונים בפינה המערבית של האתר, בין חומות A ו-B.

ביצורי ירמות מכילים מאפיינים יעילים מבחינה טקטית כמו שער כניסה עקיפה ומרחקים קטנים בין המגדלים, יחד עם מאפיינים פחות יעילים כמו הבסטיונים הפנימיים או היציאה משימוש של חומה A עקב בניית הארמון. המאפיין האחרון מפתיע מכיוון שהעודפים המאוחסנים במחסני הארמון דרשו בוודאי הגנה רבה יותר. גם חיל המשמר שנדרש כדי להגן על חומה זו היה גדול בהשוואה לאוכלוסיה הקטנה באתר. המאמץ שנדרש להקמת החומות המאסיביות של האתר היה גדול וגרם בוודאי להתארכות הפרויקט. במהלך תקופת הב"ק 3 מאמץ הבנייה הופנה לארמון, על חשבון הביצורים.

באב א-ד'ראע: האתר כולל יישוב מבוצר, בתים שנבנו מחוץ לחומות ובית קברות. שתי חומות נבנו מסביב לאתר, הראשונה בב"ק 2 והשנייה (A) בב"ק 3. חומה A נבנתה במקטעים, וכללה בסיס אבן ומבנה על מלבני בוץ, רוחבה 8-7 מטר והיא הקיפה את כל האתר, למעט צידו הצפוני. מחקר אנתרופולוגי-פיזי של בית הקברות העלה מספר עדויות לאלימות, אולם ללא עליה במשך התקופה. נראה שלמרות הביצור המאסיבי, האתר לא היה תחת איום, ולכן לא נבנתה חומה בצידו הצפוני וחלק מהאוכלוסייה יכול היה לגור מחוץ לחומות.

לביאה: האתר ממוקם על שלוחה תלולה ברמת הגולן, מנותק משאר הרמה על ידי שתי חומות ברוחב 16 ו-10 מטר, ומוקף משאר עבריו התלולים בחומה ברוחב 3-4 מטר. אין עדויות ברורות למאפיינים אחרים של ביצור למעט שער כניסה ישירה בכל אחת מהחומות. האתר נחרב במהלך תקופת הב"ק 3 במה שנראה כהתקפה על אזור השער. העדויות האפשריות כוללות חסימה של השער החיצוני, סימני חורבן באזור זה, אבני קלע, שני ראשי אלה והטמנה של 24 כלים מיניאטוריים ליד הביצורים.

תושבי האתר המעטים השקיעו מאמץ רב בביצורו בחומות מסיביות, אך למרות זאת נכנעו לתוקפים חמושים באבני קלע וראשי אלה שיעילותם נמוכה. מיקום ההתקפה בנקודת התורפה היה צפוי, כפי שניתן להבין מחסימת השער, אך למרות זאת היא לא נהדפה. הדבר מעיד על כך שהאיומים היו לרוב נמוכים ושהתושבים הסתמכו על ביצוריהם שירתיעו מראש את התוקפים.

זרקון: שטח האתר כ-80 דונם ומורכב מעיר עליונה ותחתונה. האתר היה מוקף בביצורים משלושה עברים: לא נמצא ביצור בצידו המזרחי ויתכן שמעולם לא נבנה שם כזה. שלושה פירים בשטח האתר מובילים למפלס מי התהום או לוואדי הקרוב. בתחילת תקופת הב"ק 3 עובתה חומת הב"ק 2 לרוחב של 6–7 מטר, השערים

המשניים נחסמו, ולפני שער העיר העליונה נבנה חצי מגדל וקיר שהפכו אותו לשער כניסה עקיפה. בשלב המאוחר יותר נחסם שער העיר התחתונה ובמקומו הובילו מדרגות למעבר על גבי החומה. זוהי דוגמה נוספת לשילוב של מאפיינים צבאיים יחד עם נקודות חולשה בולטות שגורמות לביצורים להיות לא אפקטיביים. הצד המזרחי חסר הביצור בניגוד לצד המערבי על ביצוריו המתוחכמים מראה שתפקידם העיקרי של הביצורים היה הצהרת כוח ועוצמה והם לא נועדו לעמוד במצור או מתקפה.

עי: האתר היה מבוצר החל מתקופת הב"ק 2 (Wall B). בשלב הראשון של תקופת הב"ק 3, עובו הביצורים על ידי הוספה של חומה נוספת (Wall A), צמודה לקודמת ומילוי רוב הרווח ביניהם. רוחבו הממוצע של הביצור הוא 8 מטר. תוספות נוספות כללו חלקלקה ומגדלים/בסטיונים פנימיים, שיעילותם נמוכה ממגדלים חיצוניים. נראה שבשטח C חומה B לא הגנה כלל על הבתים שהקיפה ולכן חומה A הייתה הכרחית. בשלבים מאוחרים יותר עובו החומות עוד יותר, אך בוצעו גם פעולות לא הגנתיות, כמו ביטולו של מגדל 75-76. כל השערים שנמצאו היו צרים ופשוטים ולפחות אחד כלל כניסה לא ישירה.

קאלאוואי טען שתקופת הב"ק 3 הייתה אלימה, דבר שהתבטא בחורבנות רבים בעי, ואכן נראה שמרבית כוח העבודה של תושבי העיר במהלך תקופת הב"ק 3 הופנה לשיפור הביצורים. חלק מהשיפורים הפחיתו מיעילות הביצור בכך שביטלו מגדלים או בנו חומה בחזיתם, ונראה שהבונים חיפשו לעבות ולהגביה את החומות יותר משניסו לשפר את יעילותן הטקטית.

חברון: האתר של חברון ממוקם על שלוחה במזרח ג'בל רומיידה במיקום נשלט על ידי שאר ההר ולכן נחות טקטית. בחפירות באתר נמצא חומה "קיקלופית" בנויה במקטעים שתוארכה לתקופת הב"ק 3. רוחבה 6.2-5.7 מטר. הפן החיצוני של החומה נבנה מסלעים גדולים מאוד והיה מטויח בלבן, הפן הפנימי היה בנוי מסלעים קטנים בהרבה והיה מטויח בבוץ אדום. המרווח בין הפנים מולא באבנים קטנות ואדמה. החומות הבנויות מאבנים ענקיות ומטויחות לבן נראו למרחקים ויצרו בוודאי רושם רב. גרם מדרגות שנבנה בסמוך לחומה בשכבה X פגע באפקטיביות שלה ומראה שבוני החומה שמו דגש על הרושם שהיא יוצרת והתחשבו פחות בשיקולים טקטיים.

3.4 אנליזה של הכלכלה והפולחן והקשרים ביניהם

3.4.1 כלכלה, מסחר והתמחות

מודל כלכלי לתקופת הב"ק 3: מספר מודלים כלכליים הוצעו לתקופת הברונזה הקדומה, אך לרוב עסקו בתקופת הב"ק 1. פיליפ הציע מודל של *כלכלת מוצרי יסוד* (*staple finance*), בו כוח כלכלי וחברתי מושג על ידי מניפולציה ושליטה על מוצרי יסוד בסיסיים. כלכלה זו מאופיינת בפעילות חקלאית מוגברת ובריבויים של מתקני אחסון גדולים. פיליפ טען שתקופת הב"ק 3 התאפיינה במרכזי כוח רבים בצורה של קבוצות המבוססות על קשרי משפחה ודם, והם אלו שניהלו את החברה והכלכלה. כלכלה זו עומדת בניגוד ל*כלכלת מוצרי היוקרה* (*wealth finance*) בה כוח כלכלי ופוליטי מושג דרך שליטה במוצרי יוקרה. גנץ הציע מודל כלכלי בשם *cash crops economy*, שבו הפעילות הכלכלית מבוססת על מוצרים חקלאיים בעלי ערך גבוה, בעיקר שמן זית ויין. מוצרים אלו נאגרו על ידי הארמונות והיוו מקור כוחם החברתי. בהתבסס על מודל זה, אני מעוניין להציע

שהכלכלה של תקופת הב"ק 3 התבססה על מספר מצומצם של חפצי יוקרה ומעט גידולים בעלי ערך ושהאליטות צברו את כוחם דרך מניפולציה של מוצרים אלה. מודל זה נקרא *semi-wealth economy*.

בסיס כלכלי: בהתבסס על תל בית ירח כמקרה מבחן, המבנה החברתי של תקופת הברונזה הקדומה 2 התאפיין בריבודיות נמוכה והתבסס על מספר גדול של קבוצות כוח שוות (corporate society). הכלכלה הייתה מבוססת על השליטה במוצרי יסוד וחפצי יוקרה היו נדירים ביותר. בניין המעגלים היה התוצר האחרון של רוח תקופה זו והיווה ניסיון לשלוט באחסון וההפצה של מוצרי היסוד. בתחילתה של הב"ק 3 חל שינוי במגמה זו והסימן העיקרי לכך הוא אי השלמת בנייתו של בניין המעגלים. עדות נוספת נמצאה במחקרה של אליס ברגר על שרידי צמחים מהאתר, שהראו כי שרידי הדגנים שנמצאו בשכבות הב"ק 2 כללו כמות פחותה של מוץ ועשבים מאשר אלה של תקופת הב"ק 3. הסיבה לכך היא שהדגנים של תקופת הב"ק 2 עברו עיבוד מחוץ לאתר, ואולי הגיעו מאחסון, בעוד שאלה של הב"ק 3 עובדו בתוך האתר. ברגר הסיקה מכך שמדובר בהתרופפות של השלטון המרכזי בתקופת הב"ק 3. ממצאים אלה תואמים את הטענה שבמהלך הב"ק 3 מרכז הכובד של האתר עבר ממרכזו (בניין המעגלים) לפריפריה שלו ולחומה עם המגדלים החלולים שבה, שאולי שימשו כממגורות. עדויות נוספות למגמה זו היא שינויים דומים בעיבוד מוצרי בשר והירידה בתפוצתם של הכלים המתכתיים (NCMW).

העלמות של צלמיות החמור בב"ק 3 וההופעה של צלמיות ראש הפר מסמלת את המעבר מכלכלה של מוצרי יסוד משונעים על ידי חמורים לכלכלה בה כוח, עוצמה, עושר ויוקרה הופכים מרכזיים. נטישת בניין המעגלים ובניית בניין אמידים בדרום-מזרח התל הם דוגמה למעבר זה. חומה C היא דוגמה נוספת לאופייה של החברה ביישוב. המגדלים שבחומה זו, אם שימשו כממגורות, יכלו להכיל כמות דומה לזו שאמור היה להכיל בניין המעגלים. הפיזור שלהם לאורך החומה הביא לכך שכל אחד (או כמה מהם) שימש כממגורה לקבוצה ב"שכונה" שלידו. ביזור זה של הארגון החברתי משתקף גם במקטעים מהן נבנתה החומה.

עדויות נוספות ל-*semi-wealth economy* ניתן למצוא בארמון של ירמות, שבחצרו נמצאה ממגורה בקוטר של 2.4 מטר, אשר יכלה לספק את צרכי החיטה השנתיים של דרי הארמון. הפיטסים וקנקני האגירה שנמצאו במחסנים שבתוך הארמון יכלו להכיל תוצרת בנפח גדול פי שלושה. המיקום שלהם בעומק הארמון מעיד כי יועדו לאחסון מוצרים יקרי ערך כמו שמן זית, יין ושרף. הכמויות הגדולות של מוצרים אלה לא יועדו לצריכה של הארמון או להפצה מחדש אלא לשימוש כמוצר בעל ערך כלכלי וחברתי.

אתרים נוספים בהם נמצאו עדויות לכלכלה של תקופת הב"ק 3 הם זרקון, בו נמצא ארמון או בית אמידים שהכיל עשרות בודדות של קנקני אגירה ופיטסים ושהכמויות בהם היו קטנות מידי לחלוקה מחדש, ונומיירה, בה נמצאו כמויות גדולות של מתקני אגירה ביתיים.

התמחות וחפצי יוקרה: למרות נדירותם של חפצי יוקרה ואומנות בתקופת הב"ק, ישנה עלייה יחסית בתקופת הב"ק 3. חפצים אלה כוללים ראשי פר מגולפים, שפופרות עצם מעוטרות, דגמי מיטות ודגמי מקדשים. נראה שחפצי היוקרה קשורים לאליטות כלשהן שאולי שלטו בייצורם. בנוסף, דגמי המיטות והמקדשים אולי מעידים על ריבודיות שמשתקפת בפולחן (וראו גם בפרק 3.4.2), כלי בית ירח שנמצאו באתרים ללא נוכחות של אנשי

כלי בית ירח שימשו כנראה כחפצי יוקרה, מספר עדויות משטח J במגידו מעידים אולי על אזור עשיר יותר ליד הארמון, ושוני בלהבי מגל כנעניים בבית ירח מעיד אולי על הבדלים כלכליים בין המשתמשים בהם.

הכלכלה של צריכת מזון ראוותנית: במהלך תקופת הב"ק 3 חלה עלייה בגודלם של הטסים והם הגיעו לקטרים של 75–105 ס"מ, שהפכו אותם לכבדים ושבירים. אפילו עלייה מתונה בקוטר הטסים הביאה לעלייה גדולה בשטחם של הטסים ולעלייה גדולה אף יותר בנפח המזון שעליהם. מכיוון שמקובל להניח שטסים שימשו להגשת כמויות גדולות של אוכל בסעודות ומשתאות , ניתן להניח שגדילתם מעידה על שינויים במבנה החברתי. הימצאותם של הטסים הגדולים יותר ביישובים גדולים יותר מעידה על כך שהשינויים בהם היו חריפים יותר.

ההשטחה של הטסים בתקופת הב"ק 3, שהופכת אותם לשבירים יותר אך גורמת לכמויות המזון שעליהם להראות גדולות יותר, לא הייתה פונקציונאלית ומעידה על כך שההצגה הייתה מסיבות חברתיות: עם הביזור של עיבוד והפצת הדגנים שתואר קודם לכן יכלו בתי האב והקבוצות השונות להשיג עוצמה חברתית על ידי השתתפות ב-*semi-wealth economy* והצגת עושרם ונדיבותם בסעודות גדולות.

3.4.2 פולחן, טקסים וסימבוליזם

תקופת הב"ק 3 מאופיינת בהופעה של מתחמים מקודשים גדולים, יחד עם מקדשים קטנים יותר. הפולחן והפנתיאון נוטים להיות קשורים לחברה שמקיימת אותם ולהצדיק אותה בכך שהם נותנים צידוק שמימי למבנה החברתי האנושי: חברות מרובדות נוטות להאמין בפנתיאון מרובד. מירושדג'י טוען שבעוד שבתקופה הכלקוליתית ותחילת הב"ק "הסתפקו" האנשים באלת פריון בודדה, עם תחילתן של ערי מדינה היה "צורך" גם באלוהות גברית. המתחמים המקודשים המורכבים של מגידו וזרקון הם דוגמאות לתהליכים כאלה. המקדשים הקטנים שנמצאו במספר אתרים ושהתקיימו במקביל למקדש/ים הגדולים קשורים בוודאי גם הם לפנתיאון המרובד ויועדו לאלים ולמעמדות הנמוכים יותר. המקדשים הגדולים שימשו את האליטות, ורוב הקהילה הגיעה אליהם באירועים מיוחדים בלבד.

מעמדם ויכולתם הכלכלית של המקדשים בתקופת הב"ק הוא נושא שלא נדון בהרחבה עד היום. בהמשך להרצוג שטען שהבמות העגולות של מקדשי מגידו וזרקון היו בסיסים של ממגורות ולא מזבחות, חישוב של נפחם האפשרי מעלה שהבמה של מגידו דומה למעגלי בניין המעגלים ואם אכן שימשה כממגורה, הרי שמקדשי מגידו נהנו מכוח כלכלי לא מבוטל.

סמלים והתנהגות סמלית: האירוע הסמלי המשמעותי ביותר שנמצא עד כה הוא ראשי האלות המנותצים שנמצאו בפלאזה של בית ירח. כמותם גדולה מאוד בהשוואה לכמויות הקטנות יחסית שנמצאו באתרים אחרים. מיעוט הסמלים בתקופה, בייחוד בהשוואה לתקופה הכלקוליתית יכול להיות משויך לאיקונוקלזם או למעבר מכלכלת מוצרי יוקרה לכלכלה של מוצרי יסוד, אולם מעט עדויות סותרות מעידות שהתמונה הייתה מורכבת יותר.

קבורה: מיעוטן של קבורות ב"ק 3, כמו גם בית הקברות של באב א-דרה על מבני הקבורה העשויים לבני בוץ שנמצאו בו, מעידים על כך שהקבורות בתקופה לא נועדו להשתמר לאורך זמן, ולא נועדו להיות מונומנטים שיעמדו לאורך זמן. בני האדם וקבורותיהם נועדו להיטמע בתוך משהו גדול מהם – העיר ומבניה.

4. דיון

4.1 ארכיטקטורה מונומנטאלית של תקופת הב"ק 3: עוצמה והשפעה

4.1.1 ארכיטקטורה של שכנוע בבית ירח: בניין המעגלים והפלאזה

ניתוח מאפייניו השונים של בניין המעגלים מראה את המשמעויות והמסרים החברתיים החבויים בו.

בנייה: בנייתו של בניין המעגלים יכלה להסתיים תוך מספר קטן של חודשים. עצם הבנייה שימשה כחיזוק ואישוש של המבנה החברתי ושל תפקודו בפועל.

תכנון ומטרולוגיה: אחת עד שלוש יחידות מידה שימשו לבנייתו של בניין המעגלים. השימוש במספר רב יחסית של יחידות מידה מעיד על שלטון מרכזי כלשהו, אך גם על חולשתו, ניסיון להצניע את עצמו, או על בניית המבנה על ידי מספר קבוצות עבודה. השימוש המוגבל ביחידות מידה במהלך הב"ק מעיד על שלטון מרכזי חלש יחסית והירכיה מוגבלת. הרחובות המרוצפים שנבנו לפני בניית בניין המעגלים, עדויות לבניין גדול נוסף שלא נחפר עדיין, והגילוי האחרון של קיר מסיבי מצפון לבניין מעידים על כך שלאזור הייתה חשיבות מיוחדת ושבוני העיר ניסו לעצב את המרחב החברתי העירוני.

מונומנטאליות ונגישות: בניין המעגלים נועד להיות מבנה בעלת בסיס נמוך ורחב, פתוח בצד אחד, שעליו ממוקמות כיפות גדולות. ארכיטקטורה זו נועדה לשוות לבניין מראה נגיש, תוך כדי שמירה על מונומנטאליות וגודל. גודלו של הבניין הקרין יציבות וביטחון שהתבואה שהופקדה בתוכו אכן תישמר, בעוד שנגישותו תרמה לתחושה שמדובר במוסד נגיש ושהתבואה המופקדת אינה הולכת לטמיון. תוכניתו של הבניין מעידה על חולשתו של השלטון המרכזי, או על דמיון לאידיאולוגיה של תקופת הב"ק 2 שהדגישה ערכים של קהילה וציבור על חשבון הירכיה, צבירת עושר ואינדיבידואליזם. ההכנות לבנייתו, שנעשו עוד בתקופת הב"ק 2 יכולות להעיד שמדובר ביצירה ברוח תקופזו, שנבנתה רק בתחילת התקופה העוקבת.

מיקום: פתחו של בניין המעגלים, הפונה לכיוון מזרח או צפון-מזרח אינו מתיישב עם האפשרות שהשדות החקלאיים של האתר, כמו גם שער הכניסה אליו היו ממוקמים מדרום לו. מיקומו זה יכול לנבוע ממיקומו של הרחוב שהוביל מהשער, או מכיוון שהתבואה הובלה אליו דרך ימת הכנרת.

עדויות לשלטון מרכזי ואחסון: בתקופת הב"ק 2 עיבוד ואחסנת התבואה היו מרכזיים, בעוד שבתקופת הב"ק 3 ירד כוחו של השלטון המרכזי ואחסון התבואה עבר ביזור והתקיים במגדלים החלולים של חומה C. אישוש נוסף לביזור זה הם הרחובות ליד בניין המעגלים שניקיונם הופסק בתקופת הב"ק 3 ונטישתו החלקית של אותו אזור.

הפלאזה: שטחים עירוניים פתוחים נחשפו בערד, במגידו, ובעי, אולם רובם קטנים מה"פלאזה" של בית ירח, גבולותיהם אינם רגולריים, בתוך חלקם התגלו מבנים ורצפתם אינה כבושה.

על מנת להעצים את הרושם שיוצר מבנה מונומנטאלי ניתן לבנות לפניו אזור פתוח ונמוך, שיאפשר להתרשם ממנו במבט אחד. נראה שהפלאזה נבנתה כך והצופה ממנה על הבניין ראה מבנה שהיתמר לגובה של לפחות ארבעה מטרים. האפקט של מבנה כזה בחברה שרוב בנייניה היו בני קומה אחת היה משמעותי ותרם לתפיסת השלטון כחזק ויציב. המבנים הציבוריים שנבנו ליד הפלאזה, יחד עם הקיר שנמצא באחרונה בצפונה והממצא

בתוכה מעידים על כך שהאזור היה קשור לאליטות, אולי נשלט על ידיהן ושימש לאירועים וטקסים. במהלך תקופת הב"ק 3 האזור אוכלס על ידי אנשי KKW שכנראה ניצלו את היחלשותו של השלטון המרכזי.

4.1.2 ארכיטקטורה של עוצמה בתל ירמות

ארמון B-1 בתל ירמות נבנה על שטח גדול והמאמץ שהושקע בבנייתו היה משמעותי לתושבי היישוב הקטן. אולם, עוצמתם של בוניו לא הייתה מוחלטת, כפי שניתן ללמוד מכך שלא נבנה על גבי האקרופוליס. הארמון של ירמות ובניין המעגלים בבית ירח שונים בכל היבט כמעט – בגודלם, בנגישות אליהם, ביכולת האחסון שלהם, במיקומם, ובעלות הקמתם. בעוד שבניין המעגלים נתפס בוודאי כבניין שמיועד לתועלת כל תושבי היישוב ועלותו הייתה נמוכה, הארמון של ירמות היה מיועד לרווחתה של קבוצה קטנה בלבד ועלותו הייתה גבוהה; בוני בית המעגלים יכלו לפנות את התושבים שגרים באזור בו הוקם, בעוד שבוני הארמון של ירמות היו צריכים לנצל אזור שנחרב לפני כן. שני המבנים מעידים על המבנה הפוליטי/חברתי בכל אתר: מבנה היררכי למחצה הבנוי על הסכמה בבית ירח, מול מבנה הירכי שהפעיל כוח עבודה גדול אך מעט סרבני בירמות.

4.2 התפקיד החברתי של מלחמה, קונפליקט והגנה בברונזה הקדומה 3

למרות גודלם של ביצורי הב"ק 3 והמאמץ הרב שהושקע בבנייתם, יש מעט סימנים אחרים ללוחמה. פרק זה מראה שתפקידם העיקרי של ביצורי התקופה היה חברתי ופוליטי.

4.2.1 טיעונים בעד מלחמה

עדויות התומכות באפשרות של לוחמה ואלימות מאורגנות בתקופה כוללות: שכבות חורבן, בנייה מחדש, שיפוצים ושיפורים תכופים של הביצורים, מעבר של האוכלוסייה לערים מבוצרות, מיקום אסטרטגי של אתרים הכולל גישה למים, שערי כניסה עקיפה, אטימת שערים במהלך תקופת הב"ק 3, והמוכנות של תושבי היישובים לשאת בעלות הגדולה של בניית ביצורים ותחזוקתם שנראית כנובעת מתחושת איום גדולה.

4.2.2 טיעונים נגד מלחמה

ביצורי הב"ק 3, למרות הופעתם המרשימה לא היו מאוד אפקטיביים, אם בשל מגדלים שנבנו בתוך קו החומה, מרחקים גדולים בין מגדל למגדל, מיקום לא אפקטיבי, בלייה שגרמה לחשיפת חלק מהיישוב, חומות שלא הקיפו את כולו, או צורך בחיל משמר גדול מיכולת האוכלוסייה. טיעונים משמעותיים נוספים כוללים חוסר מוחלט בכלי מצור וכמעט מוחלט בכלי נשק, העדרן של מערכות מים מוגנות ברוב היישובים, וחוסר בעדויות אנתרופולוגיות-פיזיות לאלימות.

4.2.3 מטרתם של ביצורי הב"ק 3

הניתוח לעיל מראה שמלחמה ואלימות מאורגנת היו נדירות בתקופת הב"ק 3 ושההשקעה בביצורים בתקופה הייתה מוגזמת ביחס לאיומים הפוטנציאליים. הציפייה לאלימות וההכנה למלחמה היוו מאז ומתמיד גורם חשוב בעלייה של מנהיגות ואליטות, שניצלו את המלחמה כאמצעי להגביר את מעמדם והסטאטוס החברתי שלהם. תפקידיהם העיקריים של ביצורי התקופה היו לסמל ולהנכיח את עוצמתן, עליונותן וכוחן של האליטות

והאידיאולוגיה שלהן, ליצור חציצה בין העיר והחוץ, וליצור הבדלה בין 'שלנו' ו'לא-שלנו'. בניית הביצורים יצרה אחדות ותחושת הזדהות עם הקהילה, והביצורים עצמם, יצרו תפיסה שונה של הסביבה והחלל.

הגידול בביצורים במהלך הברונזה הקדומה היווה מעין "מרוץ חימוש" שבו ערים בנו ביצורים גדולים ומורכבים יותר ויותר כדי להראות את עושרן, את אחדות הקבוצה ועל מנת להשיג סטאטוס גבוה יותר – להן ולמנהיגיהן. הביצורים הפכו את האידיאולוגיה של ריבוד חברתי לתרבות חומרית בכך שהיוו צריכה ראוותנית שהעידה על עוצמת האליטות.

הביצורים לא נבנו רק לצרכים חברתיים ובהכרח היה איום, או חשש מאיום. יתכן שמימדיהם העצומים של הביצורים נועדו לכפר על החוסר ביכולת צבאית של תושבי הערים ולהרתיע מראש אויבים פוטנציאליים.

4.3 משמעויות חברתיות של הכלכלה והפולחן בב"ק 3

4.3.1 כלכלת Semi-Wealth

במהלך תקופת הב"ק 3 כלכלת הקיום המשיכה להתבסס על דגנים, בעוד שהכלכלה הפוליטית החלה להתבסס על שמן זית, מעט מוצרי יוקרה וצריכת מזון ראוותנית. ניתן להגדיר כלכלה זו כ- *Semi-Wealth Economy*. מוצרי היוקרה כללו צלמיות ראש פר, שפופרות עצם מעוטרות, ראשי אלה, ולעיתים כלי בית ירח גדולים. צריכת המזון הראוותנית השאירה את חותמה בממצא הארכיאולוגי כטסים גדולים ושטוחים שהיו חלשים מבנית, אולם גרמו לכמויות האוכל שנישאו עליהם להראות כגדולות יותר ושימשו ככלי לשידור יוקרה.

השינויים החברתיים לא היו אבולוציוניים ושינו את כיוונם תוך כדי התקופה. בבית ירח נהרס בסוף תקופת הב"ק 3 מתחם בתי מידות בדרום-מזרח העיר על מנת לפנות מקום לחומה C. המקטעים בחומה זו מעידים על חברה שכללה מספר קבוצות כוח. המגדלים החלולים מעידים על כך שהריכוזיות של תקופת הב"ק 2 ננטשה בב"ק 3 לטובת מספר רב של ממגורות קטנות ששימשו את קבוצות הכוח שביישוב.

4.3.2 התפקיד החברתי של פולחן, טקסיות וסימבוליזם

מבני הפולחן של תקופת הב"ק 3 נחלקים למקדשים וקומפלקסים גדולים או מקדשים "שכונתיים" קטנים. זהו שיקוף של המבנה החברתי המרובד של התקופה בו המקדשים הגדולים קשורים לאליטות והקטנים לבני המעמדות הנמוכים יותר. מקדשי התקופה צברו כוח כלכלי משמעותי, כפי שניתן לשער מהבמות העגולות ומוקפות החומה שנמצאו בחלקם ושניתן להניח ששימשו כממגורות לצבירת עודפים שנצברו על ידי המקדש.

הכמות הגדולה של ראשי אלה שבורים שנמצאו ב'פלאזה' של בניין המעגלים מעידה על כך שבמקום זה התקיימו טקסים מאורגנים של שבירת סמלי סטאטוס. יתכן שמדובר בהתנגדות לסמלי סטאטוס באופן כללי, או לקבוצה שהחזיקה בהם. זוהי דוגמה לתהליך החברתי בו אידיאולוגיה הופכת לחומר.

החוסר בממצא סימבולי או פולחני והקבורות המעטות שנמצאו הוא ראייה בפני עצמה: במקביל לעלייה קטנה בממצא סמלי, מגמות נוגדות כמו הרס ראשי האלה בבית ירח, הנטישה של מקדשי העי, זרקון וירמות, והעדר הקבורות, מראות שבניגוד לעיר ולחומותיה שהיו אמורות להיות נצחיות, בני האדם לא היו אמורים לבלוט ושרידיהם לא נועדו להישמר.

5. סיכום ומסקנות

ניתוח תקופת הב"ק 3 כישות נפרדת מראה את תכונותיה הבולטות: עליה בריבודיות של אנשים ובתי אב, עליה בהיקף ההשקעה בבניה מונומנטאלית, ריבודיות של דת ופולחן, וכלכלה המתבססת על מוצרים יקרים למחצה כמו שמן ומעט חפצי יוקרה, ועל צריכת מזון ראוותנית.

האנליזה של בניין המעגלים והארמון בירמות מראה שתי צורות קיצוניות של חברות הנבדלות במבנה החברתי, בכלכלה, ובאידיאולוגיה. החברה שבנתה את בניין המעגלים הייתה Corporate society שהסוותה ריבודיות ועסקה בכלכלה של מוצרי יסוד. החברה בירמות הייתה ריבודית יותר עם ארמון ו- *Semi-wealth economy*. מבנים חברתיים באתרים אחרים נעו על הציר שבין שני מקרי קיצון אלה.

עבודה זו מראה סבירות נמוכה לקיומן של אלימות מאורגנת ולוחמה בתקופת הב"ק 3. בשונה מהאזורים השכנים, העירוניות של דרום הלבנט פנתה לכיוונים אחרים והביצורים הגדולים האופייניים לתקופה נבנו בשל איומים שלרוב נשארו בגדר אפשרות בלבד. האליטות דחפו את האוכלוסייה לבנייתם של ביצורים אלה ותוך כדי כך חיזקו את מעמדן ואת הריבודיות בחברה. התפקיד דה-פקטו של הביצורים היה כמכשיר אידיאולוגי וכסמל של הסדר החברתי. בנוסף, הם השפיעו על ההתייחסות כלפי הנוף, החוץ, ותושבי היישובים האחרים.

כפי שניתן לראות בארמון של תל ירמות, האליטות שלטו במוצרים יקרים למחצה כמו שמן זית ויין, שבצירוף עם מעט מוצרי יוקרה יצרו *Semi-wealth economy*, שמימנה את פעולותיהם ואת הסעודות שתמכו במעמדם החברתי. שבירת ראשי האלה בבית ירח מעידה על התנגדות מאורגנת לפעולות אלה ומהווה דוגמה נוספת לריבוי המבנים החברתיים בתקופה.

המבנה החברתי של תקופת הב"ק 3 משתקף ומשתחזר גם במקדשים: קומפלקסים גדולים שאכלסו את האלים החשובים, מול מקדשים קטנים שנועדו לשכבות הנמוכות יותר. מיעוט הממצא הקשור לאומנות וסמליות, כמו גם העדר הקבורות מעיד על חברה שבה האינדיבידואל נטמע בקבוצה וחשיבותו משנית.

קיימים הרבה מימדים וצורות לריבודיות ואי-שוויון חברתי. נראה שהחברות של תקופת הב"ק 3 ניסו רבים מהם – אם בבית ירח והניסיון הלא מוצלח לכלכלה של מוצרי יסוד וחלוקה מחדש, או בתל ירמות, בו הניסיון של מערכת ריבודית למדי האריך ימים ונראה דומה יותר למערכות של תקופות מאוחרות יותר. נראה שהאוכלוסיות של דרום הלבנט בתקופת הב"ק 3 אימצו רעיונות והושפעו מהתהליכים שעברו על האזורים השכנים באותה תקופה, אך לבסוף נהגו בצורה אחרת. דוגמה לכך היא הביצורים: התפיסה של צורתה החיצונית של עיר הגיע לדרום הלבנט והביאה לבניית ביצורים מרשימים, אולם מבחינה פונקציונאלית הם היו שונים מאלה במסופוטמיה. בניגוד להנחות רווחות, תקופת הב"ק 3 על "ניסוייה" החברתיים מראה שריבודיות משמעותית אינה טבעית והדרך אליה אינה בהכרח רצופה וישירה.

ההשקעה הגדולה בחומות בתקופת הב"ק 3 יכולה להיות מוסברת בנטייה של חברות מורכבות להגדיל את ההשקעה במורכבות בתקופות של מצוקה. יתכן שזו הייתה אחת הסיבות לקריסתה של המערכת ולבחירתם של חלקים גדולים מהאוכלוסייה לחבור למרכיב הנוודי של החברה.

אוניברסיטת תל אביב

הפקולטה למדעי- הרוח ע"ש לסטר וסאלי אנטין

בית הספר למדעי היהדות ע"ש חיים רוזנברג

החוג לארכיאולוגיה ותרבויות המזרח הקדום

תקופת הברונזה הקדומה 3 בדרום הלבנט: חברה, עוצמה ואידיאולוגיה

חיבור לשם קבלת תואר דוקטור לפילוסופיה

מאת: חי אשכנזי

מנחה: פרופסור רפאל גרינברג

הוגש לסנאט של אוניברסיטת תל אביב

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