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Mud-Brick Town Walls in the EBI-II Southern Levant and their Significance for Understanding the Formation of new Social Institutions

The third millennium BC has long been known as the first period in the Southern Levant during which major town walls were constructed. The mammoth stone fortifications at 'Ayy and Tall Yarmūt offer outstanding examples. In its third phase in EB III, the fortification system at Yarmūt had two separate wall lines with fill in between and massive bastions in places. At 'Ayy the total width of Walls A, B and C in EB III was 17m prompting one of the workman at the site to exclaim that the people who built this wall were very afraid.

Less well known but extremely important and interesting for understanding the emergence of the Early Bronze Age culture is the early development of the fortification system in EB I-II. During the last ten years new data has been published that challenges the accepted dating for the emergence of walled towns and highlights the early use of mud-brick in the late EB I-early EB II fortification walls. Better information on the timing, extent and especially the effort that went into the building of these walls should improve our understanding of the early development of social organization in Early Bronze Age Palestine.

The phenomena of these early mud-brick fortifications will be our subject here. Among the questions I will address are: the purpose, the timing, and the nature of social organization involved in the building of these walls.

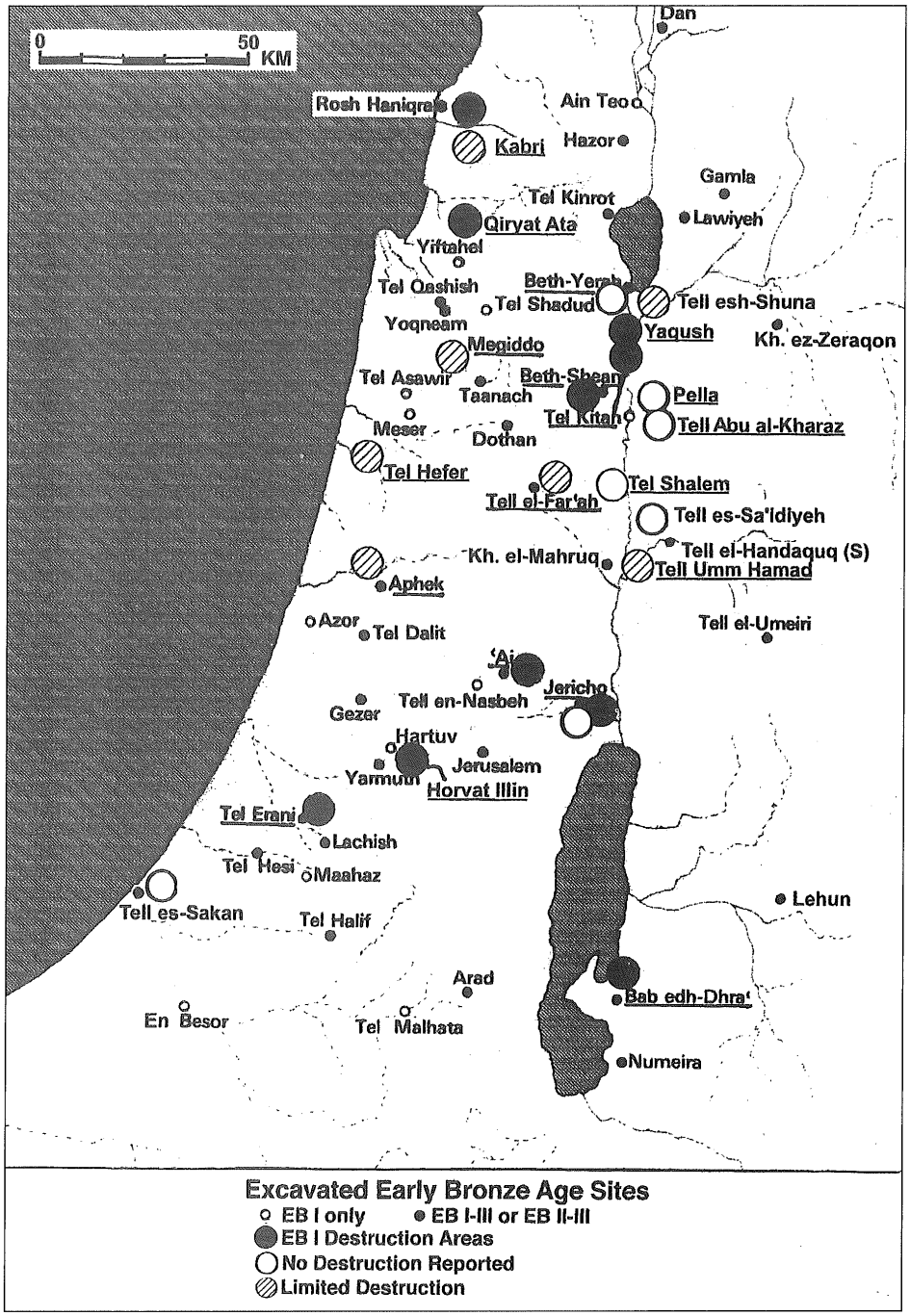
Limitations in the available evidence need to be noted. In the recent literature it is clear that the accepted terminology for the late fourth millennium is undergoing a change. The conventionally accepted terminology for many scholars of EB IA and EB IB is now often replaced with early EB I and late EB I. Other new terminology that has become more and more common for late developments is "the transition period between EB I and EB II". A second problem is that important details in the size of mud-brick and construction techniques are often lacking in preliminary reports (also some final reports).

Purpose of Building Town Walls

The basic reasons for building walls include keeping people in or out. This could mean building a compound or prison to keep people in or establishing borders of a polity to keep others out. Separating an elite group or sacred places by building an acropolis had symbolic meaning. Privacy concerns may come into play as in modern gated communities. A major reason, however, for constructing walls throughout history has clearly been for defense against attacks.

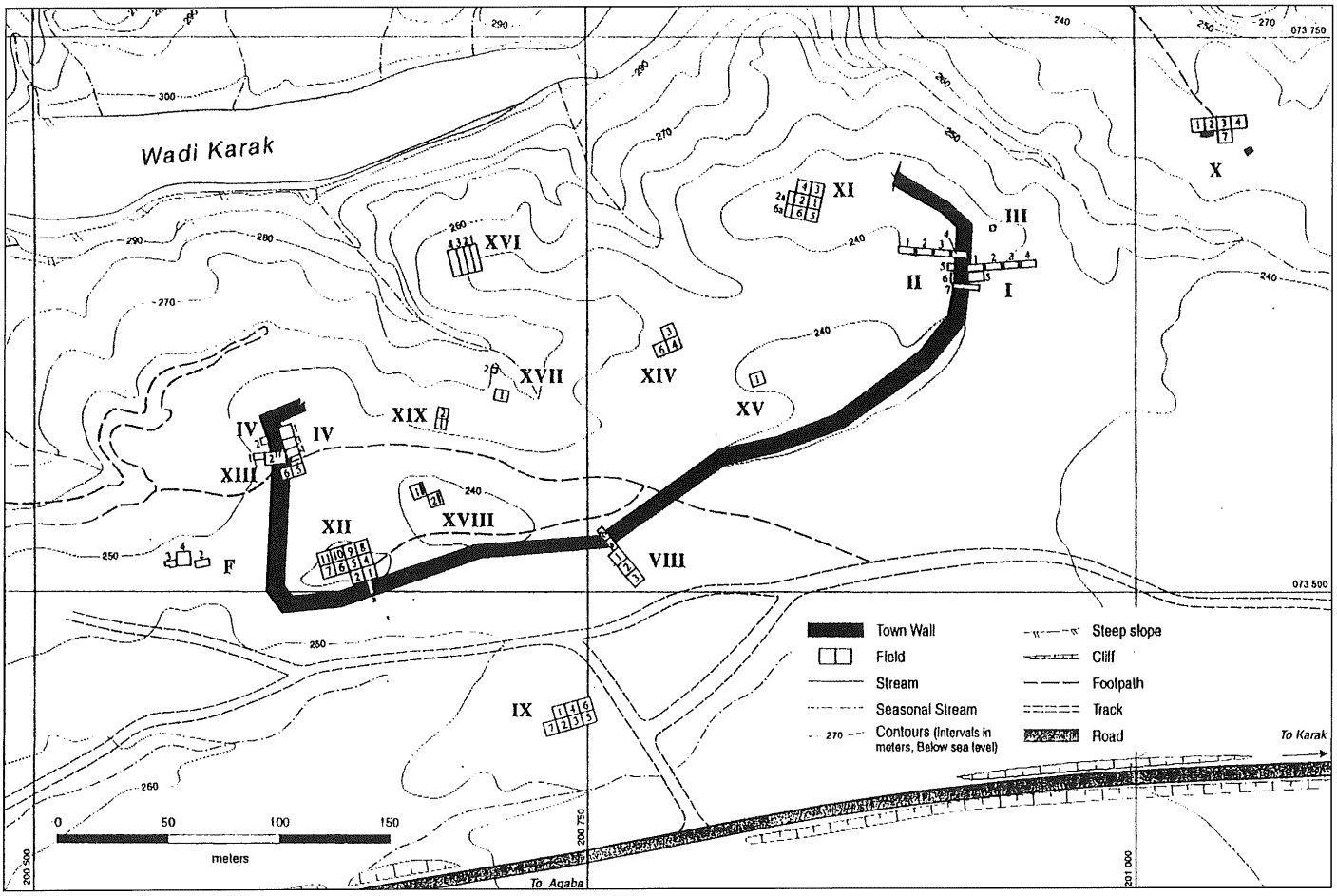
This purpose, defense against attacks, clearly appears to be the predominant reason why walled towns emerged throughout Cis- and TransJordan in late EB I or early EB II. Supporting this stance is the fact that there are clear changes in settlement patterns during EB I. In many areas open villages are relocated or replaced by settlements on more easily defended promontories. Also, when walls are constructed they often were first erected at the most vulnerable areas to attack. In addition, at many sites the construction of the walls appears to have been done in stages with successive thickening of the walls. Most compelling is the evidence for destruction levels at many village sites in the first part of the third millennium which supports the notion of regional conflicts to which defensive walls may have been a response.

The map in FIG. 1 summarizes the reported evidence for destructions at EB I-II sites. I have offered extensive detail on these destruction reports in a paper at the 3ICAANE conference (Schaub 2002) Here, given space limitations, it will suffice to mention only a few of the details. At Bāb adh-



1. Excavated Early Bronze Age Sites in the Southern Levant.

Dhrā' the key evidence is the widespread destruction associated with Stratum IV, the EB IB level of the site. Wherever this level was encountered on the site (FIG. 2), in the spread out village area to the west (Area F), on the periphery areas of the site proper (Fields II, IV, XIII, XII and XI) and also within the interior of the site (Field XIV), it was covered by a heavy burn layer, at times 30cm deep. Two Carbon 14 dates place the destruction between 3300 and 3000BC (Weinstein 2003: 641). One of the EB IB round burial houses of the cemetery, G1, also had a heavy layer of ash with burnt bones in the debris. Among the approximately 150 individuals represented in the scattered skeletal material there were at least three skulls with axe wounds (Ortner 1982: 94). A second round burial house, A 53, also showed evidence of deliberate destruction. There is little doubt that the EB IB unwalled village at Bāb adh-Dhrā' was destroyed and the cemetery was vandalized. In Stratum III, assigned to EB II, the first evidence occurs of a mud brick town wall, 3m wide, at the east end of the site probably associated with a tower (Rast and Schaub 2003: 166-71). The site of Yaqush, in the upper Jordan



2. Contour Plan and Excavated Fields of the Bāb adh-Dhrā' Town Site.

valley, slightly north of Beth-Shean, excavated by Esse, provides clear evidence for the destruction of a large village at the end of EB I (1993). Yaqush is a 6 acre site with 4 phases. The latest phase was uncovered both on the summit and at the southeast edge of the mound. This phase, with predominant grain-wash ware, is dated to the very end of EB I. A C14 date on wheat provides a calibrated date of approximately 3200BC. The excavator's description of the site reports that "both areas were dominated by evidence of an extremely destructive conflagration" (Esse 1993: 1502). On the southeast this destruction was labeled as dramatic, with four courses of vitrified brick. According to Esse "the village of Yaqush underwent its greatest development and expansion in the latter part of the EB I and reached its greatest extent at the transition from EB I to EB II, when the entire village was violently destroyed" (1993: 1503). It was later occupied in EB II-III with site size declining to one to two acres.

In the nearby site of Tall Kitan, Stratum VII, with grain wash ceramics, is assigned to the latest stage of EB I (Eisenberg 1993a: 880). Structures included long houses, some with rounded corners and pillar bases with plastered benches. The site apparently underwent sudden destruction and was not occupied again until MB IIA.

At Beth-Shean, the large EB IB building excavated by Mazar is a huge hall with 14 pillar bases and mud brick benches. Band slip or grain wash is distinctive in the ceramic assemblage and a calibrated C14 date ranges from 3300 to 2946. According to Mazar "a violent conflagration destroyed the building, resulting in the partial firing of the collapsed bricks" (1997: 63). There is some occupation in EB II, but it appears to be limited. These are a few examples of major burn layers interpreted by the excavators as associated with destruction at sites in the transition period between late EB I and EB II. In the same time frame mud-brick town walls are constructed at many sites.

The Dating and Consistent Features of the Town Wall Constructions

In the traditional terminology fortifications were usually assigned to EB II. This long established

theory of the beginning of fortifications in EB II, however, has been challenged. Some scholars have argued recently for an earlier appearance of fortifications, namely in Late EB I or EB IB (Getzov, Paz and Gophna 2000: 22). Among the possible sites listed are Bayt Yerah, Tall as-Sa'īdiyya, Pella, Tall Abū al-Kharaz, Jericho, Tall Shalem, Aphek, and Megiddo. Tall Sakan in the Gaza area would have to be added to this list (Miroschedji 2002b).

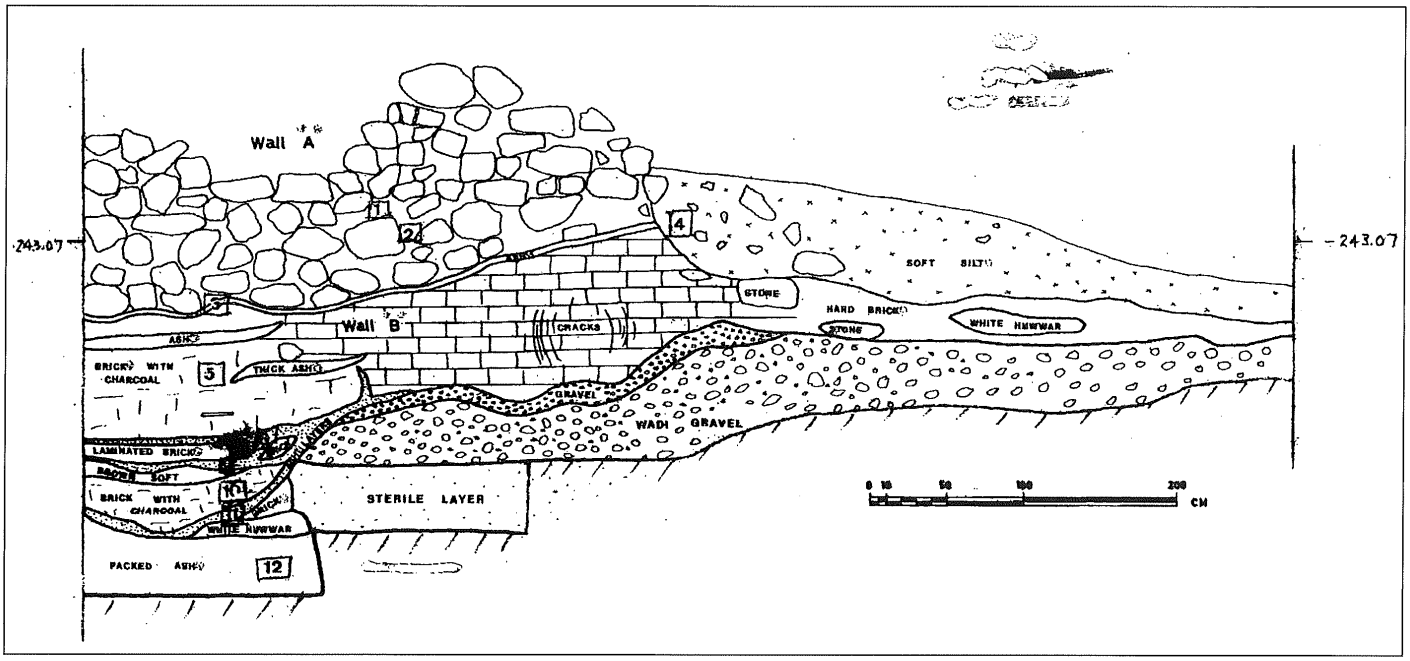
In addition, an examination of the details of these early mud-brick town wall constructions reveals some interesting patterns. The walls were often built on a base level of gravel for drainage. Complex bonding techniques were often employed. At several sites, the walls were built in stages with successive widening of the walls. A few examples from the Jordan valley will help to illustrate the timing and the construction patterns.

Reports on recent salvage excavations at Beth-Yerah describe a mud-brick town wall dated to EB IB (Getzov 1998: 20-21). It was built in several stages. The first stage was a 4m wide wall laid on earth terraces and preserved 4.5m high. This wall was widened in a second stage by a mud brick addition, 2.4m wide, again laid on an earthen terrace.

A not dissimilar situation is found at Tall Shalem in the central Jordan valley. Salvage excavations in 1987 and 1988 revealed a major fortification wall constructed of mud brick in several phases dated to EB IB (Eisenberg 1996: 20). Wall A had several phases of construction and repair with the final state consisting of three adjoined walls with a combined width of 4.5m At a later stage, partly contemporary with Wall A, a second mud-brick wall 2.8m wide was built running on the north side, parallel to wall A. Both walls consisted of sun-dried rectangular mud-bricks, 9cm in thickness.

In addition to these examples mud-brick fortification walls in the Jordan Valley from late EB I have been reported at Jericho, a 3m wall built in three 1m sections, according to Parr's recent hypothesis (2000); Pella, a 2m wall (Bourke 1997), Tall Abū al-Kharaz , an early mud-brick wall (Fischer 1993). In EB II, major mud-brick fortifications were constructed at Tall Rehov (Mazar 2002) and Khirbat Maḥrūq (Eisenberg 1993b).

Bāb adh-Dhrā' is another example for early EB II. At the east end of Bāb adh-Dhrā' a trench through the wall revealed the earliest town wall, built of mud-brick , 3m wide, on gravel (FIG. 3) and a possible tower gate on the exterior (Rast and Schaub 2003: fig. 8.7) Both have been dated in the recent final report to Stratum 3 or EB II, but it is also clear from the priority loci that they were built early in this period. Behind the tower against the high natural hillock Lapp cleared a mud-brick facing of eighteen courses (Rast and Schaub 2003: fig 8.5). The mud-brick fortification wall was not encountered in other sections of the circumference. In these areas it may have been removed in the build-



3. Section of Field II.7/7b at the east end of the Bāb adh-Dhrā' Town site with early EB mud-brick wall below later EB III Stone Town Wall.

ing of the later stone wall or its absence may also indicate that the fortification wall was only thought to be necessary in lower more vulnerable sections of the hillocks surrounding the site.

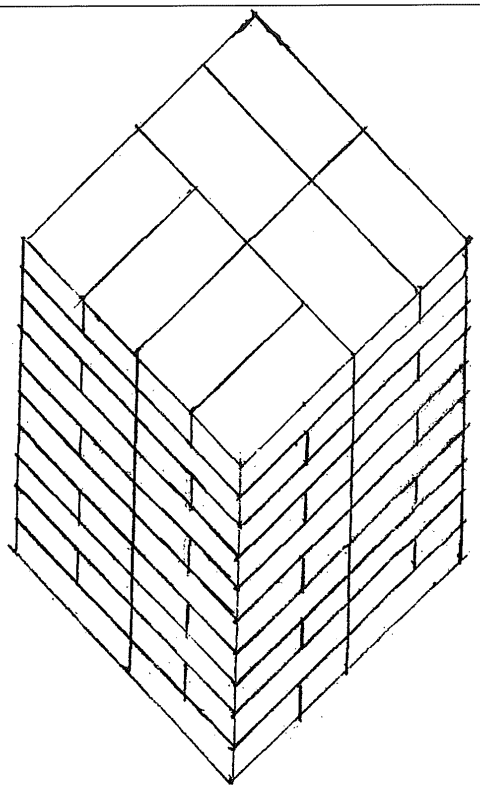
In summary, a 3m wide fortification wall was built at Bāb adh-Dhrā' with molded sun-dried mud-bricks directly on gravel early in EB II. A large mud-brick tower was associated with this wall. Similar features of mud-brick construction for walls were found throughout the site at every level in EB IB (Stratum IV). The people who built these were very accomplished in mud-brick construction. Where possible they used gravel as a foundation for drainage and in some instances bonded the walls securely with combinations of alternating header and stretcher courses. The widespread use of sun-dried molded mud-brick appears to be an innovation at the site in Stratum IV.

Social organization required

Compared to the later mammoth stone walls, twenty to thirty feet thick, of EB III these early mud-brick fortifications appear to be minor constructions. Yet, the time and organization involved in building these early walls is impressive on its own and clearly implies an effective social polity which was able to organize the material resources, labor groups and planning of the structures.

Let us look at some of the details. A section of mud-brick one meter square constructed of rectangular bricks in size 50 x 25 x 9cm (a common size observed in excavations) with bonded courses of four headers on one side and four stretchers back to back on the other side in each course requires eighty mud-bricks (FIG. 4). A mud-brick wall, 3m wide and 1m high, 240 bricks, the same 4m high, 960 bricks (at Beth-Yerah and Shalem walls were preserved to this height) and if it extended for 100m it would require 96,000 mud-bricks. If a 6 hectare site (300m long x 200m wide) were totally enclosed it would have required close to 1 million mud-bricks (960,000). No small investment of time and skill.

The manufacture alone of this quantity of mud-brick, although simple in basic process, would have required major organization and manpower. Teams had to dig out the raw material from soil or clay sources and collect the material in suitable areas. Molds had to be made. Large quantities of water would have been needed to mix with the soils to achieve a suitable consistency for putting



1 Cours=8Bricks 10 Course=80 Bricks
Wall, 3m wide, 1m High = 240 Brick
Wall, 3m wide, 4m High = 960 Brick
Wall, 3m wide, 4m High, 100m long = 96,000 Brick
6 Hectare Rectangular Walled Enclosure, 300m long 200, wide with Wall, 3m wide, 4m High = 960,000 Brick

4. Column of Mud-brick with Estimates of Bricks needed in various length walls.

into molds. A large area would have been needed for laying out quantities of bricks since one or two days in fairly hot weather would have been needed to dry the bricks. I have made some estimates for the time involved with the help of a modern mud-brick maker from Australia (Jirgens 2003): peter@makeitmudbricks.com.au) which are too detailed to go into here. Suffice it to say that for the forming alone it would appear to have required 600 work-days for one skilled worker to produce the 960,000 mud-bricks for the enclosure wall of a small 3ha. town. Thirty workers at the same skill level would have taken twenty days — if they had the raw materials and sufficient water and space to lay out all of those bricks.

Emergence of Complex Societies

Many reasons have been proposed to explain the

origin of complex societies (Renfrew and Bahn 2000: ch. 12). For some, irrigation techniques, which required effective management, were a critical innovation which led to greater yields, and increasing population density. These new techniques required effective management and authority which developed into centralized control. Others have argued for warfare between adjacent polities as the prime stimulation for the emergence of individual warrior leaders and chieftans. Population growth in various forms, Malthusian or Boserupian, environmental constraints and external trade are other reasons frequently posited to explain the emergence of centralized authorities. Most today would argue for multivariate reasons rather than a monocausal explanation. Processes of increasing specialization and intensification and social ranking help to recognize the presence of more complex societies. Some of the correlates helping us to identify these processes in the archaeological record are evidence for full time farming, specialization in crafts, particularly if specialized craft areas may be identified in town plans. Among these correlates major wall building processes must also be included. The evidence and extent of the time and labor required in the building of the mud-brick town walls in EB I-II Palestine clearly points to the emergence of a complex society. The form that this early complex society took, group-oriented chiefdom, corporate village, city-state, may still be beyond our reach without documentation but it is clear that the first complex societies in this region began to emerge in late EB I or early EB II and one of the strongest lines of evidence for that emergence is the construction of the mud-brick town walls.

Bibliography

Bourke, S. J.1997. Pre-Classical Pella in Jordan: A Conspectus of Ten Years' Work (1985-95). *PEQ* 129: 94-115.

Eisenberg, E. 1993a. Tel Kitan. In E. Stern (ed.), *The New Encyclopaedia of Archaeological Excavations in the Holy Land.* Vol. 3. The Israel Exploration Society. Carta, Jerusalem.

—— 1993b. Kh. el Makhruq. In E. Stern (ed.), *The New Encyclopaedia of Archaeological Excavations in the Holy Land.* Vol. 3. The Israel Exploration Society. Carta, Jerusalem.

—— 1996. Tel Shalem - Soundings in a Fortified Site of the Early Bronze Age IB. *`Atiqot* 30: 1-24

Esse, D. L. 1993. Yaqush in Jerusalem. In E. Stern (ed.), *The New Encyclopaedia of Archaeological Excavations in the Holy Land.* Vol. 1. The Israel Exploration Society. Carta, Jerusalem.

Fischer, P. M. 1993. Tell Abu Kharaz. The Swedish Jordan Expedition 1991. Second Season Preliminary Excavation Report. *ADAJ* 37: 279-305.

Getzov, N., Paz, Y. and Gophna, R. 1998. Tel Bet Yerah. *Excavations and Surveys in Israel* 118: 20-21.

—— 2001. *Shifting Urban Landscapes During the Early Bronze Age in the Land of Israel.* Tel Aviv: Ramot Publishing

Jirgins, P. 2003. http://www.makeitmudbricks.com.au

Mazar, A. 1997. Four thousand Years of History at Tel Beth Shean: An Account of the Renewed Excavations. *Biblical Archaeologist* 60: 62-76.

—— 2002. An Early Bronze I Public Building and EB II-III Rampart Fortifications in the Beth Shean Valley, Israel. Paper delivered at the Third International Conference on the Archaeology of the Ancient Near East, April, 2002, Paris.

Miroschedji, P. 2002. The Excavations at Tell es-Sakan (Season of 2000) and the interaction between Egypt and Palestine during the Early Bronze Age. Paper delivered at the Third International Conference on the Archaeology of the Ancient Near East, April 2002, Paris.

Ortner, D. 1982. The Skeletal Biology of an Early Bronze Ib Charnel House at Bab edh-Dhra', Jordan. *SHAJ* I: 93-95. London: Pitman Press.

Parr, P. 2000. Proto-Urban Jericho: The Need for Reappraisal. Pp. 389-98 in L. E. Stager, J. A. Greene and M.D. Coogan (eds.), *The Archaeology Of Jordan and Beyond.* Essays in Honor of James A. Sauer. Winona Lake, IN: Eisenbrauns.

Rast, W. and Schaub, R.T. 2003. *Bab edh-Dhra': Excavations at the Town Site (1975-1981).* Reports of the Expedition to the Dead Sea Plain Volume 2. Winona Lake, IN: Eisenbrauns.

Renfrew, C. and Bahn, P. 2000. *Archaeology: Theories Methods and Practice.* 3rd ed. London: Thames and Hudson.

Schaub, R. T. 2002. The Origins of the Early Bronze Age Walled Town Culture of the Southern Levant: A Reasssessment. Paper delivered at the Third International Conference on the Archaeology of the Ancient Near East, April 2002, Paris.

Weinstein, J. 2003 A New set of Radiocarbon Dates from the Town Site. Pp. 638-48 in *Bab edh-Dhra': Excavations at the Town Site (1975-1981).* Reports of the Expedition to the Dead Sea Plain Volume 2. Winona Lake, IN: Eisenbrauns.