



Tell Brak

Early Northern Mesopotamian Urbanism, Economic Complexity and Social Stress, fifth–fourth millennia BC

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Tell Brak is one of the largest and most complex archaeological sites of northern Mesopotamia (NE Syria). It lies at the southern edge of the Upper Khabur drainage system that feeds the Euphrates River, adjacent to the Wadi Jaghjagh and Wadi Radd (see map p. 315). These wadis are currently dry for most of the year but were presumably permanent or near-permanent at least into the first millennium BC.¹

Brak's geographic location has advantages and disadvantages. It lies near an efficient east-west overland trade route that connected Assyria to the Mediterranean. It is only a short distance from the timber, metal and stone resources of eastern Anatolia, and there is ample agricultural and grazing land surrounding the site. However, Brak lies at the southern edge of the Upper Khabur drainage and near the average 250 mm rain/year isohyet that enables rainfall agriculture. The risks for agriculture around the site would have been high, and 'bad years' of drought and lowered productivity may have been frequent in the past. Brak's continuity of occupation from at least the seventh millennium BC Neolithic through the later second millennium BC Middle Assyrian Period is testament to the "power of place". This power reflects the connectivity of a site's inhabitants to the location, driven by tradition, habit and memory; such power may conquer economic concerns. The power of place is particularly notable in the late third and second millennia BC, when both an abrupt climate change event and gradual trend towards greater aridity affected the region.² Although occupation at Brak contracted during this era, the site remained occupied even as the regional settlement pattern thinned and other sites – even sites in more propitious locations – were abandoned.

History of Excavations

Excavations at Brak began under Max Mallowan in 1937–38, after his 1934 survey of the Khabur region.³ Mallowan's most notable discoveries were the Eye Temple of the fourth millennium BC and the Naram-Sin Palace of the Akkadian Period, late third millennium BC. He

1 Deckers/Riehl 2007.

2 Cullen *et al.* 2000; DeMenocal 2001; Fiorentino *et al.* 2008; Riehl/Bryson/Pustovoytov 2008; Staubwasser/Weiss 2006; Weiss 2000.

3 Mallowan 1936; Mallowan 1947.





also excavated extensively, although not intensively, on the site's high ridge, on the outlying mound of Tell Majnuna, and at various other points on the central mound. His goal was to contribute to the region's then little-known culture-history sequence, a research aim that also saw him explore the nearby site of Chagar Bazar.

After a hiatus, research at Brak resumed under David and Joan Oates in 1976. Their primary objective was to explore the occupation of north Mesopotamia during the third millennium BC.⁴ Key discoveries include further Akkadian Period public buildings to supplement Mal-lowan's Naram-Sin Palace, including administrative structures and shrines in Areas SS and FS.⁵ Their excavation of the Mitanni Palace and Temple at the site's highest point (Area HH) also provides information on the operationalizing of power in this regional state.⁶ Inscriptions from Brak, combined with texts from Mari, Tell Beydar and Ebla, allowed identification of the site as ancient Nagar.⁷ Investigation of the fifth–fourth millennium BC sequence of occupation has been carried out through excavations in Area CH (1976–1987) and Area TW (1981–2011).⁸

There has been a series of Field Directors at Brak since 1994. Roger Matthews (1994–1996) explored previously untapped aspects of the site's occupation during the early fourth, mid-third and early second millennia BC, adding valuable information on the micromorphology of occupation in particular.⁹ Geoff Emberling and Helen McDonald (1999–2004) concentrated on expanding the fourth millennium BC sequence in TW and articulating a large public building of the mid-third millennium in Area TC, which preceded the Akkadian take-over of the site and reflects Nagar's power in the Ninevite 5 Period.¹⁰ My research and Field Directorship at Brak began in 2006.¹¹

Current Research Themes

As a multi-period site in an important geographic location, Tell Brak offers the opportunity to explore many research questions in Near Eastern archaeology. Currently, our aims in-

4 Oates 2004.

5 Oates/Oates/McDonald 2001 is the final publication of the third millennium BC material, after preliminary reports in the journal *Iraq*.

6 Oates/Oates/McDonald 1997 is the final publication of this second millennium BC research, again after previous preliminary reports in *Iraq*.

7 Oates 2004: 5 and references therein.

8 For Area CH, see Oates 1987 and forthcoming, Oates/Oates 1994; for Area TW see Emberling *et al.* 1999, Emberling/McDonald 2001; Emberling/McDonald 2003; McMahon/Oates 2007, Oates/Oates 1991; Oates/Oates 1993; Oates/Oates 1997 and Oates forthcoming.

9 Matthews 1995; Matthews 1996, Matthews 2003; Matthews/Matthews/McDonald 1994.

10 Emberling 2003; Emberling/McDonald 2001, 2002, 2003; Emberling *et al.* 1999.

11 Research at Brak from 2006–2011 has been supported by the British Academy (Small Research Grant Scheme and, from 2011, BARDA); British Institute for the Study of Iraq; McDonald Institute for Archaeological Research; University of Cambridge; Newnham College; Society of Antiquaries, London; and private donations. Preliminary publications include McMahon/Oates 2007, McMahon 2009, McMahon/Soltysiak/Weber 2011. Thanks go to Dr. Bassam Jamous and Dr. Michel al-Maqdissi of the Direction Générale des Antiquités et des Musées, Damascus, and to Dr. Abdel Masih Baghdo of the Department of Antiquities in Hassake.

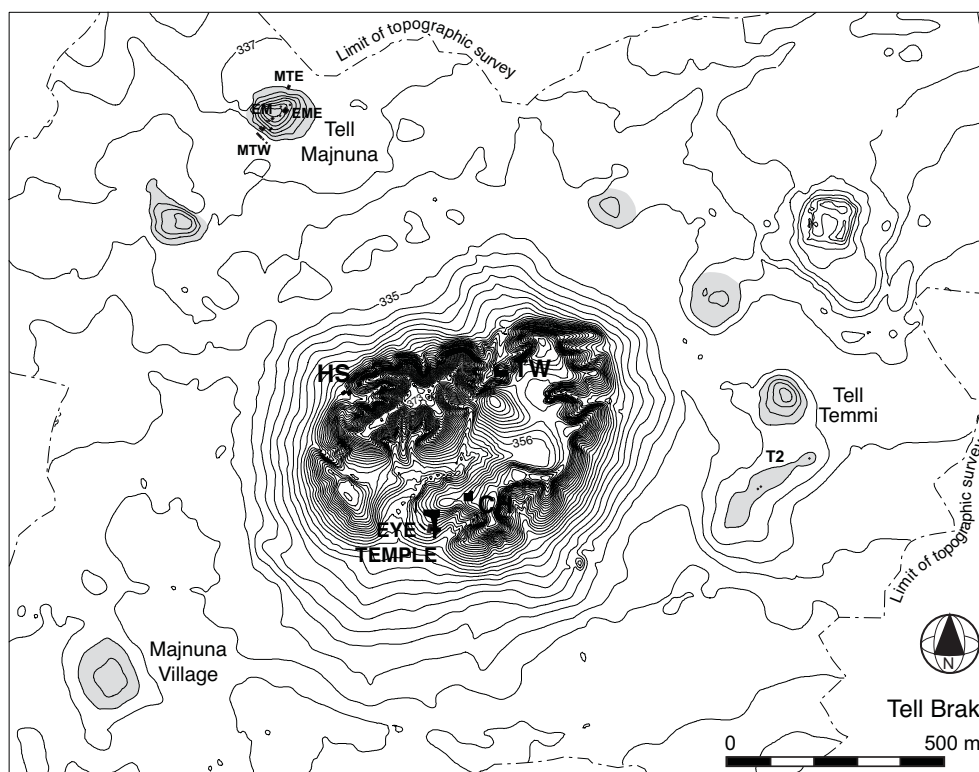


Fig. 1 Topographic plan of Tell Brak with fifth–fourth millennium BC excavations shown.

volve issues and debates regarding socio-economic and environmental changes in the fifth through second millennia BC.

Tell Brak is a crucial site for understanding early urbanism, and many of our current research questions revolve around this development in the fifth and fourth millennia BC. When and where did the earliest cities develop? In what ways did northern Mesopotamian urbanism differ from that of the better-known south, physically, economically, and ideologically? What was the nature of power wielded by early northern Mesopotamian institutions and individuals: did it have the same complex religious, economic and political aspects as in the southern Mesopotamian city-state model? Did urbanism lead to social stress and conflict?

Tell Brak's environmentally marginal location also supports exploration of the intersection of political change and climate change in the late third and second millennia BC. Brak's reduced but apparently unbroken occupation through the late third millennium BC environmental crisis and collapse of the Akkadian political system allows comparison with adaptations at settlements such as Tell Leilan and Chagar Bazar.¹² In addition, the persistence of

¹² For the 4.2 kya abrupt climate change event, see footnote 2 *supra*.



crowded occupation across the second millennium BC at Brak enables us to explore characteristics of urban neighborhoods, particularly long-term persistence of property lines.¹³

Urban Landscapes at Brak

Our research into early urbanism at Brak is multi-scalar, addressing the site and its urban landscape; buildings and spaces within that landscape; and material culture.

The central tell has long been the focus of excavations at Brak. However, the full urban landscape includes a ring of outlying sub-mounds 250–400 m from the centre, plus the un-mounded Outer Town between these and the central tell (Fig. 1). Our current excavations explore two of the outlying sub-mounds, while previous surface survey and sounding programmes¹⁴ have examined both Outer Town and sub-mounds. Currently and recently excavated areas consist of Area TW on the central mound, now in levels of the Late Chalcolithic 2 (LC 2) or Early Uruk Period, and two locations in the Outer Town: sixteen trenches on the subsidiary mound Tell Majnuna, to the north, and three trenches on Tell T2, to the east. Occupation on both sub-mounds dates to very late LC 2 through the end of Late Chalcolithic 3 (LC 3), or roughly late Early through Middle Uruk.

A significant issue in Mesopotamian urbanism involves the widely-held assumption that southern Mesopotamian cities, such as Uruk, preceded and influenced urbanism and social complexity in the north. However, growing evidence from surveys and excavations in north-east Syria indicates that urbanism in northern Mesopotamia may have preceded, or at least was contemporary with and not influenced by, urbanism in the south. At Brak, the backdrop for our current exploration of urbanism is partly set by the work of Emberling, Matthews and J. Oates, who uncovered massive buildings of the early fourth millennium BC in Areas TW and HS.¹⁵ Our research is further based on the work of Jason Ur and Philip Karsgaard, whose surface survey of Brak proved that the site reached urban size, c 130 hectares, in the LC 3 Period, c 3800 BC, possibly earlier than the urban growth of Uruk.¹⁶ Certainly this growth occurred well before the famous southern Uruk expansion into the north, and Brak's growth was not a secondary development but an original pristine origin of urbanism.

The survey also presented a new model for urban growth, from the outside in, via the merging of distinct external settlements – the outlier sub-mounds – with the centre, during the LC 2 to LC 3 transition. This urbanisation model led directly to our current exploration of the Outer Town and to a set of questions: What constituted the urban landscape? What was the nature of those outer settlements, and what activities were located in the urban edge zone?

¹³ These questions are explored in two current excavations, HH and HN. This paper will focus on the urbanism project; a preliminary report on HH and HN can be found in McMahon/Oates 2007.

¹⁴ Emberling *et al.* 1999.

¹⁵ See footnotes 8, 9 and 10 *supra*, for references.

¹⁶ Ur/Karsgaard/Oates 2007.





Fig. 2 Cross-section through two pottery kilns of LC 3 date, Tell T2.

The Urban Edge

We have made two discoveries that confirm long-held (but generally unproven) assumptions, that the urban edge zone was used for “dirty” industrial activities and for rubbish disposal. In addition, in a particularly important discovery for the fourth millennium BC, the edge zone was used for burials.

On Tell T2, our 2011 excavations provided evidence for “dirty” industries of pottery production and tanning/dyeing or fulling. Kilns (Fig. 2), pottery wasters, and manufacturing tools such as ring scrapers (Fig. 3) are evidence for pottery production. The soil in our western trench in particular appeared generally ashy, testament to the intensive fuel burning fuel there. A massive clay-lined pit for dyeing or fulling textiles or tanning leather cut through the kilns and other structures in the western trench (Fig. 4). This pit measured 2.4 meters wide, 3.4 meters long and 1.5 meters deep, with a volume of over 12,000 litres. Its thick clay lining has distinctive red and green staining that reflects soaking in urine or faeces. Textile dyeing and leather tanning in this region (as in many others, cross-culturally) probably used animal urine and faeces and tree barks or plants, and the smell would have been quite appalling. The location of this basin, and its associated practices, at the settlement edge is thus fitting. We know from texts of the mid-third millennium BC from Ebla that textile dyeing and fulling





Fig. 3 LC 3 Ring-scrapers from Tell T2.

were located on the city edge, for ease of water access.¹⁷ The Brak basin may be the earliest known archaeological evidence for dyeing/tanning in the Near East. Comparable basins have been recovered in the south Levant and Cyprus, dated to the late second millennium BC, and we know a great deal about dyeing in later second–first millennia BC Levant, particularly Phoenician use of murex shells for purple dye.¹⁸ The Brak basin is an exciting discovery for its early date and for the similarity to later traditions in this most vital of manufacturing activities.

These industrial installations and activities date to LC 3, c 3800–3600 BC, contemporary with the increase in Brak's size and population. This increase in occupants probably raised demand for manufactured goods and could have triggered intensification of industrial activities. The corresponding increase in density of population within the central mound may also have forced these activities further out to the edge zone.

The second aspect to our work in the Outer Town involves something we expect but rarely contemplate, large-scale rubbish disposal. Industrial activities create rubbish: ash, sherds, discarded animal bones or other organics, lithic debitage, broken tools. Urbanisation also creates rubbish: more people mean more production, consumption, breakage and discard. Of course, stratigraphy is rubbish, and rubbish accumulation is intrinsic to tell formation. But ur-

¹⁷ Andersson *et al.* 2010: 160.

¹⁸ Barber 1991.





Fig. 4 Tanning or dyeing/fulling pit of LC 3 date on Tell T2 (scale is 2 m long).

banism and a rise in population density may have compelled greater discard at the site edge, since all areas at the settlement core were increasingly needed for habitation. Space previously used for small-scale middens may have been in demand for other purposes. Enormous quantities of broken pottery have been recovered from all areas excavated on Majnuna and T2, far more than would have been produced from industry there. We propose this pottery was part of the rubbish deliberately brought out from the settlement core. Municipal waste management may indeed begin at LC 3 Tell Brak.

Rubbish was in fact deliberately piled up to create the entire sub-mound of Tell Majnuna. Our trenches exposed a cross-section of the mound, and there was no architecture, occupation or industry, just layered rubbish some seven meters deep and c 150 x 150 meters in extent (or approximately two hectares). Tip lines sloping down from southwest to northeast allow reconstruction of the discard practice, while the material culture and layer thicknesses show that the mound was built up in many episodic large-scale events over the two centuries of LC 3. It is probable that parts of the urban edge were perceived as useful discard or storage space for rubbish and as the solution to a growing problem. But as well as this negative aspect, the Majnuna rubbish pile also made a positive statement in the urban landscape: this mound had the appearance of a tell site and it marked a distinct settlement edge to anyone arriving from the outside; it also marked an edge for occupation when viewed from within. This visibility and place-marking could be crucial for creation of urban belonging and identity, conscious or unconscious.



**Fig. 5** LC 3 infant burial from Tell T2.**Fig. 6** LC 3 adult burial from Tell T2.

The third and most intriguing discovery of our excavations on the outer sub-mounds is that the urban edge zone was used for burials. The fourth millennium BC in Mesopotamia—south and north—is notable for its low number of burials, especially of adults. There have been various reconstructions of funerary practices to explain this lack: exposure,¹⁹ cremation or disposal in rivers,²⁰ or burial on the outskirts of settlements, where excavation rarely takes place.²¹ And we can confirm the latter as one important burial location: both Tells Majnuna and T2 were used for significant numbers of adult and infant burials in the fourth millennium BC. Majnuna had mass graves resulting from violent conflict;²² while T2 provided an apparent normative burial situation, with nine adult and eight infant burials. The infants were placed in jars or bowls sealed with plates or in small pits (Fig. 5), while the adults were flexed in simple pits (Fig. 6); neither were provided with grave goods. We have encountered many infant burials within the Area TW fourth millennium BC sequence (but no adults),²³ and the burial practices on T2 appear similar: there was no specified cemetery, rather the burials were interred without recognizable pattern in open spaces within a manufacturing area.

19 Black/Green 1992: 59; Lyonnet 2009: 13.

20 Charvat 2002: 151, Pollock 1992.

21 Algaze 2008: 161–162; Pollock 1999.

22 See below and McMahon/Soltysiak/Weber 2011.

23 McMahon/Oates 2007, Oates forthcoming.

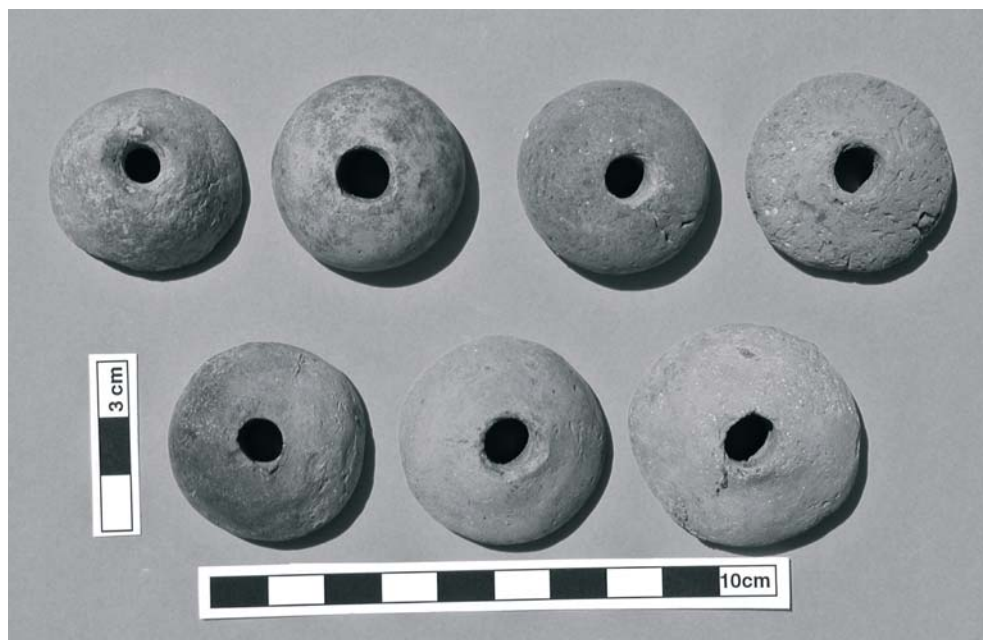


Fig. 7 Selection of spindle whorls from LC 2 levels in Area TW.

Economic Complexity

Our exploration of the urban edge complements work within the central mound. The main investigation into Late Chalcolithic levels there is in Area TW. A massive secular administrative building with a basalt threshold, LC 2 in date (Level 20, c. 4000 BC), is a cornerstone of the hypothesis that socio-political complexity was present at Brak and in northern Mesopotamia before that known from Uruk.²⁴ The area adjacent to this building and earlier levels in the same location have been exposed since 2004. The research question is the nature of the urban economy during the LC 2 to 3 and expansion of the site to urban scale. Our main goal is to determine at what point, and why, industrial activities were intensified and shifted from household production to craft workshops or factories.

During the LC 2 and early 3 (Levels 22–19, late fifth–early fourth millennia BC), Area TW was the location of workshops or small factories producing staple goods. The production of textiles is represented by dozens of hemispherical clay spindle whorls of near-standard weight and diameter (Fig. 7) and by a few pierced, lightly worked stones that may have been loom weights. Thus spinning, and possibly weaving, had been at least partially centralized by the late fifth–early fourth millennium BC. We assume that spinning and weaving were primarily female activities in this region, as in many others, and that in pre-

²⁴ Emberling 2003; Oates 2004; Oates *et al.* 2007.





urban contexts these activities would have simply met household demand. This clustering and standardisation of textile tools thus has important implications for craft production,²⁵ in particular for possible division of manufacture into distinct production steps and for increased interaction of women with “state” institutions. The latter would increase across the third millennium BC to a peak in the Ur III Period in Southern Mesopotamia.²⁶ We have two possible models to explain the clustering of textile tools in TW: spinning may have become a collective activity performed in Area TW, or spinning still took place in households but using standardized spindle whorls (and perhaps even raw wool or flax) provided by the TW workshops. Either model presents a picture of organized manufacture that aimed to standardize thread thickness and tension, and possibly other aspects. This centralisation of textile production may have been commercial – to create trade goods or to increase efficiency in production for local use – or ideological – to create special textiles that would visually materialize the elevated social status of the occupants of the contemporary monumental building (through quality, colour or pattern).²⁷

Ceramic production was also clustered in TW workshops during LC 2–3, as represented by domed kilns and ash layers in TW Levels 22–19.²⁸ This clustering of ceramic production is less surprising than the centralisation of textile production, since there was significant specialist production of ceramics already in the Obeid Period, and it is an industry that demands some collective labour (as contrasted to the often solo and intermittent work of spinning and weaving). Flint and obsidian tools were also manufactured in the TW workshops, some as finished goods for use elsewhere, and others manufactured and used within this industrial zone, perhaps for centralized butchery or wood working.²⁹

As well as staple production, we also have evidence in Area TW for manufacture of prestige goods such as shell and obsidian inlays and beads. Unworked shells and mother-of-pearl inlays in lozenge- or teardrop-shapes, including unfinished examples, support the idea that TW was a place of manufacture, not use. Obsidian blades recovered include long narrow forms that were further snapped and ground into beads or circular inlays; we also have examples of unfinished bead blanks. Among these prestige goods, the most notable is a marble and obsidian ‘chalice’ from Level 19.³⁰ This object in particular may be symbolic of authority: it has a very small volume and is so top-heavy that it must always be held in the hand, thus marking it as a high-visibility feasting object, comparable to South Mesopotamian Early Dynastic Period cups held in banquet scenes such as on the Ur Standard.

25 See Hirth 2009 and Carballo 2011 for recent discussions of the intersection of households, crafting, and the economy in ancient Mesoamerica, analogous to the Mesopotamian situation.

26 McCorriston 1997, Wright 1996.

27 The reflexive relationship between luxury textile production and elite status of female producers has been explored in Mesoamerica and South America (e.g., Brumfiel 2006, Costin 1998) and for third millennium BC northern Mesopotamia (Wattenmaker 1998) and southern Mesopotamia (Wright 1998); the Brak data hold potential for a similar study of artisan identity, textile production and commodification in late prehistoric Mesopotamia.

28 McMahon/Oates 2007.

29 The creation of tools for creation of other objects has been termed “contingent crafting” by Hirth 2009: 23 and adds additional complexity to our manufacturing stages and their locations at Brak.

30 McMahon/Oates 2007: Fig. 6; Oates *et al.* 2007: Fig. 8.





The materials from the TW workshops thus far are consistent across the LC 2 to early LC 3; we are therefore excavating in levels after a significant shift of production from households to workshops had taken place. We can, however, track changes in scale and in institutional control of this crafting. In the final LC 2 to early LC 3 levels (20 and 19), these industries were probably controlled by the occupants of the large public building. But in earlier levels (21 and 22, early-mid LC 2), the scale of buildings was notably smaller and control was minimal – there were also fewer container sealings, which mark authority and ownership (see below).

The control of craft manufacturing is further implicated in our studies of raw material sources. A detailed reconstruction of the urban economy, particularly the connections of the city to its hinterland, includes distant sources of raw materials for tools or subsistence goods.

There are significant quantities of obsidian objects in all Late Chalcolithic contexts excavated at Tell Brak. Obsidian's use for both quotidian tools and high-visibility elite objects presents an intriguing set of questions with regard to its procurement and movement through regional and local economic systems. Brak's closest sources for obsidian are in central and eastern Turkey, but how did obsidian arrive at Brak? What does its movement say about the larger 'hinterland' on which Brak relied? Preliminary study of trace chemical elements, together with visual inspection and typology of tools and debitage, have shown that the Brak obsidian had a multi-strand mode of acquisition: a wide range of sources is represented from LC contexts, but also a focus on the Bingöl source in eastern Anatolia.³¹ Although all the Anatolian obsidian sources are approximately equal distance from Brak and would have taken equal effort, the Bingöl source may have been preferred because of its quality or because of intangible aspects such as social alliances or pre-existing trade relations. This is a preliminary result, and work on this aspect of provisioning the urban settlement is ongoing. But these early results suggest a directed supply-demand system and strategic economic behaviour.

Many resources that flowed into Brak would have been organic and are no longer preserved, but clay sealings are a useful proxy for movement of such goods. More than one thousand stamp-impressed clay sealings have been recovered from the LC 2–3 levels at Brak, from the central mound and especially from Majnuna and T2. The majority of these sealings come from containers, presumably holding resources coming from the city's hinterlands or moving within the city; a smaller number are derived from doors and reflect storage and distribution once those resources arrived at Brak. Several degrees of control are reflected in the observed sealing praxis. Most sealings were stamped once, some were stamped multiple times with the same seal, and a few were stamped several times with different seals. The different impressions on a single sealing are particularly important as they may show a multi-level system of control of goods: more than one person (or institution) was responsible for authenticating items and authorizing their movement.

The iconography of the sealings is currently under study and should contribute to our understanding of the site's hinterland and resource control. The images are particularly diverse; the same stamp is rarely represented more than once in the huge assemblage. The wide-

31 The study used X-Ray Fluorescence and LA-ICP-MS analyses (Laser Ablation, Inductively Coupled Plasma, Mass Spectrometry); Khalidi/Gratuze/Boucetta 2009.





Fig. 8 LC 3 Sealing from Tell Majnuna.

ranging imagery includes lion-animal combats, lion groups, snakes, vultures, hybrid human-animal figures, and occasional human scenes (Fig. 8).³² The motifs and styles are comparable to contemporary sealing assemblages from Tepe Gawra³³, Tell Hamoukar³⁴, Hacınebi³⁵, and previous excavations in TW³⁶ and the Eye Temple³⁷ at Brak. The Brak assemblage, however, includes a wider range of motifs than seen at other sites and a great many unique images. Chief among these are scenes of lions with human figures, including early versions of the human spearing or stabbing a lion, an icon well-known from the later Lion Stele at Uruk. The lion-killing scene reflects a well-developed ideology of individual leadership as part of institutional and economic control.³⁸

Study of container types and clay sources is also part of this

project; work is underway to map motifs, style, and container type, to explore sub-groups within the assemblage. The containers include jars, several varieties of baskets, and bags. A future project will use scientific techniques (XRF) to identify trace elements in the sealing clays.³⁹ While we may not be able to pinpoint source clays precisely at this stage, homogeneity or heterogeneity of clay sources will help to determine the complexity of the hinterland or resource base from which sealed goods derived.

32 McMahon/Oates 2007: Figs. 15–17.

33 Levels XII–VIII; Tobler 1950, Rothman 2002.

34 Reichel 2002.

35 Pre-contact phase; Pittman 1999.

36 Pittman in Emberlin/McDonald 2003.

37 Mallowan 1947.

38 McMahon 2009.

39 Trace element studies exploring clay sources have used Neutron Activation Analysis on third and second millennium BC tablets and sealings from Tell Leilan (Blackman 2003) and X-Ray Fluorescence on sealings from Tell Sabi Abyad (Duistermaat/Schneider 1998) and on tablets and bullae from Anatolia, Egypt and the southern Levant (Goren/Mommsen/Klinger 2011, Goren *et al.* 2009).





Fig. 9 Detail of mass grave, early LC 3, Area MTW on Tell Majnuna.

Urbanism and Social Stress

Finally, all these issues of urban growth, increasingly complex economics and institutional control have merged in a dramatic way in the Outer Town. Among the rubbish layers of Tell Majnuna, we recovered parts of four mass graves, dating sequentially across the LC 3 Period (3800–3600 BC). These graves included up to several hundred relatively young adults who had died simultaneously, most probably from warfare or violent conflict (Fig. 9). From the disarticulation and signs of scavenging, it appears the bodies had initially been left exposed, unburied, after the conflict that took their lives. From lack of small bones such as hands and feet, we reconstruct a subsequent haphazard collection and transport to their burial place.

The disrespect shown to the dead through poor treatment of their bodies—exposure, careless gathering, looting, lack of grave goods, and deliberate mixing of individuals—implies that these were enemy dead.⁴⁰ This hypothesis is reinforced by use of femurs and tibias for tools in one grave and the possible creation of trophy heads from the skulls, as reflected by skull fragments with abrasions and polish. Trophy head taking is well known from later

⁴⁰ McMahon/Soltysiak/Weber 2011; McMahon/Oates 2007.





Mesopotamian historical artworks, such as Neo-Assyrian palace reliefs. Thus, the Brak mass graves may represent the earliest known instance of what will become a common post-battle practice.

Were these enemies external or internal? Brak's scale makes it unlikely that it was attacked from outside, by either a neighbour or a nomadic group. Moreover, the sources of internal stress were growing; while urbanism generates many positive aspects, its negative qualities are many. Urban growth meant more people and crowding; the scale of institutions increased and their demands may have become oppressive; the number of sealings implies a heavy demand for resources; and a powerful ideology of leadership is expressed in sealing imagery. These elements paint a picture of increased control, which could have led to internal resentment and rebellion. We thus reconstruct that the dead in the mass graves were internal enemies, a disenfranchised lower class. And these mass graves have led to a shift in our thinking about the urban economy and industry. Urbanisation may enable increased efficiency of manufacture and trickle-down of goods. But industry, particularly that organized by institutions, can also lead to increased wealth disparity and resentment. The prestige goods produced and used in Area TW had an underclass audience as well as elite consumers. The result of such expanded hierarchy can be violent conflict.

In our future research, we hope to continue to focus on early urban questions. There is more of the city edge zone to explore, for a fuller answer to the question of the nature of this zone and the urban landscape. We have only just begun to apply scientific techniques to material culture, to gain an understanding of the scale of hinterland and attached resource areas during early urban growth. These studies need larger samples. Within the central mound, we have not yet reached the interface between household and industrial production, the tipping point between economic autonomy and economic efficiency, which may lie earlier in the fifth millennium BC. Urbanism has been a research theme in the Middle East for decades but remains relevant today, with many questions unasked and unanswered. The majority of the global population finally became urban in 2007; cities, including megacities of 10 million inhabitants or more, will dominate our landscapes for the foreseeable future. Many of the problems faced by inhabitants of today's megacities were present in ancient cities, particularly resource sustainability in the face of rapid immigration and growth and the increasing divide between wealthy and poor.