

ALBERT RECKITT ARCHAEOLOGICAL LECTURE

Archaeology in Mesopotamia: Digging Deeper at Tell Brak

JOAN OATES

Fellow of the Academy

TELL BRAK, THE ANCIENT CITY OF NAGAR, is situated in the Khabur plain of north-eastern Syria close to the frontiers of Iraq and Turkey; it is one of the largest ancient sites in Northern Mesopotamia.¹ A small settlement existed here as early as 6000 BC and by the late fifth millennium Brak had become one of the earliest Near Eastern cities. The modern tell occupies some 60 hectares and stands over 40 metres in height (Fig. 1). The tell itself is surrounded by a number of satellite settlements, largely of fourth-millennium date, but including one small fifth-millennium 'Ubaid site, a Roman farmstead and a castellum and, to the north, a considerable area of Byzantine and early Islamic settlement (Fig. 23, NE of the tell). One reason for the site's importance was its strategic position, situated on a major route from the Tigris Valley northwards to the mines of Anatolia and westwards to the Euphrates and the Mediterranean (Fig. 2).

A British expedition under the direction of Sir Max Mallowan excavated here for three seasons in the late 1930s (Mallowan 1947). Recent work at the site was resumed in 1976 under the direction of David Oates. Mesopotamian tell sites consist of layer upon layer of ancient occupation, with buildings constructed largely in mud-brick which, over time, simply decays to form part of the mud fabric of the mound. One of the

Read at the Academy on 27 April 2004.

¹ Modern political boundaries rarely coincide with those of the ancient world. The term Northern Mesopotamia includes not only northern Iraq but also part of the Khabur plain in north-east Syria. The term 'Upper Mesopotamia' is also used, in particular to include adjacent areas of south-eastern Anatolia which in the periods discussed here were often closely related, culturally, to what is now north-eastern Syria and northern Iraq.



Figure 1. Tell Brak from the north; in the background the gap between Jebel Sinjar and Jebel Jeribe is visible, 50 km to the south.

disadvantages of this type of site in the context of the relatively dry environment is that major settlements tend to persist in strategic situations and therefore tend to remain continuously occupied, often until medieval or even more modern times, a situation that renders extensive investigation of their early history virtually impossible. And it is just such sites that archaeologists would wish to investigate in order more fully to understand earlier periods when comparable strategic choice would also have been an important factor in the pattern of settlement. One persuasive reason for choosing to return to Tell Brak was the lack at that time in northern Mesopotamia of any well-stratified urban material of Early Bronze Age date (third millennium BC) and the fact that the whole of the southern part of the Brak tell had been abandoned at the end of the third millennium, making material of this date immediately accessible to the archaeologist. Thus at Brak, unusually, there was an obviously important and immediately accessible third-millennium city.

A second reason for choosing Brak was that Mallowan had discovered there the so-called Palace of Naram-Sin, grandson of Sargon of Agade, whose contemporary inscriptions accord him the titles ‘king of the four quarters (of the world)’ and ‘smiter of Armanum and Ebla’ (Tell Mardikh in northern Syria), which ‘since the beginning of mankind no

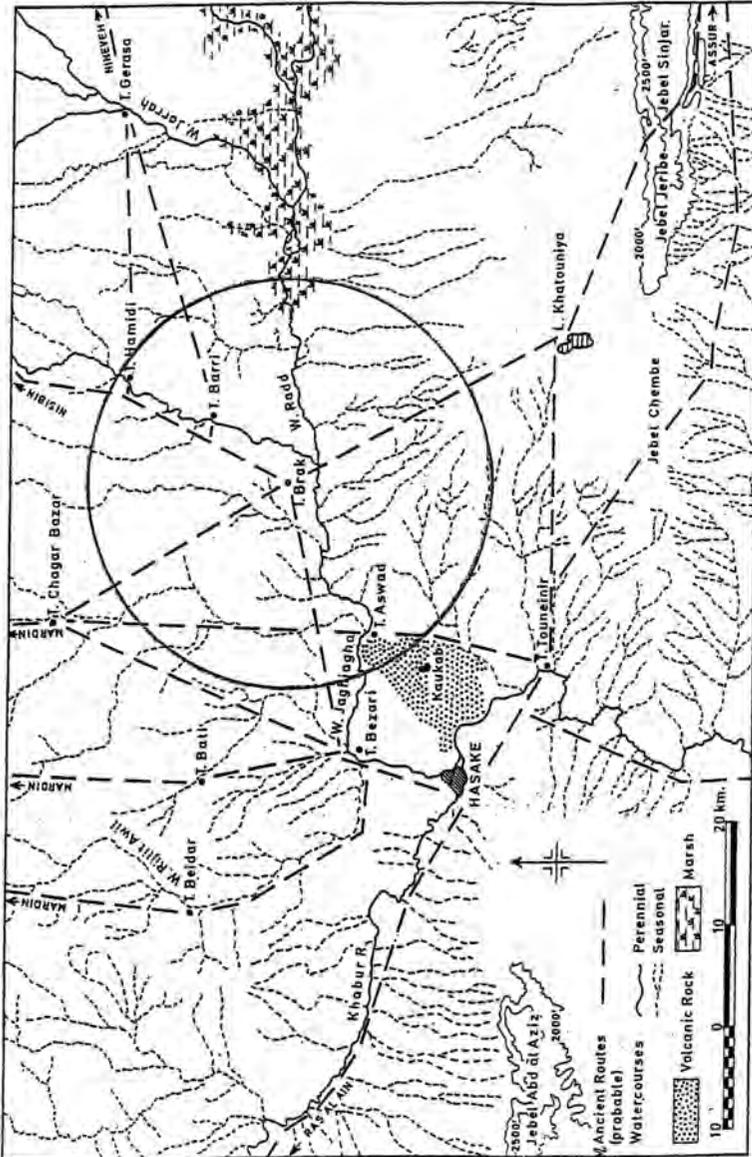


Figure 2. Map of the southern part of the Khabur basin, showing the major routes passing through Tell Brak-Nagar and the area of the current archaeological survey (p. 28).

king had ever destroyed' (Frayne 1993, 136). The 'palace' was actually a heavily fortified storehouse (the outer wall was 9 metres thick, Mallowan 1947, pls 48:2, 59), in which Naram-Sin had fortunately left his name stamped on some of the mud-bricks used in its construction (Oates *et al.* 2001, figs 136, 381). Thus Brak also offered an opportunity to investigate a major provincial centre of what is often referred to as the world's first 'empire', a claim at that time increasingly subject to sceptical comment. Indeed in 1985 a distinguished American scholar wrote, 'The data we have do not suggest any empires or large states in third millennium Syria . . . the presence of Naram-Sin's garrison at Tell Brak and scribal bombast notwithstanding' (Michalowski 1985, 301), a phrase which was to prove extremely useful in raising research funds for the investigation of Akkadian imperial administration at the site. Another persuasive reason for selecting Brak was that Naram-Sin's stamped bricks provided the only third-millennium archaeological horizon in the whole of northern Mesopotamia and Syria that could be precisely historically dated. This remains so, even today.

A large volume on the third-millennium excavations was published in 2001 (Oates, Oates and McDonald). The intention of this paper is to focus on two recent projects, the investigation of the earlier fourth to fifth-millennium levels and an intensive survey of the surrounding countryside, begun two years ago, using the latest satellite imagery and computer software. The following brief comments on the third-millennium discoveries are intended to provide a broader context for the more recent work; supporting evidence and further illustration can be found in the final reports.

Third-millennium Brak

Brak was occupied throughout the third millennium BC, but up to now we have excavated extensively only the second half of this millennium, focusing particularly on what we now know to have been an important pre-Akkadian kingdom and the succeeding Akkadian levels.² Also of significance, especially from an environmental point of view, is the excavation of levels of post-Akkadian date, approximately 2150–1950 BC.

² Earlier third-millennium material of the 'Ninevite 5' phase is widely present at the site but is less well documented owing to the depth of the overlying, later third-millennium deposits (see Matthews 2003, ch. 5; Oates, *et al.* 2001, 188–201 and figs 466–71).

The ancient name of Tell Brak-Nagar was originally suggested on the evidence of the second-millennium texts from Mari (Charpin 1990; Oates *et al.* 2001, 379–80), is attested in inscriptions from Brak itself and confirmed by the work of our colleagues at Ebla, south of Aleppo, and the site of Tell Beydar, some 40 kilometres north-west of Brak, a small town that was clearly a dependency of Brak.³ Contemporary cuneiform tablets from Ebla tell us that in the third millennium Nagar was the dominant city in this part of northern Mesopotamia, and a major point of contact at the interface between the cities of the Levant in the west and those of Mesopotamia. Indeed the city's importance clearly reflects its position at the western margins of Mesopotamia itself and controlling not only routes to the west but also to the Tigris and the south (Fig. 2).

The independent, pre-Akkadian city of Nagar has proved difficult of access, largely owing to the depth of the overlying Akkadian buildings, the excavation of which formed the main focus of our work in the 1980s. In many areas, unfortunately, the foundations of the massive Akkadian structures had destroyed much of Early Dynastic Nagar. We have excavated surviving parts of houses of officials of the independent kingdom (Areas CH, ER, Fig. 3) and are at present investigating what is certainly a major administrative building of this date (Area TC, see Emberling and McDonald 2003). One of the ER houses seems to have belonged to a 'school teacher', whose pupils' practice tablets have been recovered (Oates *et al.* 2001, 111). A fragment of a large lexical tablet found in 2002 suggests the presence of a scribal library (Michalowski 2003).

The independent city came to an end in a major destruction, a welcome event in archaeologists' eyes since such disasters normally provide large quantities of well-dated, *in situ* material. Such was the case at Brak, and the fact that Brak-Nagar features prominently in the Ebla archive (Archi 1998) has provided not only a wider historical perspective but some unexpected and perhaps more entertaining information. For example, Nagar was noted for a special type of dancer, or perhaps acrobat. The meaning of the word used to designate this 'profession' is not entirely clear but carries the implication of 'jumping about' (Catagnoti 1997); indeed one suggested translation is 'specialists in equestrian arts' (Archi 1998, 11). Some of the Nagar 'entertainers' were actually resident in Ebla, some 500 kilometres distant, both to provide local entertainment and

³ The cuneiform texts from Brak are published by Eidem in Oates *et al.* 1997, ch. 2, and by Eidem, Finkel and Bonechi in Oates *et al.* 2001, ch. 3. See also Matthews and Eidem 1993; Archi 1998; Ismail *et al.* 1996; Sallaberger 1999.

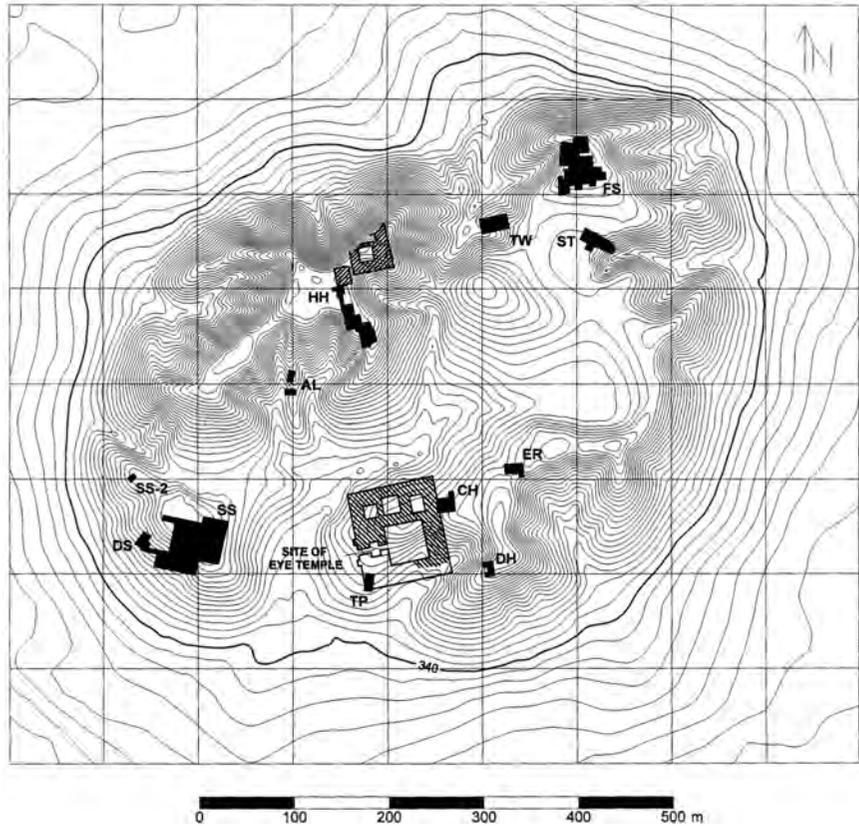


Figure 3. Contour plan of Tell Brak, one metre contour intervals.

instruction in their special arts. Nagar was also noted for the quality of its hybrid equids which were both expensive and much in demand in the west (Oates 2003, 117). We believe that these were donkey-onager hybrids which, before the introduction of the horse, were the preferred draught animal, deemed especially suitable for drawing the chariots of gods and kings. The long-necked equids in Figure 4 are almost certainly the hybrids, and we know from the Beydar documents that the ruler of Nagar visited the towns of his kingdom with just such an entourage. At the same time the texts from Ebla tell us that the king's 'superintendents of the charioteers' and 'breeders of livestock' actually travelled to Brak-Nagar for the acquisition of these animals which at least occasionally cost as much as 5 minas of silver (over 2 kilos), more than fifty times the price of a donkey.

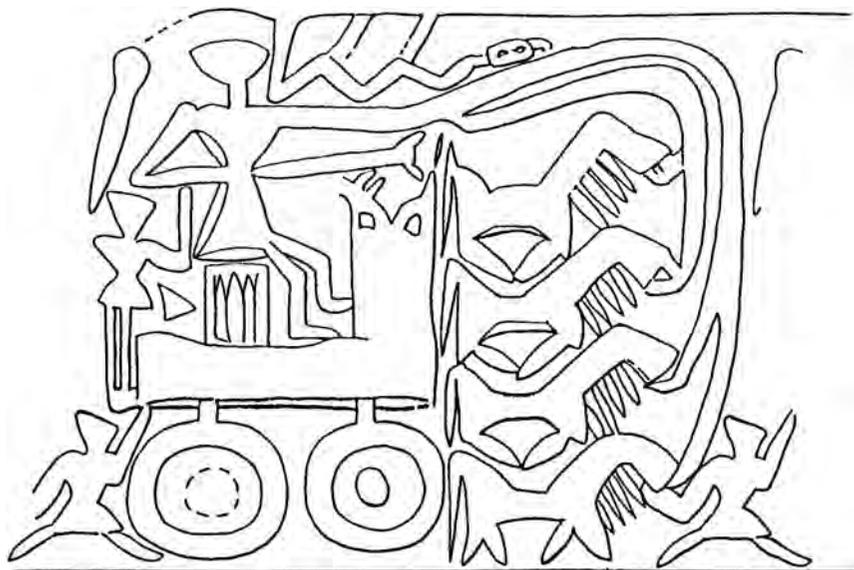


Figure 4. Impression of jar sealing depicting a wheeled vehicle drawn by four equids, almost certainly the donkey-onager hybrids bred at Brak-Nagar, mid third millennium BC; seal height 3.4 cm.

Texts from Ebla also provide information about the dowry of the daughter of the ruler of Ebla on her marriage to the crown prince of Nagar (Biga 1998). This is the earliest recorded royal dowry and clearly represented a desirable political alliance. Included were large quantities of textiles and perfumed oils. Regrettably, we have yet to find any trace of the forty-two jars of wine sent from Ebla to Nagar for the wedding celebrations. From this period we have perhaps the finest object to have been found at Brak, a statue of a couchant human-headed bison (Fig. 5), a mythical creature associated with the sun god.

Following the destruction of the city sometime in the twenty-third century BC, Nagar was rebuilt by officials of the Akkadian Dynasty as a major centre of their provincial administration, a fact clearly attested in the cuneiform documents from the site. The earliest Akkadian phase has provided us, *inter alia*, with two extraordinary public buildings, the first a large complex in Area SS which occupies the whole of the south-west corner of the site, an area of some 60 by over 100 metres (Fig. 6). The building consists of several distinct complexes, including a temple in the north-east, entered from the east courtyard, an administrative unit entered from the west (in particular room 23 and, later, room 18, together



Figure 5. Limestone sculpture of a human-headed bison, found in Area SS, height 28.2, length 41.5 cm, now in the Deir ez-Zor Museum (further comment in Hansen 2001).

with the courtyard to the north), an ‘industrial’ area west of the temple with unusually large ovens (e.g. room 4) and, most unusual of all, a vast south courtyard with a massive limestone throne dais at its north end (Fig. 7) and surrounded by large *iwans* with doorways 5 metres wide, with single supporting columns. The most extraordinary features of the building were the unique, decorative, shallow fluted pilasters in the mud wall plaster, and the subtle *trompe l’oeil* concealment of the trapezoidal courtyard, the shape of which presumably reflected the existing contours of the tell. The concealment was effected by the use of elaborately rebated piers in the corners in order to conceal the lack of right angles, a surprisingly sophisticated architectural technique for the mid third millennium.

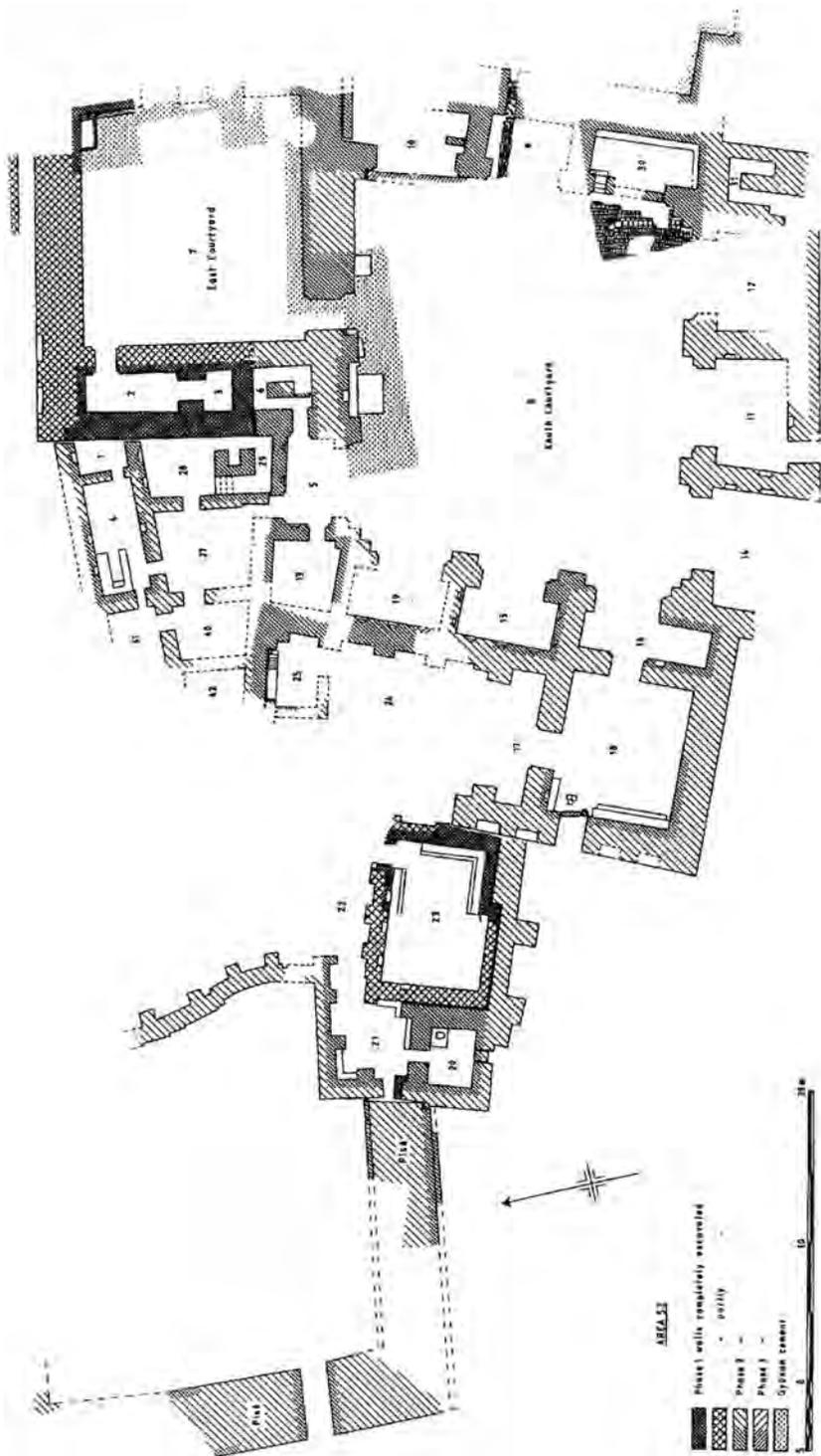


Figure 6. Plan of Early Akkadian building in Area SS.



Figure 7. Area SS, north façade of south courtyard.

The name of one of the officials in charge of this building has been preserved, one Muriš, bearer of a north Semitic name. Contemporary sealings from a local seal belonging to him and another in the Akkadian style which had obviously been presented to him, and on which his name represents a later cutting have been recovered from the building (Oates *et al.* 2001, figs 171–2). It would appear that at least in the early years of their administration the Akkadians made use of local officials, who of course knew where to collect the taxes, a ploy not unknown to the Romans.

A second early Akkadian building (Area FS) has within it a very similar temple and an official ‘reception suite’, but otherwise consists of a number of very large courtyards in which we have found both micro-stratigraphic evidence of herbivore dung and traces of small stakes, almost certainly used to tether animals (Oates *et al.* 2001, 41–50 and fig. 366). Sealed dockets, recovered in the courtyard just outside the temple itself, record transactions involving the donkey-onager hybrids that were in such demand at Ebla, and it is clear that the building was in some way connected with the breeding and use of these animals (Oates *et al.* 2001, 118). The Area FS complex lies near the north gate of the city and may also have served as some type of ‘way station’ (the contemporary Beydar texts attest just such an institution, Sallaberger 1996, 1999).

At some time during the Akkadian occupation of the site but before the construction of Naram-Sin's 'Palace', microstratigraphic and other archaeological evidence demonstrates that both monumental buildings were briefly abandoned, then cleared out and deliberately filled in, the latter process involving both ritual burning and the ritual deposition of valuable objects. That is, there are at Brak at least two contemporary examples of ritual closure of major temple complexes, sometime early in the Akkadian period.⁴ Valuable objects were deposited on the floors, and the deliberate fill in both buildings was carefully sealed. In Area SS food offerings were found on the sealed surface, while in FS a number of ritual donkey burials were discovered and the complete skeleton of a saluki was found, together with its water bowl (discussed by Clutton-Brock in Oates *et al.*, 2001, 327–9).

In the Area FS temple courtyard were found some of the richest of the ritual offerings, including a necklace and fine chain of silver together with small silver ingots (Fig. 8). These objects had been deposited in a cloth or leather bag, in which the surrounding copper objects had served to preserve the silver (Oates *et al.* 2001, figs 50, 51, 250). Large numbers of copper and copper/bronze objects were also recovered from this and other ritual deposits in both buildings, and we know from the number of moulds recovered at the site that metal working was an important part of the third-millennium economy of Nagar.

The evidence from this third-millennium city has relevance also to a current environmental debate which has flourished in recent years not only in archaeological journals but also in *Nature*, *Science* and other scientific journals. This concerns an environmental catastrophe sometime around 2250 BC, and some archaeological papers have attributed the fall of the Akkadian Empire to this 'event' (*inter alia*, Weiss *et al.* 1993); some even argue for the 'desertification' and abandonment of the entire Khabur plain at this time. A French soil-micromorphologist, Marie-Agnès Courty, a leading figure in assessing the evidence for this 'event', has now identified at Brak the earliest clearly dated Near Eastern soil 'signal' in a level unquestionably preceding the construction of Naram-Sin's Palace, that is, well before the collapse of the Akkadian Empire (see Courty 2001 and associated bibliography). It is possible that the sequence of temporary abandonment and ritual closure of the early Akkadian monumental buildings is in some way related to this 'event', though we lack direct

⁴ The detailed arguments for dating the Akkadian levels at Brak, and in particular the closure of these buildings, can be found in Oates *et al.* 2001, chs. 2 and 16.



Figure 8. Silver necklace from ritual deposit in the temple courtyard of the Area FS complex, c.2300 BC (see Oates *et al.* 2001).

proof of this beyond the fact that the soil ‘signal’ was not picked up beneath these buildings.

Also relevant to this environmental debate is the incontrovertible evidence at Brak and a number of other cities in the area for continuing large-scale occupation at the end of the third millennium (Oates *et al.* 2001, 63–73, and plan, fig. 79, especially the large southern house with its bakery and, apparently, a shop on the street, perhaps the earliest yet identified). Further evidence for the lack of a lengthy desertification is found in the botanical evidence from Brak which shows no discernible difference in crops or weed species through the second half of the third millennium (Charles and Bogaard 2001). That is, although there is undoubtedly evidence throughout the Near East for some unusual natural ‘event’, apparently *during* the Akkadian period, a *lengthy* ‘desertification’ is not supported by the archaeological record in the Khabur area, nor elsewhere in Mesopotamia. Moreover, the Brak ‘event’, which occurs before the construction of the Naram-Sin Palace, substantially pre-dates the fall of the Akkadian Empire, and there is unequivocal evidence for a substantial period of Akkadian occupation subsequent to its construction. There is, however, evidence that may suggest a tightening of

Akkadian control following the Brak 'event', for example the construction of the heavily fortified 'palace' itself and the apparent introduction of greater numbers of Akkadian as opposed to local officials, perhaps a reflection of unrest in the countryside of the type that often follows some natural catastrophe.

Second-millennium Brak

We have also excavated second-millennium levels, which are found only on the highest (northern) part of the mound and extensively in the ploughed fields to the north of the tell (excavations published in Oates *et al.* 1997). Of especial interest was a Mitanni palace and adjoining temple, found adjacent to private houses investigated by Mallowan in the 1930s. Among the unusual discoveries in the palace were two extraordinarily well-preserved staircases—the living quarters were on the upper floor—and an area of large and well-preserved workrooms from which we recovered not only objects of ivory (some clearly unfinished) and a great variety of ancient glass but also glass ingots together with slag indicating the working of both copper and iron. This building proved to be a particularly well-preserved example of the Late Bronze Age type of palace complex in which large numbers of specialist craftsmen were employed.

Several cuneiform tablets were also recovered including legal documents sworn 'in the presence of' the Mitanni kings Tušratta, well-known from the Amarna correspondence (Fig. 9), and Artaššumara, his older brother, a more mysterious figure whose murder is referred to in one of Tušratta's letters. The Brak documents were sealed with the 'dynastic' or 'state' seal of one of their forebears, a sealing also found on documents elsewhere within the Mitanni Empire which once stretched across northern Syria and Iraq. Although the Mitanni were a Hurrian-speaking people, the royal letters were normally written in Babylonian, the lingua franca of the time; a fragment of a letter written in Hurrian was, however, also recovered.⁵

⁵ The Mitanni documents are published in Eidem 1997; regrettably, the Hurrian fragment has proved very difficult to read (see G. Wilhelm, 'A Hurrian Letter from Tell Brak', *Iraq*, 53 (1991): 159–68).

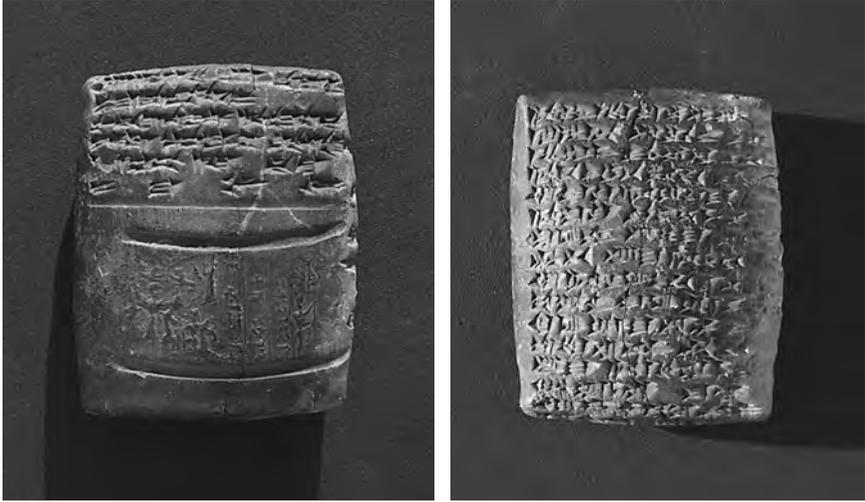


Figure 9. Legal document recording an agreement made in the presence of the Mitanni king Tušratta, sealed with the dynastic seal of his ancestor Saustatar (translation in Eidem 1997, 41).

Brak in the fourth and fifth millennia

The most recent work at Brak has focused on pre- and proto-historic levels, from which the results, although not as visually spectacular as the excavations of the third- and second-millennium cities, have been instrumental in altering presently held views concerning the rise of urban civilisation in Mesopotamia. Such earlier levels have been excavated in two parts of the site, Areas CH and TW. In CH, occupation of the fifth-millennium BC ‘Ubaid period has been reached (still some 12 m above the plain, implying a lengthy prehistory still unexplored, Oates 1987), but material here had been much disturbed by the constant rebuilding of its monumental constructions. The discovery of comparably early levels in Area TW resulted from the chance identification of early third-millennium occupation beneath the foundations of massive second-millennium walls first seen as a vegetation mark after an unusually wet winter in 1981 (Fig. 18a, below; Oates *et al.* 1997, figs 165–6). The massive walls proved to be substructures of what was almost certainly part of the outer defences of the second-millennium city, and their deep foundations had literally removed most of the underlying third-millennium occupation, thus providing unexpected access to fourth-millennium levels normally deeply

buried beneath the many metres still surviving from the great third-millennium city.

Ten years later we were able to return to this area. One unexpected result has been the only well-stratified sequence of fourth-millennium material from any Mesopotamian site, including the type site itself, Uruk-Warka. Moreover, the types of buildings and materials recovered here are contributing to a major shift in the way archaeologists view not only the origins of urban society but also some of the very practices that formed the basis of the literate administration of later Sumerian cities in southern Mesopotamia. In the 1930s Mallowan (1947) had already excavated a fourth-millennium building of considerable importance, known as the Eye Temple owing to the hundreds of so-called Eye Idols recovered from its foundations (Fig. 10). The temple was dated, on analogy with what was then known at Warka, to around 3000 BC, a date our recent work has now pushed very much earlier. There were at least five phases of Eye Temple construction of which the latest in the series can now be dated around 3400 BC. The Eye Idols together with thousands of beads and

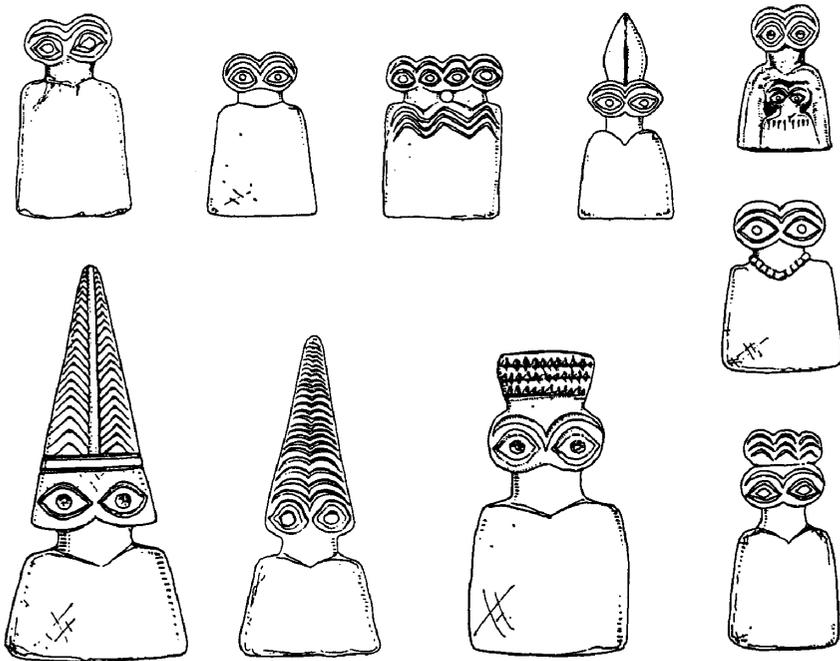


Figure 10. Selection of alabaster Eye Idols from Tell Brak. The simpler examples range from 2–5 cm in height; the largest known, lower left, is 14.3 cm high (see Mallowan 1947).

many stamp amulets had been deposited largely in the mortar of the even earlier second phase of construction, a point to which I shall return.

The 1991–3 seasons provided over seven metres of well-stratified material. This came from sixteen actual construction levels dating from the early third back to the mid fourth millennium. In 1997 we returned to this area, opened a second trench to the west, and discovered two very unusual buildings in the earlier levels 18 and 20. The latter, and earlier of the two, has proved to be what may arguably be the earliest secular monumental building yet discovered in the Near East. Unfortunately, it was situated in the deepest corner of the original trench, its floor some eleven metres below the modern ground surface, and we have been able to recover only a small area of the plan (Figs 11, 18b). This includes a major entrance, with walls a metre and a half thick and, within the wide doorway, a vast threshold stone consisting of a single piece of basalt measuring 1.85×1.52 metres in area and 29 centimetres thick (Oates and Oates 1997, figs 3, 4). It has not been possible to establish the precise function of this clearly monumental structure, but the plan does not conform to that of contemporary ‘ritual’ buildings. There seems to have been a large fire installation in the middle of the south-east room but, in the area we were able to excavate, the building was otherwise empty and samples from the floors have up to now proved uninformative.

Associated pottery recovered during the most recent field season (2004) now securely dates the building to the latter part of the fifth millennium, to a phase referred to as Early Northern Uruk or Late Chalcolithic 2 (c.4200–3900 BC).⁶ The most recent season has also provided significant new information concerning this late fifth-millennium occupation. A series of small rooms was excavated, adjacent to but not bonded with the north wall of the monumental structure and entered from the large open courtyard to the north (Fig. 11). The westernmost, adjacent to the gate, would have served as a guardroom, but the rest have very much the appearance of the facilities one finds outside government offices in the Near East today, a series of desks at which letter-writers and other clerks provide services for the benefit of those having business in the

⁶ For a more precise discussion of chronology, based on radiocarbon determinations, see Oates, forthcoming. For a recent assessment of radiocarbon determinations for the fourth millennium, see Wright and Rupley 2001, especially ‘beginning of Early Uruk’, p. 120. It should be noted that the reassessment of chronology in Oates, forthcoming, places the Level 20 building early in Late Chalcolithic 2 (LC2), whereas in the recent Rothman volume (2001, 7, table 1) it would have been attributed to late LC1. On the basis of the pottery the Level 20 Brak building is contemporary with Tepe Gawra XI–A to XI.

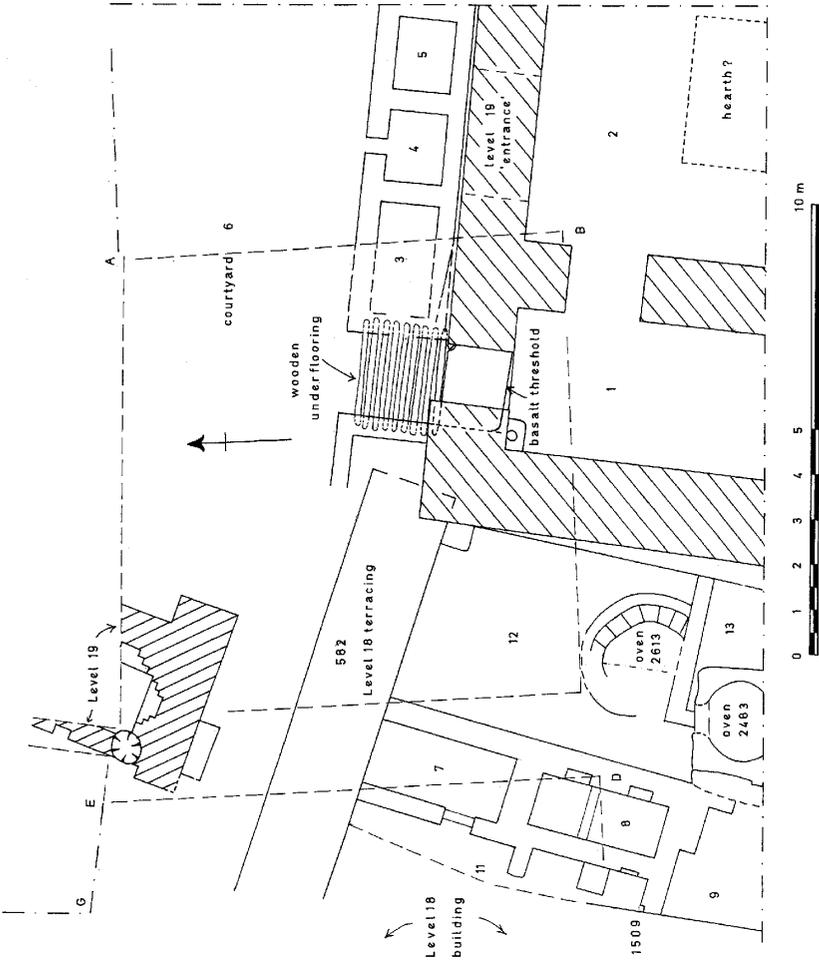


Figure 11. Plan of the Level 20 trench, late fifth millennium BC, showing the large monumental building in the south-east corner and the newly excavated 'offices' (rooms 4, 5) and work areas to the west, cut by the much later terracing wall (582).

building itself. A second possibility, that these might be a series of *suq*-like shops, is perhaps supported by the discovery of a 'craft area' just to the west of the building, with several ovens and large numbers of tools of both bone and ground stone. The small rooms north of the building were regrettably empty. Like the third-millennium equid building in Area FS, this monumental TW building lies near the north gate of the city and, for the moment, we favour the view that this too may have been some form of official 'way station'. Certainly its function was 'administrative', not 'ritual'.

Much earlier formal buildings are of course known in Pre-Pottery Neolithic contexts in south-eastern Anatolia and throughout fifth-millennium 'Ubaid Mesopotamia. Although these would seem to have served some ritual function, none is on the scale of the Brak complex and the well-established Mesopotamian tripartite plan differs significantly from that excavated in TW Level 20. The discovery of a large secular administrative building securely dated before the end of the fifth millennium significantly alters existing views of the complexity of Mesopotamian society at this time, especially that in northern Mesopotamia. There is at Brak, moreover, further evidence of increasing complexity in the presence of a massive wall, two metres thick, some 400 metres distant along the north-west limits of the tell, possibly the wall of a large compound or conceivably even part of a city wall (Matthews 2003, 29–30). Contemporary pottery has been found in several parts of the tell and at satellite settlements just to the east and west of the main mound, clearly suggesting occupation of considerable size as well as complexity already in the fifth millennium (Fig. 22, below).

The second new building (Fig. 12) defines a later level (18), to be dated sometime around 3800 BC,⁷ and would appear to have been the original 'roadside café'. The southern portion consists of a roofed structure on the plan of a formal reception hall, that is, the early Mesopotamian tripartite plan with its central chamber and side rooms that served both as a temple and a house plan. (The daily needs of the gods were not dissimilar to those of ordinary people.) To the north is a very large open courtyard, entered from the adjacent street. The façades of the southern courtyard bear decorative niches, another distinctive feature of public buildings (Oates and Oates 1997, fig. 17). Unfortunately much of this area was badly damaged by very large rubbish pits, dug by later inhabitants of the site, which destroyed many of the walls, while the western side of the

⁷ LC3 or early 'Middle Northern Uruk'.

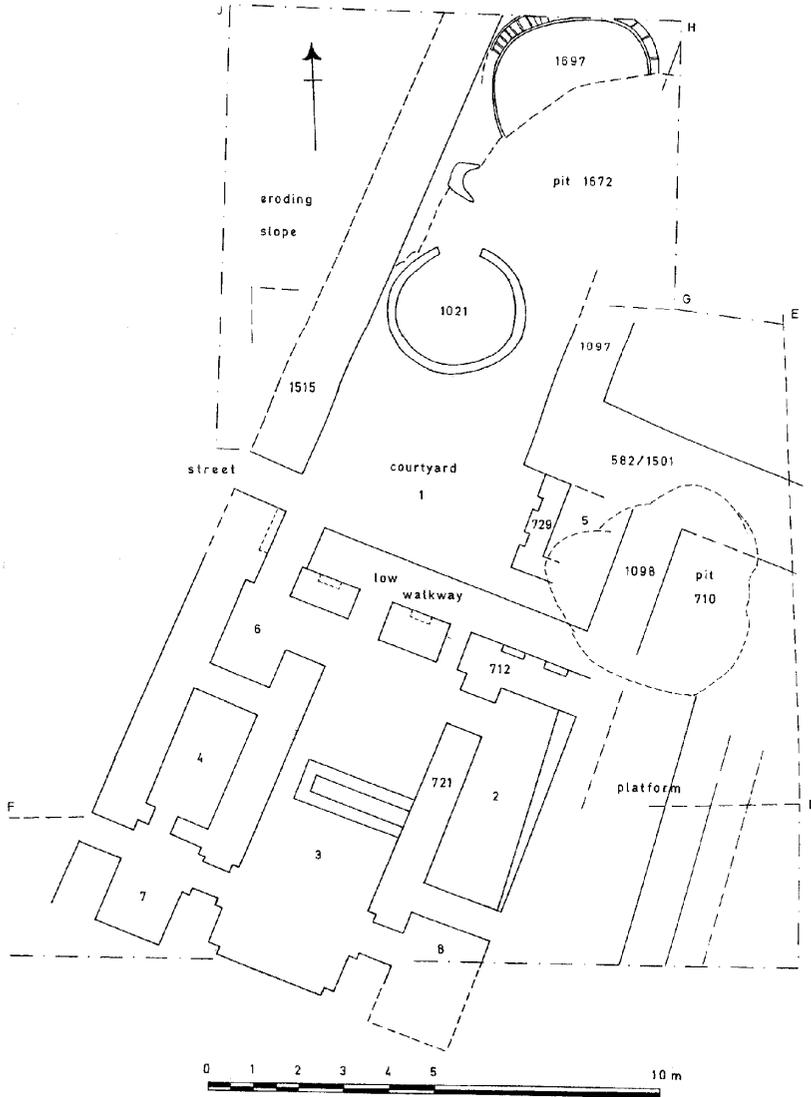


Figure 12. Plan of the Northern Middle Uruk 'cook-house' or 'feasting hall', Area TW; built in Level 18, in use during the first half of the fourth millennium BC.

building had virtually disappeared owing to the steep slope of the eroded tell (Emberling and McDonald 2001, figs 2,3). Indeed we lack altogether the eastern wall and the northern limits of the courtyard.

This complex remained in use over a long period during the Late Chalcolithic 3 or 'Northern Middle Uruk' phase, very approximately the

latter part of the first half of the fourth millennium. Within the courtyard we have found a great variety of fire installations, including domed ovens, grills and open hearths which were periodically rebuilt or replaced (Fig. 13). One of the most interesting features of this formal 'cook-house' is the evidence for the types of meal produced here, obviously on a very large scale. The speciality of the house seems to have been meat, though local river fish were also served. The identified plant remains seem largely to have come from the fuel used in the ovens, whether from the fuel itself or from animal dung, widely used as fuel. It seems likely that different kinds of food were produced in the different types of oven, only two of which are shown on the plan. Mutton and beef were most in demand, but there is evidence also for the roasting of pig, gazelle, fox, hare, birds and either dog or jackal. The larger animals seem to have been butchered elsewhere, while smaller animals and birds were baked intact. The bones of the larger specimens were generally fragmented and burnt, suggesting a cooking technique involving the release of the fat in the bones (Weber 2003). That is, we believe that quantities of animal carcasses and plates of prepared food were brought here for roasting and baking. Indeed the major finds within the courtyard consisted of crudely made, mass-produced flat plates, perhaps the original paper plate! (up to 70 per cent of the surviv-



Figure 13. The southern domed oven in the courtyard of the Level 18 'cook-house' (photograph, H. McDonald).

ing sherds in the courtyard itself).⁸ Again we know of no similar building of this date, anywhere, though ‘institutional’ domed ovens are also reported in a contemporary level at Hamoukar, an important fourth-millennium site 80 kilometres east of Brak (Gibson *et al.* 2002, 17).

To the east of the Level 18 building, in the original trench, were several occupation levels containing tripartite houses which, although later in construction, were certainly occupied during the period in which the ‘cookhouse’ remained in use (TW Levels 17–15), possibly by people involved in the operation of the Level 18 building, though there is no direct connection. Level 16 was heavily burnt, providing an unusually extensive repertoire of *in situ* pottery and other objects. Two buildings provide more or less complete plans (Fig. 14), the usual tripartite house to the south with a much more unusual building in the north-west corner, of which at least one wall was ornamented with the earliest known examples of mud-brick semi-columns, a type of architectural decoration well-known in later periods and reserved for buildings of importance (Oates and Oates 1993, figs 26, 27). A number of heavily charred wooded objects were recovered here, especially in room 1, including a large platter and thin segments of what may have formed some type of panelling or screen. Other objects from this building include, unusually, a large gold bead made of sheet metal, two very beautifully crafted ivory objects, in shape resembling long pen-holders, a very large stone ‘fruit-stand’ (Oates and Oates 1993, fig. 50, no. 10) and a number of finely made ground stone tools. It was here also that the only *in situ* Eye Idols have been recovered.⁹

Another type of object, also known from the ‘Eye Idol’ level of the Eye Temple, is the charming alabaster bear seen in Figure 15 (Pittman 2002).

⁸ An example is illustrated in Oates and Oates 1993, fig. 54, no. 66; many are slightly flatter than the illustrated specimen.

⁹ Although hundreds of alabaster Eye Idol fragments have been found in the recent series of excavations, most of these were from earlier soil used to make much later bricks. The two complete examples from Level 16, room 1, and probably another from Level 14, remain the only complete, *in situ* examples (illustrated in Oates and Oates 2002, fig. 5). Part of a bone Eye Idol, one of only two examples in this material from Brak, was recovered from a Level 16 jar from the north courtyard of the ‘cookhouse’ (Emberling and McDonald 2003, fig. 11). These stratified examples provide the sole evidence for dating the thousands of Eye Temple specimens recovered from an early but otherwise undated phase of the Eye Temple foundations (see discussion in Oates and Oates, 2002).

Until recently it was believed that the Eye Idols were unique to Brak, but in 1999 a number of Eye Idols, in both bone and stone, were recovered from a pit excavated at Tell Hamoukar (Gibson *et al.* 2002, 17). Also found in this pit were many beads and some 90 stamp amulets of the type also well-known from the Brak Eye Temple, the latter now found in well-dated contexts at Brak (Area TW, Levels 16–17). Of great importance is the recent discovery of impressions of such seals from the approximately contemporary burnt house at Hamoukar (Reichel 2002).

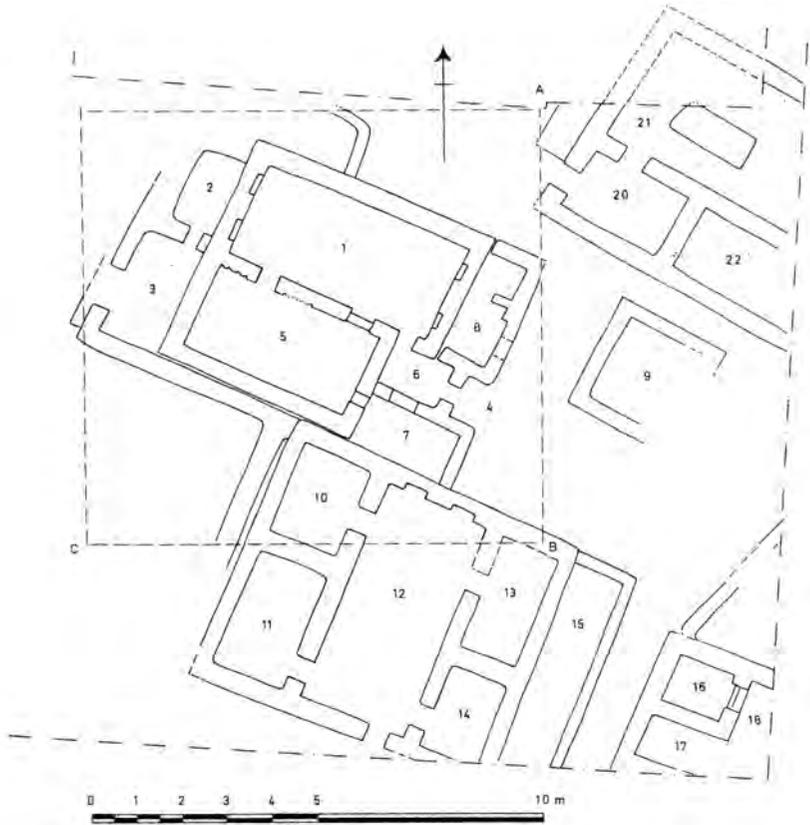


Figure 14. Plan of Area TW Level 16 houses, contemporary with the later use of the 'cook-house'.

Perhaps the most remarkable find from TW Level 16 had been buried beneath the courtyard just east of the semi-columned building, an extraordinary hoard of some 350 beads together with two of the Eye Temple type stamp amulets. The majority of the beads were carnelian, but there were also a number in gold, silver, lapis lazuli, rock crystal, amethyst and other exotic stones, the silver examples being among the earliest silver objects yet recovered (colour photograph, Emberling and McDonald 2002, 950), again emphasising the importance of Brak's dominant position controlling one of the routes from Mesopotamia to the metal sources of Anatolia, where some of the exotic stone is also found. The lapis, of course, comes from distant Badakhstan, far to the east in Afghanistan.

The material recovered in these indigenous early to middle fourth-millennium levels provides the basis not only for a reliable archaeological



Figure 15. Alabaster bear, Area TW houses, height 8.2 cm; traces of red and black pigment survive on the eyes, mouth and claws (for ‘bears at Brak’, see Pittmann 2002; photograph, H. McDonald).

sequence but also for a new assessment of the origins of Mesopotamian urbanism, long credited solely to the south Mesopotamian Sumerians. This new perspective is also supported by the size of Brak in the early fourth millennium which, with its corona of outer tells, occupied an area of over a hundred hectares (including Tell Majnuna, Tell T2 and the tells beneath both Majnuna and Temmi villages, Fig. 20). Moreover, evidence from our latest project, an intensive survey of Brak’s sustaining area (discussed below), shows this to be the period with the greatest number of settlements before the Iron Age.

Other recent discoveries bear on the origins of the early recording systems that preceded the development of the pictographic script, for which the primary evidence remains still at Warka (Uruk IVa). The new evidence from the north includes not only a wide variety of symbolic notation but, in the Middle Northern Uruk phase at Brak, groups of very specific and repeating signs found on the shoulders of large jars and the sides of bowls, different types of signs associated with different types of vessel (Oates 2002, figs 7, 8). Over a hundred examples have been found on large jars alone, and we are persuaded that they may relate in some way to quantity (something we shall attempt to test). Certainly they appear to have some numerical significance.



Figure 16. Clay dockets of mid-fourth-millennium date, apparently recording a number (perhaps 10) and an animal, and pre-dating the pictographic texts from Warka. The originals are in Deir ez-Zor; casts can be seen in the British Museum.

Associated with material of this date, we have also found what must be among the earliest proto-tablets (Fig. 16) and a large numerical tablet, that is, a tablet bearing only a number, closely resembling *juss* (gypsum) specimens from the Anu Ziggurat at Warka which pre-date the pictographic texts (Jasim and Oates 1986, fig. 4 and pl. 2).¹⁰ The number on the Brak numerical tablet seems unusually large (perhaps 3600) and conceivably represents some form of ‘employment’ record—certainly mass-produced pottery of the types often interpreted as ration bowls, implying large work forces, appear already in levels underlying the Level 20 building. One of the consequences of the construction of city walls and monumental buildings is of course the need for a large labour force, to say nothing of the organisation behind it. Indeed one of the facets of mud-brick construction that is often forgotten is the enormous quantity of both straw and water that is required not just for the bricks but also the mud plaster. A monumental building like that in late fifth-millennium Level 20 requires not only the organisation to build and regulate it but also the workforce to acquire the necessary construction materials and

¹⁰ This evidence is discussed in more detail in Oates 2002 and Jasim and Oates 1986.

actually to make the bricks. In a good season a hectare of barley will produce roughly 500 kilos of straw, enough for approximately 800 mud-bricks, hardly a beginning for a building of this scale.

The extensive use of the stamp seal, a device for marking property and record-keeping, is also widely attested in the north at this time, another aspect of Sumerian administration that clearly originates not in Sumer but in the north, where it is found at least as early as the seventh millennium BC, long before there is any evidence for such a practice in Sumer (Duistermaat 2000; Oates and Oates 2004, 183–4). Some of the earliest stratified impressions of cylinder as opposed to stamp seals come from Brak, from Middle Northern Uruk levels, that is, associated with indigenous northern materials (Felli 2003, 63; Oates and Oates 1993, 178).¹¹ Of the other administrative features that develop at this time, the use of so-called counters or tokens is also well-illustrated at Brak, though at this time these were confined to simple geometric shapes (Jasim and Oates 1986, pl. 1c). Tokens of more complex shapes are all of Late Uruk date, at least at Brak, and closely resemble the probably slightly later pictographs (*inter alia*, Oates and Oates 1997, fig. 15; Emberling and McDonald 2003, fig. 5).

It is only in the latest level of this ‘Middle Uruk’ phase at Brak (TW Level 13) that we find the first evidence of extensive fourth-millennium contact with Sumer, in the presence of large quantities of southern pottery. At Brak such southern material is found in clear association with the distinctive Middle Northern Uruk assemblage described above. That is, although Sumerians from the south are almost certainly present, Brak had not as yet become a southern ‘colony’ comparable with sites on the Euphrates such as Qraya and Shaikh Hassan.¹² This Middle Uruk settlement at Brak appears, however, to have been completely replaced by a true southern colony, in which both the buildings and the pottery are of exclusively southern types. For the moment Brak is the only ‘colony site’ so far identified in north-eastern Syria, though it seems likely that Nineveh, on the Tigris to the east, may also have been such a site. At Brak we remain uncertain what happened to the previously thriving and extensive

¹¹ Recent evidence from nearby Hamoukar shows clearly the importance of the sealing of both packages and the doors of storerooms already at this time (Reichel 2002); door sealings are found even earlier at the fifth-millennium ‘Ubaid colony site of Değirmentepe in south-eastern Anatolia (Oates and Oates 2004, 184).

¹² For more extensive discussion of the Middle and Late Uruk ‘colonies’, see most recently Rothman (ed.) 2001; for a summary of the evidence from north-eastern Syria, see Oates forthcoming.

local population, of whom there is no visible trace on the tell itself. One possibility, of course, is that they were forced onto the outlying tells but we have no specific evidence for their dispersal. The theory that the exclusively south Mesopotamian material culture at Brak represents no more than acculturation seems highly unlikely, in the total absence of northern traits.

The motivation for the establishment of such southern colonies, which on current evidence were more common on the Upper Euphrates, remains a matter of debate, but it is clear that the acquisition of types of raw materials absent in the south, in particular metals, is one major factor; certainly large copper pick-axes were being cast at Brak at this time (Oates and Oates 1997, fig. 16). Unusually, high percentages of sheep/goat characterise the Brak fauna throughout the fourth millennium (over 90 per cent, Weber 2003), emphasising the value of wool in the local economy as well as in the colony period, while the weaving women depicted on some Late Uruk seals suggest that local textiles may also have been an important commodity (see discussion and fig. 15.6 in Oates and Oates 2004, 184–7). The value placed on specialised textiles is certainly clear from the later cuneiform texts. By contrast, in the late fifth millennium, contemporary with the Level 20 monumental complex, the percentage of sheep/goats was lower and more in line with the usual Late Chalcolithic emphasis on cattle and pigs.¹³

In Area TW the Late Uruk buildings consist of part of a large house (in the eastern trench) and, to the west, a series of smaller rooms with the typical southern ‘frying pan’ hearths and resembling small shops in a modern *suq*, though their actual purpose remains unclear (Fig. 17). Room 6 was a flint-knapper’s workshop, producing both very large Canaanite blades and obsidian tools (Oates 1993, pl. 5). In a contemporary nearby house, just to the north of Area TW, was found an extraordinary clay ‘blade-holder’, with several tiny projectile points still *in situ*, set into the holder while the clay was still plastic and demonstrating the continuing manufacture of microlithic tools at this time (Wright 2002, fig. 1). One of the more interesting Late Uruk features in Area TW was the lengthy and unusually well-preserved pipe drain, which originated in some contemporary building east of the excavated trench (Fig. 17; photograph in Emberling and McDonald 2003, fig. 9).

¹³ I am indebted to Jill Weber for this information, based on the faunal material from the 2004 season at Tell Brak.

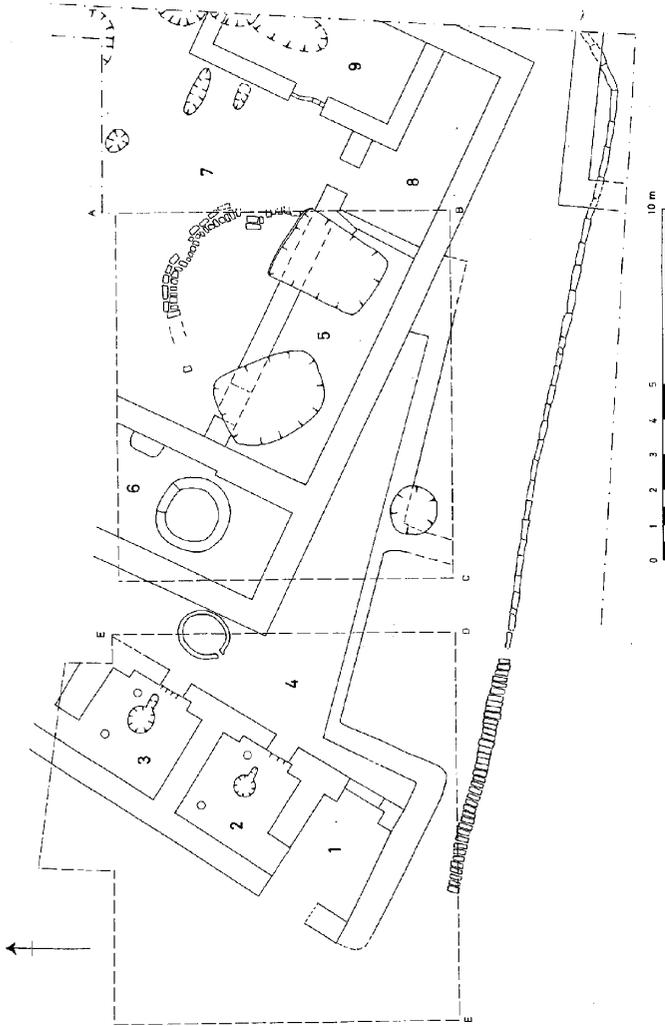


Figure 17. Plan of the Level 11 structures, part of the Late Uruk 'colony' at Tell Brak (built c.3400 BC). The main excavated building (rooms 5-9) extends considerably to the north, beyond the limits of the excavation, and was in use in both Levels 11 and 12. The pipe drain comes from some building further to the east and debouches onto waterproof *juss* (gypsum) bricks at the west; the semi-circular brick structure in courtyard 7 is made of the same material.

The Late Uruk occupation of Brak ended with as much mystery as it began, with the occupants of the site apparently simply departing, leaving their belongings behind: fortunate for the archaeologist, but puzzling. Although contact with the south appears to cease at other colony sites, this is not the case at Brak, presumably a reflection of Brak's geographical position (Oates and Oates 1991; 1993). The late fifth- to end of fourth-millennium sequence at Brak remains for the moment unparalleled, both in its length and in its evidence for early urban complexity. We have, moreover, in the large area now opened up, the possibility of extending this sequence still deeper into the fifth millennium, providing an even longer perspective on the growth of one of the world's first complex societies (Fig. 18b).

The Brak Sustaining Area Survey

Our most recent project is an intensive, four-season survey, begun in 2003, of the sustaining area of Tell Brak up to a twenty kilometre radius from the site, a total of over 1200 square kilometres (Fig. 1). The survey has been made feasible by the recent availability of LANDSAT data, GIS software and, most importantly, the cooperation of the Directorate-General in Damascus. We are also using 1960s CORONA satellite imagery, important in representing a landscape pre-dating the very intensive, pump-assisted irrigation agriculture of recent years. Other important resources are photographs taken in the vicinity of Brak by Père Poidebard in the 1920s (Poidebard 1934) and locally from a crop-spraying plane in 1984 (Fig. 19). Not surprisingly, the sites themselves are best visible on the older images.

We are carrying out two different types of survey, one over the larger area and based on the satellite images with a view to establishing changing patterns of settlement from prehistory to the present. The objective is not only a better understanding of the history of Brak itself but also to contribute to wider studies of the northern landscape. The second is an intensive field-walking exercise in the immediate vicinity of the tell itself, with sherd collection in random ten metre squares. ERMapper is used to overlay or 'drape' the older CORONA pictures, on which the sites are more visible, onto the recent LANDSAT images which provide both modern detail and more accurate site coordinates. With these, using hand-held GPS receivers, we can drive or walk to the sites visible on the



Figure 18. Area TW 'before and after': (a) before excavation in 1981 with visible vegetation mark, (b) at the end of the 2002 season, looking east. The Level 20 building is situated in the south-east corner, in the deepest part of the trench; the Level 18 cook-house was located in the western trench, where the excavations had reached Level 19 at the time of the photograph.

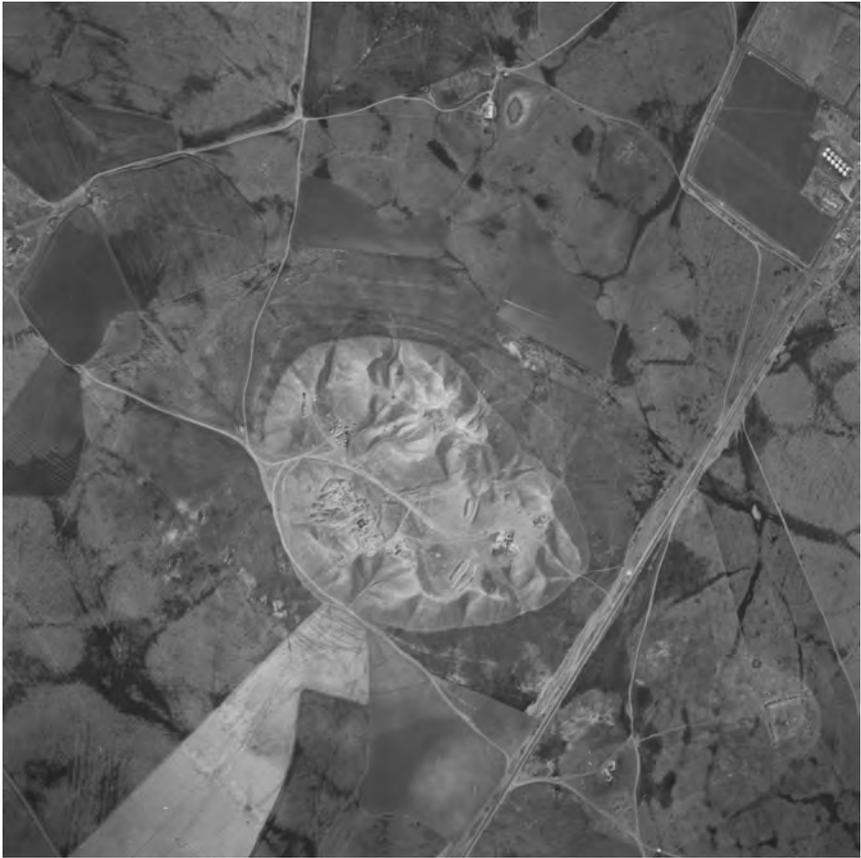


Figure 19. Vertical air photograph of Tell Brak taken in May 1984 (courtesy of Hartmut Kühne and Norbert Grundmann; photograph taken on behalf of the German expedition to Tell Shaikh Hamad in cooperation with the Syrian Agricultural Ministry and the Syrian Antiquities Department; photographer N. Grundmann, pilot Abbad Samman, co-pilot Hartmut Kühne; copyright Sh. Hamad Excavation 1984).

CORONA pictures. Moreover, with the use of infrared bands which highlight anthropogenic soils, even small settlement scatters of the type rarely found without intensive field-walking can be identified. Indeed we believe that this combination of techniques provides a method that is more efficient and certainly less time-consuming than field-walking. And certainly less exhausting.

Up to now we have completed two of the four projected seasons; 268 sites have been identified, together with an additional fifteen within the immediate suburbs of Brak itself (Fig. 20). Figure 21 shows all the sites

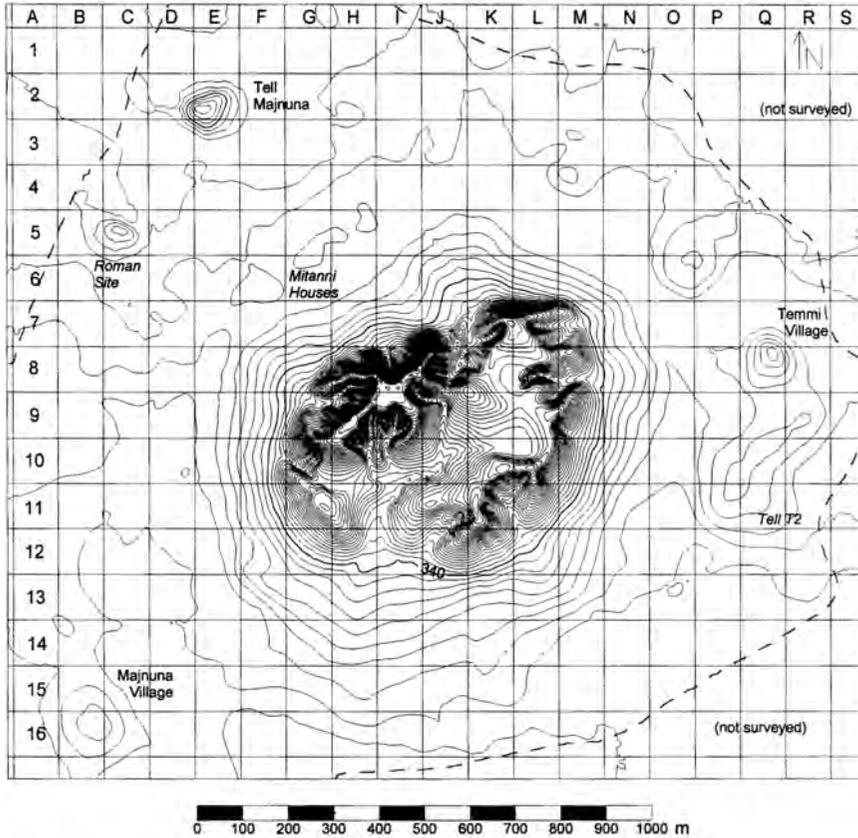


Figure 20. Topographic plan of Tell Brak and surrounding area, one metre contour intervals (courtesy of G. Emberling, T. Skuldbøl and T. Larsen); this detailed plan is being extended in the 2004 survey season, in order to include further late fifth/early fourth millennium settlement to the west of Majnuna village and the Roman castellum and surrounding Byzantine/Early Islamic town to the north-east (partly visible to the upper right of the tell in Fig. 23).

recorded up to now (268), with the exception of those immediately around Brak. One of many sites of unusual interest is Tell Grazil (BKS 220, the cluster near the top of the map due north of Brak), a large, important, yet previously unknown settlement of third- and second-millennium date.¹⁴ The earliest sites include Levallois flakes found on gravel knolls to the north-west of Brak and PPNB chipped stone from Brak itself and from a small, completely levelled and also previously

¹⁴ This site appears as Zil Saghir, the second word meaning 'small', on the satellite map published in Ur 2003, fig. 9; 'Umm Hijara' is BKS 216.

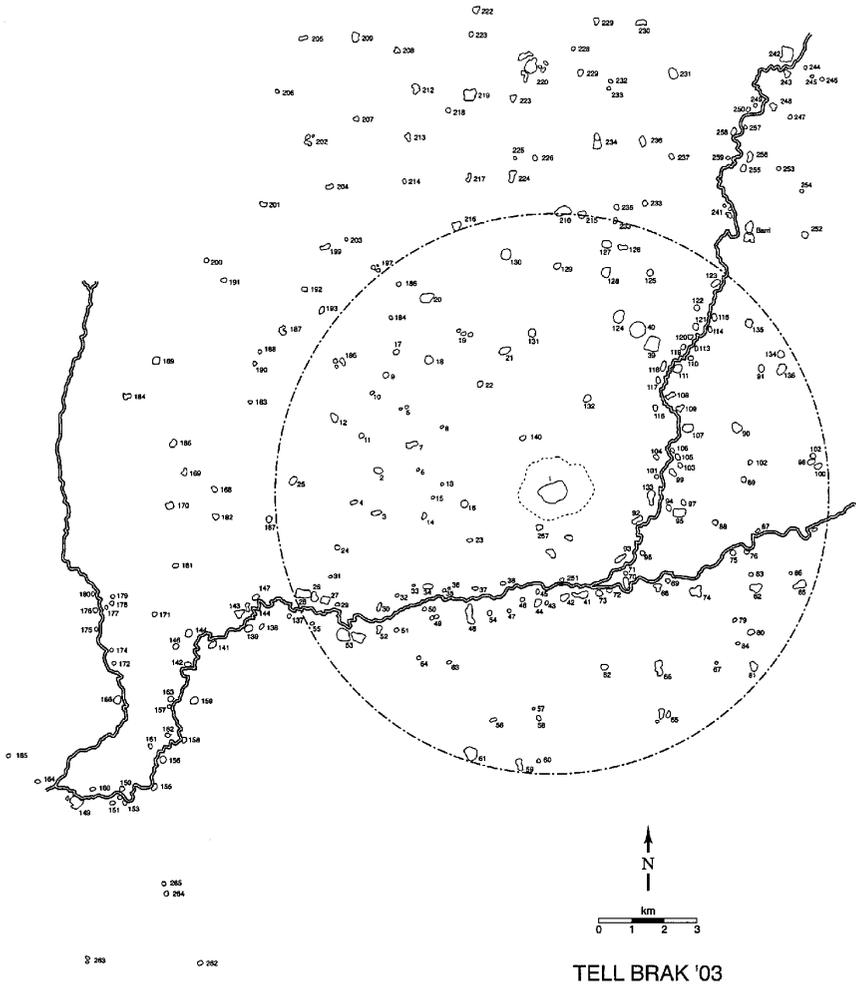


Figure 21. Sites surveyed and recorded during the 2002 and 2003 seasons.

unknown site near Tell Barri. Perhaps not surprisingly, the largest number of sites date to the Late Assyrian period (141 up to now), while before that time it is in the fourth millennium that both the site of Brak itself and the surrounding countryside are most densely populated, an observation not unrelated to the evidence for early urbanisation described above. Figure 22 illustrates both the unexpected concentration of population at Brak and the contemporary sites of late fifth-millennium, Early Northern Uruk attribution, a total of 97. Over the same area Parthian-Roman sites total only 96, though some of the latter are of course larger.

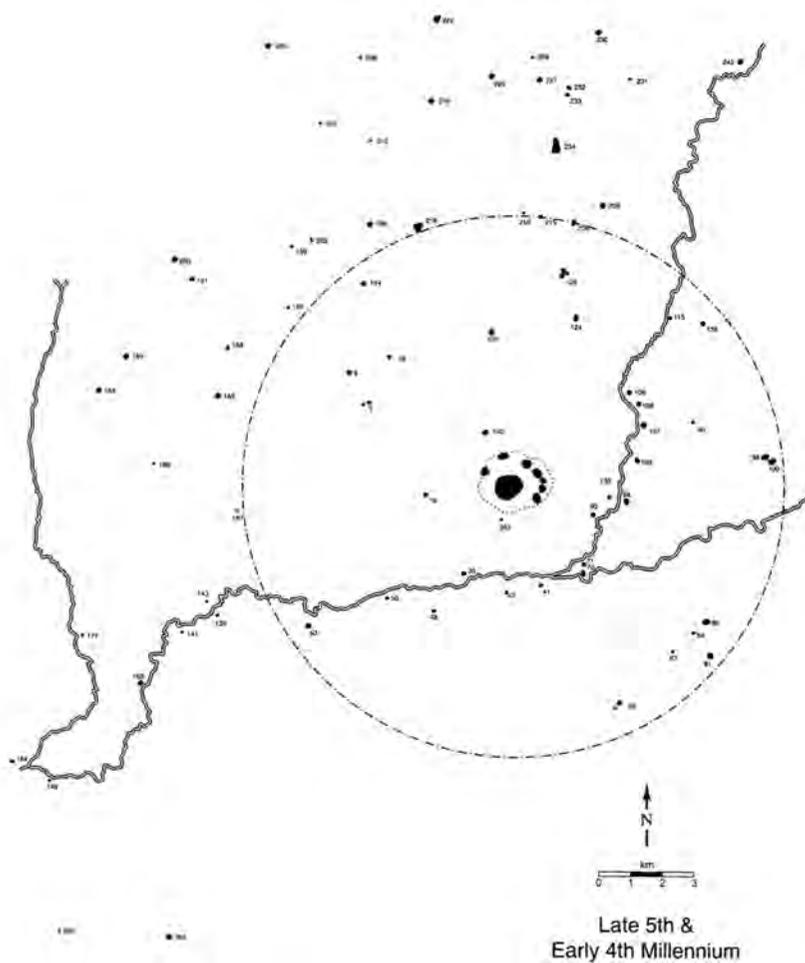


Figure 22. Sites of Early Northern Uruk/LC2 date (c.4200–3900 BC), identified in the first two survey seasons.

The intensive field-walking programme has already produced three previously unknown fourth-millennium settlements in the ploughed areas around Brak itself. It has also led to the investigation of an extraordinary feature south of the tell, which looks remarkably like a city wall, with roadways leading to three possible gates, though little is visible in the heavily ploughed surface and this observation remains to be confirmed (Fig. 23). We shall be examining this area more closely in the coming season (autumn 2004).



Figure 23. CORONA image (taken 11 Dec. 1967) showing Tell Brak, its outer ‘corona’ of satellite tells and the great number of ‘hollow ways’ leading to the site. Of especial interest is the ‘wall-like’ dark area to the south of the tell, with various hollow ways and their bifurcations leading to quite specific points on the ‘wall’, a heavily ploughed area to be investigated further in 2004.

Such ancient ‘roadways’ appear on the landscape as slight hollows, and we are attempting to analyse their dates by virtue of the associated sites. Of particular interest is the evidence for river crossings, and we believe that we have already identified a stone-built Roman crossing that had probably functioned in earlier periods as well owing to the natural stone in the river bed at this point (Oates and Oates 1990). Just upstream, east of Brak, there would seem to have been a crossing of Islamic date, while due south and down river from the Roman crossing, is a Byzantine example, also with large carefully cut stone, where a coin of Justinian was found.

The survey data are greatly increasing our understanding not only of the history of settlement but also of land use in a wider sense. Brak lies today approximately at the southern limit of rainfed cultivation, one of several environmental reasons for choosing to work at the site. Indeed the primacy of Brak, clearly visible on the survey maps, can be understood not only with respect to its ‘gateway’ status, dominating a major river crossing and the intersection of east–west/north–south routes, and controlling access to the largest dry farming area in Upper Mesopotamia



Figure 24. Mud-brick *diwan* in a village just south-east of Brak, a type of house built for the reception of visitors and now disappearing from the local landscape.

(Fig. 1), but the site may also have functioned as an interface between the well-watered plain to the north and semi-nomadic pastoralism in the drier steppe to the south, an important source of the wool that was a basic commodity in both the fourth and third millennia. At the same time the enormous body of archaeological data from Brak itself, including now over four millennia of palaeobotanical, faunal, environmental, ceramic, lithic and other data provide an invaluable framework within which to understand the wider settlement patterns, and how—and we hope why—these changed over time.

We are also recording the most interesting of the modern mud-brick structures, now all too rapidly disappearing from the landscape (Fig. 24), while our Syrian representative has been successful in stopping clay removal at one site and the massive bulldozing of several others. Certainly one of our aims is to inform local villagers of the remarkable legacy of their landscape and to hope to gain their cooperation in preventing further depredation.

The title of the lecture was ‘digging deeper at Tell Brak’. My meaning was not simply its literal depth, though this is considerable, but the greater depth of understanding of how societies grow, change and decline over a long period that, with patience, can be extracted from major multi-period sites such as Brak.

Note. I would like especially to thank the various institutions that have supported the work at Brak over many years, in particular the British Academy, the British School of Archaeology in Iraq and the McDonald Institute for Archaeological Research. We are also grateful to the National Geographic Society, the British Museum, the Metropolitan Museum of Art and the Humanities Research Board for their generous support. It is impossible to list the names of all the Syrian officials and students, the large number of specialists who have worked on the material from Brak, and the even greater number of site supervisors who have contributed immeasurably to the success of the work. Their names can be found in both the preliminary and final reports. Without them the project would not have been possible, and I am deeply grateful to them all.

The preliminary reports on the new survey project have yet to appear in print. I wish therefore to thank here, most warmly, those who are contributing to its success. We are especially grateful to Dr Tammam Fakouch, Director-General of Antiquities and Museums, and Dr Michel Al-Maqdissi, Director of Excavations, Damascus, for their friendly and unfailing assistance and support, not only on the survey but the excavations as well. Throughout the first two survey seasons we were ably assisted by Sd. Eyad Ganem, Representative of the Directorate-General; we are also grateful to Sd. Abdul Messih al-Baghdo, Director of Antiquities in Hasake for his continuing efforts on our behalf. The survey is part of the wider Tell Brak Project under the direction, until his death last spring, of Professor David Oates. I am the current Project Director, with Professor Henry Wright, to whom I am especially grateful, as Survey Field Director. Throughout this project we have been ably assisted by Jason Ur and Eric Rupley (2002, 2003) and, in 2003, by Helen McDonald, Philip Karsgaard and Harriet Martin together with Fahed Juma and Chris Martin who joined us for part of the season. In 2003 the very successful intensive survey in the immediate vicinity of Brak was initiated by Jason Ur, with the assistance of Philip Karsgaard. The objects from both the excavations and the survey remain, of course, in Syria and are now in the Deir ez-Zor Museum.

Most of all, I wish to thank David, who has guided my archaeological efforts over many years and who not only initiated and directed the Brak project but was responsible for the excavation of the remarkable third and second millennium buildings together with the architectural drawings. We shall miss him.

References

- Al-Gailani Werr, L., Curtis, J., Martin, H., McMahon, A., Oates, J. and Reade, J. (2002), *Of Pots and Plans, Papers on the Archaeology and History of Mesopotamia and Syria presented to David Oates in Honour of his 75th Birthday* (London).
- Algaze, G. (forthcoming), 'The Sumerian Takeoff' in Stone, E. (ed.), *Settlement and Society: Ecology, Urbanism, Trade, and Technology in Ancient Mesopotamia and Beyond. Festschrift in Honor of Robert McCormick Adams* (Los Angeles).
- Archi, A. (1998), 'The Regional State of Nagar According to the Texts of Ebla', *Subartu*, IV, 2: 1–15.
- Biga, M. G. (1998), 'The Marriage of Eblaite Princess Tagriš-Damu with a Son of Nagar's King', *Subartu*, IV, 2: 17–22.

- Catagnoti, A. (1997). 'Les listes des HÚB.(KI) dans les textes administratifs d'Ébla et l'Onomastique de Nagar' *MARI*, 8 (Paris), 563–96.
- Charles, M. and Bogaard, A. (2001). 'Third-millennium Charred Plant Remains from Tell Brak', in Oates *et al.* 2001, 301–26.
- Charpin, D. (1990), 'A contribution to the geography and history of the kingdom of Kahat', in Eichler, S., Wäfler, M. and Warburton, D. (eds.), *Tell al-Hamidiya 2*: 67–85 (Fribourg).
- Courty, M.-A. (2001), 'Evidence at Tell Brak for the Late EDIII/Early Akkadian Air Blast Event (4 kyr BP)', in Oates *et al.*, 367–72.
- Duistermaat, K. (2000), 'A View on Late Neolithic Sealing Practices in the Near East: The Case of Tell Sabi Abyad, Syria', in M. Perna (ed.), *Administrative Documents in the Aegean and their Near Eastern Counterparts* (Rome), 13–31.
- Eidem, J. (1997) (ed), 'The Inscriptions', in Oates *et al.* 1997, ch. 2.
- Emberling, G. and McDonald, H. (2002), 'Recent Finds from the northern Mesopotamian city of Tell Brak', *Antiquity*, 76: 949–50.
- (2003), 'Excavations at Tell Brak 2001–2002: Preliminary report', *Iraq*, 65: 1–75.
- Felli, C. (2003), 'Developing Complexity, Early to Middle Fourth-millennium Investigations: the Northern Middle Uruk Period', in Matthews (ed.), 53–94.
- Frayne, D. (1993), *Sargonic and Gutian Periods (2334–2113 BC)*, The Royal Inscriptions of Mesopotamia, Early Periods/Vol. 2 (Toronto).
- Gibson, M., Al-Azm, A., Reichel, C., Quntar, S., Franke, J., Khalidi, L., Hritz, C., Altaweel, M., Coyle, C., Colantoni, C., Tenney, J., Aziz, G. and Hartnell, T. (2002), 'Hamoukar: A Summary of Three Seasons of Excavation', *Akkadica*, 123: 11–34.
- Hansen, D. P. (2001), 'The Reclining Human-faced Bison Sculpture from Area SS, in Oates *et al.* (2001), 257–63.
- Ismail, F., Sallaberger, W., Talon, P. & Van Lerberghe, K. (1996), 'Administrative Documents from Tell Beydar', *Subartu* 11.
- Jasim, S. A. and Oates, J. (1986), 'Early tokens and tablets in Mesopotamia: new information from Tell Abada and Tell Brak', *World Archaeology*, 17/3: 348–62.
- Mallowan, M. E. L. M. (1947), 'Excavations at Brak and Chagar Bazar', *Iraq*, 9.
- Matthews, D. and Eidem, J. (1993), 'Tell Brak and Nagar', *Iraq*, 55: 201–7.
- Matthews, R. (2003) (ed.), *Excavations at Tell Brak*, vol. 4: *Exploring an Upper Mesopotamian regional centre* (McDonald Institute Monograph).
- Matthiae, P., Pinnock, F. and Matthiae, G. S. (1995) (eds.), *Ebla, Alle origini della civiltà urbana* (Milan).
- Michalowski, P. (1985), 'Third millennium contacts: observations on the relationship between Mari and Ebla', *Journal of the American Oriental Society*, 105: 293–302.
- (2003), 'Inscriptions from Tell Brak, 2000, 2001 and 2002', in Emberling and McDonald (2003), 54–60.
- Oates, D. (1968), *Studies in the Ancient History of Northern Iraq* (Oxford).
- (1982), 'Excavations at Tell Brak, 1978–81', *Iraq*, 44: 187–204.
- and Oates, J. (1990), 'Aspects of Hellenistic and Roman Settlement in the Khabur Basin', in Matthiae, P., Van Loon, M. and Weiss, H. (eds.), *Resurrecting the Past, A Joint Tribute to Adnan Bounni* (Leiden).
- (1991), 'Excavations at Tell Brak 1990–91', *Iraq*, 53: 127–45.
- (1993), 'Excavations at Tell Brak 1992–1993', *Iraq*, 55: 155–99.

- Oates D., Oates, J. and McDonald, H. (1997), *Excavations at Tell Brak*, vol. 1: *The Mitanni and Old Babylonian Periods* (McDonald Institute Monograph).
- (2001), *Excavations at Tell Brak*, vol. 2: *Nagar in the third millennium BC* (McDonald Institute Monograph).
- Oates, J. (1987), 'A Note on 'Ubaid and Mitanni Potery from Tell Brak', *Iraq*, 49: 193–8.
- (1993), 'Trade and Power in the fifth and fourth millennia BC: new evidence from Northern Mesopotamia', *World Archaeology*, 24: 403–22.
- (2002), 'Tell Brak: the Fourth Millennium Sequence and its Implications', in J. N. Postgate (ed.), *Artefacts of Complexity*, 111–22 (British School of Archaeology in Iraq).
- (2003), 'A Note on the Early Evidence for Horses and the Riding of Equids in Western Asia', in Levine, M., Renfrew, C. and Boyle, K. (eds.), *Prehistoric steppe adaptation and the horse* (McDonald Institute Monograph).
- (forthcoming), 'The Proto-Urban (Uruk) Period in Northeast Syria', in Matthiae, P., Al-Maqdissi, M. and Orthmann, W. (eds.), *The Archaeology and History of Syria*, vol. 1.
- and Oates, D. (1997), 'An Open Gate: Cities of the Fourth Millennium BC (Tell Brak 1997)', *Cambridge Archaeological Journal*, 7: 287–97.
- (2002), 'The Reattribution of Middle Uruk Materials at Brak', in Ehrenberg, E. (ed.), *Leaving No Stones Unturned, Essays on the Ancient Near East and Egypt in Honor of Donald P. Hansen* (Winona Lake, IN), 145–54.
- (2004), 'The Role of Exchange Relations in the Origins of Mesopotamian Civilization', in Cherry, J., Scarre, C. and Shennan, S. (eds.), *Explaining social change: studies in honour of Colin Renfrew* (McDonald Institute Monographs), 177–92.
- (forthcoming), *Excavations at Tell Brak*, Vol 3, *The 'Ubaid and Uruk Periods* (McDonald Institute Monographs).
- Pittmann, H. (2002), 'Bears at Brak', in Al-Gailani Werr *et al.* (eds.), 287–96.
- Poidebard, A. (1934), *La Trace de Rome dans le désert de Syrie* (Paris).
- Reichel, C. (2002), 'Administrative Complexity in Syria during the 4th Millennium BC—the Seals and Sealings from Hamoukar', *Akkadica*, 123: 35–56.
- Rothman, M. (2001) (ed.), *Uruk Mesopotamia and its Neighbors* (Santa Fe).
- Sallaberger, W. (1996), 'Grain Accounts: Personnel Lists and Expenditure Documents, in Ismail *et al.* (eds.), 89–106.
- (1999), 'Nagar in den frühdynastischen texten aus Beydar', in Van Lerberghe, K. and Voet, G. (eds.), *At the Crossroads of Civilisations in the Syro-Mesopotamian Realm, Proceedings of the 42nd RAI* (Leuven), 393–407.
- Ur, J. (2003), 'Using CORONA Satellite Photographs to Study Ancient Road Networks: A Northeastern Syrian Case Study', *Antiquity*, 77: 102–15.
- Van Lerberghe, K. (1996), 'The Livestock', in Ismail *et al.* (eds.), 107–17.
- Weber, J. (2003), 'Animal processing in the fourth millennium BC at Tell Brak: Preliminary Results', in Emberling and McDonald (2003), 22–6.
- Weiss, H., Courty, M-A., Wetterstrom, W., Guichard, F., Senior, L., Meadow, R. and Curnow, A. (1993), 'The genesis and collapse of third-millennium north Mesopotamian civilization', *Science*, 261 (August 20), 995–1004.
- Wilhelm, G. (1991), 'A Hurrian Letter from Tell Brak', *Iraq*, 53, 159–68.

- Wilkinson, T. J. (2000), 'Regional Approaches to Mesopotamian Archaeology: The Contribution of Archaeological Surveys', *Journal of Archaeological Research*, 8: 219–67.
- Wright, H. T. (2002), 'Arrows and Arrowheads in the Uruk World', in Al-Gailani Werr *et al.* (eds.), 373–8.
- and Rupley, E. (2001), 'Calibrated Radiocarbon Age Determinations of Uruk-Related Assemblages', in Rothman (ed.), 85–122.