Proto-Urbanism in the Late 5th Millennium BC: Survey and Excavations at Khirbat al-Fakhar (Hamoukar), Northeast Syria

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***Abstract*:**
Excavation and systematic surface collection since 1999 have revealed the outlines of a unique site in northern Mesopotamia. Khirbat al-Fakhar is an extensive settlement of 300 hectares, primarily occupied during the LC 1-2 periods (ca. 4400-3800 cal BC). Systematic surface collection, satellite imagery analysis, and targeted excavation allow a preliminary characterization of its settlement, in particular the abundance of evidence for intensive obsidian manufacture. This unexpectedly large and early settlement presents problems of demography, nature of sedentism, permanence of occupation, and obsidian manufacture and trade. In this article we discuss these issues in light of current narratives on the development of societal complexity and urbanism in the region and argue that the site of Khirbat al-Fakhar presents a unique form of settlement that has characteristics of both villages and cities, qualifying it as proto-urban.

Keywords: *Late Chalcolithic, Syria, proto-urbanism, obsidian*

I. Introduction: The Urban Transition in Mesopotamia

The seemingly abrupt transition from widespread village life to urbanism is one of the most vexing issues in Near Eastern archaeology. After millennia of sedentary agricultural life in small villages, human communities began either to agglomerate in discrete places or to remain in them long after former social and demographic thresholds for fissioning had been reached. Experiments in settlement form that have some (but not all) urban characteristics were found already in the PPNB, but it was not until the 4th millennium BC in Mesopotamia that such settlement forms became uniform, widespread, and durable. At this time, we see the urban formation at Tell Brak in northern Mesopotamia, ca. 3800 BC[1], and at some point in the 2nd half of the 4th millennium at Uruk in southern Mesopotamia[2].

To define cities, we use a combination of demographic and functional variables. Cities are densely settled, spatially extensive places with high populations relative to neighboring sites; they act as centers for various economic, political, or ideological activities not found in those smaller neighboring sites. Rather than using a trait-list approach[3], it is better to envision urbanism as a variable phenomenon consisting of a range of different criteria, not all of which will be apparent in all sorts of ancient cities[4]. Most of the variables listed above skew in the urban direction with regard to the Mesopotamian sites generally labeled as "cities" in the 4th millennium BC and are found wanting for Ubaid and earlier sites.

At issue here is the nature of the transition between small and largely homogenous villages and spatially extensive, internally complex cities. In non-urban societies, no social mechanism exists to resolve the inevitable intra-community disputes that emerge as households grow, merge, and attempt to reproduce themselves; the most common result is settlement fission and the creation of new villages elsewhere[5]. Communities must develop institutions to retain would-be out-migrants, or to accommodate immigrant households.

In the late 5th millennium, northern Mesopotamian communities lived in small villages generally not exceeding 4-5 hectares (Fig. 1). This time period, variously called the LC 1 and 2, Terminal (or Post) Ubaid, or Gawran, is known from excavations across the northern Fertile Crescent in Syria, Turkey, and Iraq[6]. The most extensive excavations were conducted at the small site of Tepe Gawra in the hinterland of Mosul in Iraq. This work and its publication[7] have provided an unparalleled dataset that has centered almost all subsequent discussion of this time period on this site[8]. These various discussions have focused on particular aspects of increasing complexity at this "proto-urban" phase of Mesopotamian prehistory, in particular aspects of economic administration (sometimes anachronistically labeled as "bureaucracy")[9], inequality as evidenced through architecture[10], the development

[1] Oates, et al., 2007; Ur, et al., 2007.
[2] Finkbeiner, 1991.
[3] E.g., Childe, 1950.
[4] Cowgill, 2004.
[5] Reviewed in Bintliff, 1999; Bandy, 2004.
[6] See recent reviews in Butterlin, 2009; Ur, 2010a.
[7] Tobler, 1950.
[8] see especially Rothman, 2002b; and papers in Rothman, 2001; Postgate, 2002; Butterlin, 2009.
[9] Rothman, 2002b.
[10] Aurenche, 1981.

of centralized religious institutions[11], or the emergence of secular power ("chiefdoms," in neo-evolutionary terminology)[12].

Excavation and survey since 1999 at the site of Khirbat al-Fakhar (also known as the "Southern Extension" of Hamoukar[13]) has the potential to shed some light on the transition between small fissioning villages and large urban centers. Khirbat al-Fakhar is at present unique in Near Eastern archaeology in its immense size (300 hectares), morphology, and early date (LC1-2, ca. 4300-3800 BC). Our work thus far has focused on several urban aspects: spatial scale and structure, demography, and economic specialization. In some respects, the site shows the characteristics of classic Mesopotamian cities: it is spatially extensive and shows remarkable centralization of obsidian trade and production within its region. Yet it lacks other key variables associated with urbanism. Khirbat al-Fakhar thus appears to represent an intermediate form between villages and cities, a "proto-urban" experiment that is otherwise unknown in the prehistory of Mesopotamia. We present here the results of landscape research at the site (remote sensing and surface collection), the initial excavations, and preliminary analyses of ceramics and lithic production. Only through this combination of extensive and intensive research methodologies can we address the significant issues of sedentism, urbanism, and craft specialization that are raised by this site.

II. Excavations

Questions about demography, permanence of occupation, and means of economic subsistence in the LC 1 and 2 periods inspired the program of excavations in 2005-2008. Excavations at Khirbat al-Fakhar began in 2000, under the direction of Tony Wilkinson who initially investigated the nature and depth of occupation in the non-mounded areas of the site. The nine soundings excavated within the 300 hectare area delimiting the edges of the LC1-2 site demonstrated evidence for a shallow deposit of occupation with remains of poorly-preserved architecture. It had been suggested at the time that the Khirbat al-Fakhar settlement could have been a seasonal residence for mobile groups who used the site for exchange and specialized manufacturing activities[14]. The central mounded area, however, remained untested by excavation. The 2005- 2008 excavations were aimed primarily at investigating the central mounds. Excavation trenches (Fig. 2) were placed in four different areas of the mounded center, designated ZI, ZM, ZD1/2 and ZD3/4. One sounding was also excavated in the lower fields at the southwestern edge of the site (Sounding 10) in an area of high density obsidian and pottery scatters.

Area ZI

Area ZI yielded Ubaid period occupation levels disturbed by Parthian burials. Despite the high concentration of LC 2 pottery on the surface of this area, no corresponding archaeological deposits were found. Rather, it appeared to have been strictly a dump area during the LC 1-2, disturbed by modern plowing, and leaving Ubaid deposits immediately below the modern surface. The lithic assemblage was entirely devoid of obsidian, a rather stark contrast with the situation in the LC levels in Area ZD3/4 (described below).

[11] Rothman, 2009.

[12] Forest, 2001.

[13] Hamoukar is a multiperiod mound that originated in the LC3-4 but grew to its full 105 ha extent in the EBA. On the spatial relationship between the LC3-5/EBA mound at Hamoukar and its southern extension at Khirbat al-Fakhar, see Ur, 2010b.

[14] Wilkinson, 2002.

Area ZM

In this 10x10 m trench, the uppermost level had late Islamic graves excavated into a substantial architectural level of early Islamic date. Directly below this level were LC deposits. The uppermost level was completely destroyed by leveling in the Islamic period. The better-preserved level beneath it contained a round oven and associated ash pit, a bin and a subterranean storage pit, all of which were constructed from distinctive red mudbricks.

Surfaces associated with these features were paved with sherds. One such paving was of considerable size (3 x 1.5 m) and was surrounded on its southeast edge by a curved one brick-wide wall. Intact obsidian blades and large cores were found on and around one of these sherd pavements. The subterranean storage feature, sealed by a round basalt capstone and plastered with red clay, was bell shaped and completely empty of any fill for a depth of 110 cm. The bin contained loose fill but also produced a large number of obsidian cores and large flakes.

Objects found in this area include two intact hut symbols of the closed-eye type, as well as a number of the standard hut symbols with wide open eyes (Fig. 3). A sealing found in this area carries the impression of one of the seals recovered in Area ZD.

The setting of these features suggest a domestic context with an associated obsidian workshop, as it produced the greatest number of obsidian cores, debitage and waste yet excavated on the site (see Section V below).

Area ZD1/2

In this shallow 10x20 m excavation area, a surface characterized by discontinuous sherd scatters was found across the entire area. Recurrent features included linear scatters of LC pottery sherds and baked brick fragments, which were possibly the remains of ephemeral structures. Also common on these surfaces were large broken pots, an abundance of clay hut symbols and grinding stones, and an *in situ* large mortar with its pestle still inside it.

Area ZD3/4

A 10x20m trench was excavated in Area ZD3/4 and revealed Parthian levels overlying three levels (1, 2 and 3) of LC occupation, in addition to an earlier level (4) known only from a small sounding. Level 4 was only reached in the northwest corner of Area ZD, and contained walls with a different orientation to those of the building above it.

Level 3 was architecturally the most complex in Area ZD, and contained a substantial multi-roomed building. The construction of the building was an agglutinative process with three sub-levels (3a, b and c) in which the space was partly rearranged and walls were rebuilt.

In sub-phase 3C, the earliest excavated to date (Fig. 4a), large rooms were located in the western half of the building, a series of long narrow rooms in the east, and small rooms and an open-air courtyard with installations to the southwest. The building's western outer wall was 70 cm thick. The courtyard contained a large basin with a vault-shape plan and a sherd scatter around it on the west and south. The basin may have been used for clay mixing. Two small rooms (17, 18) communicated with the courtyard in its eastern end. Room 17 contained a small *tannur* cut by a later Level 2 well. An ashy midden area in the exterior space west of the building contained a large quantity of animal bones, pottery sherds, obsidian blades and debris, hut symbols, and piles of baked and unbaked bricks.

North of the courtyard were four square rooms (4, 7, 13 and 14, each roughly 2.5 x 2.5 m). The floor of Room 4 was plastered with fine clay. In room 7, a hemispherical seal of black

stone was recovered. East of these rooms were six narrow rooms (11, 12, 15 16, 19 and 20) roughly 1.5x 1.2 m in size. A couple of "Wide Flower Pots" (see Section III for description), animal bones, and an obsidian blade core were recovered on the floor of room 11, while room 12 produced a wide flower pot. Room 19 had a small fire pit or hearth embedded in its southern wall.

Several changes occurred in sub-level 3B (Fig. 4b). Four rooms (17-20) were demolished to create a space for a large thick-walled kiln or oven in the southeastern area of the trench. This firing structure was roughly 3m in diameter and had two openings. Elsewhere in the building, rooms were filled with brick debris to raise the floors. Most walls were rebuilt while others were added, and some were replaced, in some cases with narrower walls only a single brick wide.

After the remodeling of the building, the courtyard basin was still in use with another layer of the sherd pavement running along its top edge. At this time, the oven may have been used to fire ceramics. West of the building, the sub-level 3C midden continued to be used, now confined by a series of poorly preserved walls that had been damaged by pits.

The most characteristic trait of sub-level 3A (Fig. 4c) was the extensive reinforcement of several single-brick walls with another interior wall; sometimes these were built directly against the external wall and sometimes a gap of 20-30 cm remained in between and was filled with clay. These reddish internal walls contrast strongly with the brown bricks of sub-phase 3B walls. The new internal walls blocked some doorways. Two new rooms were constructed in what was once an exterior space in the west; one of them contained a fire installation with a smooth compact plaster surface and an associated pit full of soft dark ash.

Several finds suggest textile production in this building in sub-level 3A. The hard-plastered floor of Room 6 had two small postholes (6 cm diameter) opposite each other in the room's corners; these may have been postholes for loom supports. Furthermore, a significant amount of spindle whorls came from the fill of Rooms 11 and 12. Micro-wear analysis has not yet been conducted on the spindle whorls or on artifacts that may have functioned as loom weights. While textile production is suggested at the site, it is impossible as of yet, to determine to what extent this activity may have occurred.

In two instances, objects were deposited in the spaces between the double walls. A hoard between the two southern walls of Room 4 contained large characteristic obsidian preparation flakes knapped from the same core, stone pestles, a black hemispherical seal, and a large slab of sealing clay. Likewise, a whole vessel, an obsidian core, spindle whorls, and a hut symbol were recovered from the fill at the base of the double wall between Rooms 9 and 11.

The courtyard was used for work activities, particularly obsidian knapping, and the oven/kiln continued to be in use. An ashy refuse full of ceramic sherds, bone, obsidian debris and baked bricks characterized deposits in the midden. Two *pisé* hemispheres and one mudbrick stool-like feature were uncovered alongside the external southern wall of room 3. They were made of compact smoothed clay roughly 40 cm in diameter. Given their location in a courtyard and their proximity to abundant obsidian debris, they may have been work stools used by obsidian knappers.

The large multi-room building in Level 3 may represent an extended family household, the members of which carried out various production activities within their dwelling. One of the main activities was obsidian blade production, which seems to have taken place in the external space to the west of the building as evident by the scatter of obsidian debitage on the external surfaces as well as in the household midden.

In Level 2, the entire Level 3 building was deserted and the area was turned into an open work area of pits and sherd scatters (roughly 1-2 square meters in size). The most prominent feature of this level was a 3.5 m diameter pit kiln that continued to be in use into Level 1. In addition to ash, ceramic sherds, and slag, the kiln contained an obsidian blade core and a number of bladelets, two sealings, and three hemispheric black stone seals (Fig. 5). Ash from the kiln was dumped to the east of the feature. With the exception of a single brick bin, no other architecture appeared in this level. Sherd scatters were irregularly distributed, possibly delimiting activity areas. A substantial quantity of obsidian representing the entire blade core reduction sequence recovered on various surfaces, in dump areas, and in pits, demonstrates that this outdoor activity area became a major locale for obsidian knapping.

Level 1, the final LC occupation in Area ZD3/4, was the most poorly preserved due to soil formation processes, disturbance by Parthian activities, and modern plowing. The Level 2 pit-kiln continued to be in use, but the surrounding activity areas saw a slight reorganization. A partially excavated pisé structure south of the kiln contained small grinding stones, obsidian blades, and at least five large storage jars on a lensed clay floor. The northeastern corner of the trench was heavily pitted and may have been a major dump area in this phase. In one of these pits a large number of sealings were recovered.

In sum, the excavations reveal household architecture and assemblages that appear not to differ substantially from other contemporary LC sites in northern Mesopotamia, with the exception of the distinctive emphasis on obsidian production (discussed further below). The relatively small scale of the excavations must be taken into consideration when evaluating this conclusion, but based on the data presently available, the nature and scale of activities undertaken appear to be largely comparable to those at other sedentary settlements. This assessment is further borne out by the ceramic assemblage.

III. The LC1-2 Ceramic Assemblage

The ceramic assemblage is of particular importance to our research program for two reasons: in the absence of radiocarbon dating, it is the primary means for chronological control, and it can offer an array of clues to household economic activities, including aspects of sedentary or mobile lifeways. Here we describe primarily the material from Area ZD3/4.

Bowls (Fig. 6)

The most common bowl in all levels is a coarse flat-based mass-produced bowl (the "Wide Flower Pot," hereafter WFP) that composes about 85% of the entire assemblage (Fig. 6 nos. 1-4). These bowls were either handmade or mold-made in a coarse ware that includes abundant chaff and mineral inclusions. Most were not fully oxidized and retain a grey or black core, which indicates that they were probably fired at a low temperature. They vary in shape, color, and size. The color range is orange, buff and brown, with brown being standard. Rim diameter varies from 18 to 50 cm, with an average of 20 cm. Height ranges from 4 to 8.3 cm with 6-7 cm being the average.

Also common is a bowl with an inwardly bevelled rim (Fig. 6 nos 5-10), which was handmade and finished on a wheel. Surfaces are mostly washed but some examples were scraped on the exterior. Two complete examples had ring bases that were probably made separately on a wheel. Common decorative practices included rim incision, bands of black paint, and painted blobs on the inner rim.

Another common form is a globular bowl with in-turned rims, sometimes shaped with a slight carination (Fig. 6 nos. 11-14). These bowls are made of fine clay with both chaff and

sand inclusions, but few can be classified as fine ware. They are mostly handmade, sometimes finished on a wheel. A few of these bowls were slab made. They are smaller than the WFPs and are inwardly bevelled rim bowls with an average rim diameter of 10 cm. Two sherds of this type were decorated with black paint, one with simple horizontal bands and a sprig design above (Fig. 6 no. 14), and the last example had a range of black and striped rhombuses (Fig. 6 no. 13).

Other bowl forms include carinated fineware bowls that are yellow in color, hand-made and wheel finished (Fig. 6 nos. 15-18). A few are categorized as blister ware, which indicates a slab manufacturing technique. Beaded rim bowls occur infrequently; they are made of mineral tempered paste and the surface is mostly treated using techniques such as smoothing, burnishing, and sometimes a red slip (Fig. 6 nos. 19-20). A handmade, red slipped and burnished large and deep triangular rim bowl only occurs in Level 1 (Fig. 6 nos. 21-22).

Pots (Fig. 7)

Hole-mouth pots occur in considerable numbers. In Level 3, most have a simple rim and some occur with a small spout (Fig. 7 nos. 7-11). They are mostly gray in color, although some are brown, of relatively fine fabric with mineral and shell inclusions. Some specimens were finished on a tournette. Surfaces are mostly burnished and a few examples have red slip on interior and exterior surfaces, but not covering the whole surface. In Levels 2-1 a beaded rim form predominates (Fig. 7 nos. 8, 10). Almost 62% of Level 2 sherds of this type were slipped compared to 5% in Level 3. On the beaded version, many of the spouts were not intended to be functional.

A distinctive large form has a wide double rim that forms a broad channel around the top of the vessel. The inner rim is usually pierced, probably for drainage of liquid from the channel into the vessel. Two versions of this pot can be distinguished. The first is crudely made with both rims at roughly the same height (Fig. 7 nos. 1-2). The second form is burnished and in some cases slipped in black or red, with the outer rim at twice the height of the inner rim (Fig. 7 no. 3). In Level 3, the first form is more frequent (83.4% of examples), while the second form is more common in Level 2 (57% of total sherds of this type), a trend that continues in Level 1.

U-shaped pots (Fig. 7 nos. 4-6) are large vessels of a rather fine fabric. These are handmade, sometimes wheel finished, well fired and exhibit light surface colors. Some are painted with black bands, with a single example exhibiting a sprig design. These pots are very infrequent in Levels 2-1 (Fig. 7 no. 6).

Less frequent types include a globular beaded rim pot (Fig. 7 nos. 12-16) that was made of fine clay using the slab technique, finished on a wheel, and fired to a yellow color. In Level 1, most pots include a pinched lip (Fig. 7 no. 14). A medium globular pot with a straight spout (Fig. 7 nos. 17-19) was handmade and showed great investment in surface treatment; most were washed, and many were painted or slipped. One sherd of this type is decorated with simple bands and cross-hatched triangles (Fig. 7 no. 19). Another pot has a globular body and a flaring ledge rim (Fig. 7 no. 20).

Jars (Fig. 8)

Flaring rim jars occur with two slightly different rim morphologies. The first is outwardly flaring (Fig. 8 nos. 1-3), while the second is only slightly flaring (Fig. 8 nos. 4-5). These rims were attached to large well-fired storage jars with globular bodies of fine to medium coarse fabric with mainly mineral inclusions. The bodies and rims of these jars were handmade, and

refined on a slow wheel. The rim was later attached to the body. Paint was applied to some jars of this type in the form of simple black bands on the rim, sprig designs, and cross hatched triangles combined with checkerboard designs (Fig. 8 no. 2). In Level 2, a fineware version first appeared, with a characteristic "blister ware" fabric caused by deficiency in firing slab manufactured ware.

Small jars with short necks or neckless rims (Fig. 8 nos. 9-11) were handmade; fineware examples had signs of slab manufacture. Large jars of this type were made of a medium ware while the small ones were made of a fine ware, and some were painted. Internally hollowed rim jars, which represent an early form of later LC 3 rims, are another variation of this jar tradition (Fig. 8 nos. 12-13). Finally, an infrequent jar type (Fig. 8 no. 14) was coarsely made and exhibits a vertical neck on a globular shouldered body.

Beakers (Fig. 8)

Beakers were made in a fine fabric with fine mineral inclusions using the slab technique. Most were impressed, incised, punctured or decorated with appliqué patterns. The most frequent decoration found includes a pattern of notched perpendicular lines and impressed rosettes arranged in parallel vertical lines (Fig. 8 nos. 15-16). Less common variations include the punctured type (Fig. 8 no. 17) or a pattern of diamonds or triangles impressed with the end of a stylus-like object. Another type of beaker has horizontal incision (Fig. 8 nos. 18-19).

Other Types

Of particular interest is the considerable number of painted body sherds with various sprig patterns that were recovered, both in surface and excavation assemblages (Fig. 9). This decorative type occurs on a range of vessel forms. Footed cups were handmade of rather coarse ware with smoothed surfaces. Another interesting vessel type is a funnel, which is coil manufactured with smoothed surfaces. Miniature crudely-made cone-shape cups and large ceramic ladles were also found.

The Date and Function of the Ceramic Assemblage

At the time of the Tell Hamoukar Survey, the surface assemblage of Khirbat al-Fakhar was given a general LC 1-2 designation[15], on the basis of comparisons with the Tepe Gawra sequence and other LC chronological schemes for northern Mesopotamia[16]. Some of the common diagnostic types found by the survey, such as sprig ware and the U-shaped urn, are characteristic of Gawra Level XII, which provides the primary dataset for the LC 1 period. Many other types, however, are characteristic of the LC 2 (e.g., decorated beakers) or span the two periods. A recent assessment of the excavated ceramic sequence of Area ZD3/4 attributed it to the LC 2 period, on the basis of parallels with the Brak TW sequence, and because of doubts about the chronological significance of sprig ware[17]. At the time of writing, radiocarbon samples from the excavations have not been evaluated, making it difficult to precisely position the ceramic assemblage excavated from the site within the LC1-2.

As with the architecture, the excavated ceramic assemblage is remarkably similar to that of smaller contemporary LC sites in northern Mesopotamia. Of particular interest is the frequent

[15] Ur, 2002a, 2010b.
[16] Rothman, 2002a; Schwartz, 2001.
[17] Al Quntar, 2009.

occurrence of forms connected to the processing, cooking, and storage of agricultural products. Large ceramic forms are known in pastoral nomadic households, but in small quantities and as fixtures.[18] While not quantified, a qualitative assessment suggests that the rate of midden discard was equivalent to, or in excess of, the rate found in later and unambiguously sedentary settlements in the region, and radically in excess of the surface assemblages of ethnographically documented campsites.[19]

IV. Production, Consumption and Trade in Obsidian

In addition to the large ceramic corpus, excavations at Khirbat al-Fakhar have produced a significant assemblage of obsidian blade manufacturing products that is until now, unparalleled at contemporary Mesopotamian sites. Based on survey and excavation data, intensive production and consumption of obsidian blades are attested across the 300 hectare site. Craft specialization is partially elucidated by the sheer amount and nature of production waste (predominantly obsidian and ceramic) found in discard middens and pits associated with each of the structured sedentary households in the central mounded area of the site. The obsidian data, when viewed in conjunction with the architectural, ceramic, and survey data available for the site, provide a strong argument for partial permanence of occupation driven by increased craft production activities that include obsidian blade production and also involve blade consumption for craft activities. While these characteristics of Khirbat al-Fakhar stray from those expected for proto-urban sites (large settlement size at low occupation density; lack of centralized institutions), dense obsidian production output and consumption across the entire site and in the context of other craft activities are difficult to categorize in the same way as earlier sites in the region, qualifying it instead as proto-urban.

One of the most striking statistics generated from the lithic study regards the ratio of obsidian to other stone types used for tool production at the site. Obsidian accounts for 97% of the lithic assemblage from excavated deposits in all three levels (I, II and II) of occupation at Khirbat al-Fakhar (Fig. 10). Without taking other variables into account, this percentage alone is unprecedented for sites of the period in this region.

Quantities of obsidian from excavated LC1-2 levels exceed 5000 obsidian blades and blade production debris. As of 2008, just over 3000 pieces have been studied; these pieces can be broken down into 70% blade and blade fragments, 24% cores and blade preparation debris and 6% tools such as scrapers made on roughout and preform flakes (Fig. 11). Blade preparation debris includes few neo-cortical flakes, and a large number of blade cores, crested and plunging blades, and platform preparation flakes such as tablets (Fig. 12). The quantities of obsidian as well as the technological stages present across the site attest to a production center with direct relationships to at least one major source supplying the raw material at distances often exceeding 300 kilometers[20].

Neo-cortical flakes occur in small numbers alongside diagnostic elements of all stages of blade core preparation and debitage at Khirbat al-Fakhar, suggesting that most obsidian reached the site as largely decorticated nodules. The blade manufacturing process is present in different degrees in all of the households excavated thus far. Pressure debitage was the main technique used for blade extraction (Fig. 13). Direct percussion was used prior to pressure debitage for the making of initial roughouts, the maintenance of core platform and

[18] See especially Cribb, 1991: 75-79.
[19] Ur and Hammer, 2009.
[20] Khalidi, et al., 2009.

surface convexities, and for reparation of accidents. Indirect percussion may have also been utilized, though less commonly, for blade extraction.

The pressure debitage technique requires a great deal of skill to extract blades successfully, yet it is attested in each household complex excavated. Therefore each household would have had to have access to at least one skilled obsidian craftsman. Significant blade consumption is also attested in discard contexts at the household level. Of the more than 2000 blades and blade fragments studied, the majority includes sturdy proximal and medial segments (Fig. 14). 37% of blades are retouched for form, to re-sharpen the edges and from use. A fraction of the 59% blade blanks exhibit edge wear and/or burin facets on their extremities (Fig. 15).

This data points to obsidian blade manufacture in association with craft activity that can be compared to a craft-consumption model recently proposed for the Early Classical Guatemalan site of Kaminaljuyu[21]. Heath Anderson and Hirth argue that one obsidian workshop area at this proto-urban Mesoamerican site was involved in blade production that was not necessarily aimed for either exchange or on-site consumption. Rather, the varied crafts (described as activities involving cutting) that were being carried out in this context, as well as the breakdown of types of blade series present (irregular percussion versus pressure blades) and the percentage of blades with use-wear on their edges, pointed to a situation whereby blades were produced for site but also workshop consumption, with a likelihood that certain elements missing from the workshop may have been exchanged[22]. This particular Mesoamerican site provides patterns of production output, discard and consumption in one single area and in the context of a proto-urban setting driven by craft production, that are analogous to those recovered at Khirbat al-Fakhar, even if the sites themselves are quite different. While preliminary attempts at use-wear analysis have been minimally successful as a result of the effects of taphonomic variables (mainly soil pedogenesis) on obsidian, we can be confident that a variety of cutting and scraping activities were taking place at the household level. Data point to the presence of food production, textile production and the production of ceramic vessels and artifacts, but there is inconclusive evidence to support any of these having been major manufacturing activities.

Contextual data presents a relatively coherent picture of pristine interior workshop floors with no more than a handful of blades left in situ alongside other materials related to the activity carried out in that space (grindstones, spindle whorls, storage vessels, etc.). Exterior spaces, on the other hand, produced large amounts of blades and debris discarded in pits and abandoned features. Obsidian debris and discarded blades made up one of the main elements of exterior surface matrices. All evidence points to obsidian blade production and discard in household courtyards and exterior spaces, while several tools at a time were used for specialized indoor activities that required cutting, scraping and burrowing implements. Based on the present dataset, each household at Khirbat al-Fakhar both produced and consumed obsidian, among other activities.

The number of obsidian blades and debitage recovered at Khirbat al-Fakhar is exaggerated compared to the number of obsidian blade cores recovered. Area ZM produced the majority of these cores and may have been a communal specialized production area where blades were produced and redistributed, while each household also had access to obsidian to produce tools on a need-to-use household basis. Alternatively, non-exhausted pressure cores may have been exchanged with producers at other blade producing sites after having been partially exploited for on-site needs. These theories need to be tested with targeted excavations, and with

[21] Heath Anderson and Hirth, 2009.
[22] Heath Anderson and Hirth, 2009: 169

comprehensive study and source analyses of obsidian lithic materials on contemporaneous sites in the region.

The quantity of obsidian on the site in the LC1-2 period is striking, compared to its infrequency in the periods of occupation prior to and following it. For example, the Ubaid levels in Area ZI are almost entirely devoid of obsidian, as is the LC3-4 occupation of Tell Hamoukar itself (Area B), compared to obsidian's almost exclusive use in the LC1-2 phase of occupation at Khirbat al-Fakhar[23]. By the 4th millennium BC, obsidian use decreases significantly, and in many cases eventually disappears from sites across the Near East[24]. This trend occurs in conjunction with an increase in chert use, often in the context of the production and consumption of large blades termed 'Canaanean'. This new blade type coincides with the introduction of a new knapping technique (pressure debitage with lever) used for its production[25] and by its use in composite agricultural sickles and threshing sledges[26].

The chronological, spatial, technological and geochemical data for obsidian allow several preliminary conclusions. Khirbat al-Fakhar was sedentary at its core and was a major craft center involved in the production and consumption of obsidian blades. It had direct economic if not kinship ties to populations (possibly transhumant) with direct access to at least one major peralkaline Anatolian source (Nemrut Dag or Bingöl). It is likely, but still undetermined, that the site was also involved in the external distribution of obsidian, either in the decorticated nodules that arrived at the settlement, as non-exhausted cores, or as blades.

V. Scale and Morphology of the Settlement

The analysis of settlement and craft specialization from the excavated contexts discussed above can be extended, with some caveats, to the site as a whole via surface collection and remote sensing, which also enables an approach to the ancient population. The demographic aspect of urbanism and early social complexity has become academically unfashionable of late, with most scholars choosing to focus on functional aspects[27]. Given the small size of Gawra, Shelgiyya, Grai Resh, Qalinj Agha, and others, it is no surprise that settlement scale has had no place in many recent discussions of "proto-urban" Mesopotamia of the late 5th millennium BC. In fact, population agglomeration is a critical variable in the development of hierarchy and complex social institutions. Village settlements fail to grow because internal conflicts lead to community fissioning, or because there is no economic or ideological incentive for outsiders to join the community. A demographically large settlement is a proxy indicator for the existence of social institutions to adjudicate disagreements or to create and maintain economic, political, ideological aspects that draw in outsiders because these things do not exist elsewhere. Recent research at Tell Brak documents the emergence of such institutions as that settlement grew into the largest Mesopotamian city of the early 4th millennium[28], and will be discussed further below.

For these reasons, the matter of scale and morphology at Khirbat al-Fakhar is of more than passing interest. As part of the 1999-2001 Tell Hamoukar Survey (THS), it was subjected to

[23] For the paucity of obsidian on the surface of the LC3-4/EBA mound at Hamoukar, see Ur, 2010b Fig. 3.14.

[24] Edens, 1982; Nishiaki and Matsutani, 2003.

[25] Experimentation and study of the blades has also shown that the punch technique was also used for their production. Pelegrin, 2002; Pelegrin, 1988.

[26] Chabot, et al., 2006; Anderson, et al., 2004; Chabot, 2002; Anderson and Inizan, 1994.

[27] Feinman, 1998; Cowgill, 2004.

[28] Ur, et al., 2007.

several weeks of systematic surface observations[29]. The morphology of the site presented substantial challenges. At its center is a 31.3-ha area of undulating low mounds and adjacent depressions from brick material extraction. Surrounding this area is a vast area of low or unmounded sherd and lithic scatters. Together, the central mounds and outer fields amount to a 300-ha site complex. Initial observations suggested that the central mounds had later occupation of the 1st millennium AD (now confirmed by excavations), so this area was subdivided into seventeen sub-areas, from which diagnostic types were recorded. The low outer areas were sampled in 10 x 10 m squares at 200 m intervals, except where crops or ground visibility conditions prevented them[30]. The goal of this research was to confirm generally the initial dating of LC 1-2 but also to establish the spatial extent of the site's surface assemblage, and by proxy the settlement's former size.

Within the mounded area, sherd density was high and suggested full occupation in the LC 1-2 range with later occupation of the 1st millennium AD in some areas. Beyond this central area, the full lower area was covered with LC 1-2 sherds at generally high but variable density (Fig. 16). In areas of lowest density were between 50-100 sherds/100m^2, but often density could exceed 1000 sherds/100m^2. Sherds were large and with relatively recent breaks; this is the morphology of plowed out settlement, rather than field scatters from premodern manuring practices[31].

Today the outer area of the site is almost entirely flat, but analysis of historical CORONA satellite photographs suggest that it was less homogenous in the past. In imagery from 1967, fields in the outer areas appear patchy, with light areas alternating with darker areas (Fig. 17). Ground confirmation elsewhere in the Hamoukar Survey area has shown that lighter coloration indicates low or unmounded archaeological remains[32], which result from the decay of mud brick architecture[33]. CORONA imagery thus suggests that the outer area originally contained low density or intermittent occupation that has been subsequently blurred by intensive mechanized plowing in the late 20th century AD.

The surface assemblage of Khirbat al-Fakhar also contained enormous quantities of obsidian. Almost all collection units in the outer town produced obsidian, some in great numbers and also from all stages of the manufacturing process (Fig. 18). Although not collected systematically, the central mounded area was also covered in obsidian debitage, blade fragments, and cores.

VI. Discussion: Khirbat al-Fakhar in the Context of LC1-2 Northern Mesopotamia

Survey, excavation, and obsidian analysis show that Khirbat al-Fakhar does not fit into existing site classifications or the predominant narrative of the development of social complexity in northern Mesopotamia. Here we compare several aspects of the site to its contemporaries in the LC 1-2 period, conventionally dated to 4400-3800 BC[34].

Scale and Settlement Morphology

At that time across northern Mesopotamia, other settlements grew to a few hectares at most, with some exceptions (discussed below). Tepe Gawra, for example, does not exceed 1.5

[29]See preliminary reports in Ur, 2002a, b (where the site is referred to by its field number, THS 7) and a detailed discussion in Ur, 2010b, where it is designated as THS 25.

[30] For a detailed discussion of survey methodology see Ur, 2010b.

[31] On field scatters as a proxy for promodern manuring, see Wilkinson, 2003.

[32] Ur, 2010b.

[33] Wilkinson, et al., 2006.

[34] Hole, 2001; Wright and Rupley, 2001; Schwartz, 2001.

hectares[35]. It would be misleading, however, to compare the entirety of Khirbat al-Fakhar directly with densely settled towns like Tepe Gawra. Although the 31-hectare central mounded area appears to have been densely settled, the patterning seen on CORONA satellite imagery (Fig. 17) suggests variable density in the outer areas of the site. The white patches might indicate clusters of houses with vacant or unsettled areas in between them. This spatial pattern is at present rather uncommon in Mesopotamia, and is more reminiscent of settlement structure in the New World, for example in Maya cities[36]. We can rule out any modern activity behind this pattern: the distribution of surface sherds bears no similarity to known plowed out sites, and local farmers have no tradition of spreading debris from abandoned settlements on their fields as manure.

Nonetheless, even if one only considers the central mounded area (31 ha) and the areas of lighter soils (77 ha, hatched in Fig. 17), the built-up areas of Khirbat al-Fakhar exceed one square kilometer. If we assume these areas were settled at densities comparable to later Mesopotamian settlements, a fully sedentary settlement could have contained 10,000-20,000 persons. It remains to be demonstrated that these persons-per-hectare ratios are accurate for the later periods to which they are generally applied, let alone to such an early and atypical settlement as Khirbat al-Fakhar. For this reason, most discussions use site area as a proxy indicator.

The Area ZD3/4 excavations in particular have revealed the domestic structures of a sedentary community. It has been suggested, however, that the outer town might be the result of shifting seasonal occupation by nomadic groups[37], which might explain its unmounded and extensive nature, but we see several factors that suggest at least a semi-sedentary occupation, if not full permanence. The ceramic surface assemblage is dense and diverse, which suggests that households had large pottery inventories that accommodated the full range of sedentary domestic activities, particularly storage of cereals. Furthermore, the light patterning on CORONA imagery has been shown elsewhere to be typical of decayed mud brick, which signifies an architectural investment in the area as well. None of these aspects exclude some sort of semi-sedentary arrangement, wherein some part of the community migrated annually; in fact the obsidian assemblage hints of this possibility, or minimally some very close trading arrangements with transhumant nomads who visited the source regions. At least part of the community at Khirbat al-Fakhar, however, were permanently present agriculturalists.

There are two possible interpretations of the variable density clustered nature of Khirbat al-Fakhar, which are not mutually exclusive. In Mesoamerica, the pattern of dispersed households is characteristic of settlements with particularly intensive agricultural practices; the intervening spaces are not vacant but filled with carefully cultivated gardens[38]. Such a land use pattern is strikingly different from the nucleated infield-outfield pattern known empirically for the later 3rd millennium and assumed for other time periods in northern Mesopotamia[39]. Another possibility is that intervening space was used to maintain social boundaries between the settlement clusters. At this proto-urban time, social institutions for the maintenance of demographically large, dense, and contiguous communities may not have existed, and the residents of Khirbat al-Fakhar adapted by spacing themselves. In this case,

[35] Rothman, 2002b.
[36] e.g., Sanders, 1981.
[37] Wilkinson, 2002; Gibson, et al., 2002.
[38] Drennan, 1988.
[39] Wilkinson, 2003.

the draw of this place was clearly stronger than the centrifugal forces that kept other settlements at such small sizes[40].

Obsidian at Contemporaneous Sites

In addition to its spatial arrangement, the site's emphasis on obsidian is unprecedented. Many sites with contemporaneous levels such as Tell al-Hawa[41], Tell Raffaan[42], Norsuntepe[43] and Tell Kosak Shamali[44] have obsidian assemblages that make up a small percentage of their total lithic assemblages. For example, only 24 obsidian artifacts out of a total of 10,754 lithic artifacts were recovered from excavated Terminal Northern Ubaid to Uruk levels at Tell Kosak Shamali. Obsidian therefore makes up a fraction of a percent of the total raw materials used at this site[45]. Even where obsidian is said to be relatively common, such as at Grai Resh and Ibrah Kahir in the Sinjar region[46], the total numbers are small and the assemblage is dominated by tools and blade supports without waste products indicative of on-site knapping.

In comparison, the volume and dense concentrations of obsidian in the middens, storage features, pits and courtyard pavings associated with lived-in structures at Khirbat al-Fakhar dwarfs the small quantities found in entire levels and phases on other sites in the Near East at this time. When taking into consideration the apparently broad distribution of obsidian-related activities across the site (see Fig. 18), Khirbat al-Fakhar appears uniquely obsidian-centred. In other words, the obsidian material recovered from the site of Khirbat al-Fakhar has demonstrated an early form of economic centralization in a single stone resource.

Lithic Production Objectives

Our understanding of the nature and the dynamics of the socio-economic strategies exhibited at Khirbat al-Fakhar is further developed through a closer look at the production sequences and consumption patterns that appear in the site's archaeological record. Distance from source, period of occupation, and quantity/form of material present or absent, are more pertinent when viewed in the context of the production objectives of individuals and the society as a whole, and of the activities that were carried out on-site.

The Pre-pottery Neolithic workshop of Kömürcü-Kaletepe located 20 km away from the Göllü Dag East source zone in Cappadocia, produced massive quantities of obsidian debitage that were deposited across significantly smaller surface areas than at Khirbat al-Fakhar[47]. While large quantities of obsidian are expected from a site located near a source, it is important to note that Kömürcü-Kaletepe produced blades solely for distribution, as is evidenced by the absence of blades on site, and their presence at Mureybet, along the Middle Euphrates, among other sites[48]. In comparison, Khirbat al-Fakhar in the LC1-2 period was simultaneously a production center and a locus of consumption.

[40] A similar argument has been made for LC 2 Tell Brak; see Ur, et al., 2007.
[41] Ball, et al., 1989.
[42] Bielinski, 1987.
[43] Hauptmann, 1982.
[44] Nishiaki and Matsutani, 2003:56.
[45] Nishiaki and Matsutani, 2003: 15, 41.
[46] Lloyd, 1940.
[47] Balkan-Atli and Binder, 2000.
[48] Cauvin, 2002.

Obsidian Source Distance

Distance to obsidian source must be contextualized with reference to the time period, site function, the nature of the obsidian assemblage (waste versus finished products) and the total counts and breakdown of lithic materials [49]. Sites located within 700 km range of their obsidian sources in the proto- and pre-pottery Neolithic periods have produced so few obsidian artifacts, most in the form of finished products[50], that they are in an entirely different category than sites such as Khirbat al-Fakhar or Cafer Höyük, which exhibit large quantities of obsidian in addition to on-site production at significant distances from the source supply. The case of PPNB Cafer Höyük demonstrates that we are not simply witnessing a chronological trend, with Late Chalcolithic sites veering from the norm. By the mid-PPNB at Cafer Höyük, obsidian increased to 90% of the total lithic percentage with intensive on-site obsidian production[51]. Located 200 km from the Bingöl source complex that supplied it, Cafer Höyük stands as an early example of a site with tendencies towards a single-resource stone tool economy, but at a village settlement scale.

Just as we must reconsider previous models of early urbanism, we must reassess formulae that simplify the complex nature of social mechanisms by matching fall-off patterns (with distance) to previously proposed models of exchange[52], so as to take into account sites that do not necessarily conform. Sites like Khirbat al-Fakhar and Cafer Höyük demonstrate that the decrease in quantities with increased distance is not universally applicable. Mobility practices, production objectives and consumption activities are all key issues at Khirbat al-Fakhar, but ones that are rarely factored into economic models that emphasize dichotomies like mobility-sedentism and production-consumption. Khirbat al-Fakhar presents evidence that complicates all of these assumptions, and which point to a proto-urban conglomerate of single manufacturing households and finds the likeliest parallels with Mesoamerican sites engaged in intensive obsidian production during periods of early state formation and settlement growth[53].

VII. Conclusions

The suite of architectural, ceramic, lithic, and spatial analyses undertaken at Khirbat al-Fakhar has revealed a set of characteristics that place it outside of standard urban-rural dichotomy. For example, the pattern of variable density and intrasite spatial organization is one reason that we categorize Khirbat al-Fakhar as "proto-urban." On one hand, it has many characteristics that are associated with later Near Eastern cities. It is spatially large, literally hundreds of times larger than most of its northern Mesopotamian neighbors. It was an important trade, manufacturing, and distribution center for obsidian and was home to specialists in blade production; such economic centralization in a single resource has not been recognized in other settlements, even large ones such as Tell Brak[54]. The decentralized or household basis for blade production is typical of the urban lithic industry in later cities as well[55]. On the other hand, it lacked the density of later Mesopotamian cities, and by

[49] See numerous examples in Cauvin, et al., 1998.
[50] Cauvin, 2002; Briois, et al., 1997.
[51] Cauvin, 2002: 21-22.
[52] See for example Renfrew, 1975, 1977; Ericson and Earle, 1982.
[53] Heath Anderson and Hirth, 2009. See also Philip and Williams-Thorpe, 1993 for a contemporary parallel at the site of Abu Hamid.
[54] Khalidi, et al., 2009.
[55] See, for example, the EBA city of Titriş; Hartenberger, et al., 2000.

extension probably lacked the centralized social institutions capable of integrating densely settled communities and resolving inevitable conflicts.

The use of the term "proto-urban" should not be construed as a type or a position in a unilinear evolutionary sequence, but rather as an ambiguous position on the various continua of urban variables proposed by G. Cowgill[56], without specifying which variables. The uniqueness of Khirbat al-Fakhar remains to be firmly established. Other early sites might have had similar origins, but subsequent settlement has put them beyond our ability to study[57]. At other contemporary sites, research has been limited to excavation on mounded areas, and they have not been subjected to the same intensive landscape and remote sensing methods employed at Khirbat al-Fakhar. An exception is Tell Brak, where intensive surface collection has documented the evolution of settlement from a central mound with small satellites in the LC 2 period (totalling 55 ha) to a nearly continuous complex of mound and lower town in the LC 3-4 period, covering 130 ha[58]. The former pattern is similar to that of LC 1-2 Khirbat al-Fakhar on a reduced scale (Fig. 19). Brak, however, continued to grow into a nucleated urban form in the mid-4th millennium, while settlement in the Khirbat al-Fakhar area shifted north to form the core of the mound at Hamoukar.

The question is, of course, what drew people in to Khirbat al-Fakhar, and kept them there, in the face of natural centifugal tendencies. This question is impossible to answer on the basis of the currently limited dataset of survey and small scale excavations, but a preliminary hypothesis would have to consider the economic pull of Khirbat al-Fakhar's obsidian industry. This identical factor could not apply at Brak, where obsidian was far less frequent and was treated as an exotic material worthy of curation and reuse[59]. If we are correct that Khirbat al-Fakhar's significance stems largely from its economic role, it would be early evidence for a later trait of Mesopotamian cities: the sometimes transient nature of trade networks.

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[56] Cowgill, 2004.

[57] For example, 4th millennium Uruk might have had similarly variable density, but it is sealed by large Early Dynastic and Seleucid cities, in addition to other smaller phases of settlement, which might obscure such texture; see Finkbeiner, 1991.

[58] Oates, et al., 2007; Ur, et al., 2007; Ur, in press.

[59] Khalidi, et al., 2009.

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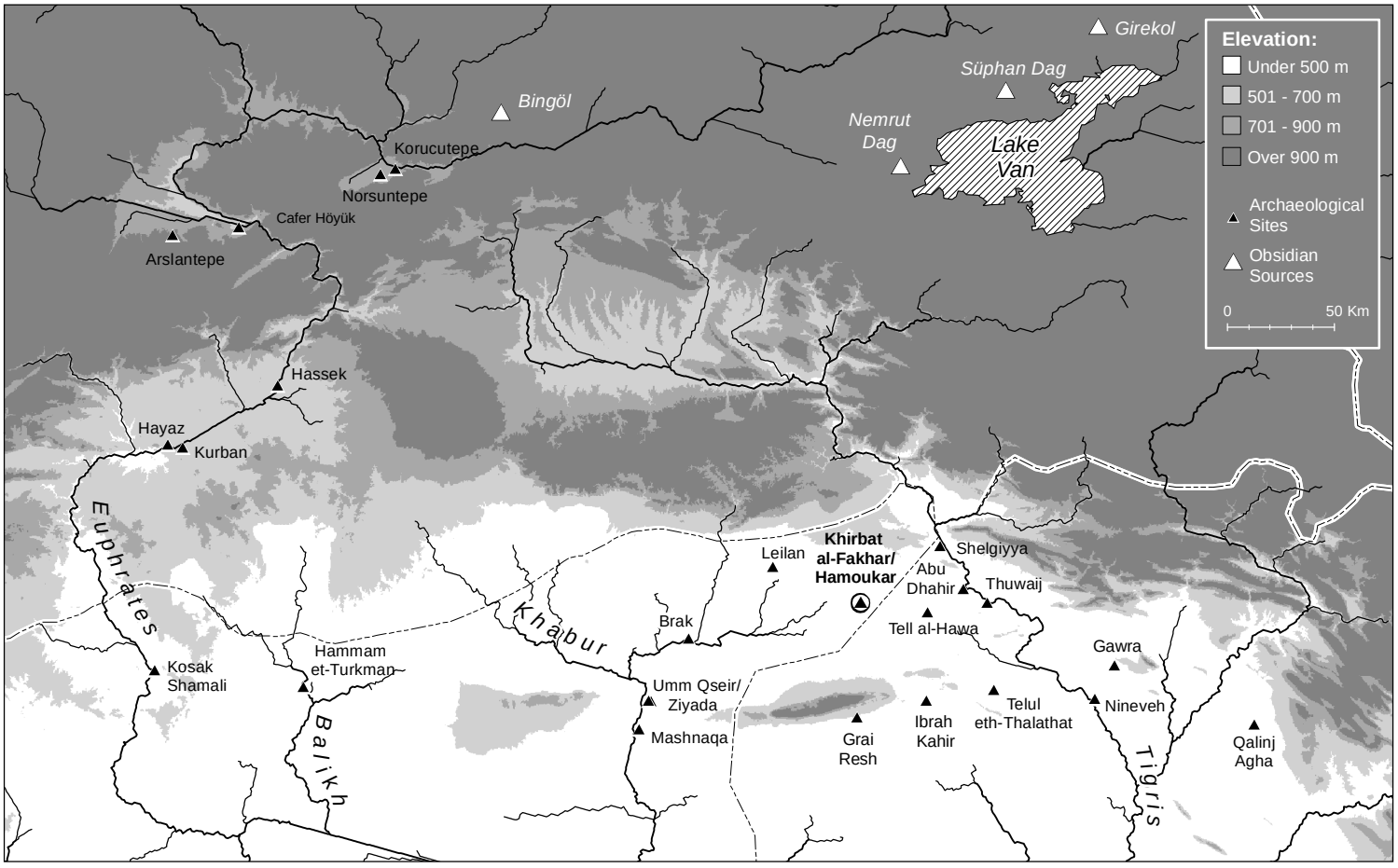


Fig. 1. Sites of the LC 1-2 period and obsidian sources in northern Mesopotamia.

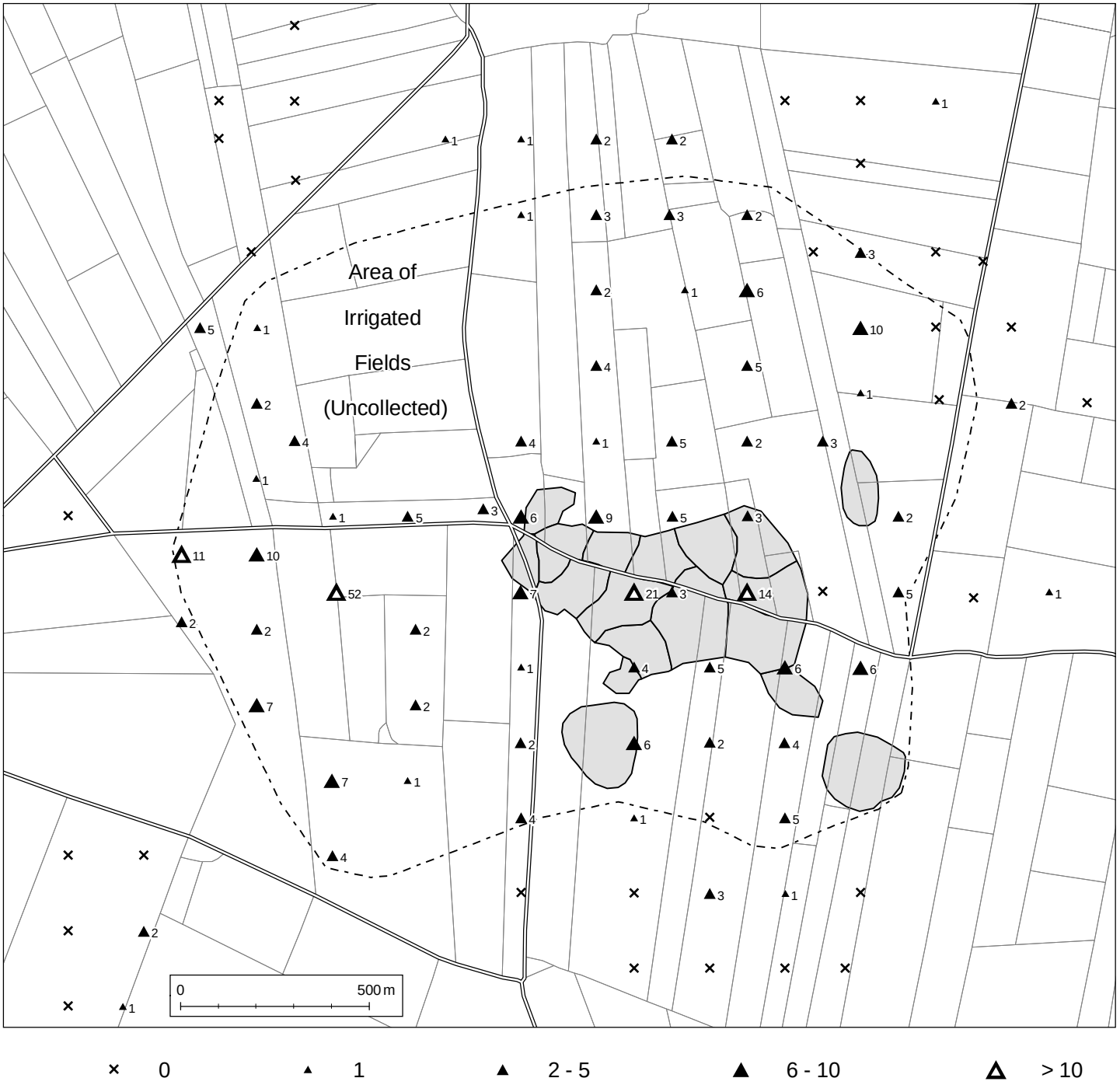


Fig. 2. Density of surface lithics at Khirbat al-Fakhar (numbers in pieces per 100 m2), with modern fields and tracks. Gray areas indicate mounded collection areas; dashed line indicates approximate boundary of the site.

Fig. 3. Clay “hut symbols” from LC1-2 trenches at Khirbat al-Fakhar.

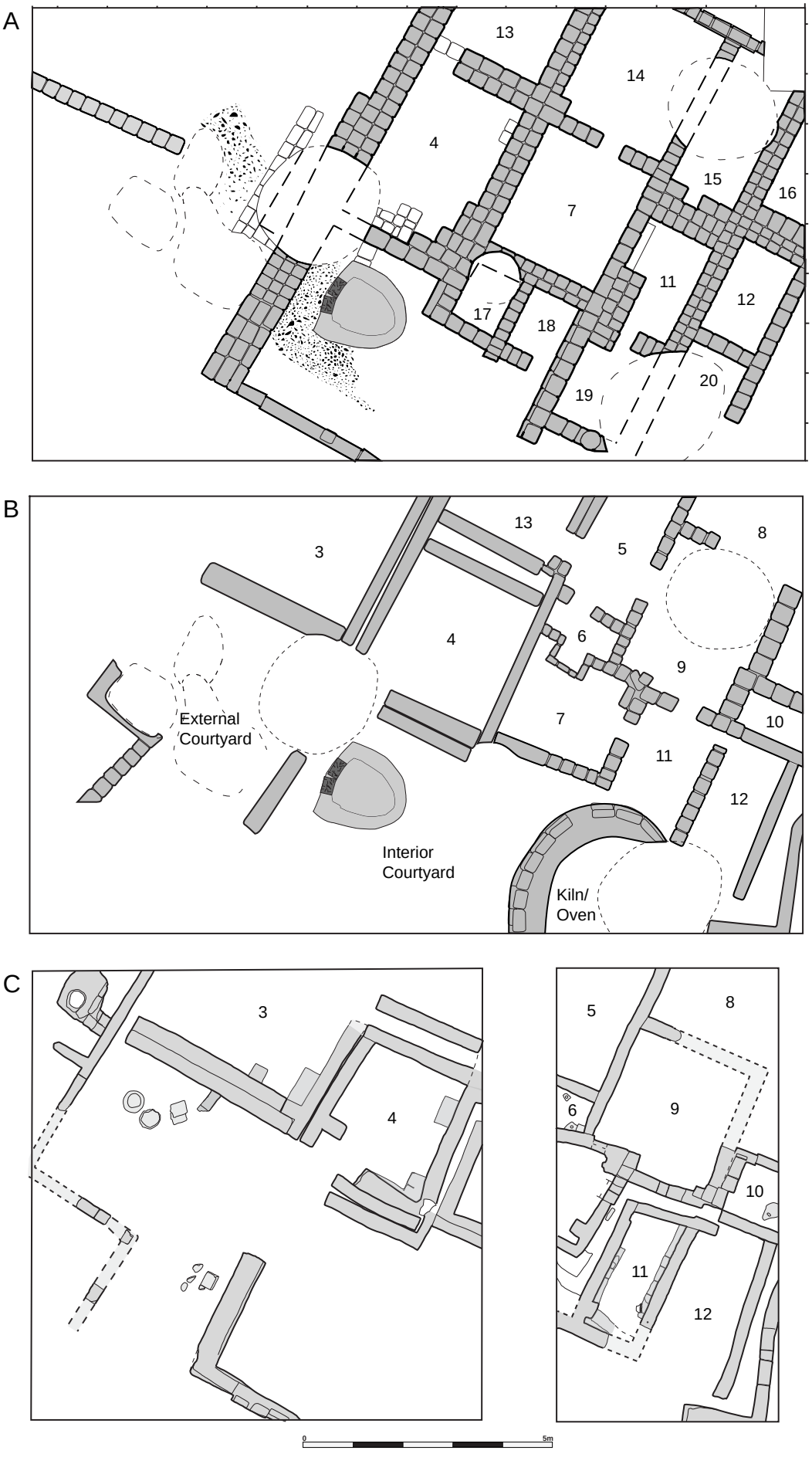


Fig. 4. Architecture of Area ZD3/4 Level 3 A. Sub-level 3C; B. Sub-level 3B; C. Sub-level 3A.

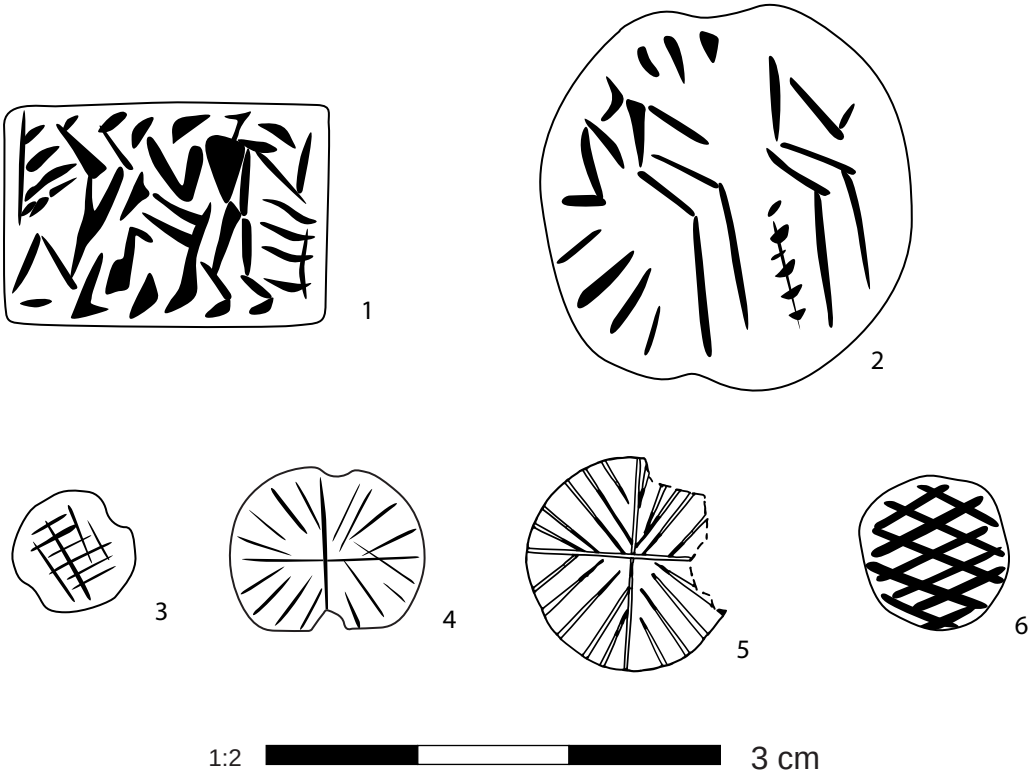


Fig. 5. Seals and sealings from Khirbat al-Fakhar/Hamoukar southern extension. 1. 5 HM2; 2. 5 HM 10; 3. 5 HM 200; 4. 5 HM 116; 5. E4318; 6. 5 HM 115.

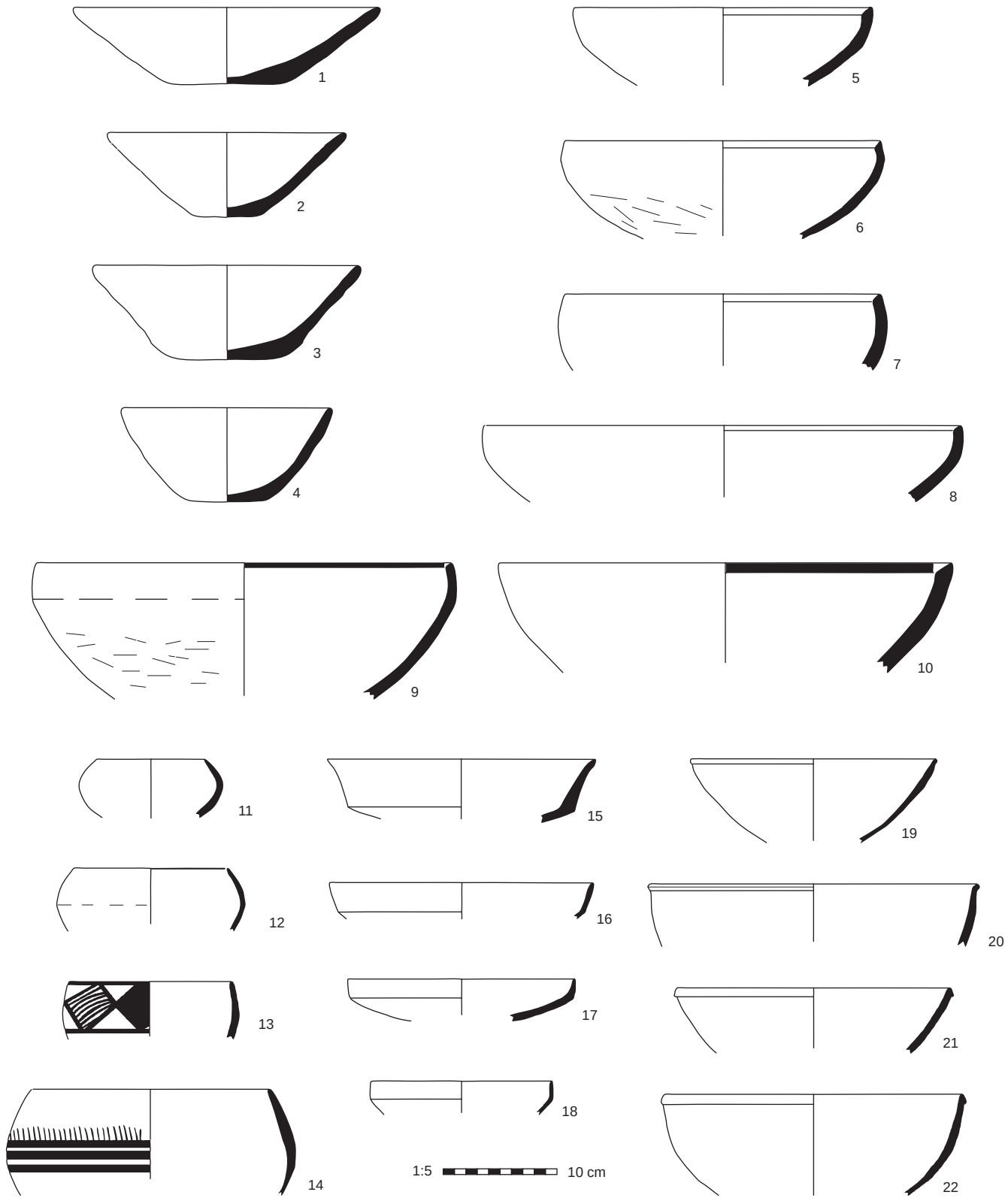


Fig. 6. Bowls from Khirbat al-Fakhar/Hamoukar.

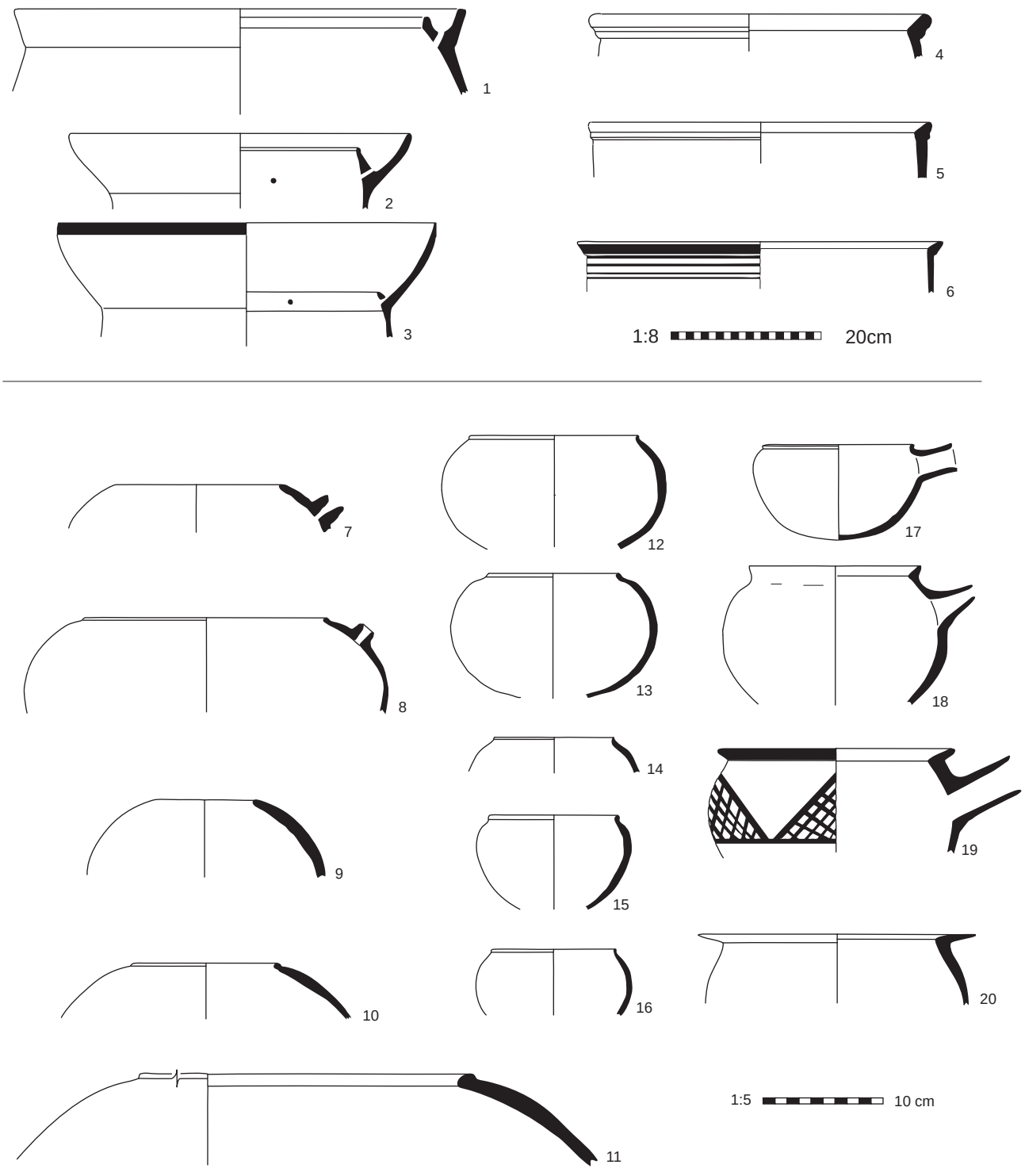


Fig. 7. Pots from Khirbat al-Fakhar/Hamoukar.

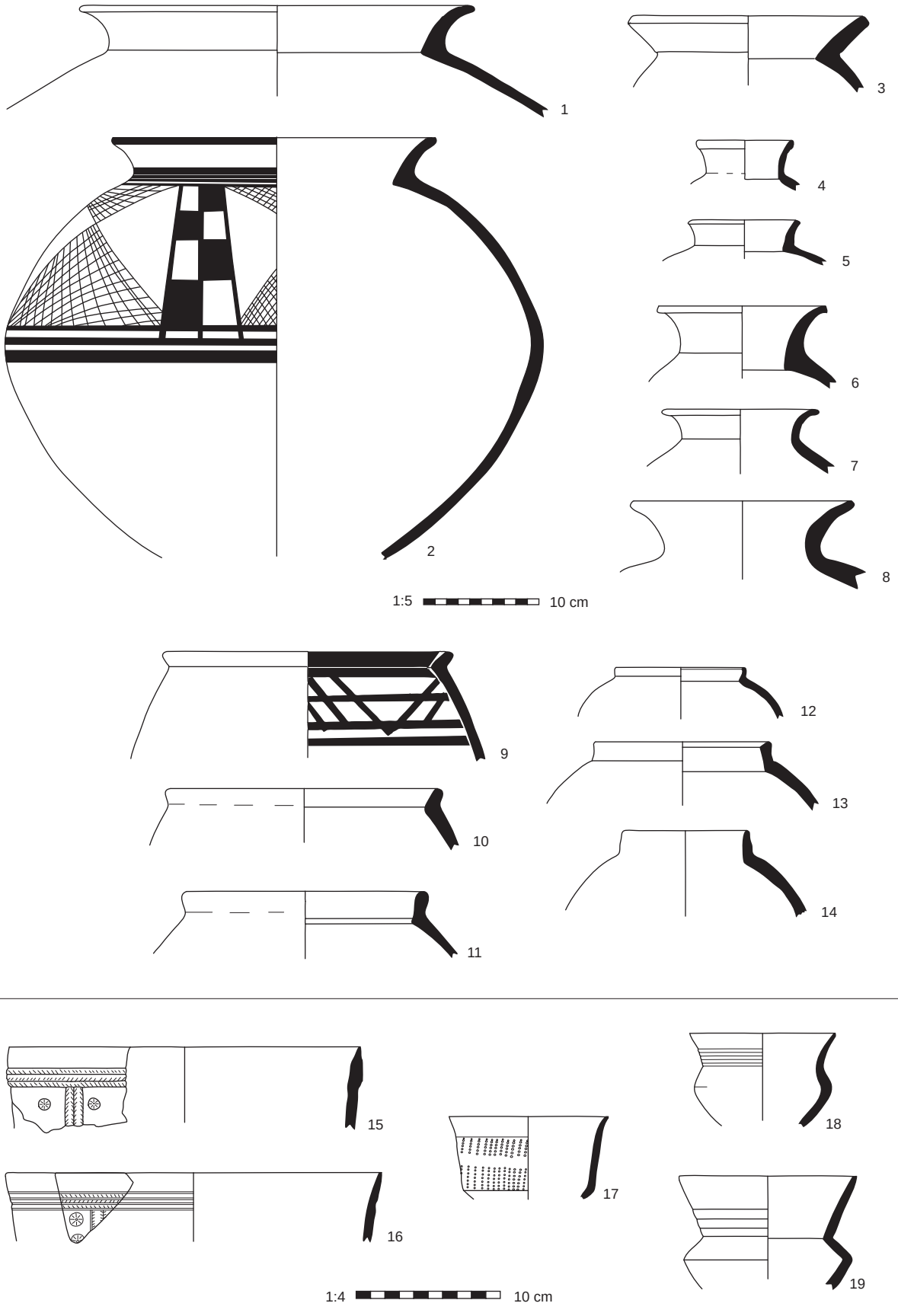
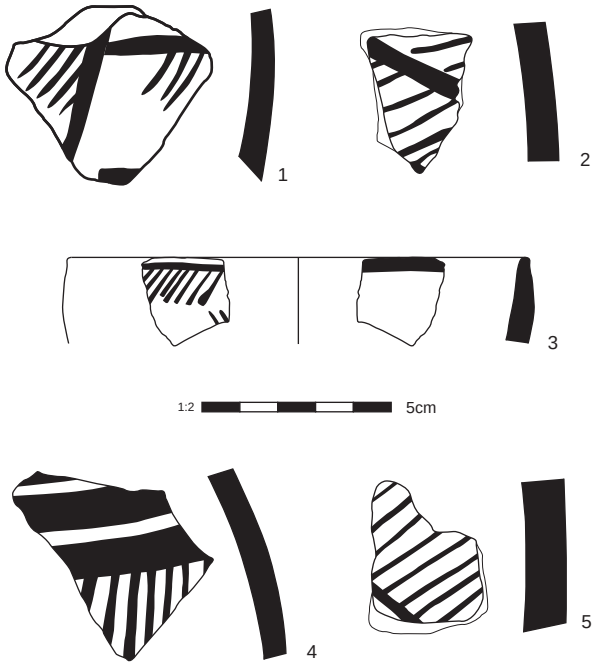


Fig. 8. Jars from Khirbat al-Fakhar/Hamoukar.



12. Sprig Ware from Khirbat al-Fakhar/ Hamoukar surface collections in the central mounded area.

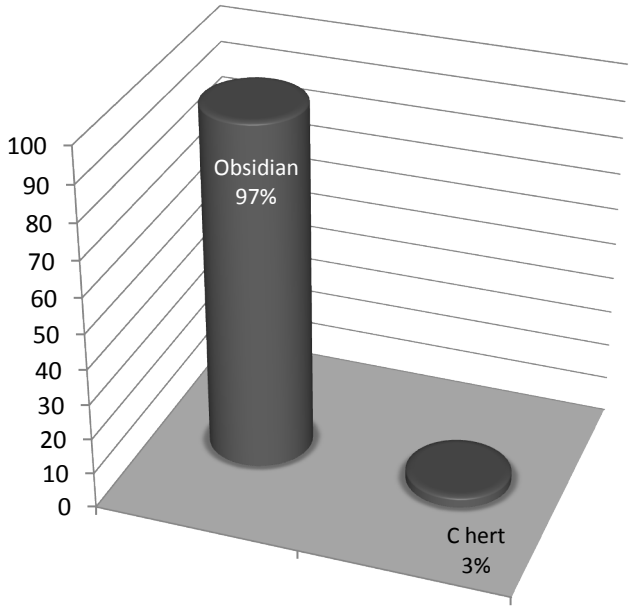


Fig. 10. Percentages of obsidian in relation to chert recovered from excavated strata in Levels 1-3 at Khirbat al-Fakhar.

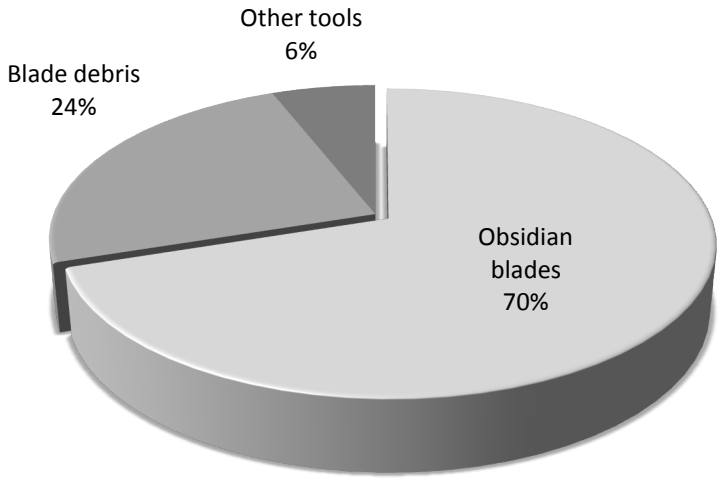


Fig. 11. Percentage breakdown of obsidian blade debris, blades, and tools excavated from Levels 1-3 at Khirbat al-Fakhar.

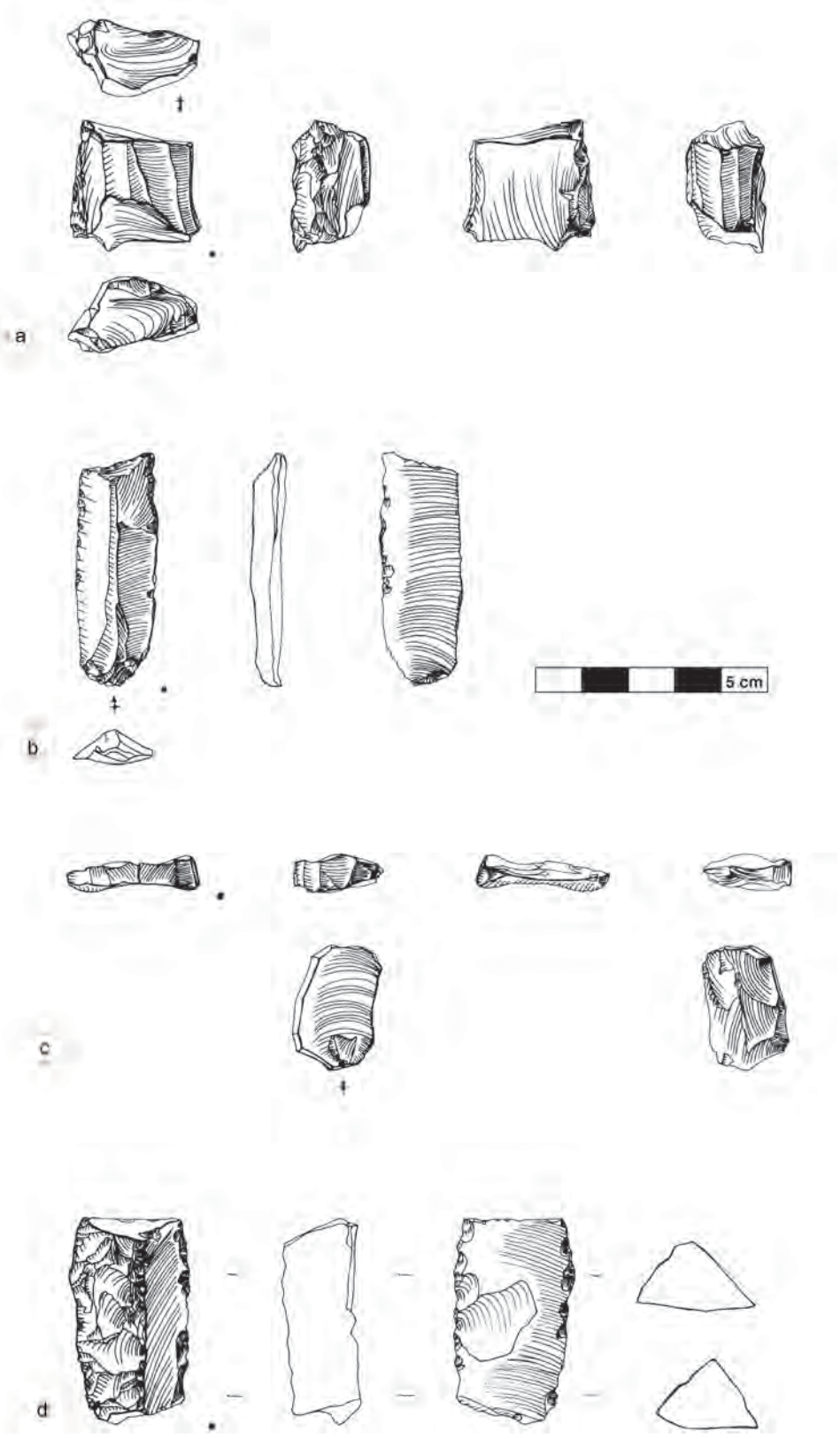


Fig. 12. Examples of obsidian blade preparation debris from Khirbat al-Fakhar. (a) Core fragment; (b) obsidian proximal retouched blade with distal truncation; (c) platform preparation flake; (d) crested blade. Drawing: L. Khalidi.

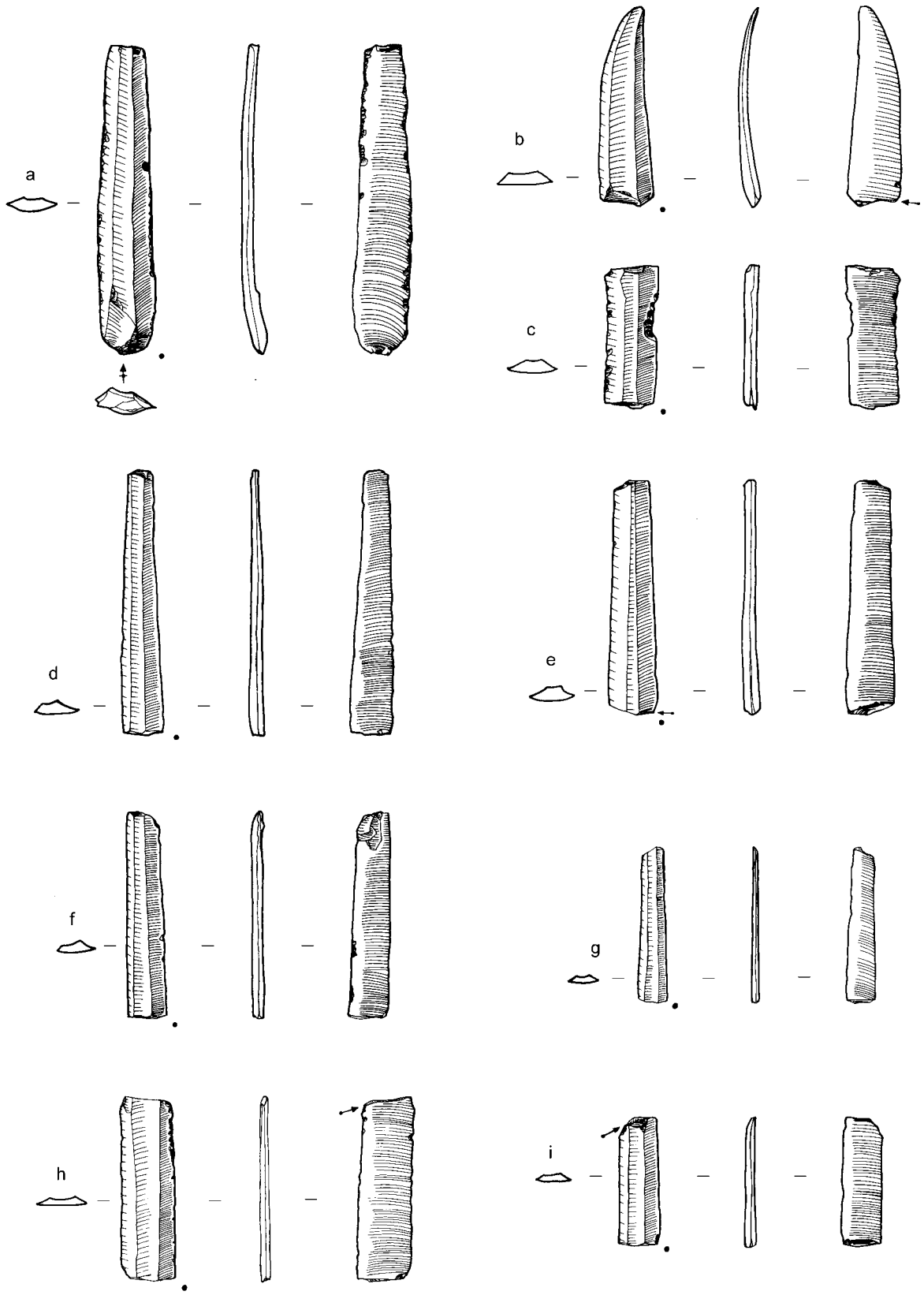


Fig. 13. Standardized obsidian blade and bladelet segments with parallel edges and arrises characteristic of the pressure debitage technique. Recovered from excavated contexts in Levels 1-3 at Khirbat al-Fakhar. Drawing: L. Khalidi.

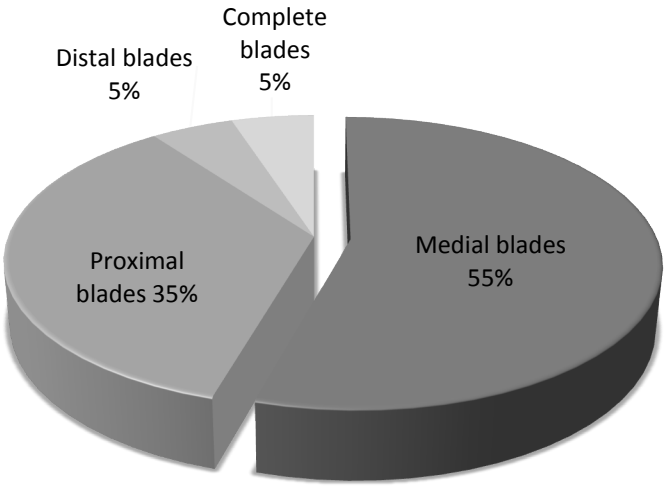


Fig. 14. Percentage breakdown of obsidian blade parts represented in excavated deposits, Levels 1-3 at Khirbat al-Fakhar.

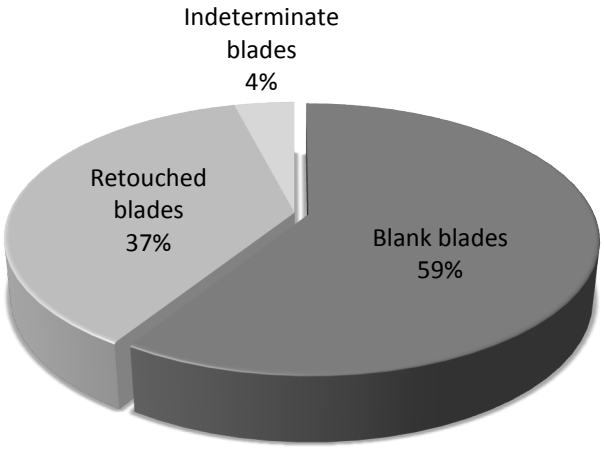


Fig. 15. Percentage breakdown of blank versus retouched and used obsidian blades and blade segments from excavated deposits in Levels 1-3 at Khirbat al-Fakhar.

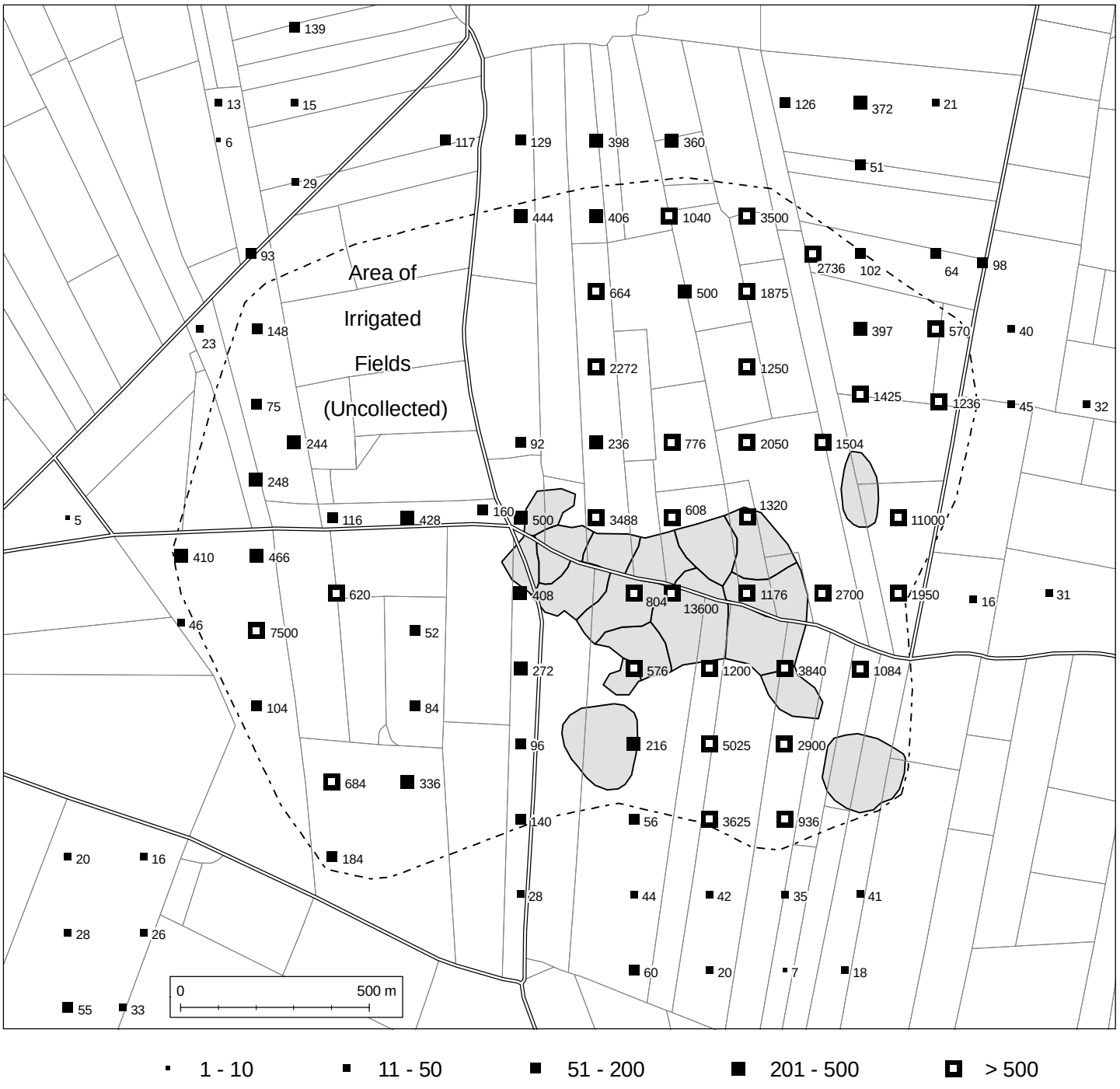


Fig. 16. Density of surface sherds at Khirbat al-Fakhar (numbers in sherds per 100 m2), with modern fields and tracks. Gray areas indicate mounded collection areas; dashed line indicates approximate boundary of the site.

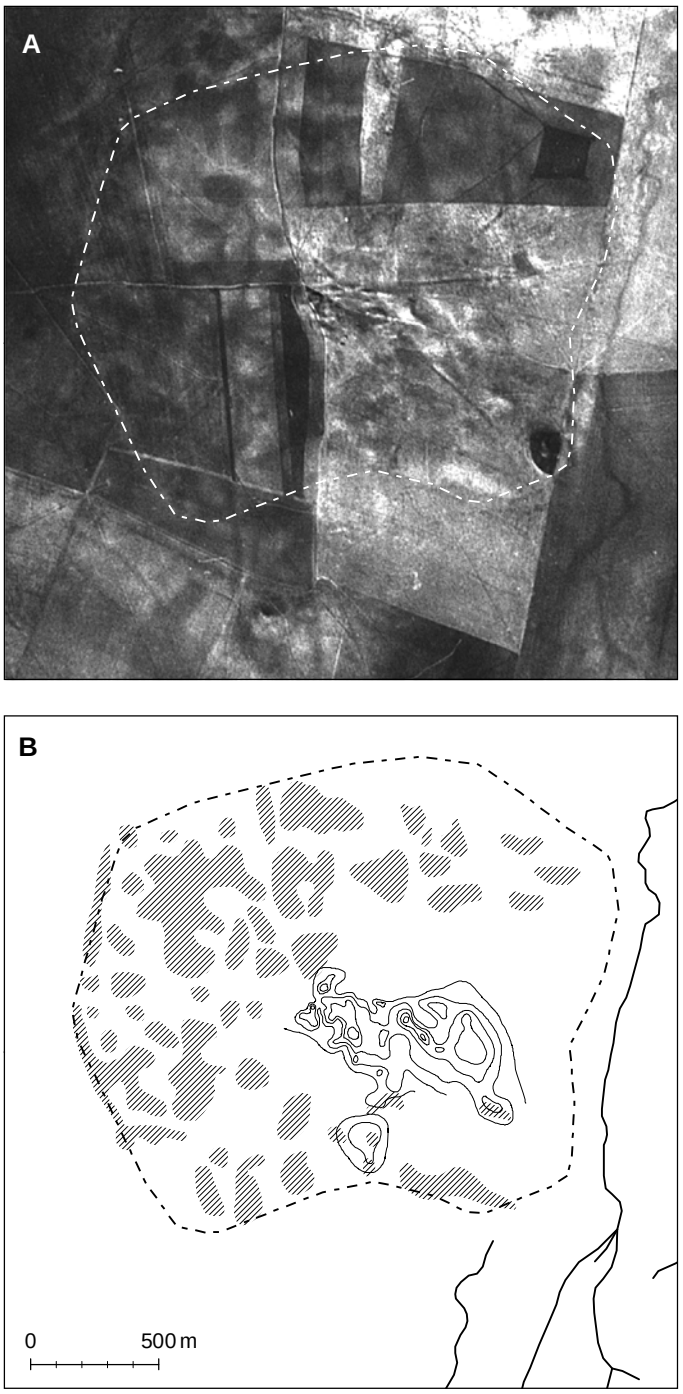


Fig. 17. The outer settlement at Khirbat al-Fakhar. A. CORONA satellite photograph with mottled outer town (CORONA 1102-1025DF007, 11 Dec 1967); B. Intepretation of CORONA image with mottled areas indicated by hatching, and sketch contours for the central mounded area

Fig. 18. Positions of collection units, soundings, and excavations at Khirbat al-Fakhar.

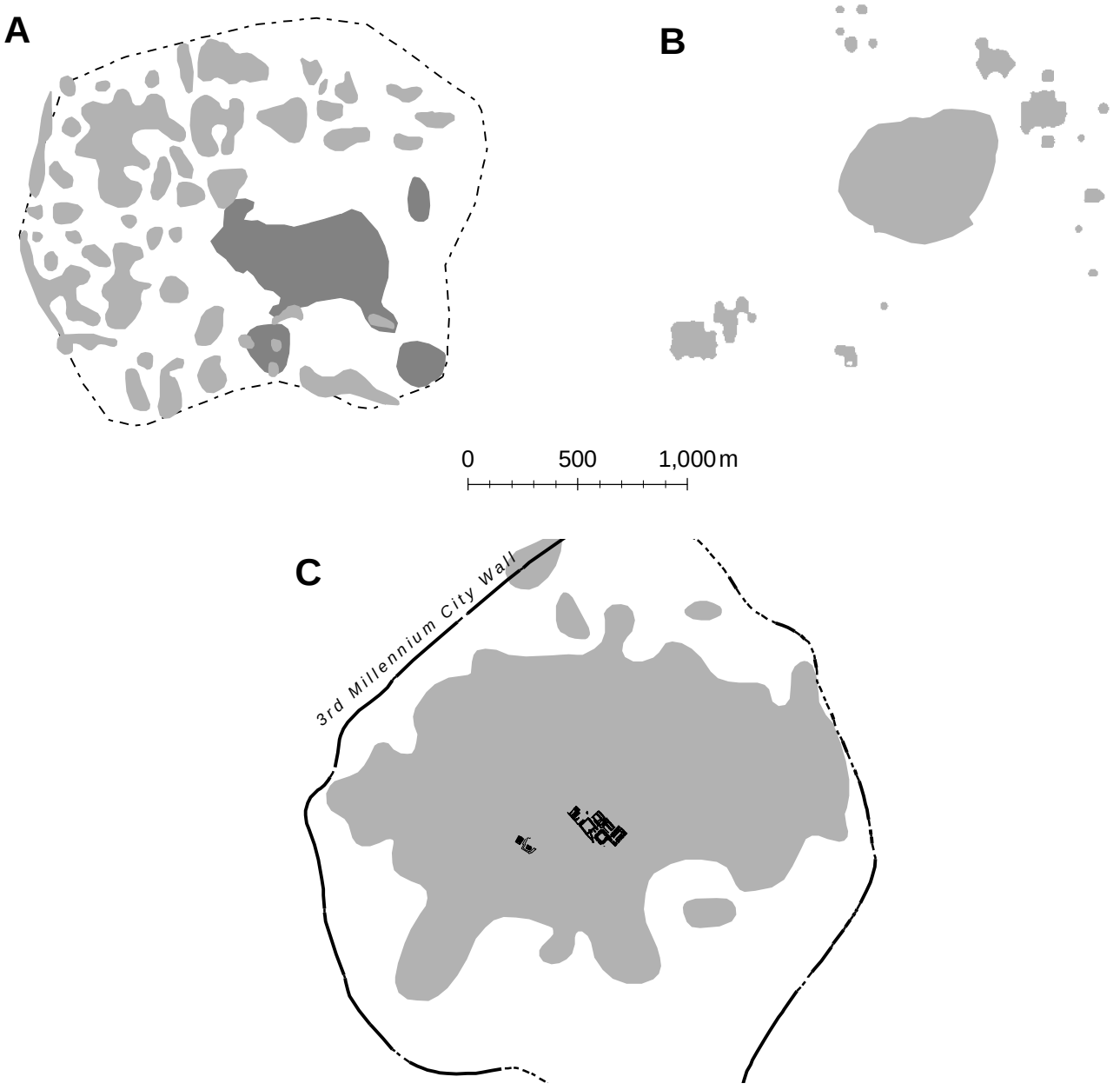


Fig. 19. Spatial comparison of 5th-4th millennium extensive Mesoptamian sites. A. LC1-2 Khirbat al-Fakhar/Hamoukar (central mound and areas of light soils, with extent of sherd scatter); B. LC2 Tell Brak (extent of sherd scatters); C. LC5 Uruk (extent of sherd scatters).