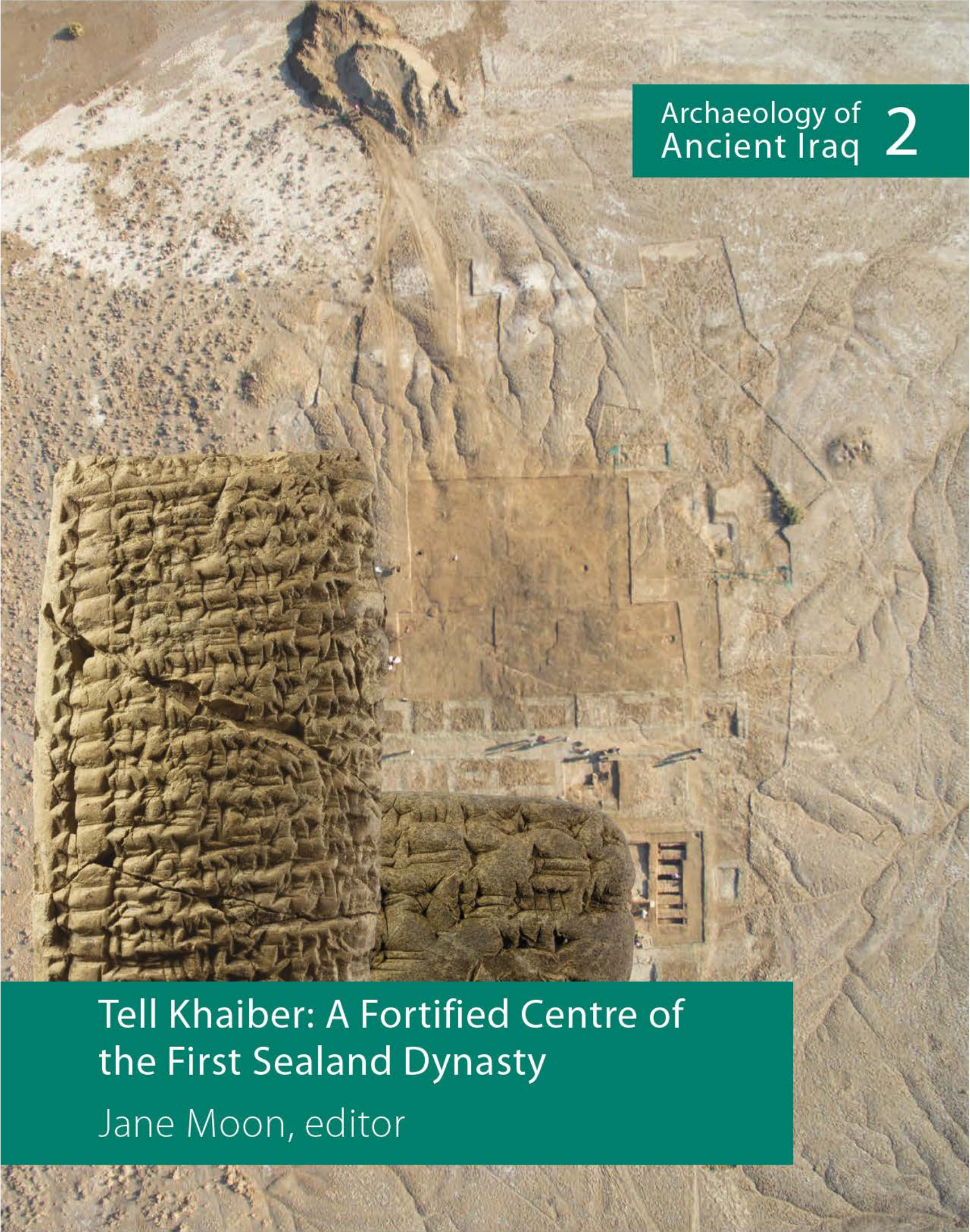

Archaeology of Ancient Iraq 2

Tell Khaiber: A Fortified Centre of the First Sealand Dynasty

Jane Moon, editor

Tell Khaiber

Archaeology of Ancient Iraq

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Tell Khaiber

A Fortified Centre of the First Sealand Dynasty

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Preface

In April 2011 I attended the London Book Fair. It was uncomfortable. Book fairs ought to be fun, if you like books, but this one seemed noisy, airless, and hopeless. It was not the fair's fault: I so desperately needed to sell the US rights to *Jane Austen Fashion*, and *Dress and Fashion on the Titanic,* but no-one was biting. I did not have much of a clue how to sell the rights to any book. In fact, I have never had much of a clue about anything except archaeology, and specifically the archaeology of Iraq. Saddam Hussein and a few other people had seen to it that I no longer had much to do with it, and now I had a day job as a university administrator and moonlighted as a small publisher, without being especially successful at either. I had taken a day's leave to try my luck at the book fair, and now I just needed fresh air.

Outside I looked for somewhere to buy refreshments and sit down. Passing a tiny grocery store, I heard the sound of Iraqi Arabic voices and stepped in, taking my time choosing a soft drink, so I could listen a bit longer. The grip of nostalgia grew, and I took in the various Middle Eastern groceries on the shelves. I had a sudden craving for *chai harmuth*, the wonderful sweet-sour citrus tea that used to revive us in Iraq, and asked the young, wary-looking shop assistant in Arabic if they had dried limes, *numi Basra*. He froze. 'One minute'. He went through to the back, and told an older man that an *Ingleezia* was asking for dried limes. I didn't catch the answer. On return he demanded 'How you know *numi Basra*?' 'From Iraq,' I replied. He relaxed, smiled, and loaded my bag with dried limes. Then added some dates. I wasn't allowed to pay.

Back in Shropshire that night I relayed my failure at selling books and success in buying limes to my husband and business partner, Robert Killick. 'We should try to dig in Iraq again', he said. There were so many reasons why in April 2011 this sounded ludicrous that their enumeration is pointless. To cut straight to the chase, we went to Iraq to have a look.

Practically the only foreigners going in and out of Iraq at that point were involved in the military or security business, and diplomats, who only got as far as the Green Zone. Practical information was hard to come by, so I signed up to Twitter and started to make contacts who actually knew what was happening. Shropshire neighbour David Phillips, our fundraising advisor for the London-Bahrain Expedition in the 1990s, was an old friend of Iraqi aristocrat and politician Dr Ahmad Chalabi, then based in Baghdad, working on his chances of becoming Prime Minister. Ahmad readily agreed to provide flights, visas, accommodation, security, and escorted transport around Iraq. It is hard to know which, if any, of the scurrilous stories that abound about him are true, but I do know for certain that he made possible for us, and for the archaeology of Iraq, what would otherwise have been impossible. I hope he rests in peace.

Another old friend, Dr Farouk al-Rawi, gave us an introduction to Mr Qais Hussein Rasheed, the incumbent head of the State Board for Antiquities and Heritage, who could grant the necessary permit to excavate. Sir John Shepherd, former Ambassador to Bahrain, put us in touch with Michael Aron, the serving Ambassador to Iraq. Professor Elizabeth Stone of Stonybrook University was also planning to resume work in Iraq, at a site near to Ur. It was clear that we would need to lodge somewhere secure like Ur if the project was to have any chance of taking off. This was not an area we had much previous familiarity with, but there is so much to do in all of Iraq, it would be no trouble to find a site that would benefit from our attention, and was within our capabilities. Elizabeth put us in touch with her doctoral student, Abdulamir Hamdani, and he very kindly agreed to meet us at Ur and show us possible sites. I booked leave again ('a holiday in Dubai') and off we went. Ahmad had been over optimistic about his ability to get us visas, so we flew from Dubai not to Baghdad but to Erbil, accessible without pre-obtained visas. His Kurdish staff effected for us a rendezvous behind a disused petrol station with a private armoured convoy. 'Stay in the back, keep quiet' were the

instructions, and we crossed the border undetected and unvisa'd into southern Iraq. We were back.

It had been thirty-five years. Sanctions, war and Saddam had come and gone. The statement 'much had changed' is pointless, and the emotions aroused by the wreckage and situations we encountered are irrelevant. There were at the time more than thirty archaeological projects in Iraqi Kurdistan, but in the south of Iraq just one, from La Sapienza University in Rome, working near to Ur, and one from Stony Brook, New York hoping to start another, also based at Ur. Iraqi scholars and practitioners had been cut off from any international co-operation for decades. What could we do to help? Mr Qais Hussein Rashid, head of SBAH, indicated that a permit would be available, and that we too should choose a site within travelling distance from Ur, for security reasons, Ur being enclosed and guarded. We could also share the accommodation and staff already set up for the Italian and US teams. We chose Tell Khaiber, of early third and mid-second millennium date, a manageable size, and not too far from Ur. We needed funding, staff, and a university connection. University staff are overworked without trying to find time or funding for fieldwork, let alone in a recent war zone. Too many of the helpful colleagues I had known and admired were no longer available, one way or another. Extant ones I approached, all bar one, gave a response that can be paraphrased as 'Iraq? You must be joking…'. Dr Stuart Campbell, then Senior Lecturer and now Professor at Manchester, said something like 'How soon can we start?' We had found the right partner for the challenge.

Funding is the archaeologist's number one headache, out of so very many. Early in our careers we developed a deep disenchantment with shoe-string operations that cut corners, exploit goodwill, produce sub-standard results, and put health and well-being at risk. A more productive remedy for a shortage of funds, we have always felt, is to find more money. We had raised and spent about £2 million for the Saar Project in Bahrain, so surely we could do it again. We scoured business information and chased down leads, managing to gather enough for a single-person fundraising trip to Baghdad and Basra. Many kind friends helped, and we made a modest beginning, but soon realised that post-apocalyptic Iraq in 2011 was not Bahrain in 1990: interest in heritage among the men vying for deals and contracts among the ruins was insufficient. Then, out of the near-blue, someone approached us. I was invited to Sunday lunch at the Dorchester Hotel in London by Baron Lorne Thyssen-Bornemisza, a student of Middle Eastern archaeology, fluent Arabic speaker, and knowledgeable connoisseur of ancient artefacts and art. He became our principal benefactor, and without his enlightened generosity the discoveries you are about to share would be, at best, still underground. I needed Google to locate the hotel, and a friend in London to lend me his bed overnight so I could be in time for lunch, but I left with the means for five annual seasons of full excavation, 'so you can concentrate on the archaeology and not have to worry'. I have yet to find the right words to express our heartfelt gratitude.

Finding staff for a first season was not straightforward. Our wild excitement at being able to work in Iraq was not universally shared among the archaeologists we contacted. We are therefore especially grateful to the team of that 2013 inaugural season, for stepping into the unknown, enduring all the strangeness and unpredictability of a country in turmoil, all the while working cheerfully to an exacting professional standard. Many, many others contributed to the project, some officially, some professionally, some casually and some out of sheer good nature and friendship. We enjoyed the boundless hospitality of local organizations, including universities, schools, colleges and clubs, all struggling against ridiculous odds to maintain a cultural life. All occasions were memorable, but one that stands out is a talk kindly given by Professor Eleanor Robson to the Dhi Qar branch of the Iraqi Writers' Union, not on cuneiform, but on comparison of four contemporary English language authors. The quality of the questions and comments from the very diverse local audience was nothing short of breathtaking.

As the seasons rolled by, the security situation improved in southern Iraq, but we generally remained unable to move outside the Ur compound without an arranged escort, and the Da'esh years brought yet more sorrow to our Iraqi colleagues. We were grateful for the space inside Ur, where there was room to walk, go running, stroll around the remains of that great city, and live in the grand and affecting presence of the ziggurat. Despite everything there were opportunities to visit the Marshes, Kerbala, Warka, Eridu, Larsa, Al-'Ubaid, Babylon and other great archaeological sites we never thought we would see again, also some very remarkable new ones, such as Abu Tbeirah and Shmeit.

Work continued annually through spring 2017, after which excavations switched to a very different, but also remarkable ancient settlement, Charax Spasinou, founded by Alexander and subsequently a major city of the Parthian empire. But that is a story for another time. The following chapters exhibit what we discovered at Tell Khaiber, and what we think it means. The achievements will be self-evident, but some aspects of the project did not achieve the results we planned, and it is important to record that too. The main omission from this volume is the environmental and specialist work, and more about that can be found in Appendix 1. Another aspiration that did not work out entirely was our desire to involve Iraqi archaeologists fully in what we were doing. There was much goodwill on both sides, but there were communication and language hurdles, and gaps in skills and expectations that we could only partly overcome. Some of those sent to us seemed chosen according to perceived desserts rather than aptitude or motivation to learn. Those who seemed to us to have learned well did not necessarily prosper in consequence, the mechanisms of advancement in local archaeology being quite opaque to us, and in fact none of our business. With hindsight, we should have made a priority of procuring

the services of a bilingual assistant for the training. Our use of advanced all-electronic recording methods may have added to the comprehension difficulties, though it is our persistence in applying these that has enabled prompt publication of results. Other bodies such as EAMENA have addressed some of the same challenges subsequently, and the results are bearing fruit.

When we began in 2013, ten years ago now, there was almost no archaeological work going on in southern Iraq, and university-level teaching was greatly atrophied. Now there are many projects, and the universities are beginning to thrive again. It has been the greatest privilege to be there for a part of this journey, and to add a new element to the extraordinary history of that country. The people of Iraq continue to face economic, political and environmental challenges, and general uncertainty about the future. They probably always will. But if their history tells us anything, it tells us that their resilience will always triumph.

Ludlow, UK
17 July 2023

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Baron Lorne Thyssen-Bornemisza at the Augustus Foundation provided the main financial support for the entire project.

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Mikdam Al-Kadhi
Bill and Sue Rees
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Luay Toma
Ala'a Zaki

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Amir Doshi introduced us to the wonderful Dhi Qar branch of the Iraqi Writers' Union, to the vibrant cultural life of Nasiriyah, and many other delights. He is the best friend an archaeologist, or indeed anyone, could have in that city.

Governor of Nasiriyah Yahya al-Naseri made repeated visits to the site, greatly enhancing profile and publicity.

Sheikh 'Atiyah Hashem, the landowner of Tell Khaiber, gave us permission to work there and provided workmen.

The Mohsen family, Dhaif, Ghanni, Nasrullah, Ghali, Haider, Akram and others, went above and beyond the call of duty to keep the wheels oiled at Ur and Tell Khaiber.

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Dr Ja'afar al-Jotheri
Dr Haider Al-Mamouri
Cynthia Bates and Dr Geoff Emberling
Professor Roger Matthews
Professor Dr Adelheid Otto and Dr Berthold Einwag
Professor Elizabeth Stone
The late Professor Tony Wilkinson
Professor Henry Wright

Jassim Al-Assadi gave the team the experience of a lifetime in the Marshes.

Salah Mhawish of Bat'ha befriended the expedition from the start and brought teachers and students to visit.

Dr Kais Kubba in London translated our annual reports into impeccable Arabic.

Ahmed Al-Dejaili introduced me to the Iraq Humanitarian Dialogue Foundation in London.

For the initial visit in 2011

David Phillips put us in touch with Ahmad Chalabi, q.v., and came on that first extraordinary visit in 2012.

The late Ahmad Chalabi provided airfares, accommodation in Baghdad, Erbil and Nasiriyah, armed protection and secure transport in 2012.

Farouk Al-Rawi put us in touch with the right people in SBAH, and gave us an all-important personal recommendation to them.

Michael Aron gave moral support in 2012, and paved the way to some FCO funding.

Qais Hussein Rashid received us at the Iraq Museum, granted a permit for Tell Khaiber, and kept a graciously straight face at my first attempt for a very long time at serious communication in Arabic.

Henry Wright responded immediately to enquiries about Tell Khaiber, and sent us his original survey notes from 1966.

The late Abdulamir Hamdani showed us Tell Khaiber, introduced us to the landowner, and helped in many ways.

Elizabeth Stone put us in touch with Abdulamir, and shared satellite images and other information.

The late John Samuels, our benefactor from Bahrain, tried again for us in Dubai.

For the fundraising visit in 2012

Mahdi Sajjad, then CEO of Gulf Sands, paid for the fundraising visit and got me into an Iraq British Business Council meeting, where despite certain challenges I was able to meet several helpful people.

William Wakeham found a way for me to get a real Iraqi visa, and introduced me to contacts in Dubai, and to Michael Christy.

Mehiyar Kathem met me on arrival in Baghdad, put me up at Culture for All in Karrada, helped me get around, and generally ensured my safety.

Richard Crow facilitated help, especially with transport, from the Amar Foundation in Basra.

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Journalists Jane Arraf, Tim Arrango and Prashant Rao all gave me advice and secure lifts. I was, and remain, in awe of their courage and professionalism in a very tough environment.

Zaab Sethna put Baron Lorne Thyssen-Bornemisza in touch with me.

Contents

FIG. 1.1. Tell Khaiber in the landscape (S).

Note: In this and all subsequent photographs the approximate direction in which the photograph was taken (i.e. looking towards the top edge of the image) is given in brackets.

STUART CAMPBELL

1. Tell Khaiber in the Landscape

LOCATION AND DISCOVERY

Tell Khaiber lies thirty kilometres west of Nasiriyah in Thi Qar province. It is approximately nineteen kilometres northwest of Ur, and twenty-six kilometres south of Larsa (Fig. 1.2). The toponym *Tell Khaiber* in fact applies to two separate mounds, both part of the same archaeological landscape, called here Tell Khaiber and Tell Khaiber 2. The focus of excavation has been Tell Khaiber, the more southerly, where the main excavated remains, including the Fortified Building, date to the First Sealand Dynasty of the mid-second millennium BCE. Tell Khaiber 2 lies about one kilometre to the north-north-west and is slightly later in date, with surface survey and three soundings indicating occupation during the Kassite period. Tell Khaiber 2 can probably be considered the successor to Tell Khaiber, with the same strategic factors determining its location.[1]

The earliest record of the site(s) of which we are aware is as Ishan Khaibar, recorded in 1953–4 as part of the 'Survey of Central Sumer'.[2] Although the map published subsequently by Jacobsen is at too small a scale to be completely clear, the location is compatible with that of Tell Khaiber. Its position on his proposed line of the Iturungal canal matches closely with our understanding of the landscape. However, as he records 'a medium low mound with surface pottery of Cassite-Middle Babylonian period', it is possible that he was referring to Tell Khaiber 2, where Kassite pottery is much more common.[3]

The Khaiber mounds were also visited by Henry Wright in 1966 as part of his survey of the southern margins of Sumer.[4] Tell Khaiber is recorded in the survey as EP 60, and called Ishan Khaiber. It measured 265 × 245 m, and periods represented in the surface pick-up of pottery were Late Ubaid, Jemdet Nasr (3.5 ha), Ur III–Early Larsa (0.8 h), and Cassite (trace). Tell Khaiber 2 is recorded as Site 61, with the name Tell Gurra. A sketch plan of Ishan Khaiber, previously unpublished, shows the general shape of the mound, with the extent of the main periods plotted out (Fig. 1.3). The second millennium occupation is restricted to the northeastern part of the mound. That of the Jemdet Nasr period is more extensive, and includes an area of kilns along the northwestern edge. With some chronological

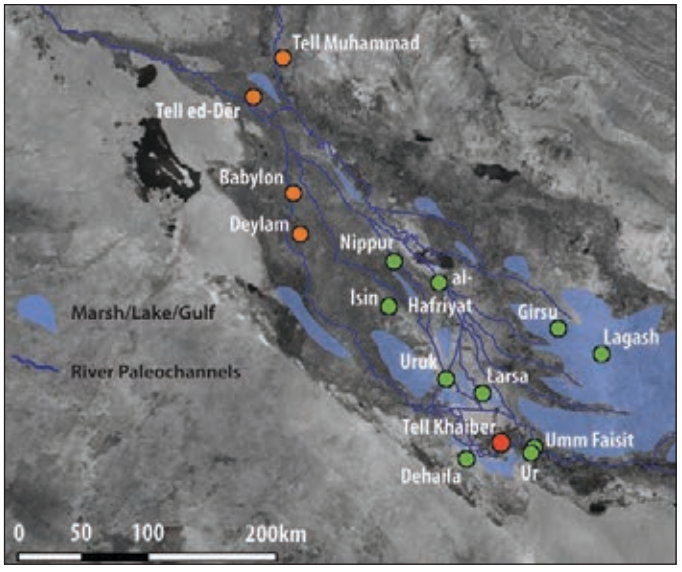


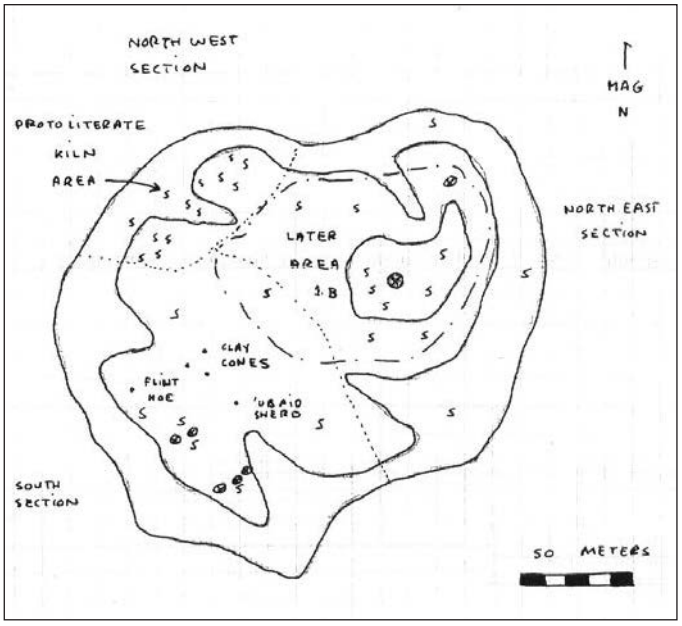
FIG. 1.2. Map of the Mesopotamian alluvial plains with key sites: Tell Khaiber (red), southern/central plains (green), northern plains (orange). Location of ancient Gulf, wetlands, and river paleochannels after Jotheri (2016: 172, fig. 5.1). Base map: © Bing Maps. Illustration courtesy of Daniel Calderbank.

[1] See Campbell et al. 2017b.

[2] Goetze 1955: 129; Jacobsen 1960.

[3] Jacobsen 1960: 179; for map see pl. XXVIII.

[4] Wright 1981.



KEY
⊗ Recent grave
S Sherd concentration
B Baked brick
— · — · — Second millennium occupation bounds
····· Bounds of three different collection areas

FIG. 1.3. Sketch map of Ishan Khaiber by Henry Wright. Done by compass and pacing, both the shape of the mound and the proposed extent of protoliterate and second millennium occupations are impressively accurate. Illustration courtesy of Henry Wright.

tweaks—the result of an additional sixty years of further refinement of pottery sequences—the observations made in the course of the original survey have proved extremely accurate and have been validated by our excavations. In the Iraq Directorate General of Antiquities survey of 1976, *Atlas of the Archaeological Sites of Iraq*, both sites are called Ishan Khaiber.[5]

Tell Khaiber has been suggested as one possible location of Enegir, the cult place of the god Ninazu and his spouse Ninĝirida. Enegir is named in a religious text as a ceremonial halt on the god Nanna's journey by boat from Ur to Nippur, which fits with the geographical location of Tell Khaiber.[6] However, the textual references to Enegir span the ED III to Ur III periods and the lack of any *in situ* remains or indeed pottery of these periods at Tell Khaiber renders this identification unlikely.[7]

THE REGIONAL LANDSCAPE

The key to understanding why Tell Khaiber was chosen as the site for the Fortified Building lies in its position within the landscape, particularly in its relationship to the canals and river systems.

There are two relict Euphrates beds that are relevant for the second millennium occupation of Tell Khaiber. The Eridu channel of the Euphrates ran less than 20 km to the west of the site at its closest point during the second millennium (Fig. 1.4). With abundant meander scrolls, this channel seems to have carried the main Euphrates flow. The second paleochannel, here referred to as the Ur channel(s) for simplicity, runs very close to Tell Khaiber and immediately to the north of Tell Khaiber 2. Both branches were active in the second millennium BCE.[8]

The Ur paleochannel splits just north of Tell Khaiber 2, with one branch running close to the present course of the Euphrates (Ur channel 2 on Fig. 1.4) and the other running more directly south, just to the northeast of Tell Khaiber and continuing in an almost straight line to Ur (Ur channel 1). On a recent digital elevation model the levees that channel both courses are clearly visible.[9] Both channels are rather straight with a general absence of meander scrolls, which strongly suggests canalisation rather than natural river courses. The Ur channel 1 is the levee noted by Hammer.[10] It had settlements along its course dating to both the Late Larsa/Old Babylonian and the Kassite periods, indicating that it remained in use throughout the mid-second millennium.[11] Ur channel 2 cannot be dated as clearly, but the discovery in more recent surveys of the presence of mid-second millennium sites immediately to its north suggests it was probably also in use at this time.[12] Further north, the Ur channels would have connected the canal and river system directly to the Uruk region. Waterways visible on satellite images also suggest that it may also have connected to the area around Larsa, although the relict channels are broken by the present course of the Euphrates.[13]

The Eridu branch of the Euphrates ran south past Tell Deḥaila before turning east, passing south of Eridu and heading towards Tell Lahm. This branch had a complicated history of shifting channels. An intricate series of secondary channels running to the east from this have been described as "Hundreds of thread-like channels, 1.5–10 meters wide… suggesting levee cultivation combined with intensive marshland exploitation".[14] Close to Tell Khaiber the canal system seems to be a little different: the canals are much

[5] Map 73: Site 108 Ishan Khaiber = Tell Khaiber; Site 107 Ishan Khaiber = Tell Khaiber 2.

[6] For the most recent discussion of the location of Enegir and relevant texts, see D'Agostino & Greco 2019: 469–71.

[7] Fragments of three baked bricks with an inscription of Amar-Suen represent the only trace of any presence at Tell Khaiber between the ED I period and the Sealand Dynasty (see p.120).

[8] Pournelle 2003: fig. 26; Jotheri 2016; Hritz et al. 2020: fig. 16.6.

[9] Copernicus GLO-30 DEM (based on TanDEM-X/WorldDEM data).

[10] Hammer 2019: fig. 16.

[11] Wright 1981.

[12] Al-Hamdani 2020.

[13] Hritz et al. 2020: fig. 16.6.

[14] Pournelle 2003: 174.

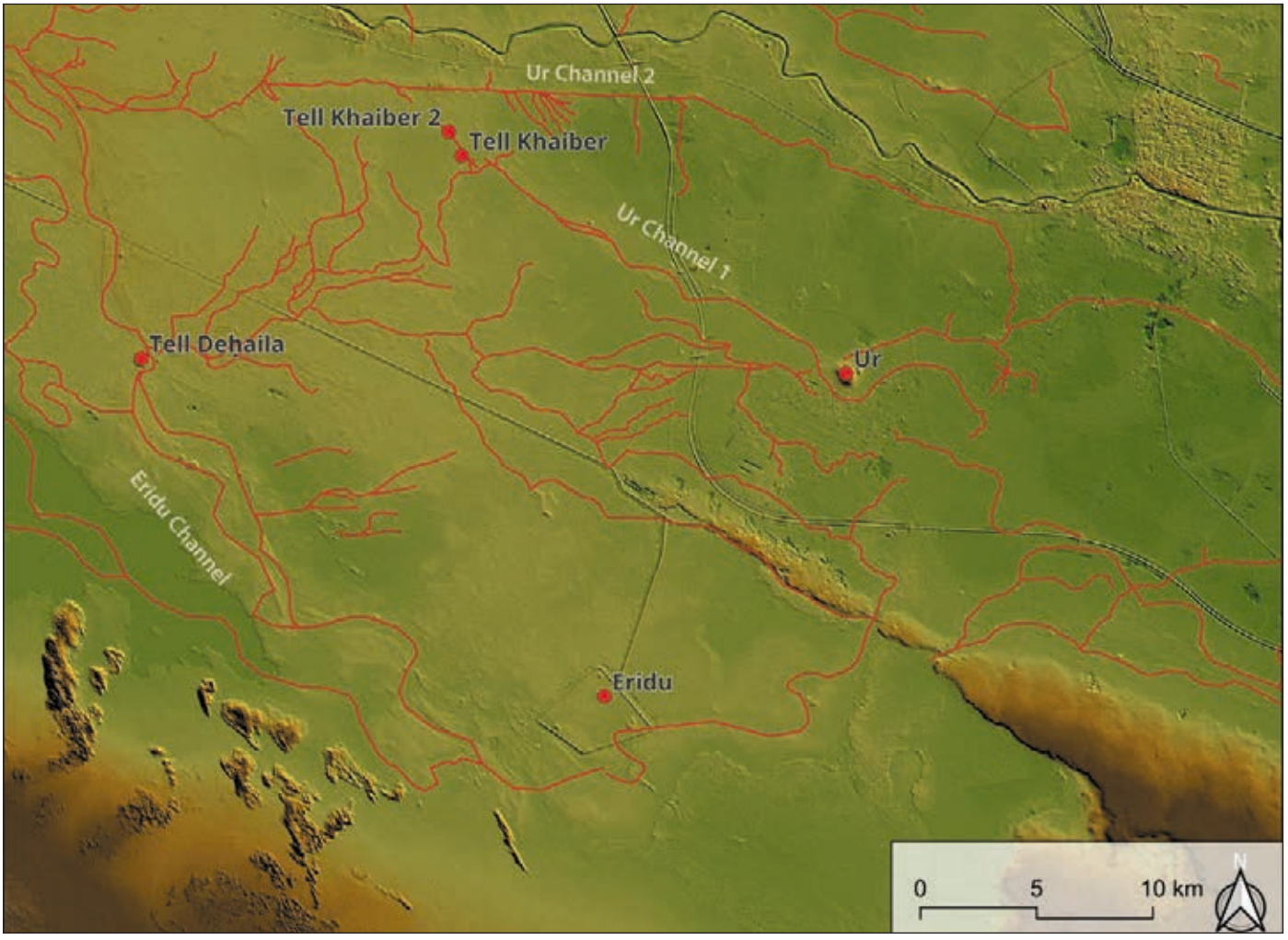


FIG. 1.4. Watercourses in the region of Tell Khaiber (adapted from Jotheri 2016) plotted on a hill-shade model derived from the Copernicus GLO-30 DEM.

straighter, with few branching waterways spreading away from them. It is possible that there was a more structured set of herring-bone irrigation canals running off the south bank of the Ur channel 2, just to the northeast of Tell Khaiber.

Tell Khaiber itself is situated on a band of land running *c.*18 km northwest to southeast, and up to 7 km wide (Fig. 1.5). While only lightly used for agriculture at the time of our excavations, historical satellite imagery shows that it was intensively cultivated in the 1960s and 1970s. The density of repeated recut irrigation canals already apparent in satellite images from the 1960s shows that this was the case over a much longer period of time. To both the north and south, this area is bounded by extensive areas of lighter soils from former marshes and flooded areas. The Ur channel 1 forms the northern boundary of this zone. The southern boundary is less precise. The former winding and dendritic waterways that run eastwards from the Eridu channel cut into the southern edge of this zone.

Al-Hamdani recently argued that south of Uruk, the landscape was largely marshland, apart from a narrow strip of dry land along the Eridu branch of the Euphrates, with its concentration of settlement, and a second strip of dry land that may have extended south from Larsa, almost as far as Tell Khaiber.[15] However, more local variations seem probable within this larger scale pattern. Jankowski-Diakonoff has suggested that the marshlands to the east of Tell Deḥaila only extended as far as this more cultivated zone,[16] and has proposed calling this area the *Ur Marsh*.[17]

Tell Khaiber was, therefore, situated on the edge of an area of drier land that could support agriculture, in an area where the water was more locally drained and canalised. It would have been prone to flooding and at certain times of the year may have been surrounded by wetlands, but in a marshy landscape it would have provided a valuable agricultural resource.

This geography places both of the Tell Khaiber sites at a particularly strategic position. They would have been able to control movement of water-borne transport from north to south, as both sat directly on the canal that forms the Ur

[15] Al-Hamdani 2020: 46–7.

[16] Jankowski-Dyakonov et al. 2019: fig. 2.

[17] Jankowski-Diakonoff 2020:19.

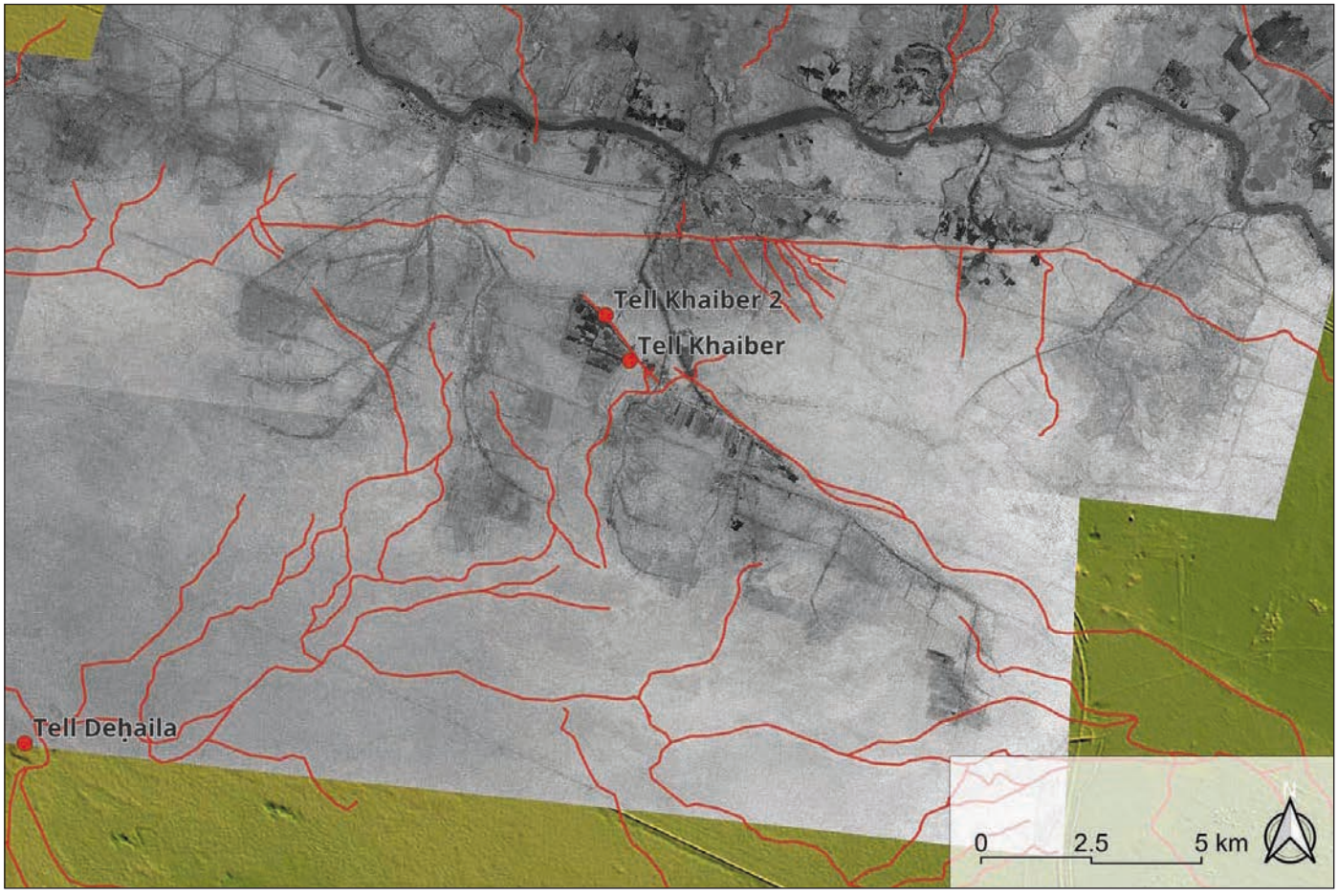


FIG. 1 5 The region of Tell Khaiber: KH-9 (Hexagon) satellite images D3C1212-300642A015 and D3C1212-300642F014, acquired 26/9/1976. U.S. Geological Survey 2015.

channel 1. Tell Khaiber was only four kilometres from the junction between Ur channels 1 and 2, and Tell Khaiber 2 was even closer, at three kilometres distance. If a canal running to Larsa is reconstructed, as suggested above, it would join the Ur channel at about the same point that the Ur channels themselves split. This would allow movement from the north, potentially from the Sealand border areas towards Uruk and Larsa as well as the more hostile regions further north, to be monitored and controlled. Movement of boats could have been observed and water-borne patrols easily mounted. From the ramparts of the Fortified Building at Tell Khaiber, a wide area could be observed. While it would almost always have been diminished by dust and heat haze, the maximum visibility in a flat plain from an elevation of 10 m, the suggested height of the towers, would be about eleven kilometres. Tell Khaiber also sits close to the more sinuous canal lines running to the south and southwest, which eventually link to the Eridu channel at the second millennium site of Tell Deḥaila. Tell Khaiber 2 is only slightly more distant. Both locations would have allowed movement from the Ur channel of the Euphrates to the western Eridu branch to be monitored, suggesting great care in selecting a location which could monitor multiple routes. If Tell Deḥaila is indeed a central site of the Sealand Dynasty,[18] this control over east-to-west movement may have been very significant.

The historical satellite images show a landscape that in the immediate vicinity of the site has only changed slightly since the mid-1960s. The major development has been the road that truncates the western edge of Tell Khaiber, together with the large irrigation canal that runs alongside, and was constructed after 1976. Earlier irrigation canals have been recut and cleaned out, but the alignments have remained very much the same and, although the exact area under agriculture varies, the broader pattern of agricultural fields has altered little.

Many current and former canals run between Tell Khaiber and Tell Khaiber 2 (Figs. 1.6, 1.7). This is clearly a very well-established system that has been cut and recut repeatedly, reinforcing a long-standing field boundary and division in the terrain. In satellite images from the 1960s, the line of the canal runs immediately to the west of Tell Khaiber 2, probably avoiding the raised ground of the site itself and reflecting a very old alignment. The most recent extensive recut between 1976 and 2003 was along this line. A much older canal line cuts through the centre of

[18] Al-Hamdani 2020; Jankowski-Diakanoff 2020.

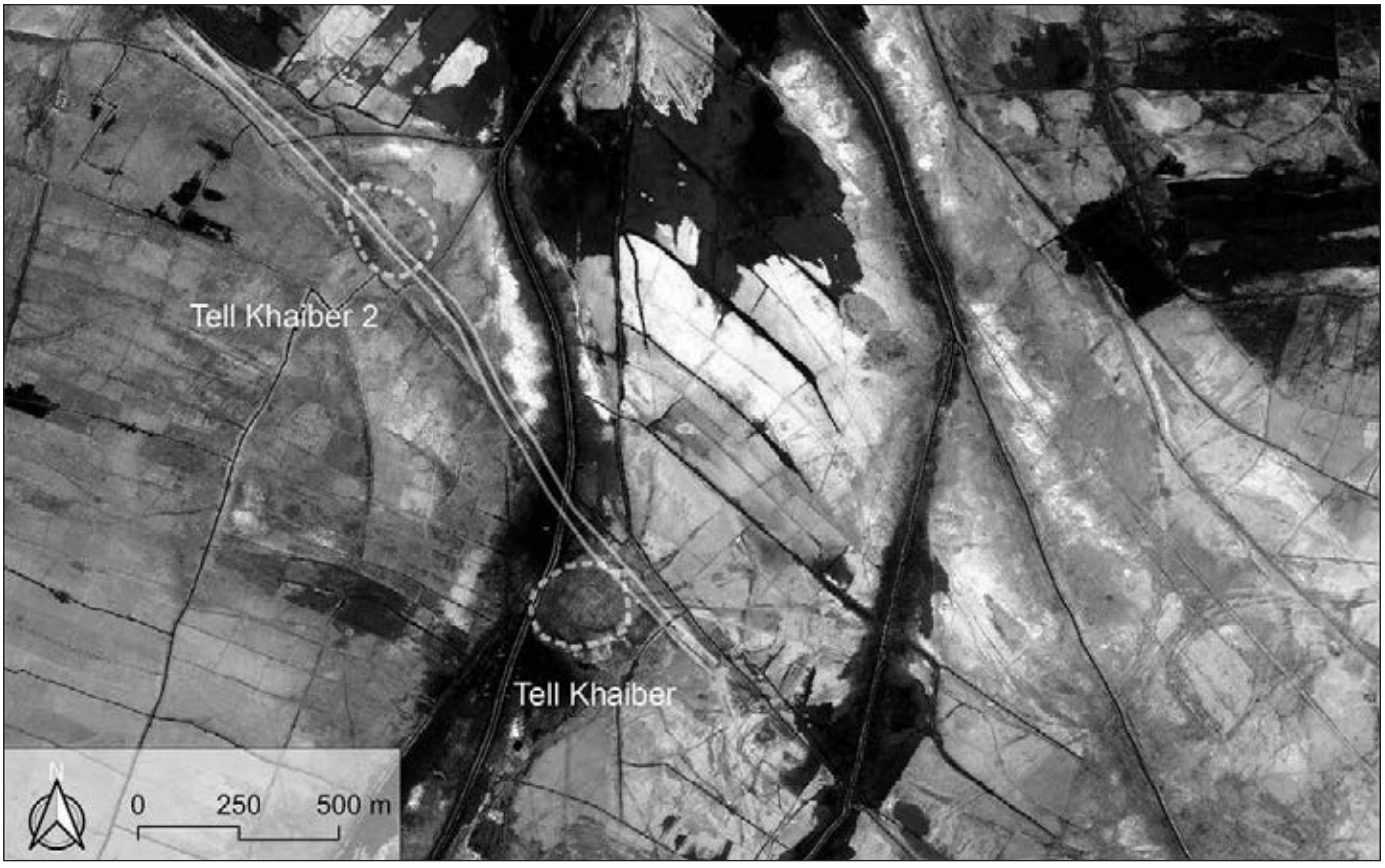


FIG. 1.6. Satellite image of Tell Khaiber mounds with relict canals marked. Image acquired 22/2/2003, courtesy of Digital Globe Foundation.

Tell Khaiber 2, running from the north of the site where it merges with the water laid deposits of former Euphrates channel and its flood zone less than 500 m further north.

Within the boundaries of Tell Khaiber 2, two distinct relic canal beds can be distinguished, each 15–20 m wide and running parallel to each other; they are presumably recuts of what was essentially the same canal. They run between the low mounds of Tell Khaiber 2, immediately adjacent to a large building visible in satellite images, and then continue past the northern edge of Tell Khaiber before heading southwest. While the direct dating of the canal remains to be confirmed, a sounding intersecting one of them at Tell Khaiber 2 suggested that it was cut from the same surface that has occupation associated with Kassite pottery. Upcast from its fill also contained characteristic Kassite ceramics. The exact line of these canals past Tell Khaiber is obscured by current canals, ditches and upcast as well as by the repeatedly recut canals of many ages. However, the alignment suggests that it must run directly to the north of Tell Khaiber, almost adjacent to the mound itself, and thus be associated with the occupation of both mounds. The alignment of the canal, and probable traces in satellite images, indicate that beyond Tell Khaiber it continued southeast as the main canal running towards Ur as Ur channel 1 (Fig. 1.5).

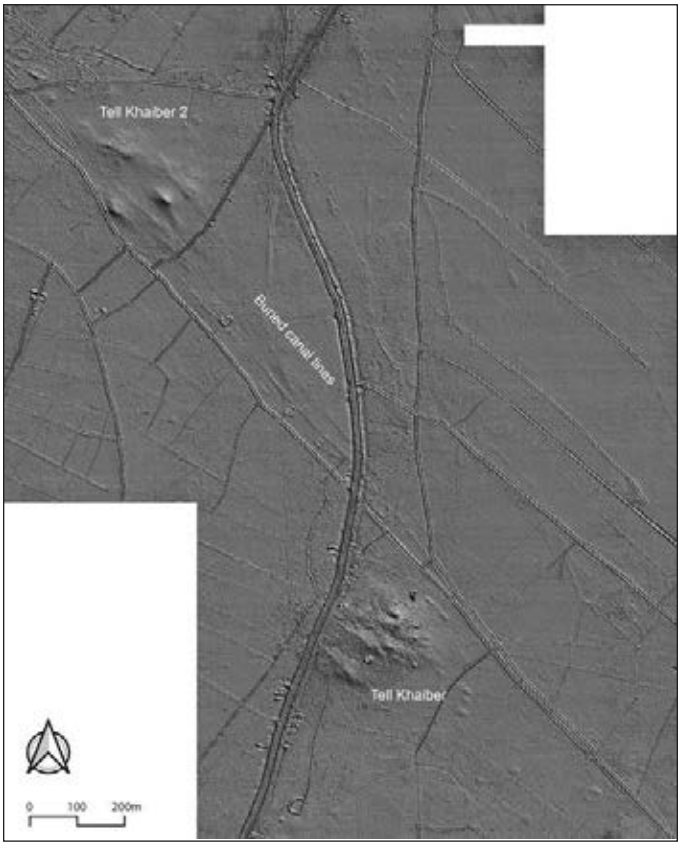


FIG. 1 7. Digital Elevation Model of the landscape around the Tell Khaiber mounds.

SITE CHARACTERISTICS AND SURFACE EXPLORATION

The visible mound of Tell Khaiber would originally have been close to circular and about 250 m in diameter before the canal and modern track cut the edge of the site (Fig. 1.8). It stands little more than 2.5 m above the level of the surrounding plain, although some of the earlier archaeological deposits lie significantly below the present plain level.[19] The mound has several rather subtle but distinct topographic areas. The highest point is at the northeast, where the Fortified Building was situated. To the west of this area, there is a small rise some 50 m long and 25 m wide. Shallow gullies cut in from both sides of the site and divide this part from the central lower-lying mounded area. A deeper gully cuts across the southern portion of the site, leaving a lower, linear mound about 75 m long as the distinct southern limit of the site. The edges of the site merge gradually with the surrounding plain, partially covered by water-laid soil from flooding and from slope wash. Off the northeastern edge of the mound there is a low ridge almost 75 m long and running from northwest to southeast. This rises no more than 20–30 cm above the plain. Its position and orientation suggest either that it is occupation that has been truncated by canal construction, or that it is an activity zone that was situated along the edge of the canal.

Both Tell Khaiber and Tell Khaiber 2 had substantial buildings visible in satellite images. At Tell Khaiber, the outline of the southwestern part of the Fortified Building (the southern unit) is very clear, with external buttresses and some hints of internal features (Fig. 1.9). That there was an extension to the northeast (the northern unit) is also obvious, although its details are less apparent. The Eastern Houses can also be seen. At Tell Khaiber 2 a large rectangular building is visible (Fig. 1.10). This measures at least 60 × 40 m and seemed to be constructed around a series of courtyards.[20]

Apart from the excavation of the Fortified Building and Eastern Houses, investigations also included an initial collection of surface material, evaluation trenches and/or surface scraping on outlying areas, and, quite late on in the project, a geophysical survey. Each of these activities provided valuable information about the extent, date and nature of occupation across the site, and the results of the different approaches are integrated into the following account.

At the start of the project (2013), a systematic surface collection of material was undertaken to identify major variations in surface material (Figs. 1.11, 1.21).[21] Ground conditions were reasonably consistent, some areas having a low density of camel thorn but not enough to make collection difficult. Areas immediately away from the mounded part of the site had powdery, deflated surfaces. Sherds, however, tended to be pedestalled which made them more visible than elsewhere.

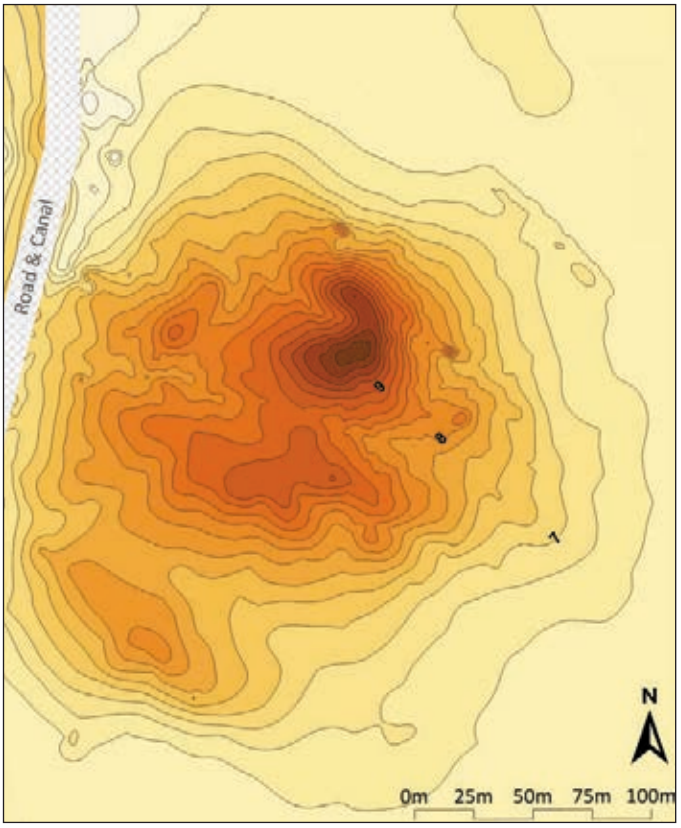


FIG. 1.8. Contour map of Tell Khaiber, 20 cm intervals.

A geophysics survey was completed in 2016, towards the end of the project (Figs. 1.13, 1.14).[22] This covered most of the surface of the mound but very little of the Fortified Building as excavation was in progress, making walking impossible over most of the building and, in some cases, creating extraneous signals from immobile excavation equipment. Walking conditions were variable. Much of the mound surface was difficult terrain, with sloping, soft surfaces, often covered with dense camel thorn. In some areas this undoubtedly impacted the speed and regularity with which the transects could be walked, producing some unavoidable loss of quality.

[19] The base survey point for Tell Khaiber was assigned an elevation of 10 m, an arbitrary value chosen to ensure only positive numbers would be required. Later measurements show that this was approximately 8.72 m above sea level.

[20] Campbell et al. 2017b.

[21] Collection points were laid out at approximately 20 m intervals, defined by a circle with a radius of 20 m^2. Additional collection points were added to ensure that visible topographic features were sampled, including localised mounding and obvious artefact concentrations. All material was collected: artefacts, slag and stones.

[22] Data was collected in 20×20 m squares using a Bartington Grad601 dual channel fluxgate gradiometer, measured with a range of ±100nT and resolution ±0.03nT. Readings were taken at 12.5 cm intervals along transects 0.5 m apart, walked as zigzag traverses. A total of 99 grid squares were surveyed, producing a surveyed area of 3.96 ha.

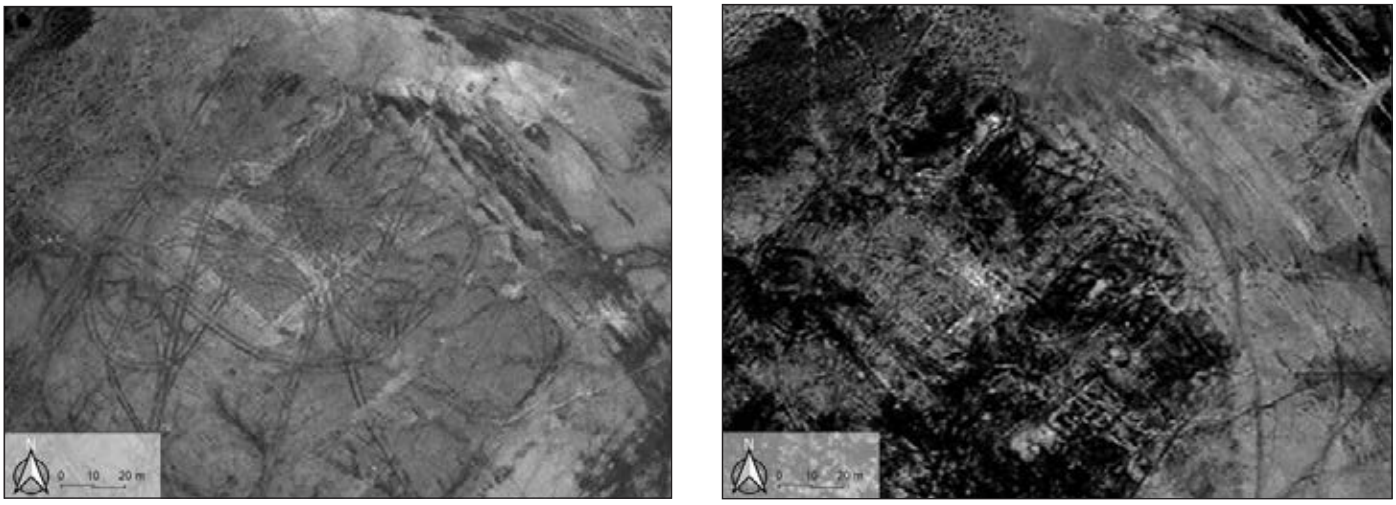


FIG. 1.9. Satellite images of Tell Khaiber (taken 22/02/2003 and 24/10/2010). Images courtesy of Digital Globe Foundation.

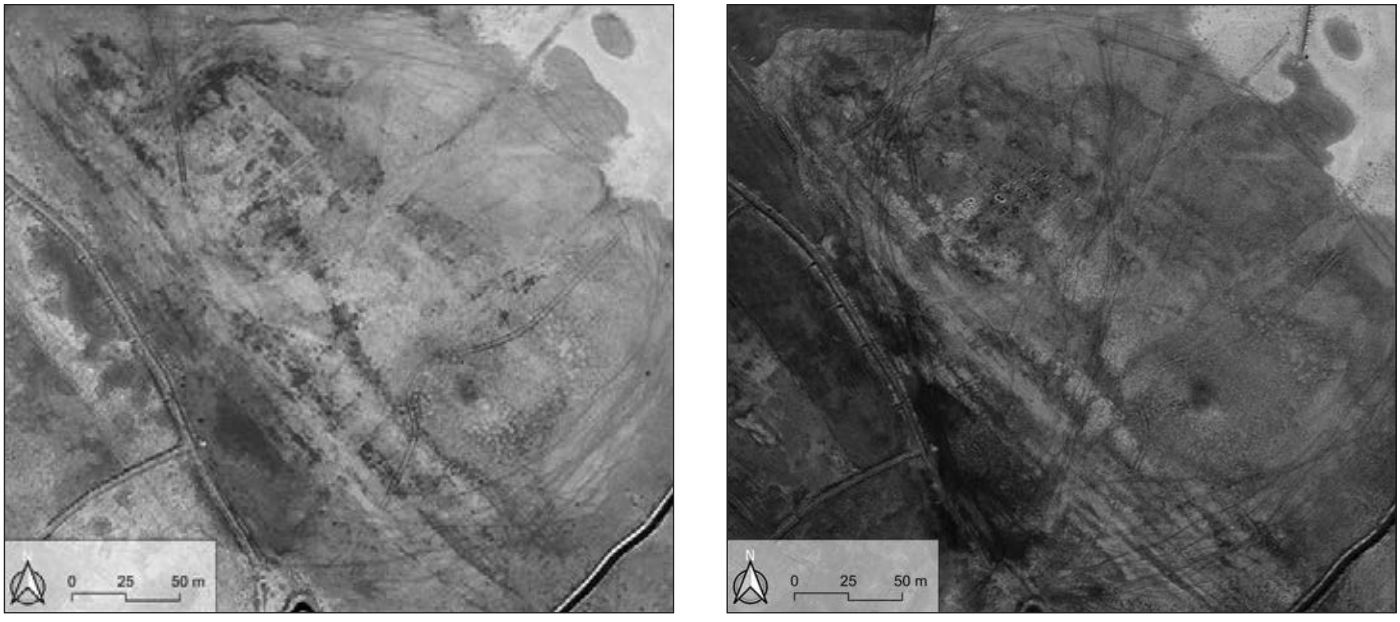


FIG. 1.10. Satellite images of Tell Khaiber 2 (taken 22/02/2003 and 24/12/2010). Images courtesy of Digital Globe Foundation.

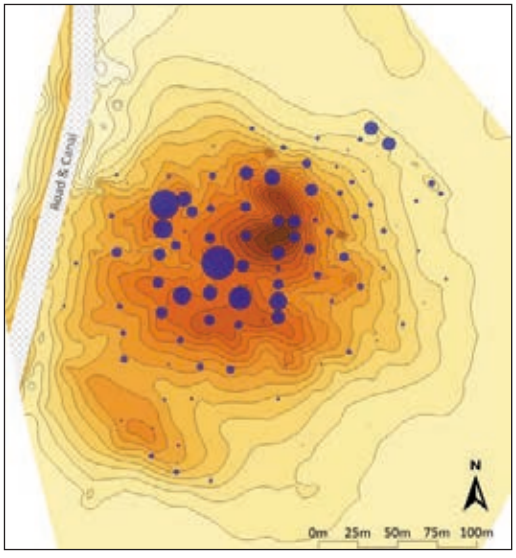


FIG. 1.11. Distribution of pottery sherds.

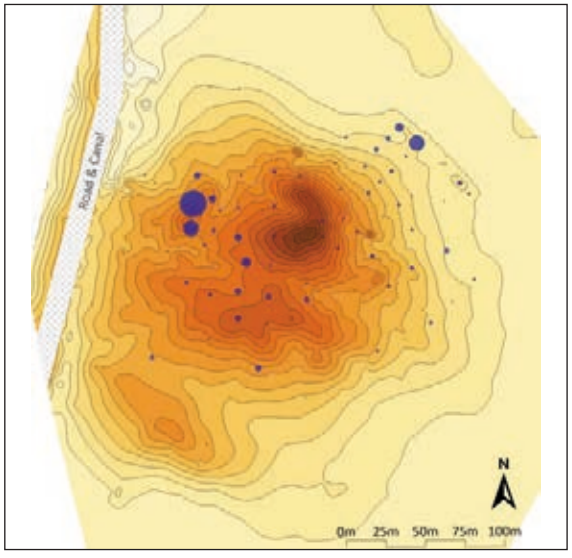


FIG. 1.12. Distribution of slag.

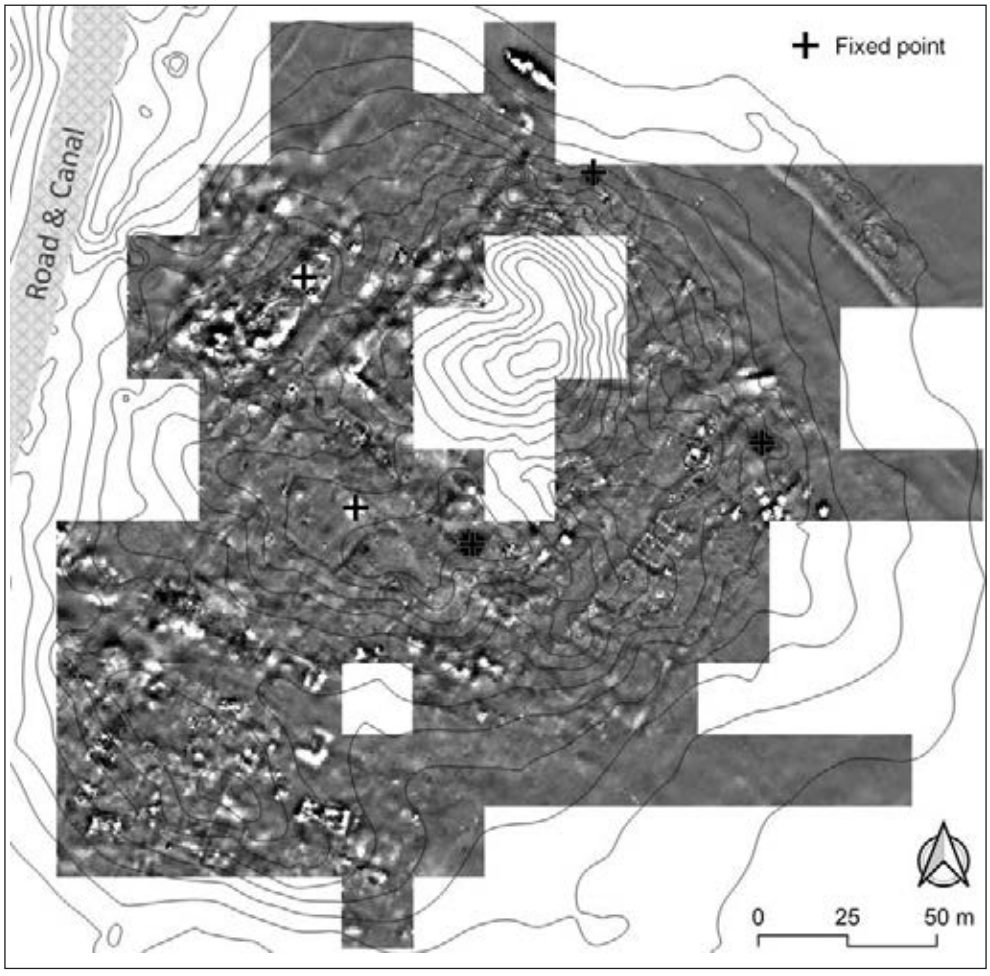


FIG. 1.13. Gradiometer survey of Tell Khaiber (-14 to 14nT).

Artefacts were found across the entire surface of the site itself. Almost none occurred on the surrounding flat plain or the lowest slope of the site. The main concentrations were in the northern part around the Fortified Building and on the central part of the mound. Around the Fortified Building the ceramics were generally of second millennium style. Sherds from surface survey, as well as sherds found in excavation of Sealand levels but derived from earlier contexts, include the occasional 'Ubaid or Uruk fragment and a little Jemdet Nasr ware, but the majority of the pre-Sealand pottery we encountered dates to the early part of the Early Dynastic Period.[23]

The highest concentration of ceramics was in the low mounded area to the west of the Fortified Building, where the sherds were almost all heavily vitrified and of third millennium date. Ceramic slag and wasters were also frequent in this location, which is almost certainly a pottery production area. Geophysics in this area identified a very strong positive anomaly of up to 80nT, which is likely to be the kiln itself. A surface scrape of the kiln area (Area 805 on Fig. 1.15) was abandoned after the initial clearance because it was so densely packed with wasters and vitrified material that work became impossible. The geophysical survey suggests that the kiln was at the southern end of a large rectangular enclosure, perhaps defining the limits of the pottery production area. The kiln area was also identified by Wright, and the pottery assigned to the Protoliterate period, but most of the pottery from our further investigations was a little later, i.e. Early Dynastic.

A ridge of upstanding deposits to the northeast of the mound had noticeable quantities of sherds of second millennium style, as well as pieces of slag, suggesting that it may have been the location of a kiln contemporary with the Fortified Building, perhaps situated on the opposite side of a canal. However, no structures were visible following surface scraping in Area 806.

Both third and second millennium ceramics were present on the central part of the mound. In contrast, the southernmost part had very low quantities of sherds, but where identifiable these were of third millennium date. Geophysics in this area shows rectilinear structures to the southwest of the Fortified

[23] Pottery from the earliest periods represented at Tell Khaiber has been treated in Calderbank and Moon 2017. This study was completed before the excavation of evaluation trench 805, in which the predominating shape was a deep conical bowl. There were also solid-footed goblets, jars with four rim-tabs and other typical ED I forms. Whether the occupation overlaps with Jemdet Nasr or extends back into the late fourth millennium is not known.

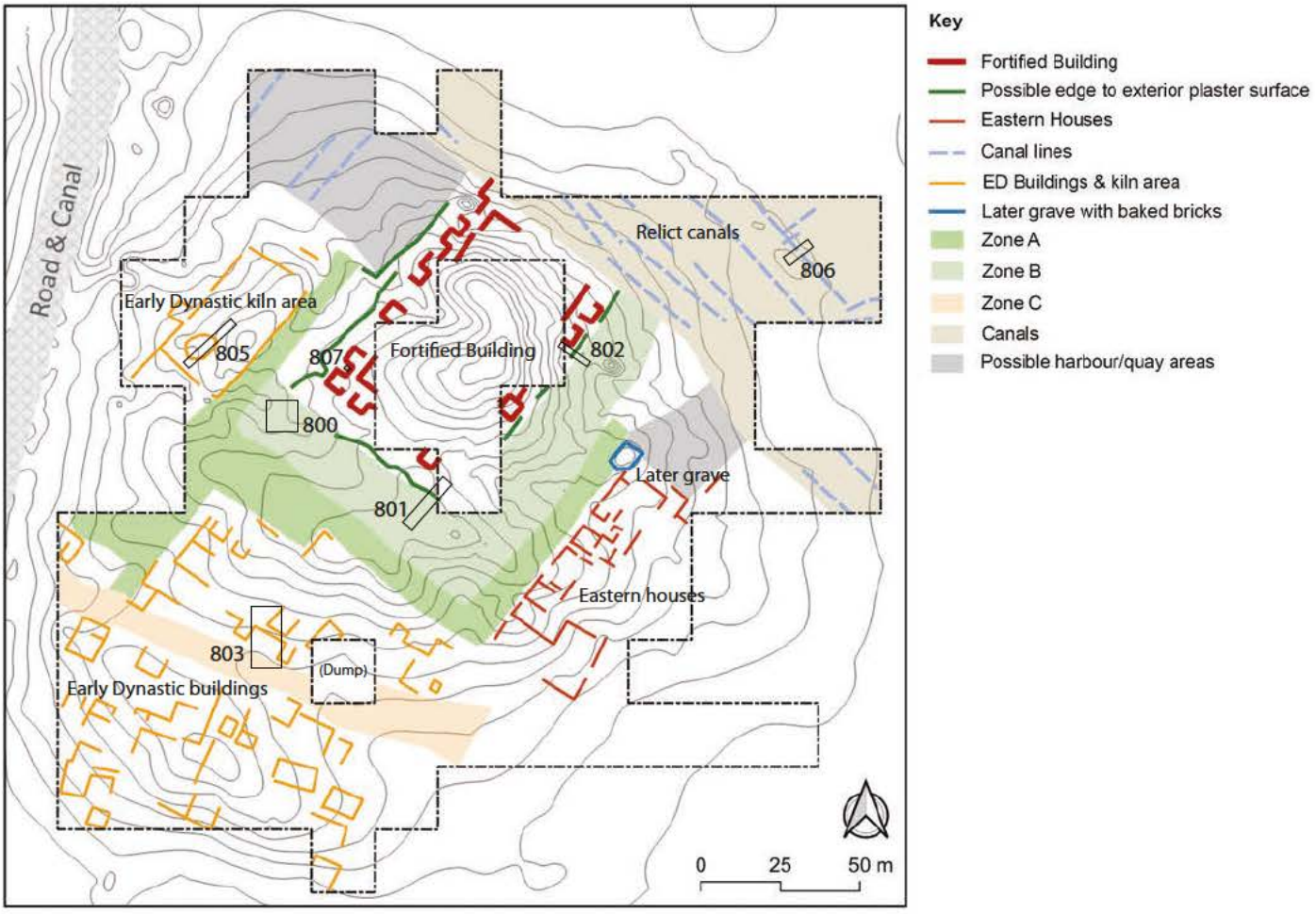


FIG. 1.14. Interpretation of geophysical survey of Tell Khaiber and location of 800 series of evaluation trenches/surface clearances.

Building, generally built on a different alignment. These were divided by a *c.*8 m wide linear feature running through a gulley between the more mounded areas (Zone C on Fig. 1.14). This might represent a road, but the scale and lack of magnetic variation within it suggests that it may be a canal. Area 803 in this area was excavated to a depth of one metre, but results were inconclusive. The pottery, however, was all Early Dynastic in date, with no second millennium material present, so it seems reasonable to assume that most, if not all, of the buildings lying to the southwest of the Fortified Building that show up on the geophysical survey are of this period. There is certainly no evidence for any second millennium buildings here.

On the eastern side of the mound at a distance of 38 m from the Fortified Building and running parallel with it, was the row of buildings that were visible in satellite images (the Eastern Houses). Surface ceramics from this area were second millennium in date. The geophysics survey shows that the rectangular houses extend for almost 70 m, with a common frontage towards the Fortified Building.

Baked bricks were rare except on the northeastern slope, where a baked brick structure was visible on the surface (Grave 15; see p.50). This may have slightly truncated the northern end of the Eastern Houses.

Multiple recuts of canals show up very clearly in the geophysical survey along the northeastern edge of the mound. The canal infill itself has a minimal variation, showing up as smooth regions with a signal between *c.*-0.5–1nT. The banks of each recut are visible as linear features with values up to 3nT. Most of these canal lines are oriented northwest to southeast, mirroring the line of both the ancient and more recent canals discussed above. A few run perpendicular to this alignment. In some cases, these are probably quite recent to allow lateral flow from canals. There are several, however, on the northern edge of the mound in an area that is relatively low and, rather like the canals, has little magnetic variation. It is possible that this was a mooring or small harbour area on the northwestern side of the Fortified Building. A small area to the southeast of the Fortified Building has a similar appearance.

The walls of the Fortified Building itself are visible in the geophysics as low variation areas, with positive signals of *c.*3–4nT. On three sides of the Fortified Building and extending from two to six metres from the main wall, is a zone with higher positive readings. This might correspond to the plastered surface which was found in excavation on the southeastern side (see pp.39–40), although it should be

noted that no surface was found in the limited investigations against the other two sides of the wall (trenchs 801 and 807).

The geophysical survey failed to reveal any structures close to the Fortified Building. However, there are two wide, linear features in the geophysics that run parallel to the walls of the Fortified Building (Fig. 1.14, Zones A and B). To the southeast and southwest, the clearest linear feature is about 25 m away from the exterior wall, to the northwest *c.*14 m (Zone A). It seems to be about 10 m wide and stands out because of its relatively low variation. The Eastern Houses to the southeast are aligned with this feature. A second linear feature (Zone B) is less well defined, perhaps because of later overlying deposits or erosion from the Fortified Building. It is closer to the building, runs parallel to the southeast and southwest walls and appears to be between twelve and seventeen metres wide.

Excavation confirmed the lack of built structures in this area. A surface scrape at the southern corner of the Fortified Building (Area 801) did not produce any visible wall remains, although it is always possible that buildings here were obscured by wash and debris from the later collapse of the Fortified Building. Similarly, in Area 800 no definitive walls were identified, although two *tannurs* were present. On the eastern side, there was also a lack of structures between the Fortified Building and the Eastern Houses. A surface scrape starting from these houses and running back towards the Fortified Building for a distance of thirteen metres failed to reveal any trace of structures.

Most strikingly, in Area 802 next to the southeastern wall of the Fortified Building there was a massive cut running parallel to the wall (see p.40). Excavation of this feature stopped at the water table, 2.6 m below the surface, without reaching the bottom. Its estimated width is not less than nine metres.

It is possible that the linear feature identified in the geophysics (Zone B) corresponds to this deep cut. Although in Area 802 the cut sliced through all the external plaster surfaces associated with the building and thus in its latest manifestation postdates the extant building levels, this may simply reflect a process of continual recutting. The alignment of the cut with the Fortified Building certainly suggests an association, in which case perhaps it represents a defensive ditch or even a water-filled canal.

The linear feature that lies outside the Eastern Houses (Zone A) might most obviously be interpreted as a formal walkway, running around the Fortified Building but keeping movement well away from the walls. Given that the building was heavily fortified, one may assume that it was desirable to keep the immediate surrounds free of obstruction in case of potential hostilities.

ROBERT KILLICK

2. The Fortified Building, Houses and Graves

THE FORTIFIED BUILDING

The Fortified Building covered approximately 4,490 square metres at its maximum extent, with twenty-six external towers and over seventy internal rooms and spaces. Approximately 94% of this area was surface scraped to reveal the outlines of the walls and rooms. In tandem, over the five years of the project 10% of this area was excavated to any depth. The main exposure was of rooms to the east of the courtyard in the southern unit where cuneiform tablets were present. Excavation here was of necessity slow and resource-hungry, but well worth the effort. Concentrating our efforts in this one area does mean, however, that relatively little is known about the rest of the building, particularly the northern part.[24]

The Building Sequence

The processes of erosion and deflation, as at other sites, have left us with an incomplete picture of the later history of the building. What is preserved can be divided into two main architectural/building levels. Level 1 represents the initial construction, while Level 2 sees a major expansion of the building and some repurposing of the original.

In Level 1, the building was originally just the southern unit: a rectangular block 53 × 27.5 m, with an external fortified wall 3.3 m wide and a single narrow entrance on the northeastern side (Fig. 2.2). On the corners of this block and arranged at regular intervals along all four external sides were projecting towers. Little is known about the internal layout at this time with the exception of a group of six sub-floor vaults in the southeastern corner. The building was then enlarged to the northeast attaining overall dimensions of 53 × 84.7 m (Level 2; Fig. 2.3). The brickwork of the external wall of the new construction (the northern unit) abutted one of the corner towers of the original building, clearly demonstrating that it was a later build. The northern unit repeated some of the features of the original building, including the arrangement of a massive external wall and towers with matching shallow internal buttresses. The entrance was not identified as the northeastern wall was badly eroded. However its central location on this wall is strongly suggested by the arrangement of the internal passages through the building as well as the absence of an entrance on the other sides.

FIG. 2.1. Descriptive labels and areas excavated.

The construction of the northern unit was accompanied by a change in the function of at least part of the original building. The vaults in the southeastern corner were filled in and a suite of rooms built above. It was from these rooms that

[24] This chapter is based on the excavation reports written by the team at the end of each season and reflects all their work, particularly that of Mary Shepperson and Fay Slater. Description and osteological analysis of the skeletal material from graves was provided by Andrew Chamberlain.

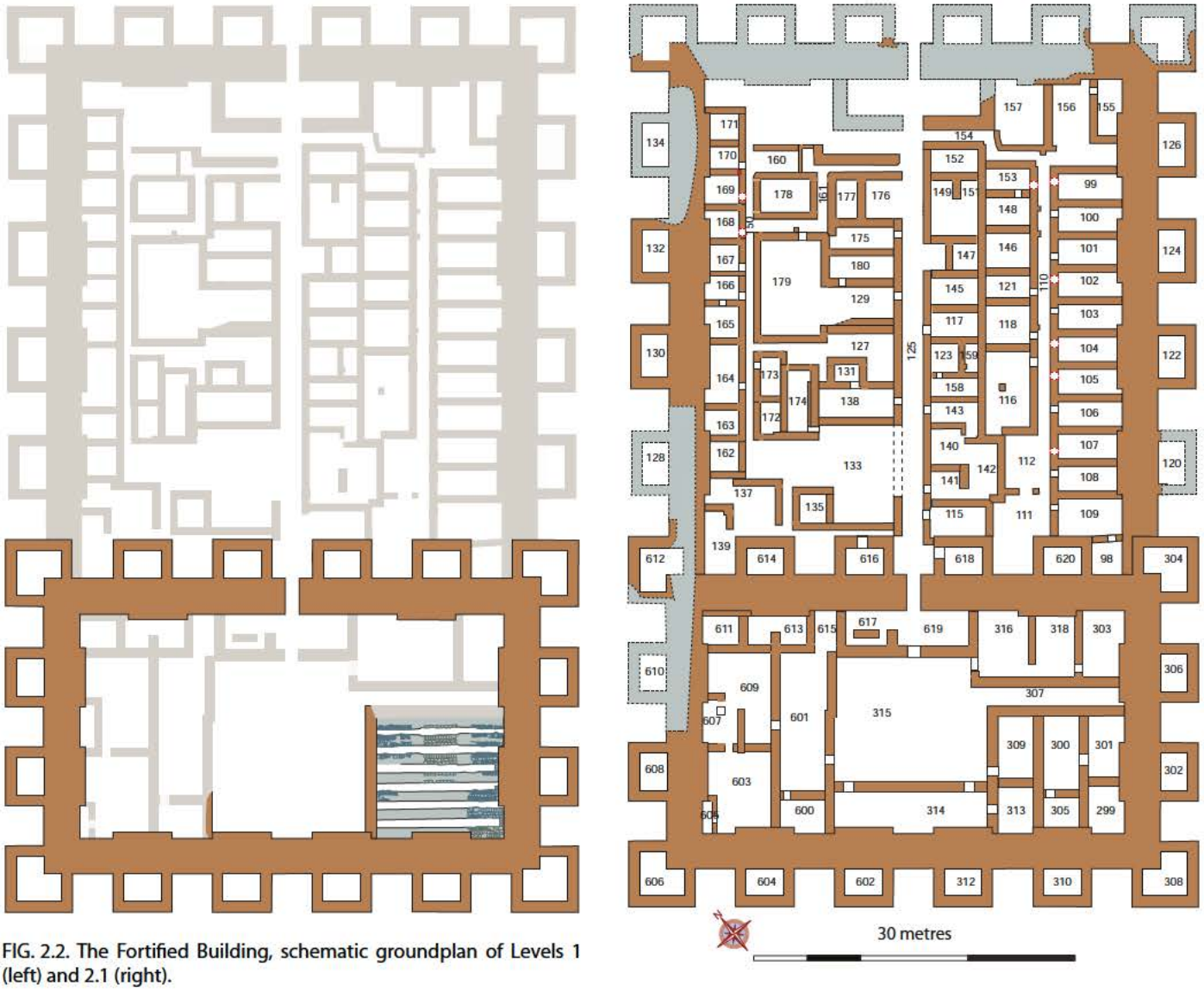


FIG. 2.2. The Fortified Building, schematic groundplan of Levels 1 (left) and 2.1 (right).

the tablets were recovered and hence they have been labelled the 'administrative suite'. Rooms here subsequently underwent some modifications, the latest of which was the subdivision of Room 309 and the insertion of a doorway at the north end out into the corridor. This alteration has been allocated a separate phase (Level 2.2), although it was restricted to this part of the building and cannot be related to changes elsewhere.

Excavation close to the top of the mound in Room 316 uncovered a series of deposits that belonged to the highest extant phase, for the most part one that had eroded off elsewhere (Level 2.3). Finally, fourteen graves in and around the building and cut from eroded layers are considered to postdate the extant remains of the building.

The division of the building into only two major levels should not be taken as an indication that occupation was of particularly short duration. A sequence of ten extant blocks of refloorings was identified in the courtyard, over a depth of 1.5 m. Each was made up of many individual plaster lenses. While in rooms of the northern unit (Rooms 140–43) six episodes of reflooring survived.

Building Level 1

The foundation level of the southern unit was reached in several places and considering the size of the building was at a remarkably uniform level. On the western side, the base of the wall of tower 608 and that of the external wall was at 7.81 m. Some 40 m away on the eastern side, the sloping bottoms of the sub-floor vaults sitting above material of Early Dynastic date were all between 7.73 and 7.98 m. Towards the middle of the building the southern and northern external walls bottomed within one centimetre of one another (at 8.07 and 8.06 m respectively).

The construction horizon comprised a layer of dark grey clay which was identified in excavation of the external wall on both the southwestern and northeastern sides. No evidence for the use of foundation trenches during construction was found. The internal arrangement of the southern unit at this time is only partially known. The main excavated element is the row of six parallel barrel vaults in the southern corner. The northeastern wall marking the limit of the vaults was masked by a later rebuild, but a sounding here in the courtyard

identified the corner and line of this wall. The western limit was the wall separating them from the courtyard. Arches built into the wall here show that the vaults were open on the courtyard side. In the southern corner of the courtyard, the earliest plaster surface above construction level spilled into the voids under the arches. Replasterings raised the ground level in the courtyard, gradually obstructing the arched openings. These earliest layers also ran under the later cross-wall which separated Room 314 from the courtyard, showing that it was not present in Level 1. The vaulted structures were confined to this part of the building and were not duplicated on the western side: a stretch of the wall demarcating the western boundary of the courtyard was excavated to foundation level and no arches indicating vaults were present. No other internal areas of the southern unit were excavated deep enough to reach Level 1 deposits.

Building Level 2

The main event of Level 2 was the construction of the massive extension (the northern unit) which tripled the size of the building, accompanied by a remodelling of part of the original building. The foundation level of the northern unit was identified in Room 101. Here the main external wall of the building as well as an internal wall bottomed at 7.70 m. Next to the central passage the base of a wall of Room 152 was at *c.*7.60 m. These compare with 8.06 m for the base of the main external wall of the southern unit. So the foundation level of the northern unit was actually lower, in places by 46 cm, than that of the southern, although it should be kept in mind that this is over a distance of some 40 m. The explanation for this is that the northern unit occupied a space that was down slope from the southern one which had been constructed on the flattened crest of the old mound. This is also indicated by the levels in the central passage which rise up towards the southern unit. The northern unit was not part of the original plan of the building, but conceived of as an afterthought when, for whatever reason, a massive expansion of the original building was required and this, of course, is also suggested by the pattern of wall abutments and the incorporation of former external towers as internal spaces. So clearly the construction of the northern unit postdates that of the southern unit, but perhaps not by very much given the closeness of the foundation levels.

Most of the plan of the northern unit is known only from surface scraping and so not all elements are necessarily part of the original build (Fig. 2.3). Obviously, the exterior walls of the building are. Internally, the excavation of Room 100 showed that this room was also present at foundation level and it is assumed that this is also the case for the rest of the block of rooms here (Rooms 99–109), as they all share a common wall out into the eastern passage (Area 110). The limits of the block of rooms to the west of this passage also appear to have been fixed from the beginning, even if we cannot say the same for many of the cross-walls except for those in the excavated rooms. Excavation in Room 141 showed that the wall of the central passage and door into the suite were part of the

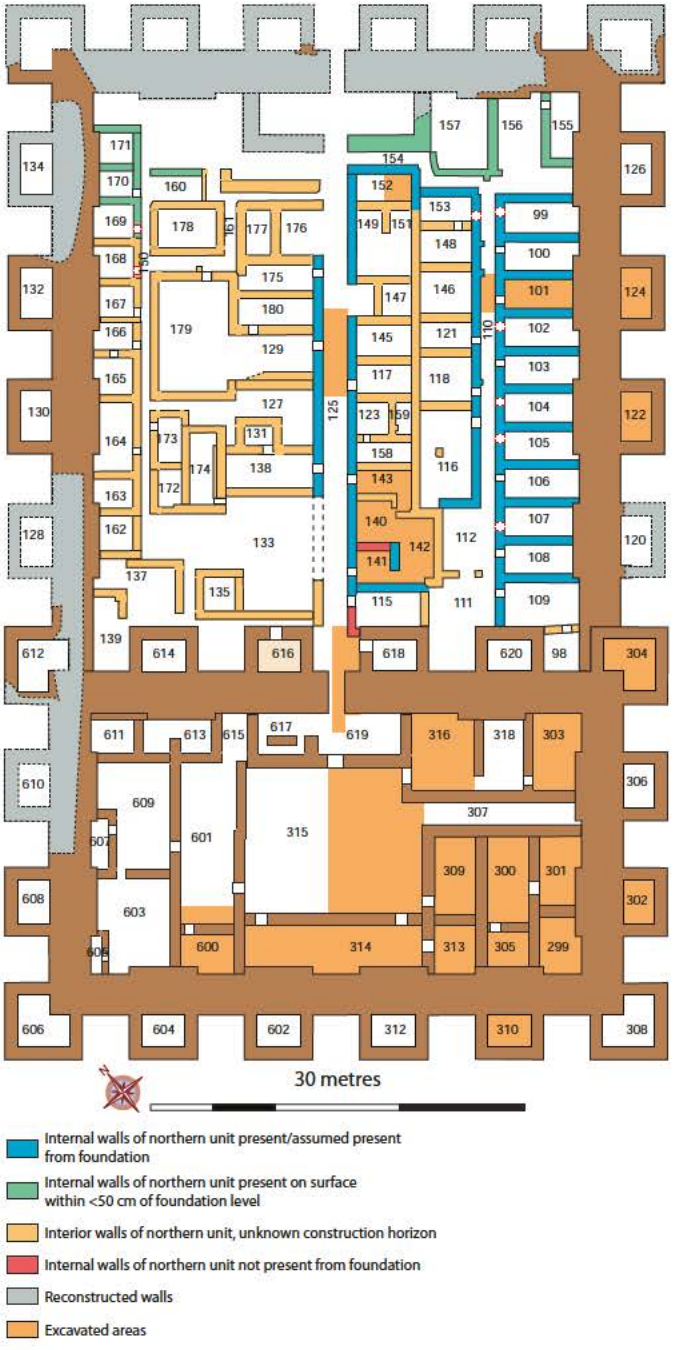


FIG. 2.3. Relative phasing of walls in the northern unit.

original plan. The situation in the western half of the northern unit is less certain, but at the northern edge of the building, where there was most erosion, some wall lines exposed on the surface were found very close (less than 50 cm) to the known foundation level of the building. This, plus the evidence from the excavation in the central passage (Area 125), again indicates that the main elements seen on the surface—three passages separating the internal space into four discrete blocks—were part of the original plan, even if the subdivisions within these blocks were modified over time.

When the northern unit was constructed it incorporated on the southwestern side towers that had been part of the


Northern unit
Southern unit

FIG. 2.4. Drone image showing part of the northern unit after surface clearance. Once the top 10–20 cm of salted crust was removed, wall lines and installations became visible. The technique worked better on the flatter southern part than on the more mounded northern end where the steeper slope and gullies obscured the building plan. Walls of the southern unit remained visible even between seasons, as can be seen here, particularly when drying out after further rain, but not so those of the northern one (NE).

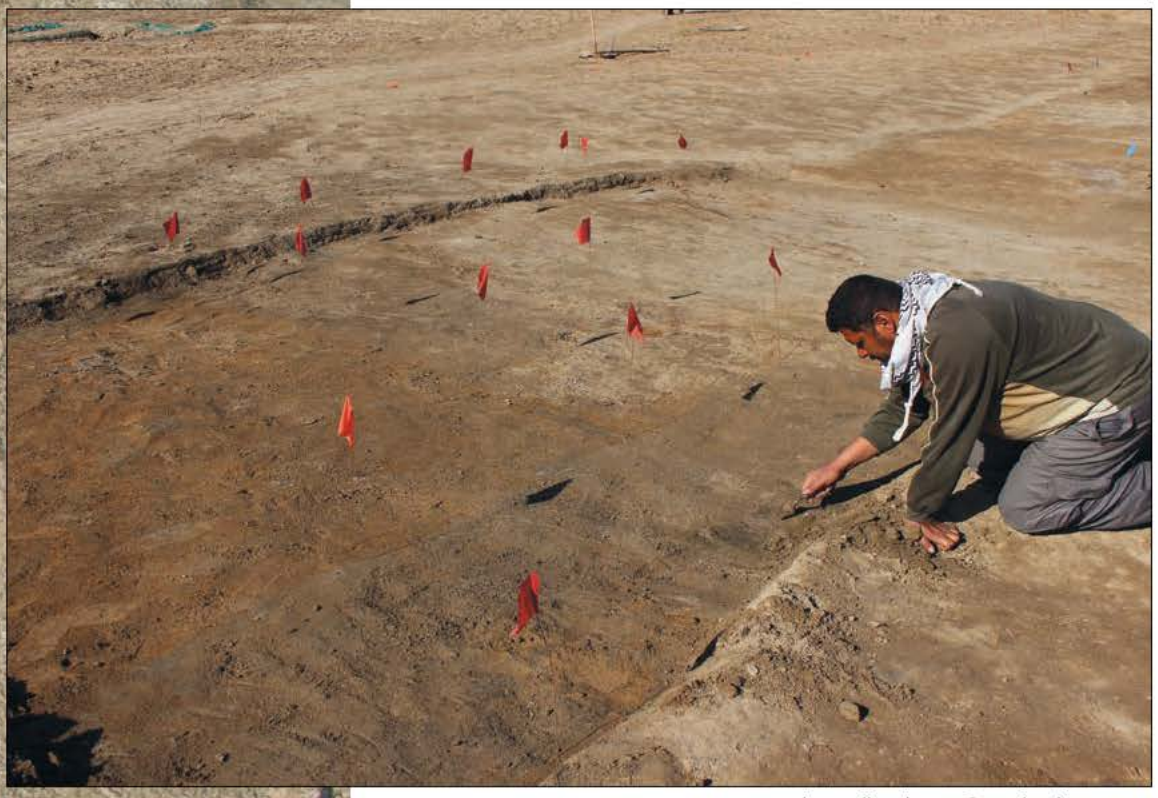


FIG. 2.5. Mapping the walls. The surface dried out very quickly and so there was only a limited time to clean and plan the wall lines. Flags were used to mark the walls prior to planning while they remained visible.

external façade of the original building. The tower to the northwest of the entrance to the southern unit was infilled with brick packing and a door added (tower 616). The tower on the other side (tower 618) also had a doorway, presumed inserted, as observed from the partial excavation of the passage outside. Here the L-shaped section of wall abutting the tower was a clear example of a late addition. There was also evidence of secondary reuse in the nearby corner tower which had a well-preserved plaster floor and a brick-built bin (tower 304).

The construction of the northern unit was accompanied by the repurposing of the vaulted area in the southern unit where a suite of administrative rooms appeared. Wherever the rooms in this administrative suite were investigated below the levels of the earliest floors, the same sequence of events was found. All the vaults were partially demolished, with the tops sliced away. The walls marking the limit of the vaulted area on the northwestern and northeastern sides were rebuilt, the voids of the vaults filled in, and the area subdivided by new walls that were constructed by cutting into the surviving brickwork of the vaults. One room was also built along the southwestern side of the courtyard.

Two rooms of the administrative suite were divided up with new cross-walls, but not at the same time. In Room 300, a new cross-wall with a low threshold sat directly on top of the primary floor. In adjacent Room 309, the cross-wall and inserted external door were higher up, with any associated floor eroded off the mound surface (Level 2.2).

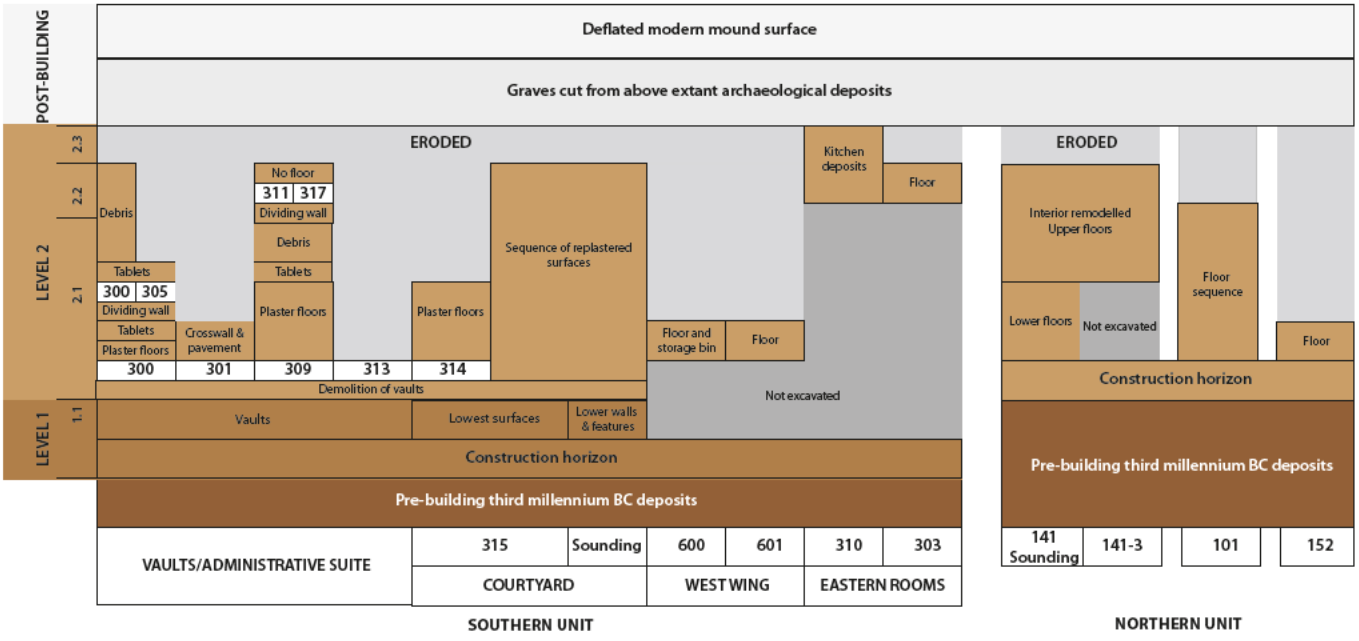


FIG. 2.6. Building levels and room sequences. Precise correlations between rooms in different parts of the building remain uncertain.

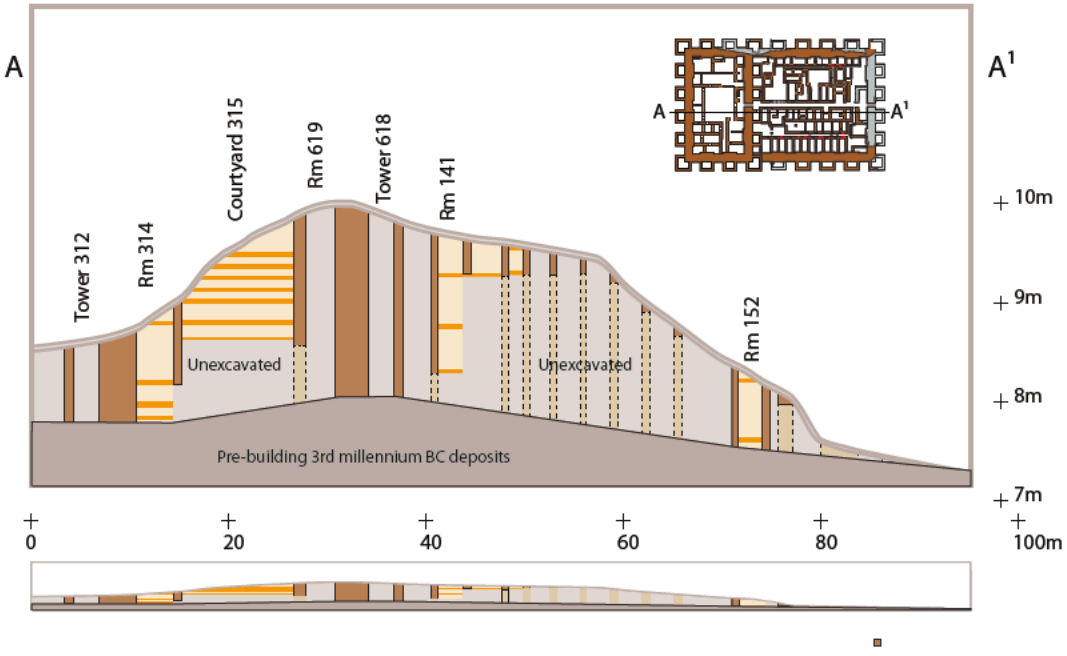


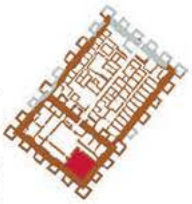
FIG. 2.7. Schematic section A–A¹ through the building with vertical scale exaggerated, showing relative heights of internal surfaces.

THE SOUTHERN UNIT

The internal rooms and spaces of the southern unit were arranged around a large central courtyard (Area 315). This originally covered 215 sq m, reduced subsequently to 150 sq m with the construction of a room on the southwest side. In the excavated eastern half of the courtyard, there was a series of uneven surfaces, most accompanied by installations lining the northeastern wall, but the most intriguing feature was a large depression in the middle, perhaps where a tree had been planted. The courtyard was entered via a single narrow entrance in the northeastern wall which led first into a two-roomed antechamber (Rooms 617 and 619). Tucked into the eastern corner of the courtyard was the door to a row of three rooms, located one behind the other (Rooms 316, 318 and 303). Room 316 (elsewhere kitchen 316) served as a food preparation area late on in its life, but it is not known if this was its original function. Only the upper levels of Room 316 were excavated as well as an eroded surface in Room 303.

A narrow corridor, originally and perhaps briefly narrower than shown, separated these rooms from the administrative suite in the southern corner which had been constructed over the cut-down vaults. From the corridor there was no access to other internal rooms. On the southwestern side, the courtyard had originally extended as far as the external wall, but with the Level 2 rebuild a large room appeared along all of this side (Room 314). On the northwestern side of the courtyard, there was a group of rooms that, with the exception of Room 600 and part of 601, remain unexcavated and are known only from the surface scrape. A single doorway here led into a long rectangular space (Room 601), with smaller rooms at either end. Much of Room 600 was taken up by the remains of a storage bin. A second suite of rooms lay parallel on the west side (Rooms 603 and 609) Each of these contained a small enclosed space in the western corner (Rooms 605 and 607). The surface scrape also showed up a *tannur* in Room 607, which may have been contemporary with the actual use of this room. Some of the wall lines and doors in the north corner remained uncertain. Additional brickwork had clearly been added to the inner face of the external wall here, perhaps as support for the roofing over the rooms in this corner.

FIG. 2.8. The Southern Unit in Level 2.1.



The Level 1 Vaults

Dating to the original building was a row of six long barrel vaults in the southern corner (Fig. 2.9). These extended from the external wall as far as the central courtyard. Each vault was just under 12 m long, 75–85 cm wide and would have stood approximately 80 cm high. These vaults were above ground, with openings on the courtyard side, and therefore supported a raised floor and superstructure (Fig. 2.10).

The mudbricks used for the vaults were unusually hard and of a uniform grey colour, in contrast to the softer bricks used in the rest of the building. They were set in a distinctive yellow mud plaster, which was also used to line the inside faces of the vaults. The bases of the vaults lay at exactly the same level as the base of the main external wall, showing that they were part of the original construction.

The side-walls of the vaults rose four brick courses above the vault floors. These courses were made up of rectangular bricks laid as two rows of headers and one of stretchers, giving each wall a width of approximately one metre. The vault ceilings were constructed with standard rectangular bricks, with smaller pieces of brick wedging the keystone in position (Figs. 2.11–12) .

The floors of the vaults were of hard grey clay. Below the floors were heavily compacted silty deposits containing only Early Dynastic pottery and thus predating the construction of the building. The floors dipped slightly towards the centres of their lengths, rising up to meet the walls at their ends, but this is probably more to do with later subsidence than design. Two of the vaults contained a single pottery vessel sitting on the floor, a bowl and jar, while in a third vault were two small jars (Fig. 2.13).

Semicircular arches in the courtyard wall show that the vaults were originally open at this end, with the lowest courtyard surfaces running up to the base of the openings. These arches were not a continuation of the long barrel vaults but separately constructed as part of the courtyard wall.

The function of these vaults is unclear. They are surely too small and elongated for the interiors to have served *per se* a useful function such as storage, yet they remained open on the courtyard side. Thus our best guess is that the openings were required to provide below-floor ventilation for the space above, where commodities requiring dry conditions such as grain may have been stored.

With the remodelling that accompanied Level 2, the vaults were partly demolished. The voids of the vaults were filled in, the tops of the arches sliced away, and the walls and floors of the administrative suite constructed on top. Whatever superstructure the vaults might originally have supported was also removed during the rebuilding.

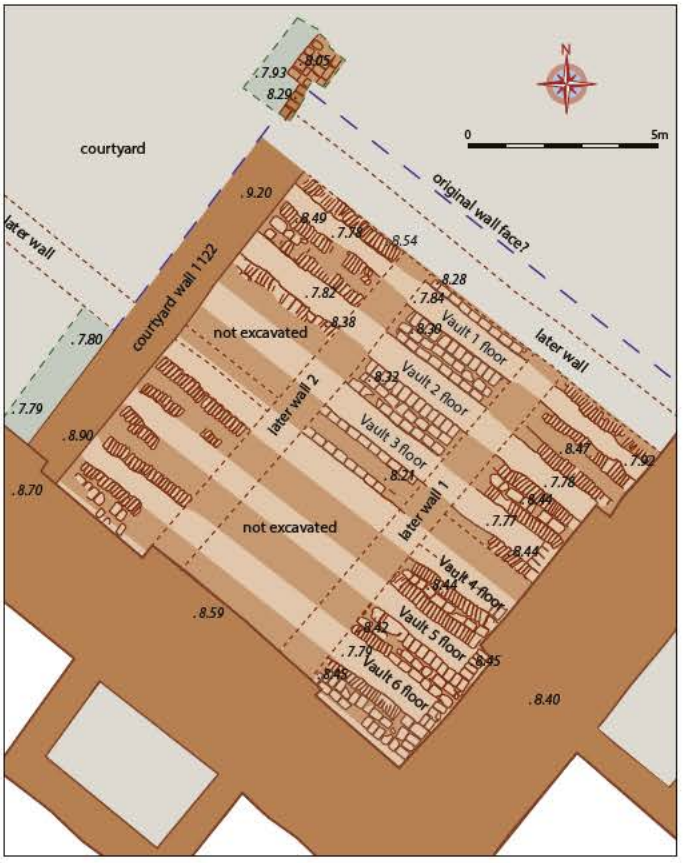


FIG. 2.9. The vaults and later walls.

FIG. 2.10. The lowest surfaces of the courtyard spilled into the voids of the open arches built into the wall (NE).

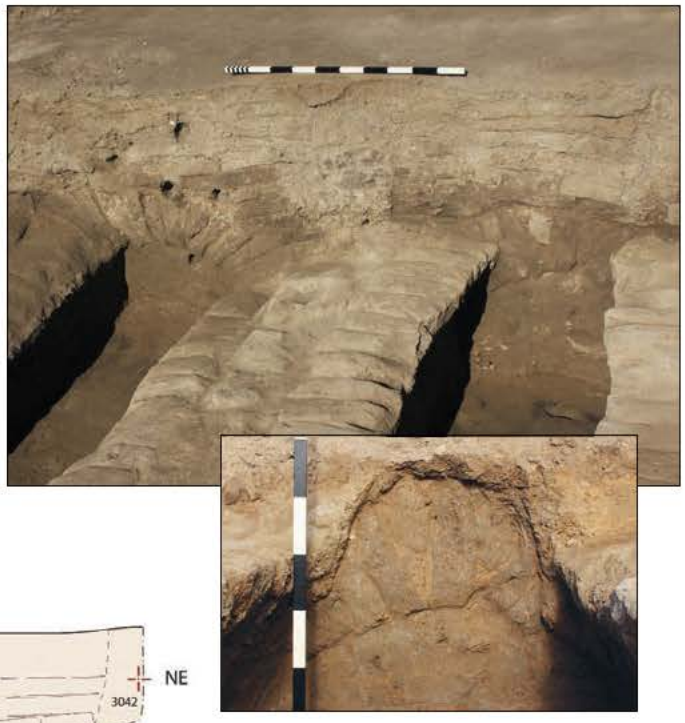


FIG. 2.11. Vaulting preserved to the keystones under the courtyard wall (NW).

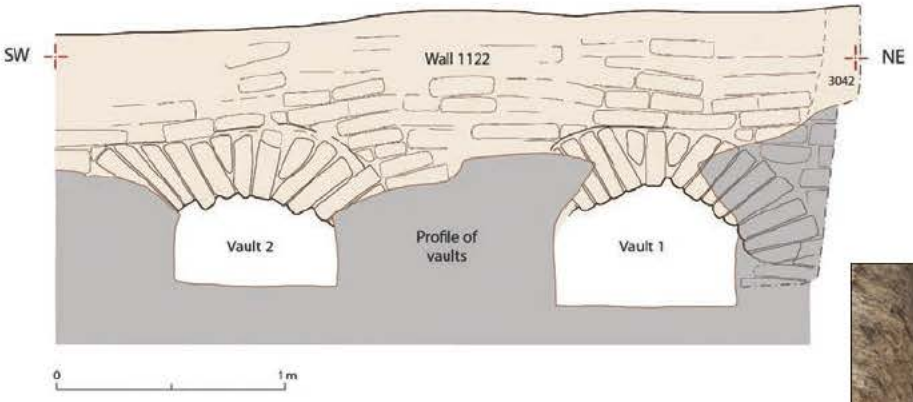


FIG. 2.12. Elevation of arches built into the courtyard wall with the profile of Vaults 1 and 2 overlaid (NW).

FIG. 2.13. Brickwork of the vaults abutting the external wall. A broken cup sat in the corner of Vault 1 (SE).

FIG. 2.14. The vaults, destroyed down to the side walls at the northeastern end. Vault 1 is shown continuing under later wall 1 at top of frame (SE).

The Courtyard

The courtyard occupied the central area of the southern unit. It originally extended all the way to the main southwestern wall before being shortened by the construction of Room 314 on that side. It was entered from the single narrow entrance in the northeastern wall via a two-roomed antechamber. Room 617 on the west side had a long freestanding block of brickwork, clearly visible in the surface scrape. This may have supported a staircase, although the surface scrape did not reveal any brick that may have belonged to the steps. From the courtyard there was access to the suites of rooms arranged around the other three sides. Excavation of the eastern half of the courtyard revealed a busy area undergoing constant remodelling as different features and installations were added and removed and the courtyard surface was relaid over and over again.

The primary courtyard surface of Level 1 and the lowest surface of Level 2 were found in two soundings along the eastern edge of the courtyard. Eight subsequent blocks of courtyard surfaces belonging to Level 2 were excavated, most comprising multiple episodes of replastering and separated from one another by levelling deposits. Because of the slope of the mound and erosion, only the lowest of these reached as far as the southern limit of the courtyard (3190; Fig. 2.15), the others successively shrinking to the north (Figs. 2.20-3).

In the eastern corner, the entrance to corridor 307 was quite narrow at this time. The stretch of wall making up the southern jamb is significantly out of alignment with other walls, perhaps because it was just an *ad hoc* abutment to the existing wall face. It disappeared with the next episode of reflooring of the courtyard.

In the centre of the courtyard was a roughly circular depression (Fig. 2.16). The surface here sloped smoothly down to a neatly-edged squarish hole, approximately 2.5 × 2.5 m, filled with a soft, brown deposit. This was removed to a depth of 1.10 m, leaving an irregular and poorly defined pit. The bottom of the pit, at 6.98 m, was close to one metre below the foundation level of the building. Our favoured explanation for this feature is that it was where a tree, perhaps a datepalm as was often present until recently in the courtyards of traditional mudbrick houses, had been planted and subsequently uprooted. Whatever its purpose, given its depth it was probably present from the first occupation of the building.

To the north of this pit was an irregular feature made up of a semicircular ridge of heavy grey clay (Fig. 2.19). It appeared to be the remains of a structure made of unusually hard material. A row of decayed mudbricks crowned the outside curve, possibly the remains of a thin wall levelled in the process of laying the next surface above. Its location next to the pit suggests there might have been some connection between the two. When it fell out of use it wasn't fully removed, possibly due to the toughness of the material. Instead an attempt was made to raise the ground level on either side by dumping a large amount of soil. This contained much Early Dynastic pottery that had been dug out of the extensive earlier mound on which the building sat.

All subsequent surfaces bulged considerably as they passed over the remains of this feature. They also covered over but slumped into the now disused pit to the south. The courtyard area was thus far from flat throughout its later occupation and it is surprising that more effort was not made to make the area level when resurfacing.

The courtyard was a busy and constantly changing activity area with a different set of benches, bases, bins and clay ovens on each of the surfaces. On the lowest excavated, there was a *tannur* in the southern corner and what appeared to be a series of at least two, perhaps three low rectangular mudbrick bases in a row parallel to the southwestern wall (Figs. 2.15, 2.17–18). It is not clear what these were used for.

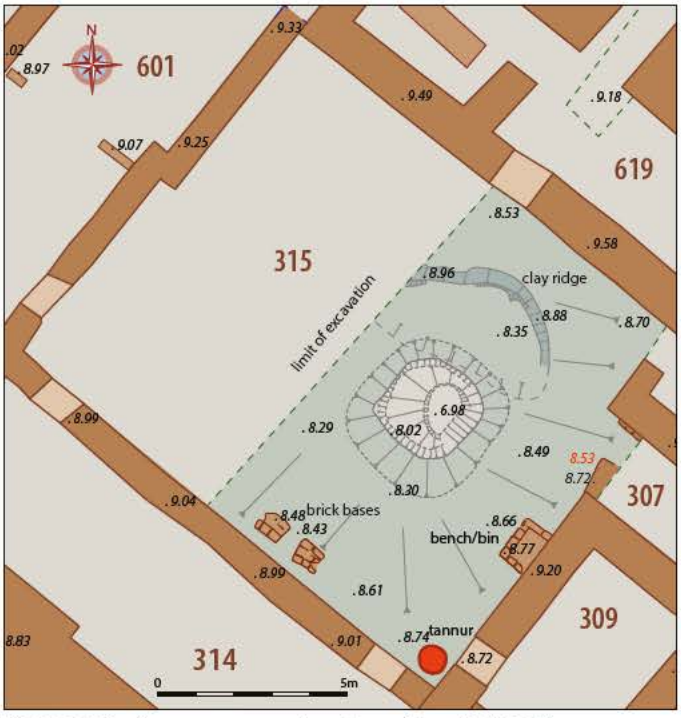


FIG. 2.15. The lowest courtyard surface of Level 2 (3190).

FIG. 2.16. Large pit in the courtyard, possibly the location of a tree (SW).

FIG. 2.17. Eastern half of courtyard, with surface 3190 exposed. A *tannur* is in the southeastern corner next to the door into Room 314. Two mudbrick bases are visible against the south wall as well as the pit in the centre prior to excavation(SW).

FIG. 2.18. Mudbrick bases or plinths against courtyard wall (SW).

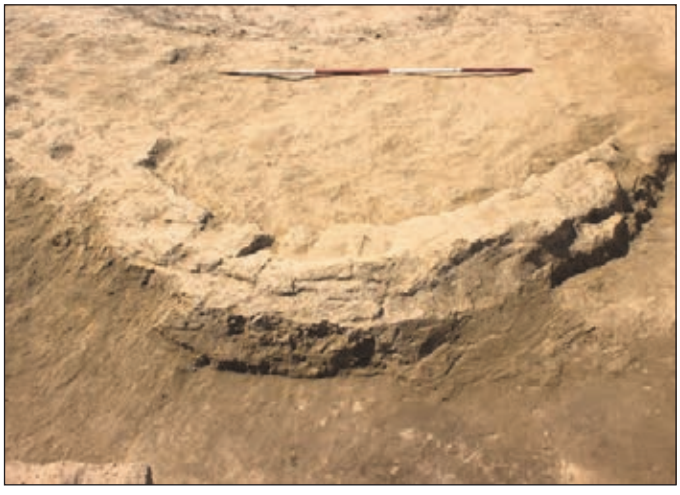


FIG. 2.19. Semicircular clay ridge topped with bricks (SW).

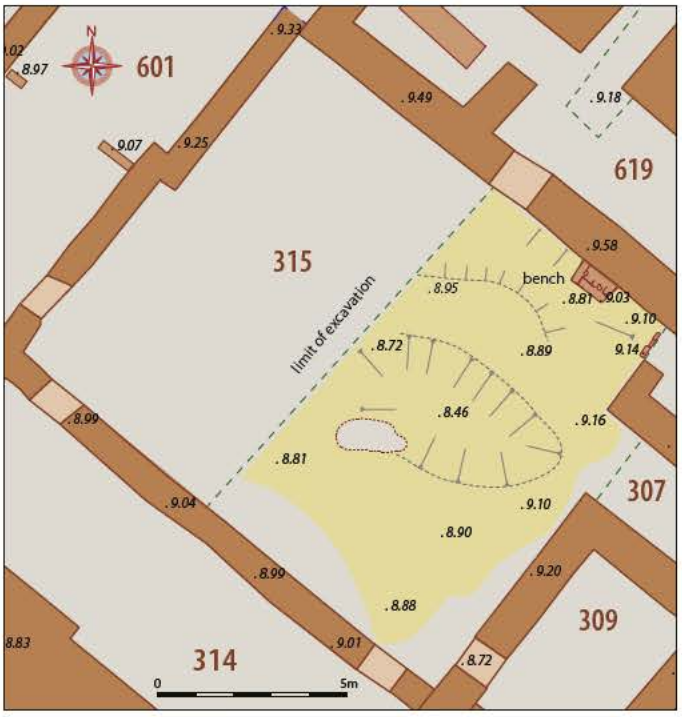


FIG. 2.20. Courtyard surface 3177.

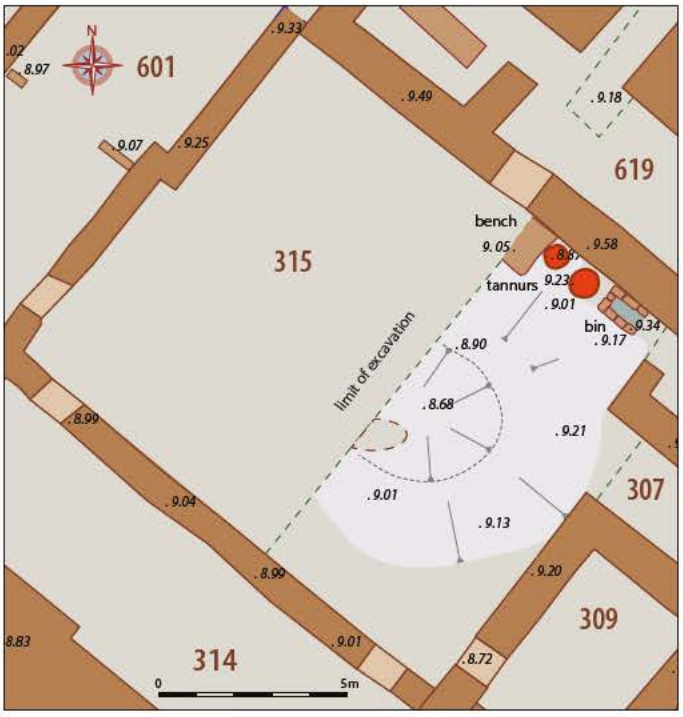


FIG. 2.21. Courtyard surface 3169.

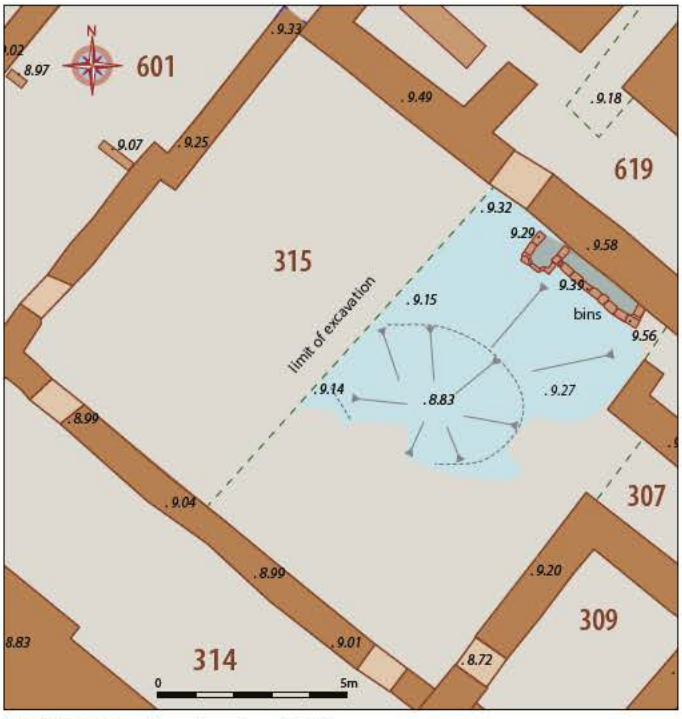


FIG. 2.22. Courtyard surface 3158.

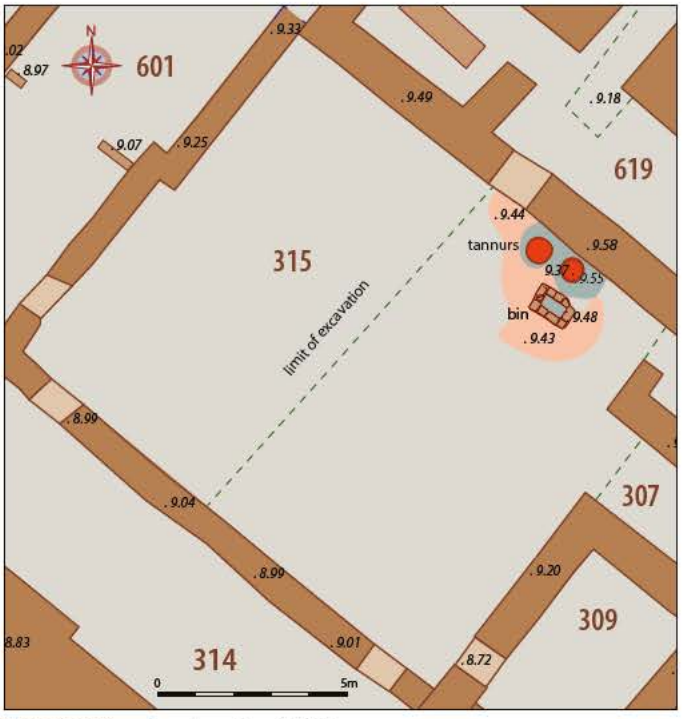


FIG. 2.23. Courtyard surface 3146.

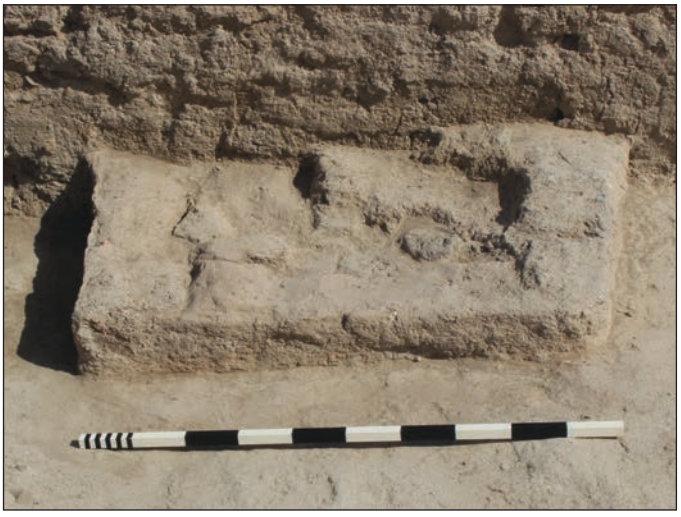


FIG. 2.24. Surface 3177. Bench against northeastern wall (NE).

FIG. 2.25. Surface 3169. Suite of installations comprising sheltering wall, two *tannur*s and bin (N).

FIG. 2.26. Surface 3158. Long narrow bin against northeastern wall, built over the installations of lower surface 3169 (NE).

FIG. 2.27. Surface 3146. Two *tannur*s and freestanding bin, with the bin of underlying surface 3158 showing (SW).

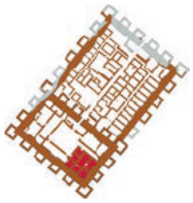
Various suggestions can be made, such as bases for statues or basins, supports for projecting architecture or for some form of shade. Just by the doorway into Room 314 was another indication of the enhanced status of this part of the building: a tall limestone basin lay toppled over on its side—the largest block of worked stone found in the building (see p.54, Fig. 3.5). The only other installation associated with this surface was a poorly preserved mudbrick bench against the southeastern wall.

Subsequent surfaces were not preserved up to the southwestern edge of the courtyard so it is not possible to say if installations were rebuilt/built here. Over the preserved parts, benches and ovens lay against the northeastern wall adjacent to the entrance. Initially, on surface 3177 there was a single rectangular bench preserved to a height of 20 cm (Fig. 2.24). Also associated with this surface was a lower threshold providing access into Room 316 in the eastern corner of the courtyard.

The bench was replaced by a suite of cooking installations comprising a sheltering wall, two *tannurs*, and a brick-lined bin (surface 3169; Figs. 2.21, 2.25). The wall lay in a small gap between the end of the *tannurs* and the entrance to the southern unit, suggesting that it acted as a guard or windbreak, protecting the *tannurs* from drafts and passers-by from the heat and smoke of the ovens. The bin was brick lined on three sides but open on the eastern one. On the next surface up two brick-lined bins were present including a narrow one 2.7 m in length (surface 3158; Figs. 2.22, 2.26). The final three surfaces were confined to a small patch by the northeastern wall. Two *tannurs* reappeared at this time as well as the only example found of a freestanding bin set away from the walls (surface 3146; Figs. 2.23, 2.27).

All these courtyard surfaces were replastered and patched many times and were separated from one another by levelling deposits which represent more serious episodes of renewal or rebuilding in the courtyard and perhaps more widely.

The Administrative Suite



Four rooms, subsequently five, made up the administrative suite, built over the cut-down remains of the Level 1 vaulted structure. An additional room in the western corner (Room 313) was not part of the suite but connected to the room along the south side of the courtyard.

Access to the administrative suite was via a door in the southeast corner of the courtyard. This led into a single room (309). The mud floor of the room had been replastered many times, building up over 20 cm of compacted flooring. It was noted in excavation that the interface between each replastering was marked by areas of salting and plant material, perhaps where mats or rushes had lain. In the southeastern corner a rectangular area of brick survived just one course high, possibly a low bench/platform. Seventy-seven tablets or fragments thereof were found in this room. Some sat directly on the highest floor in the sequence of replasterings, and the majority within 20 cm above the floor mixed in with brick debris, lying perhaps where they had fallen off shelves or simply tossed down when the room was rebuilt.

Above the flooring sequence in Room 309 were deposits of random mud bricks and, particularly in the central area, extensive silting caused by puddling. These layers are interpreted as representing deliberate in-filling prior to rebuilding the room. A new cross-wall was then constructed, dividing the room into two (Level 2.2). A doorway was also inserted to provide separate access from the external passage into the northernmost room. The reconfiguration of this part of the suite at this stage suggests also a change in the function of these rooms, but it is not possible to say more about subsequent activities here as erosion had removed any floors or occupation that might originally have been associated with this remodelling.

In spite of careful examination of the walls, no door was identified leading from Room 309 into neighbouring rooms. It would seem odd, however, if there had not been one originally into Room 300 to the east, given that tablets of the same type and date as those from Room 309 were also found in this room, suggesting a very close relationship.

Room 300 was the central and largest room, originally spanning the entire width of the suite. A door in the southeastern wall led into a room with a brick pavement (Room 301). As in Room 309, the primary flooring in Room 300 consisted of a series of mud plaster floors, some only partially preserved. This was a busy room, with several features on the floor. In the centre of the room towards the northern end was a roughly circular clay bin, with a diameter of 70–80 cm, perhaps where tablet clay was mixed (Fig. 2.29). The outer circumference was made of a thin ring of mud plaster, similar to that of a *tannur* but with no signs of heating or burning. It was preserved up to 15 cm high. The fill contained large chunks of similar plaster which suggests the upper part had collapsed and that the walls were originally higher. Against the southeastern wall, just south of the doorway through to Room 301, were two

FIG. 2.28. The administrative suite in Level 2.1 (Level 2.2 changes to Room 309 shown in inset).

circular clay bases with raised clay rims preserved in places *c.*8 cm high. These appear to be very similar to the clay bin above. Nearby was an irregular shaped pit up to 30 cm deep and against the northwestern wall a small circular clay feature, shaped as an irregular ring of clay *c.*5–8 cm thick, perhaps a pad or support.

Constructed upon the latest replastering of the primary flooring was a cross-wall which divided off the southern third of Room 300, creating a separate space (Room 305). Part of the cross-wall and the floors nearby had been removed by a later pit.

A doorway linked the two rooms, with a threshold step preserved at a height of 8.64 m so clearly associated with the floors at around 8.39/8.45 m. A single tablet was found under this wall and others then accumulating on and above the floors within Room 300, so it would seem that this reconfiguration did not disrupt the functioning of the suite and was a relatively minor event. The cross-wall and primary flooring were contemporary but not coterminous, i.e. after the construction of the cross-wall and the division of the room activities continued for some time on the same floor surface. This is in contrast to the reconfiguration of neighbouring Room 309 where the dividing wall sat over 30 cm of deposit above the original flooring.

What became Room 305 with the subdivision was devoid of any installations and the difference in the distribution of tablets is also quite stark: 95 tablets/fragments from Room

300 but only two from Room 305. Since both tablets and installations were in effect confined to Room 300 this leads to the obvious conclusion that the room had already been divided off prior to the construction of these installations and the deposition of most of the tablets—most because the single tablet found on the floor under the cross-wall suggests that, as ever, events were more complicated than we can reconstruct.

Neighbouring Room 301 was the only excavated room inside the southern unit with a brick pavement. This was badly preserved as it lay right under the mound surface and had suffered from erosion. The bricks were laid in rows lengthwise along the long axis of the room. Only the two lowest courses of bricks in the wall separating Rooms 301 and 299 survived, while within Room 299 deposits were eroded down to the very tops of the bricks of the underlying vaulted structures.

FIG. 2.29. Circular bin in Room 300 (NE).

FIG. 2.30. The administrative suite. On the left Rooms 299 and 301 have already been stripped down to the vaults; in the centre is the earliest floor of Room 300 which runs under the later door and cross-wall of Room 305; on the right is the original floor of Room 309 with the door into the courtyard (SW).

FIG. 2.31. Room 309 under excavation on left, then Room 300 and vaults in Rooms 299 and 301. Brickwork of the external wall is also visible (NE).

The Eastern Rooms

From the eastern corner of the courtyard, a door led into the first of a row of three interconnecting rooms (316, 318 and 303). In Room 316, a series of uneven surfaces, cuts and *ad hoc* installations were for the most part later than deposits encountered elsewhere in the southern unit (and hence assigned to Level 2.3). Room 318 remains unexcavated, and in Room 303 only the highest plastered floor eroding off the mound surface was uncovered, together with an associated bench (Fig. 2.34).

The lowest excavated floor in Room 316 (8067) may originally have covered the entire room, but it was truncated to the north by later cuts (Fig. 2.33). A limestone block sat against the northern jamb of the doorway into the courtyard, one of the few instances of the use of stone within the building. Exactly what part of the door apparatus this might have been is unclear, perhaps just a stop for the door to shut against. However, it provides a useful visual link between the excavated levels in Room 316 and the courtyard, as shown in the doorway section (Fig. 2.32).

The subsequent history of Room 316 is problematic, with scoops and cuts over much of the room as well as several ephemeral and fragmentary installations. It is difficult to be sure exactly when this room might have started to fall into disrepair and was no longer used for its primary function.

At some point, a flimsy wall, too insubstantial to be structural, divided the room. It was one brick wide, with five courses surviving in places, and curved at the south end to form a small alcove (Figs. 2.35, 2.37). On the eastern side, deposits had been scooped out to create flat areas containing installations and burnt deposits. A fragmentary small mudbrick installation was set within the alcove. This had a burnt interior fill and may have been a hearth and support for cooking pots. Next to it on the eastern wall was a semicircular fireplace which had seen extensive use, judging by the associated thick deposits of ash and burnt organic material rich in fishbone. In the northern part of the room there was a small square bench, 10 cm high, and a small pit or jar setting.

A short length of wall was then built at right angles to the existing internal wall, shielding the northern part of the room (Figs. 2.36, 2.38). It is unclear if it originally ran all the way to the side of the room. Installations within this space comprised a line of bricks, including three baked bricks, set parallel to the wall, a small bench, and another possible jar support made up of a broken quern fragment, a large sherd and two mudbricks. The shallow scooped-out area here gradually filled in with many thin layers of ash and burnt organic material. Bitumen and slag were also present and artefacts included grindstones, pot discs and a cache of little clay balls or gaming pieces.

The activities represented throughout the excavated sequence in this room by the finds and installations are food processing and cooking: *tannur*s, storage bins and benches; jars and lids; cooking pots; many grindstones and rubbing stones, all well used; broken flint blades; and large quantities of bone, burnt chaff and other organic material. While some animal bones were recovered, fishbones predominated. Many of the features were poorly built and temporary. The room demonstrates a repeated cycle of gradual, regular accumulation of layered rubbish, followed by occasional scooping out to create space for further activities. Surfaces, such as they were, appeared to be temporary and trampled down, and soon covered by more debris.

It is not clear if this suite of rooms was from the first a kitchen but given its proximity to all the ovens and benches in the courtyard, this would seem to be a reasonable assumption.

FIG. 2.32. Doorway into Room 316 from courtyard (SE). Section through door shows sequence of courtyard surfaces.

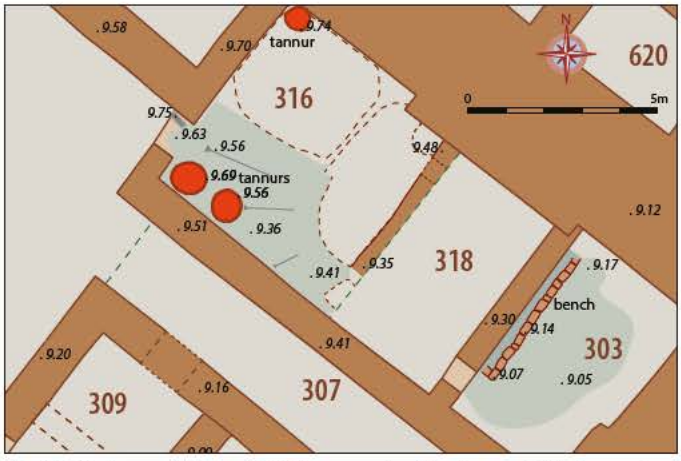


FIG. 2.33. Lowest floor (8067) excavated in Room 316, truncated by later cuts.

FIG. 2.34. Plaster floor and bench in Room 303 (NW).

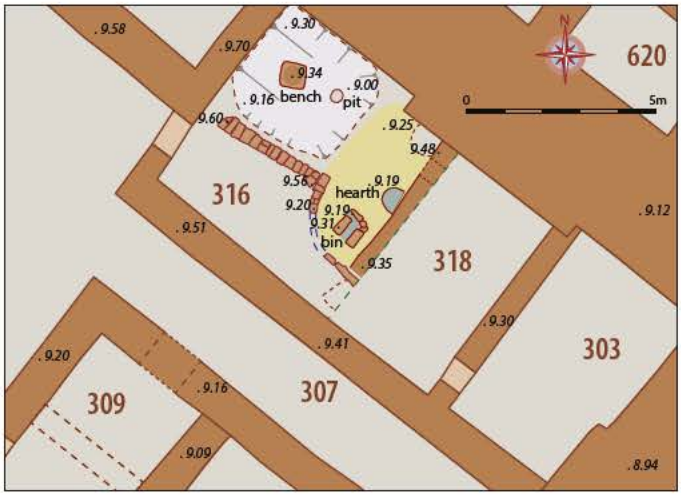


FIG. 2.35. Subsequent partition wall and installations in Room 316.

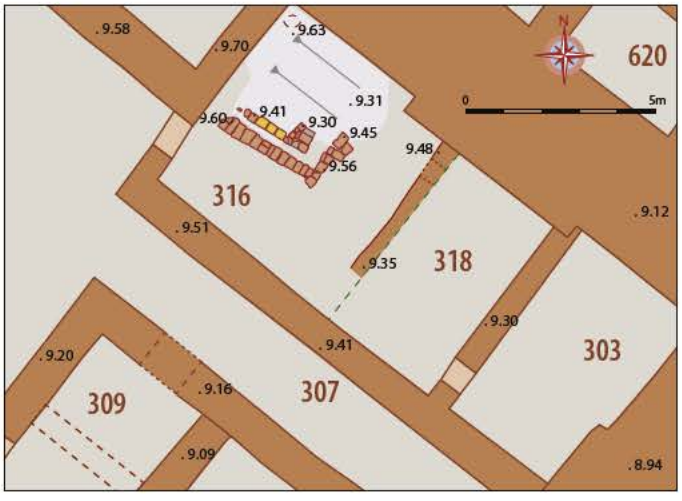
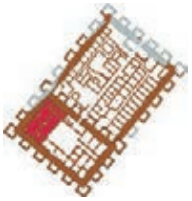


FIG. 2.36. Room 316 latest phase.

FIG. 2.37. Room 316 with partition wall (N).

FIG. 2 38. Broken jars and querns across northern half of Room 316 (N).

The West Wing

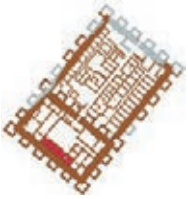


The West Wing for the most part remains a puzzle with only two rooms investigated (Rooms 600 and 601). It contains nine separate spaces. The plan recovered by surface scraping threw up some oddities in the form of two small rooms against the main northwest wall and a strange kink and abutment in the courtyard wall which looks like some form of rebuild (Fig. 2.40). The suite was entered from a door in the western corner of the courtyard. This led into a large rectangular room (601) with a floor area of 53.67 sq m. With the removal of the surface material over this room, a linear feature appeared just north of the door into adjoining Room 609. It comprised two bricks in a line on the northwest side and three on the southeastern side. Both are perpendicular to the main walls of the room and line up with one another, and so may represent part of a flimsy, perhaps semi-permanent partition.

Openings on three sides of Room 601 led into further rooms. On the south side, was a single small room (600) where a substantial amount of the floor space was taken up with a storage bin. This was roughly the same size as the one in corner tower 304 but it was without the brick floor of the latter. Sitting on the floor of the room was a collection of sixteen pierced pottery disks.

At the northern end the wall lines were less clear due to wadi erosion, but there appeared to be access into one small room (615). Along the western side were two large rooms (603 and 609), both of which had curious internal rooms in the western corners. Room 607 (floor area 10.8 sq m) contained the remains of a *tannur* at a height comparable with the highest floor fragment in Room 314 on the south side of the main courtyard, i.e. not necessarily a late intrusive installation. Room 605 was very small with a floor area of about 8.7 sq m and was only 70 cm wide. It is tempting to allow an anachronism here and describe it as a broom cupboard, particularly as a courtyard sweeper is mentioned in the texts, although it is the most inaccessible room!

The Southern Room



When the area was remodelled in Level 2, a wall was built along the southern side of the courtyard, creating a single large room (314) which had two doorways, one at either end (Fig. 2.39). The room was empty of any installations and features except on the highest surviving fragmentary floor where there was a *tannur* and a badly preserved section of mudbrick, one course high and 50 cm wide. Whether this was structural, forming a dividing partition, or perhaps the remnants of a bench is uncertain.

It is not certain at what point the door at the southern end into Room 313 was first constructed. This is because of the variation in levels between the, in effect, elevated rooms above the remains of the vaults and neighbouring areas. The earliest plaster floors in Room 314 were at *c.*8.20 m and the highest extant at *c.*8.80 m, whereas the threshold in the wall separating Rooms 313 and 314 was at 8.90 m, suggesting that the construction of Room 314 and the knocking through of the doorway into Room 313 did not happen at exactly the same time. Alternatively, there may have been steps up into Room 313 though none were identified in excavation.

It is clear from the courtyard levels that an entire series of later floors in this room has been lost, as indeed in other rooms, but accentuated here by the connecting courtyard sequence. There were four further courtyard surfaces above the one that was contemporary with the highest extant floor fragments inside Room 314.

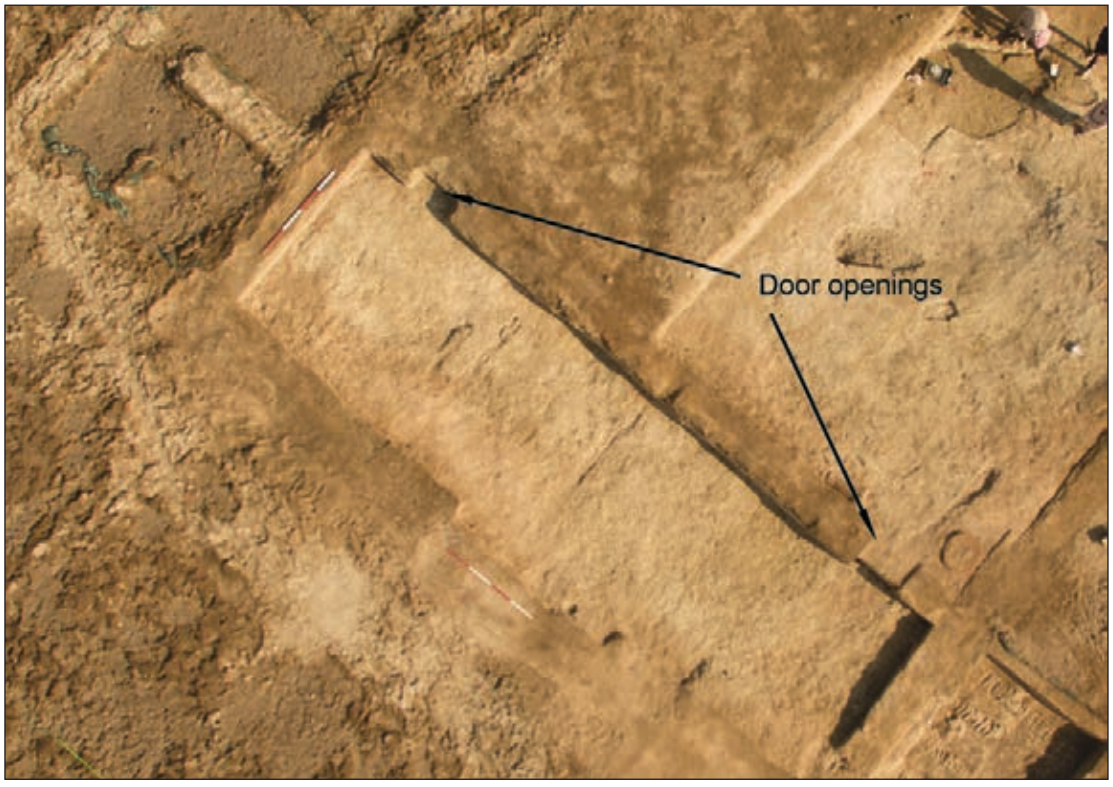


FIG. 2.39. Room 314 with its two doorways showing. The backfilled remains of Room 600 are top left (N).

FIG. 2.40. Rooms to the west and south of the courtyard.

THE NORTHERN UNIT

The rooms and spaces of the northern unit divide into four blocks, separated by three parallel passages that run almost the entire length of the unit (Fig. 2.42). The main central passage was the only through route to the original part of the building, running directly up to the entrance to the southern unit, whereas the flanking passages and rooms on the inner faces of the external wall were accessible only via twisting corridors at the northern end. The central passage was slightly wider at the southern end where the room walls on either side were rather awkwardly tacked on to the old external towers of the southern unit, but for most of its length it was *c.*2 m wide. There are a couple of places along its length where there were gaps in the side walls. This is more likely due to the vagaries of surface scraping than a true reflection of the original layout; the gaps have been shown as reconstructed wall lines on the plan.

The passage was investigated in two areas, next to the entrance into the southern unit and then some twenty-two metres closer to the northern end. Excavation next to the southern unit was limited to the top 50 cm of deposit and the results were inconclusive. It had been hoped that this work would establish a direct stratigraphic link between the two parts of the building but, in the event, no continuous surface linking the two was found. Rather the deposits comprised localised laminated lenses, mingled in with mudbrick debris and organic remains. Three features here were late additions: a segment of wall abutting the old internal tower on the southeastern side of the entrance (tower 618), creating Room 115; the highest threshold into tower 618 which included steps constructed partially of baked bricks; and a *tannur* set into the angle of the walls to the southeast of the entrance. Further along in the passage, lenses of ash and plaster sat above a well-defined trampled surface that sloped down considerably towards the southeast. It was preserved at a height that suggests it may have been roughly contemporary with the three features mentioned above.

On the western side of the northern unit a single row of rooms was ranged against the external wall (Rooms 162–71). These were similar to the row on the east side, but much smaller and in only one was a *tannur* identified. Most of the rooms in the row were single ones, with the exception of linked Rooms 166 and 165, and all but one had a similar floor area. Room 64 appears twice the size, but surface scraping was tricky along this side. Some doorways could not be identified and it is possible that a cross-wall subdividing this room may simply have been missed or was obscured. In the western corner an L-shaped section of wall closed off Room 137 and set inside the angle of this wall was a single *tannur* and five clay-lined pits preserved between 10 and 20 cm deep (Fig. 2.41). These had vertical sides and flat bottoms, shapes

FIG. 2.41. Room 137 after surface scraping, with *tannur* showing in the corner as well as the clay linings of the storage pits and burnt area against the external wall (NE).

FIG. 2.42. The expansion of the Fortified Building in Level 2.

more appropriate for storage of foodstuffs than for jar settings. Nearby was a large rectangular area of burnt clay and ash.

The rooms along the western side could only be accessed via a side corridor (Area 161) at the northern end of the central passage. Where this corridor made its first turn, from the central passage side, there was an odd little space with a *tannur* either side of a thin wall made of mud. Then, where it turned again, another *tannur* was set into the corner. An adjacent doorway led into Room 179. The wall lines here were difficult to find so it is not clear how this room subdivides, if at all. A dividing wall between it and adjacent Room 129 has been reconstructed on the assumption that nowhere else is there a clear route through the rooms from the central passage to either the western or the eastern one. The plan of these rooms and spaces to the west of the central passage is much more fluid than that on the east side where a long central wall imposed a rigid division between the rooms that front the central passage and those that could be accessed only from the eastern one.

At the south end the western passage opened up into a larger space (Room 133) with three *tannur*s. One of these, tucked against the junction of the walls of Rooms 138 and 174, was the only example with a mudbrick surround found in the building. Intriguingly there was a gap in the brickwork of the adjacent wall, although how this might have been connected (if at all) with the workings of the oven or of the cook remains unclear. The eastern side of this area is where a large erosion gully cut through the site, running from the top of the mound down the northwest side, so again some elements of the plan may be missing.

To the south of Room 133, a narrow passage led on the one side to the kitchen area mentioned above and on the other along the front of two of the old external towers of the original building (towers 614 and 616). This passage was sealed off at the eastern end with a very clumsy juxtaposition of the wall of the central corridor and the northeast corner of the tower. Tucked in between the two towers was a badly preserved mudbrick installation containing two rectangular burnt areas. Towers 616 and 618 on either side of the entrance to the southern unit had both been repurposed as interior spaces and provided with doors.

To the east of the central passage was a block of rooms bounded on the other side by the eastern passage. A narrow corridor at the northern end (Area 154) provided the only access to the rooms along the eastern passage. Where this corridor narrowed and turned, the wall of Room 157 had been curved to accommodate it while the corner of the wall of Room 152 opposite appeared to have been reshaped slightly, fancifully perhaps after the original corner had been knocked off by a careless inmate. At the junction of this corridor with the eastern passage the corridor was narrowed further by a brick buttress on the outside corner of Room 157, reducing the width here to only 60 cm. The eastern corridor too was obstructed in three places by small areas of additional brickwork jutting out into it, most notably opposite Room 100, although it is not known how high any of these were originally. Perhaps they were the jambs of internal doors that further restricted access.

The block of rooms here divides into those rooms that were accessed from along the central corridor and those that opened out into the eastern one. There was no interconnection between the two: a narrow wall ran down the middle separating them. This appears thin and curving on the plan, but this is simply an exaggerated example of walls being pushed out of shape as a result of collapse and infilling, and, of course, it is the irregular tops of the walls that have been mapped here. These rooms were investigated in two places: a suite of rooms close to the southern building described in more detail below (Rooms 140–3) and part of Room 152 which showed that the room walls here were part of the original construction.

Along the eastern passage, the final room in a row of six was an unusually large area (116) with a rectangular block of brickwork sited roughly in the middle. This has been interpreted as a non-structural bench, but it could also have provided additional support for the roof. The eastern corridor opened out at the southern end into two spaces, one behind the other (Rooms 111 and 112), separated by a short length of wall and by another freestanding block of brickwork.

A row of eleven rooms lined the external eastern wall of the building (Rooms 99–109). Only Room 101 was completely excavated and, for some of the other rooms, the surface scrape was restricted to uncovering just the wall junctions and not the entire length of the side walls. Tucked into the eastern corner was a single room (155) and between it and the rather eroded and fragmentary remains of Room 99 were the remains of two *tannur*s side-by-side. Due to erosion, the remains here were some of the lowest encountered, lying close to the foundation level of the northern unit, indicating that these rooms and installations in this corner belong to the earliest phase of the northern unit.

The rooms in the row were all single-room units except for one at the southern end which had two rooms (98 and 109). This was a result of it having been built up against one of the original external towers of the southern unit. The space between the old towers was then infilled, providing a second smaller room in the southeastern corner. Room 109 had also undergone some repairs: its northeastern wall had been buttressed by the construction of a second wall along its entire length, bonded together with a layer of plaster up to 16 cm thick. This repair resulted in a partial obstruction of the doorway which had been mitigated by reducing the width of the wall at this end. The rooms were otherwise of a fairly uniform size, with a floor space of *c.*12.20 sq m although some were slightly shorter by virtue of having being constructed against the internal buttresses of the external wall. In six of the rooms, there was a single *tannur* located in the angle of the front wall on the opposite side to the door in those rooms where the entrance was visible (Figs. 2.46, 47). It is possible that all the rooms originally had a *tannur*. Not all doorways were identified in the surface scrape and those that are reconstructed on the plan have been staggered so as not to be directly opposite rooms on the other side of passage.

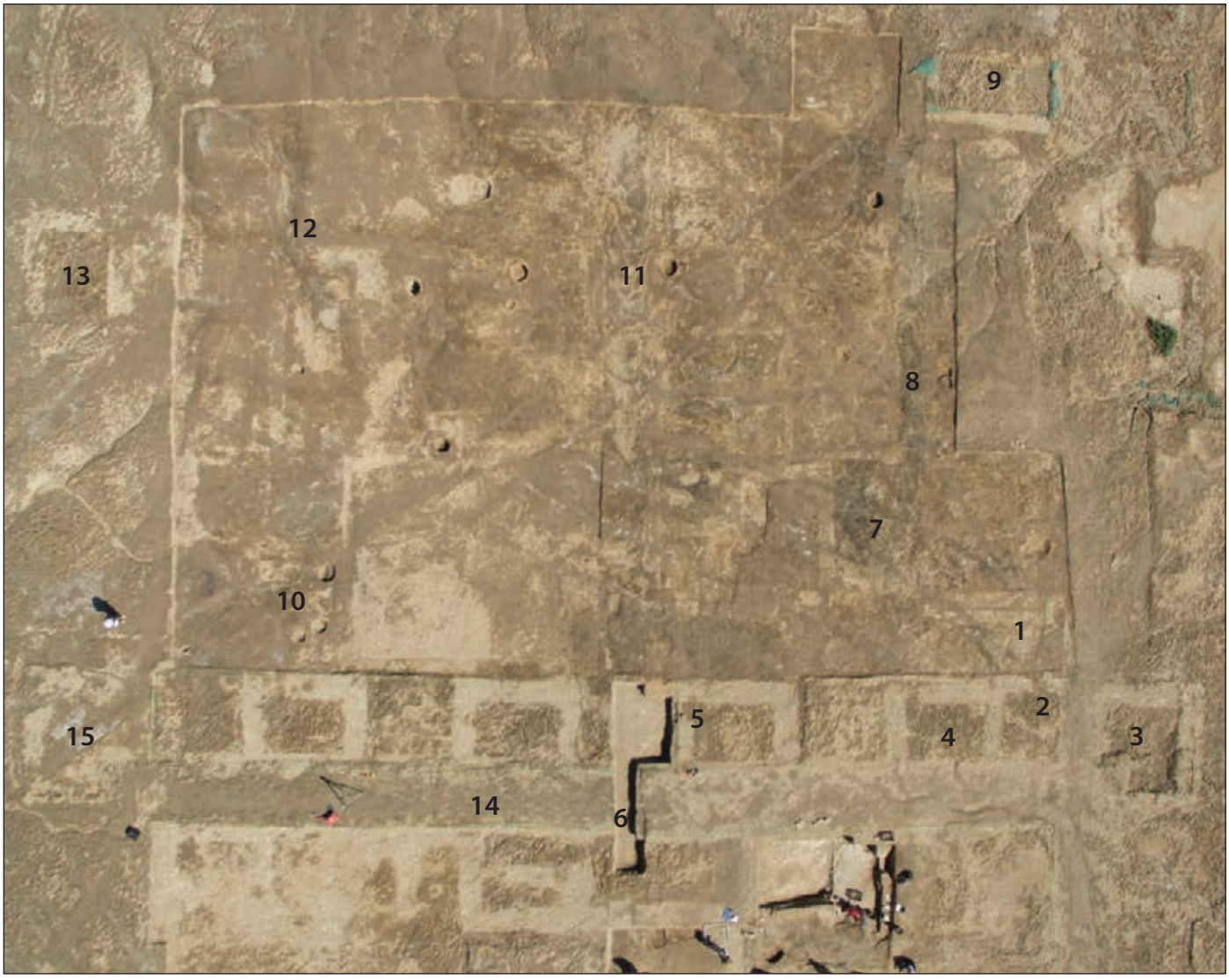


FIG. 2.43. Drone image of the northern unit (NE).

1. Wall repair to Room 109
2. Doorway into Room 98
3. Corner tower 304
4. Tower 620
5. Late door in Tower 618
6. Entrance to southern unit
7. Room 112
8. Eastern passage
9. Room 101 (backfilled)
10. Room 137, *tannur* and pits
11. Central passage
12. Western passage
13. Tower 130
14. Old external wall of southern unit
15. Corner tower 612

FIG. 2.44. Storage jar set into the surface of Room 178. Sub-surface features apart from *tannurs* were not common (E).

FIG. 2.45. Jar base reused as a door socket for Room 103. The grey bricks of the room walls can be seen behind (N).

In Room 101, the foundation level of the building was reached: the walls of the room were constructed from the same horizon as the external wall of the building, showing that this entire row was part of the original northern unit. There was a primary floor with a *tannur* in the northern corner (Fig. 2.48), and several lenses of higher floors. These floors were interleaved with occupation debris made up of many fine layers of compacted ash and greenish material, often containing reed or straw impressions. Following an episode of mudbrick infilling, further floors were laid down, with the highest one again containing a *tannur* in the northern corner (Fig. 2.47). A threshold in the doorway of three courses of mud brick was contemporary with this *tannur* and rake-out from it spilled out over the threshold into the passage outside.

A short 3 m stretch of the eastern passage outside the door to Room 101 was excavated to a depth of 0.42 m. Substantial amounts of ash and flecked charcoal, debris from the ovens inside these rooms, was mixed in with banded layers of greenish plaster and mud brick. In the surface scrape, dark ashy material, debris from the ovens in the adjacent rooms, was observed along the entire length of this corridor. Above was a layer of densely packed pottery sherds laid down as a more durable surface, at a height that coincided with the highest threshold extant in Room 101 (Fig. 2.49).

Overall, the plan of the interior of the northern unit displays the same degree of regularity and uniformity that is evident in the construction of the exterior wall and towers. The rows of rooms along both sides reflect this, as well as the block to the east of the central passage. This orderliness does break down somewhat at the southern end, where the builders do not appear to have known quite how to incorporate the old external towers into the new internal arrangement. The block west of the central passage is also more incoherent, but it is difficult to know what this might signify, functional variation perhaps or the result of repairs, alterations and rebuilds that occurred over the lifetime of the building. Certainly the very limited evidence from excavation and from surface scraping at different heights across the slope of the mound—close to foundation at the north end, but some two metres higher at the south—did not reveal any major changes in the plan, so that our inclination is to think that the plan recovered is not that different from the original layout.

FIG. 2.46. *Tannur*. The surface scraping revealed many *tannurs*, such as this one in Room 127 (SW).

FIG. 2.47. *Tannur* on the uppermost floor in the corner of Room 101 (NW).

FIG. 2.48. Room 101, with doorway and *tannur* at far end (NW).

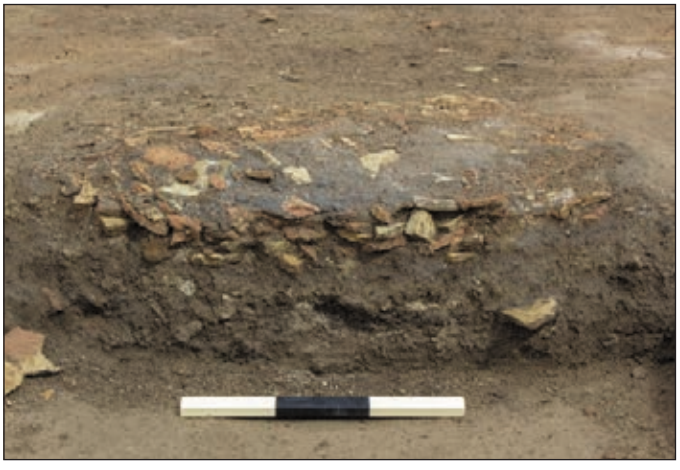


FIG. 2.49. A packing of sherds laid in the eastern passage (SW).

FIG. 2 50. The eastern side of the northern unit.

Rooms 140–3

This suite comprises the most extensively investigated rooms of the northern unit and provides the best evidence for the history of occupation here. Four interconnected rooms lay on the southeastern side of the central passage, close to the single entrance into the southern unit. Unusually, there were two doorways from the passage into these rooms. The southernmost one, known to be present from the construction level onwards, led into a single room (141) with a doorway in the wall opposite leading, in turn, to a room at the back (Room 142). A large opening in the northwestern wall opened into the third room (140) from where there was access via a small gap to the fourth room (143), and from there the second door led back to the passage.

The early history of this suite can be reconstructed from the results of a sounding made in the western corner of Room 141. This showed that the wall fronting the passage and the dividing wall with Room 115 along the southwestern side of the suite were both part of the original construction of the northern unit.

The construction level itself was not reached, but the lowest floor found (5068; Fig. 2.51) at 8.09 m was at the same height as the known construction level of the southern unit in nearby tower 616 (8.06 m) and only 20 cm higher than the primary floor of Room 101 some 26 m away. Between this floor and the mound surface, within deposits totalling 1.6 m in depth, there were five more episodes of substantial reflooring, some made up of multiple replasterings: two more in the sounding in Room 141 (5057, 5019; Fig. 2.52) and then three higher ones in adjacent Room 142 (5047, 5040, 5035). These were accompanied by some changes to the room layout and installations. The lowest floors and overlying deposits in the sounding clearly ran under the line of the northeastern wall of Room 141, although it is possible an earlier version lay slightly further to the northeast where Room 140 remained unexcavated at this level. Elsewhere, evidence for later remodelling is most clearly visible in the southeastern corner where there is an awkward abutment between the walls of this suite of rooms and its neighbour to the south.

Rooms 140 and 142 were connected through an unusually wide opening so in a sense they represent a single space. However, they clearly served different functions. No installations were found in Room 140, whereas Room 142 had benches of various sizes and in different places on successive floors. The difference is also illustrated by a floor covered with reed matting that was restricted to Room 142 (5047; Fig. 2.54, 56).

Room 142 was refurbished once more. As well as a new floor (5035), a substantial rectangular bench was built against the northwestern wall, and a second smaller one next to the opening into Room 140 (Fig. 2.55). In the opening itself, a clear line of degraded mudbricks had been set, perhaps serving as a step or threshold down into Room 140 where fragmentary

FIG. 2.51. Floor 1 (5068), the lowest in the sounding in Room 141, close to the construction horizon.

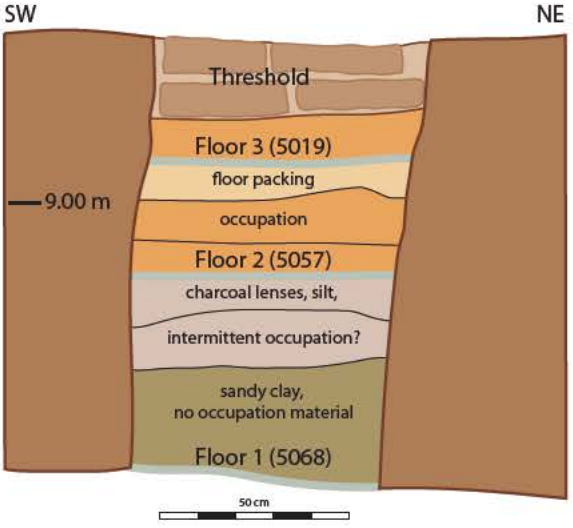


FIG. 2 52. Section across doorway between Room 141 and the central passage (NW).

FIG. 2.53. Pit of smashed pottery, dug from eroded horizon (W).

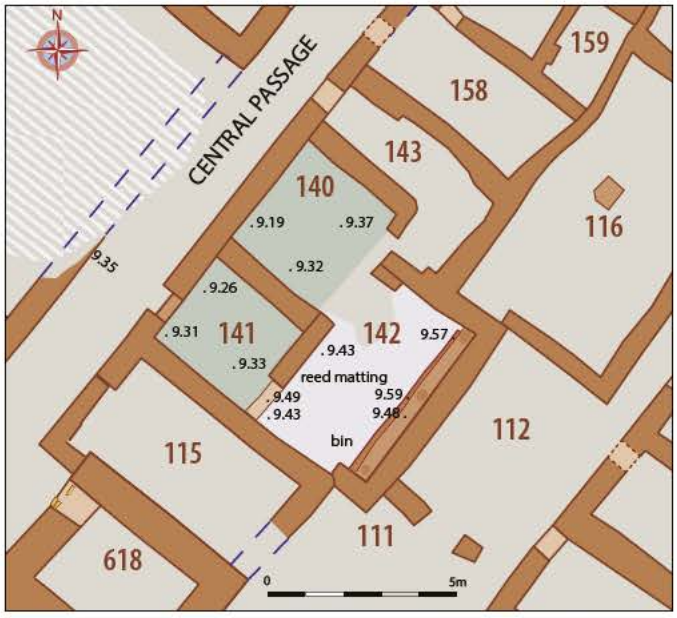


FIG. 2 54. Floor 4 (5047).

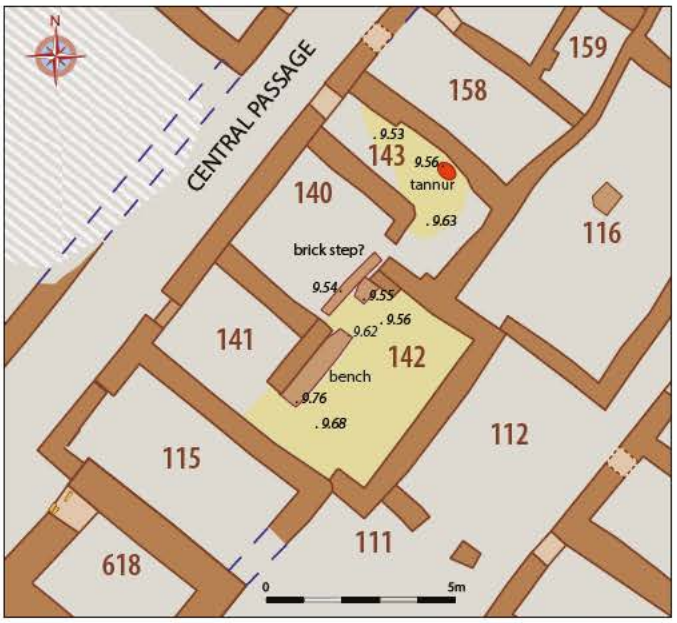


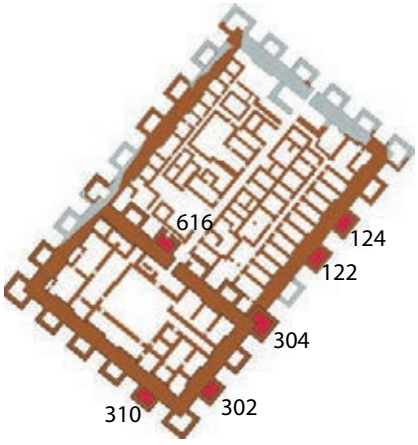
FIG. 2.55. Floor 6 (5035).

FIG. 2.56. The decayed remains of reed matting on floor 4 (5047) in Room 142. The long narrow bench/bin is visible on the right against the southeastern room wall (NE).

bits of plaster within occupation deposits provided the only surviving evidence for contemporary floors. Similarly, there was no coherent reflooring left in Room 141 at this level, although any such may have eroded off the mound surface here. Room 143 at this time had a single installation on its floor: a *tannur* against the northeastern wall.

Two pits immediately below the mound surface had been dug through the highest extant floor of Room 142. One contained a pottery vessel and was mostly likely an infant jar burial, although no human bone survived. The second was a shallow pit into which several broken pots had been thrown (Fig. 2.53).

EXTERNAL FAÇADE



The building was heavily fortified with a solid brick external wall and projecting towers on all four sides. The bricks of the external wall were laid in a variety of patterns: along the southeastern side one course was made up of fourteen rows of stretchers and one row of headers on the inner face (brick size *c.*32 × 22 cm), elsewhere there was a mix of headers and stretchers. Most side towers had matching shallow buttresses on the inside face of the external wall (Fig. 2.57). The exceptions were those along the northeastern wall of the southern unit, either side of the original entrance. A narrow single doorway was the only entrance into the original southern unit and the same was probably the case for the northern unit.

FIG. 2.57. Tower 302 and matching internal buttress on the exterior wall (NW).

The surface scraping of tower 304 provided the best evidence for the relative dating of Levels 1 and 2: the bricks of the external wall of Level 2 clearly abutting the earlier corner tower (Fig. 2.59).

Surface scraping also revealed the outline of all the other towers, with the exception of those along the northeastern side. On that side, traces of the corner towers and of the projecting wall of a single side tower were found, giving confidence that the reconstruction of four side towers is accurate. Six towers were excavated in whole or in part. Four of these were along the southeastern wall and include a former corner tower (towers 302, 304, 122 and 124); one was along the southwestern side (tower 310); and one on the northeastern face of the southern unit that started off as a side tower but became an internal space later on (tower 616).

The walls of the towers were constructed on a raft of mudbrick which also formed a paved floor to the internal space and were bonded to the external wall. Pavements were found inside the five towers where some or all of the floor was exposed (Fig. 2.58). In two towers, they were shown to run under the walls (towers 124 and 302). There was no hard evidence that there were any doors in the original towers; indeed external entry points would not be expected given the defensive nature of the building façade. Doorways were subsequently constructed in two towers when they became internal spaces on the enlargement of the building in Level 2 (towers 616 and 618). The doorway into tower 618 had at least two phases including a highest extant threshold partially constructed of baked brick.

Three towers were eroded almost down to pavement level (towers 310, 122 and 124). In one tower, material was dumped directly onto and above the original pavement (tower 302). In tower 616, the level of the original brick pavement was raised by 50 cm by a packing of six additional courses of mudbrick. Immediately above the raised pavement was wall collapse and dumped material. In only one tower (304) were there definite traces of some activity actually going on inside. Here a bin

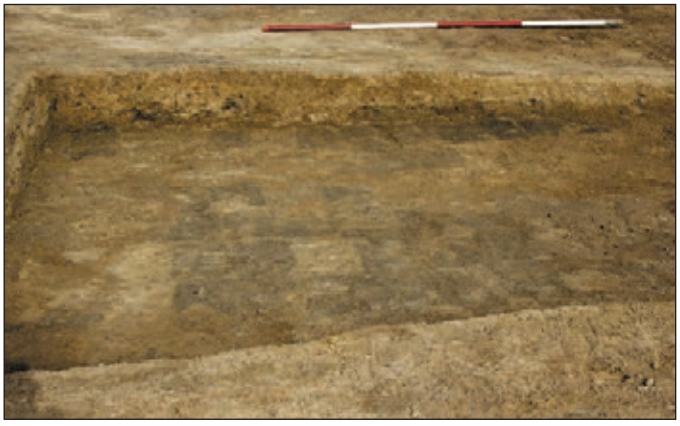


FIG. 2.58. Brick pavement of Tower 124. This ran under the walls of the tower, forming a foundation raft (NW).

with brick floor was constructed in a corner and a substantial plaster floor laid, events which postdated the construction phase (Fig. 2.60). Subsequently this tower too had material dumped into it including a collection of broken unbaked clay human and animal figurines (see pp.166–7).

The interpretation and phasing of the deposits found in these towers is difficult as the towers are stratigraphically isolated from one another and from the internal sequences of the building. All-in-all, however, we are inclined to the view that the internal spaces of the towers remained inaccessible as long as they retained their original defensive function and that it was only subsequently when they had fallen into partial or complete disuse that dumped material began to accumulate over the original pavements and tower 304 was occupied. As the towers fell into disuse they also served as repositories for inhumations: an infant jar burial was found in the southern corner of two towers (124 and 304) and one juvenile burial in a third (tower 302).

On the southeastern side of the building, there was an external plaster surface running up to the towers and external wall (Figs. 2.61–3). A similar surface was not found on the other sides of the building. An 18 m stretch was uncovered running between towers 120–4, sloping down from the external wall for a distance of 7.4 m before being

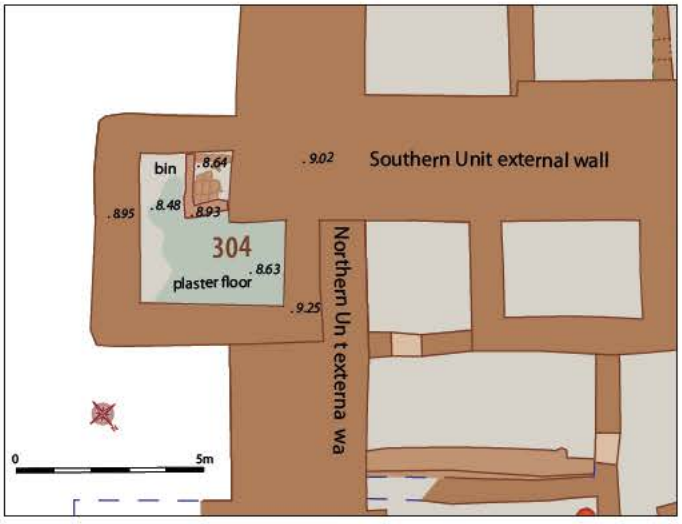


FIG. 2.59. Tower 304. The brickwork of the external wall of the northern unit (shown at bottom) clearly abutted the old corner tower of the original southern unit (SW).

FIG. 2.60. Bin with brick flooring in Tower 304 NW).

FIG. 2.61. External plaster surface running up to projecting Towers 122 and 124 and the external wall between (SW).

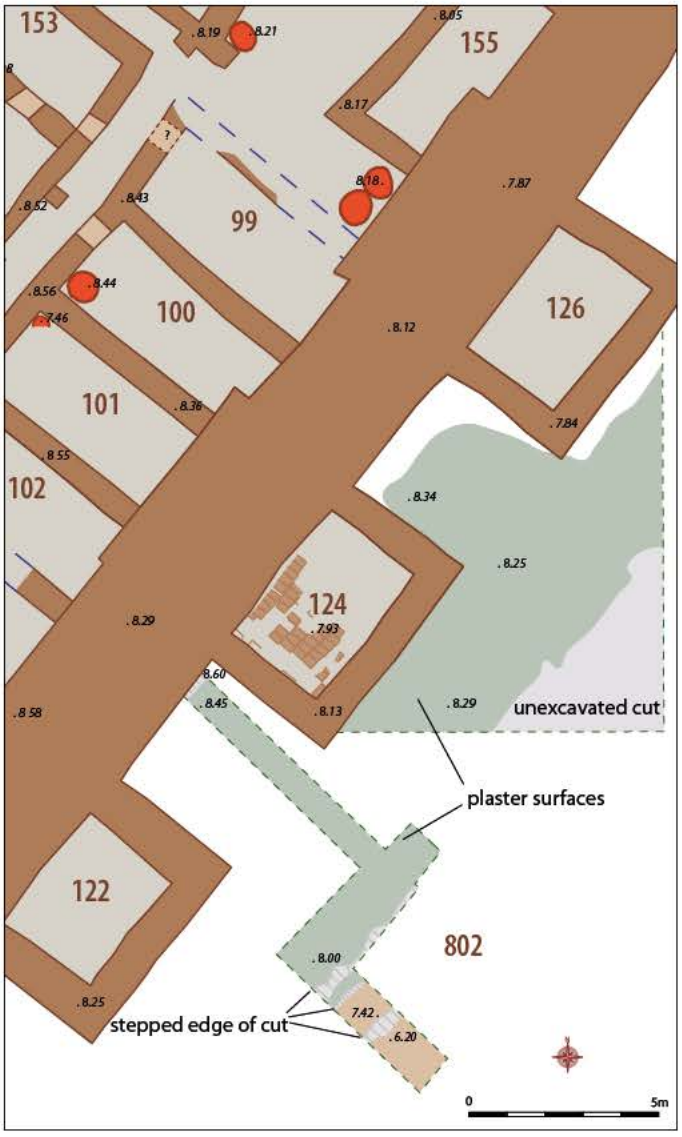


FIG. 2.62. External surfaces and later cut.

truncated by a massive later cut, or possibly by several episodes of serial recutting. Traces were also noted some 28 m further south around tower 302 so this surface may have run the entire length of the external wall on this side. It was only the latest surface of many episodes of replastering, as revealed in the sides of the later cut. The earliest plaster surfaces occurred at a depth of *c.*8.0 m, suggesting they were associated with the construction and first use of the northern unit. There were three main plaster horizons here, the largest *c.*13 cm thick. Each was made up of a succession of tiny plaster laminations, representing many episodes of resurfacing. They were interleaved with thin sterile deposits of sandy clay. Above was a thick clay deposit containing degraded mudbrick before a final series of replastering lay just under the modern mound surface. This clay deposit, up to 42 cm in depth, may have been the product of a major episode of renovation, while the subsequent reappearance of plaster surfaces can be taken as an indicator of continuity of use of the northern unit rather than of any disruption.

This cut was substantial. Its one side ran parallel to the external wall, starting some three metres away from the external towers, and it was traced parallel to the wall for a distance of fifteen metres. The other side was not reached and the tip lines of the infilling suggest the centre was also not reached, so assuming it had another side, its minimum width must have been not less than nine metres. The bottom was also not found: excavation was halted close to the water table at a depth of 2.6 m below the surface. The side of the trench was stepped in as it went down, reminiscent of the deep step trenches of the early excavators and perhaps done for the same reason, i.e. to allow the earth to be removed and handed up in stages. Why it was dug is unknown and the few bits of pottery recovered in the limited sounding were not enough to provide any certainty of date. It lies perilously too close to the edge of the building to have been utilised as a source of clay for mudbricks used in its construction and does, in any case, clearly cut through all the external surfaces contemporary with the building. Water-laid deposits were not encountered in the limited sounding, militating against but not necessarily excluding entirely the idea that it might have been a water channel. There was no evidence that it ran around the rest of the building; it did not appear in the evaluation trenches against the southwestern and northwestern sides (801 and 807; see p.9).

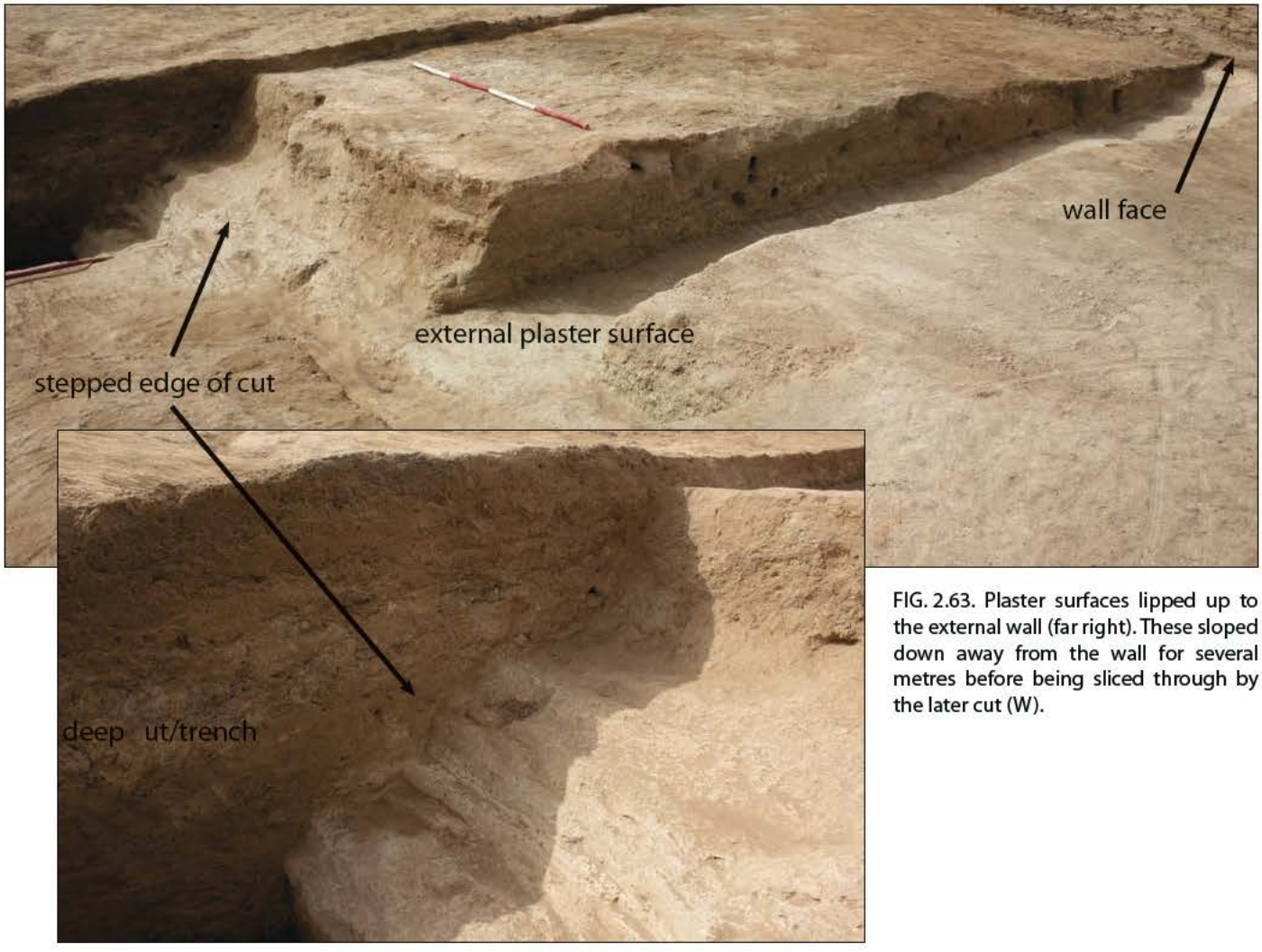


FIG. 2.63. Plaster surfaces lipped up to the external wall (far right). These sloped down away from the wall for several metres before being sliced through by the later cut (W).

THE EASTERN HOUSES

On the satellite image, walls of buildings on the southeastern flank of the site were clearly visible (Fig. 2.64). Apart from the Fortified Building itself, this was the only other place where this was the case. The walls seemed to form part of a rectangular block aligned parallel to the Fortified Building, lying some 38 m away from the side of that building in a slight depression cut by water channels running down from the crest of the mound. This area, between the 7.6 and 8 m contour lines, was a very flat and low-lying part of the site and a difficult place to work in. Not much of these houses had in fact survived, with barely thirty centimetres of walling left between foundation and the eroded modern surface. Nevertheless, the plans of three houses were recovered, in whole or in part. The rooms of one (House 1) were completely excavated, as well as two rooms in House 2, while the plan of House 3 is known only from surface scraping. Since the walls did not survive above threshold height, it was not possible to identify any doorways.

FIG. 2.64. The Eastern Houses visible on the satellite image (N).

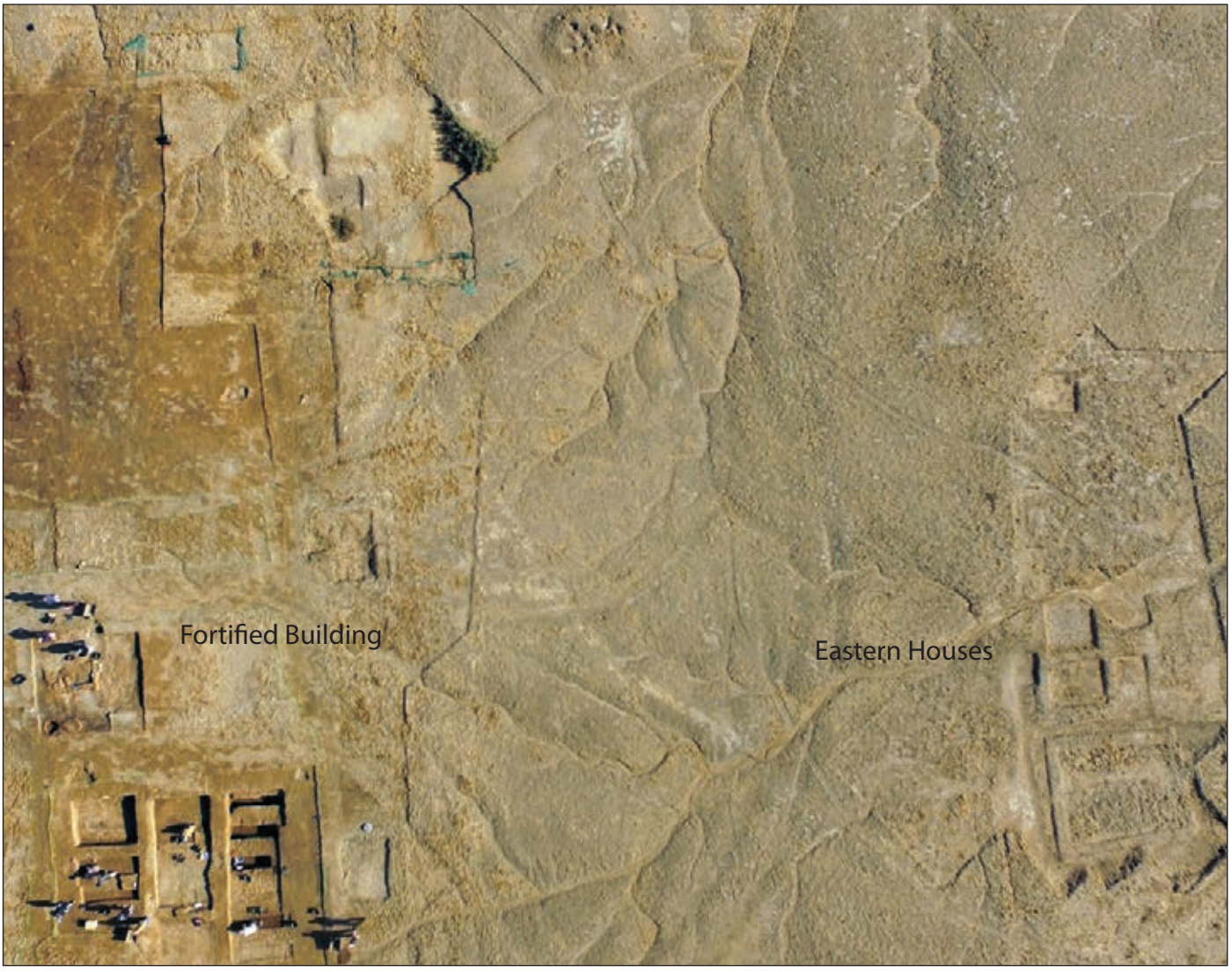


FIG. 2.65. The Eastern houses, lying to the southeast of the Fortified Building at a low elevation (NE).

The three houses were, as suggested by the satellite image, aligned southwest to northeast, parallel with the Fortified Building. However, the northernmost one, House 3, was on a slightly different alignment to the other two and would appear to belong to a different phase, perhaps a slightly later one (Fig. 2.67). A watercourse cut through where Houses 2 and 3 met and examination of the walls of both here failed to provide conclusive evidence for their relative dating.

On the west side of the houses was an open space (Area 407). The surface scrape extended across this open space from the houses back towards the Fortified Building for a distance of 13 m without any other structures becoming visible. These houses, therefore, may have been the ones nearest to the Fortified Building on this side, with open space between. More houses certainly lay to the southeast, where a segment of the wall of a neighbouring building intruded into the excavated area and, while the corner of House 3 at the northern end was found, sections of walling on the eastern side of the house suggest it or a neighbour continued to both the southeast and to the northeast.

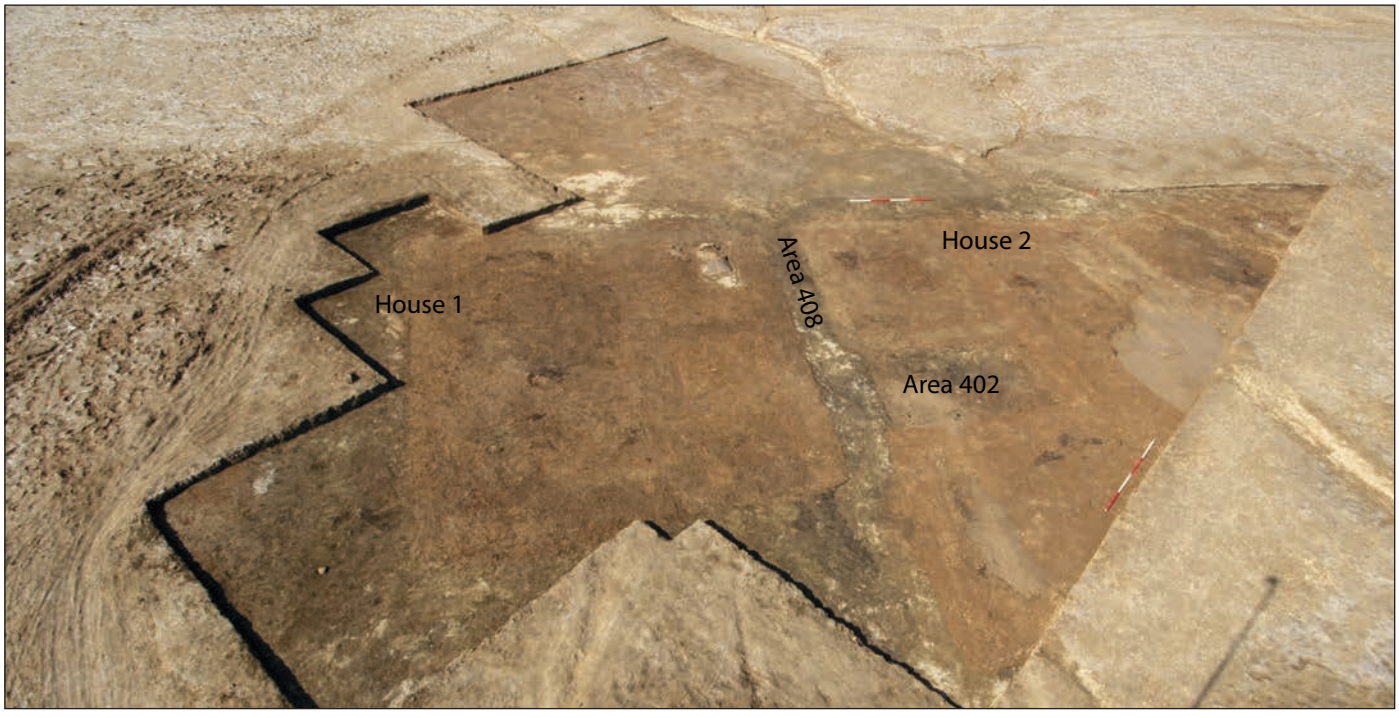
House 1 was a self-contained unit of four rooms, covering 54 sq m (Fig. 2.68). It was separated from its neighbour to the north by a narrow alleyway (Area 408), with open spaces on the other three sides. A layer of hard plaster ran under the walls and served as the primary floor. Room 404 had a mudbrick bench set against the northwestern wall. Room 405 also had a bench, in this case freestanding, as well as a *tannur*. Much of Room 403 was taken up with a double pot burial, cut from a now-eroded layer but which nevertheless respected the line of the walls of the house.

Across the alleyway, House 2 covered a greater area than House 1, occupying 87 sq m and having at least three rooms. Its limit to the north was unclear: the exterior wall continued beyond Room 401, suggesting either that House 3 was originally larger or, alternatively, that there was a neighbouring building here with a shared wall. A baked brick reused as a door socket appeared to be still in position here, as it lay next to the exterior wall and aligned with it, but as the wall was eroded to below the top of the brick, no other evidence for a doorway was found. An unusual feature of House 2 was the open recessed space (Area 402) off the alleyway, flanked by the rooms of the house. Two large rooms took up two sides of the house (Rooms 401 and 415) with a smaller one on the third side (Room 400). Only Room 400 and the western half of Room 401 were excavated to floor level. As in House 1, the primary floors were made up of a hard white plaster that served as a raft for the walls. No installations were found in this house.

The Eastern Houses are stratigraphically isolated from the Fortified Building but their parallel alignment with it indicates that they are contemporary. This is confirmed by the pottery which shows the closest correspondences with Level 2 (see p.136).

The finds from the eroded material above the houses, and from within, were more numerous and unusually rich when compared with those from the much more extensively excavated Fortified Building. This perhaps reflects the status of their inhabitants who, we may speculate, were deserving of superior accommodation to that on offer in the Fortified Building across the way.

FIG. 2.66. Houses 1–2 after surface scraping. The darker deposits of the alleyway and recessed Area 402 show clearly. The watercourse running through House 2 is also visible on the right (NW).



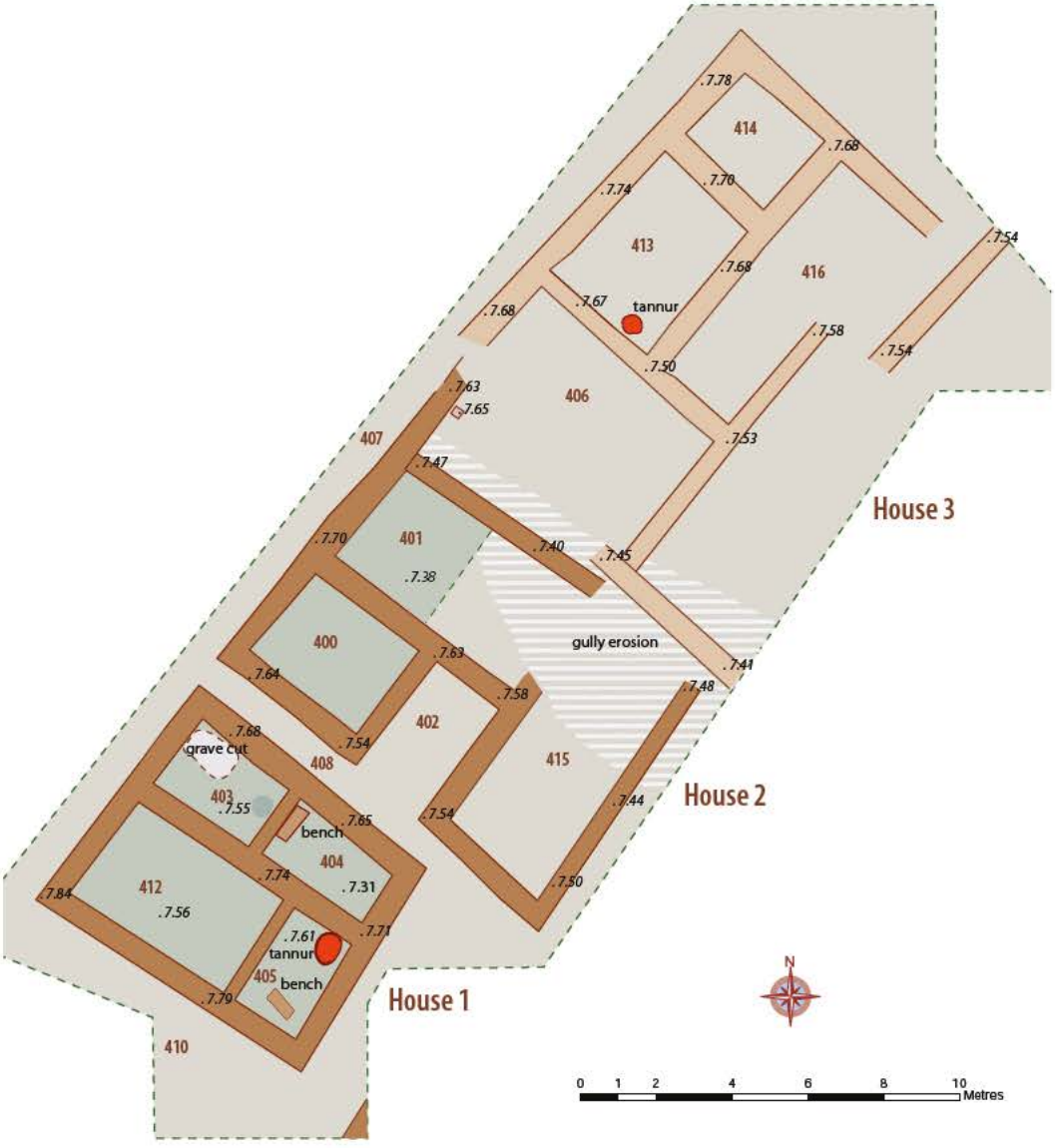


FIG. 2.67. Houses 1–3.

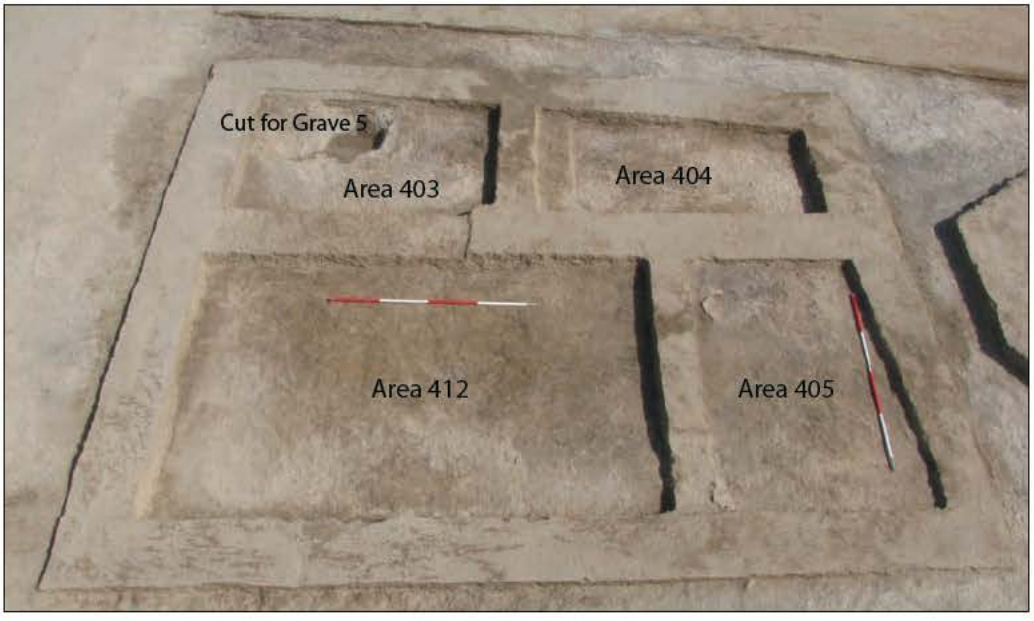


FIG. 2.68. House 1(NE) .

GRAVES

Fifteen graves were encountered during the excavations, one in the Eastern Houses, and all the others in the Fortified Building (Fig. 2.70). Two were just a handful of infant bones found loose in the surface scraping (Graves 1 and 2). Of the rest, three were simple inhumations (Graves 4, 9 and 12), six were infant pot burials (Graves 3, 7, 8, 11, 13 and 14), three were double pot burials (Graves 5, 6 and 10) and one was a baked brick vault (Grave 15). Many of the pot burials were exposed by surface scraping, and hence the graves must have been dug in from layers since eroded off the mound. Two of the infant pot burials, Graves 8 and 11, were slightly deeper, at 60 and 70 cm below the mound surface respectively. Many of the graves respected the wall lines of the Fortified Building, and these included examples of each the different burial type: Grave 4, a simple inhumation inside tower 302; Graves 3, 4 and 11, infant pot burials; and all three double pot burials. This is not to suggest that some or all of these were necessarily intramural burials: they may appear to respect the walls of the abandoned building simply because these were still visible even if ruined, and therefore it was possible to avoid the hard work of digging graves through mudbrick. At the least, they all postdate the extant building remains. In two cases, the graves were in fact cut through the walls of the building and so can definitely be said to postdate it: Grave 9, a simple inhumation, was dug into the main northeastern wall of the southern block and Grave 7, an infant pot burial, clipped the wall of Room 309.

In general the contents of the burials offer few clues as to date. An exception is Grave 5 in House 1. This double pot burial contained within it a small jug of Early Kassite date (see p.137). The two other double pot burials, Graves 6 and 10, are on the same orientation as Grave 5, which might suggest a similar date but, on the other hand, the extant skeletons were not arranged in the same way. The skeleton in Grave 5 lay on its left side facing southwest, while that in Grave 6 lay on its right side facing northeast. Grave 10 was too fragmentary to determine the orientation of the corpse. Two of the simple inhumations, Graves 9 and 12, were oriented west to east and not aligned with the building, indicating together with the presence of an iron anklet in the latter that they postdate the building.

All three double pot burials contained grave goods. The richest was that in House 1 (Grave 5), which contained a bead necklace, two metal cloak pins and the jug mentioned above. In Grave 6 there was an associated deposit placed outside the burial containers, comprising two small pots and a possible food offering. The third double pot burial, Grave 10, was poorly preserved but still contained a copper earring and bone pin. One of the infant pot burials contained five glass beads (Grave 8).

Grave 3: Infant Pot Burial

An infant burial lay in the southern corner of tower 124 (Fig. 2.69). Excavated from an eroded horizon, it nevertheless respected the wall lines of the tower. The body was in a badly preserved jar that had partially collapsed in on itself. The half of the pot nearest the surface was not preserved, and it was not possible to determine the form of the vessel. Found on its side, facing north, the skeleton was near-complete, though damaged, comprising a rib shaft fragment and three developing deciduous tooth crowns. The teeth are upper right first and second incisors and lower incisor, probably lateral. The teeth have complete crowns and one-third developed roots indicating a postnatal age of about six months.

Grave 4: Inhumation

In the eastern corner of tower 302, respecting the wall lines, was a simple crouched juvenile burial (Fig. 2.71). The body had been laid on the left side with the head at the northeastern end and the face pressed against the wall. There were no grave goods except for some pottery fragments, many of which appeared to have been placed so as deliberately to cover the body. Preserved bone material comprised a fragment of mid-shaft of a rib, a permanent upper left canine and permanent upper left molar. The canine tooth shows partial apical closure but very little occlusal wear, indicating that it had recently erupted and the individual was likely to have been 12–15 years old. The molar tooth has a complete crown with very little occlusal wear (enamel polishing only) and is probably a second molar, again consistent with an age at death of 12–15 years.

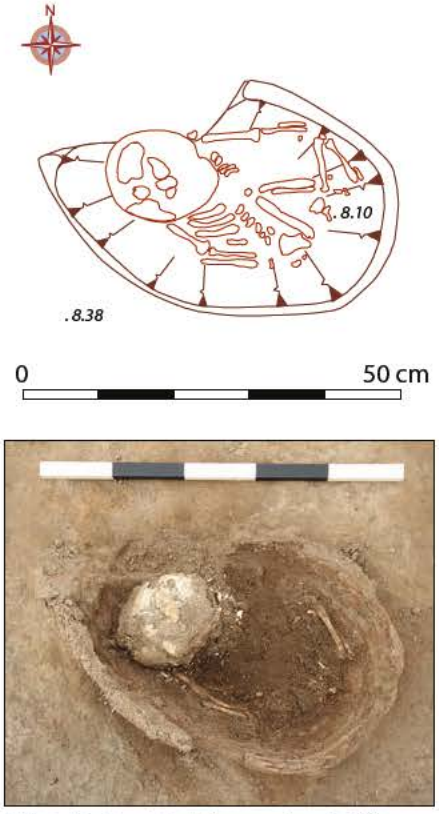


FIG. 2.69. Grave 3: Infant pot burial (N).

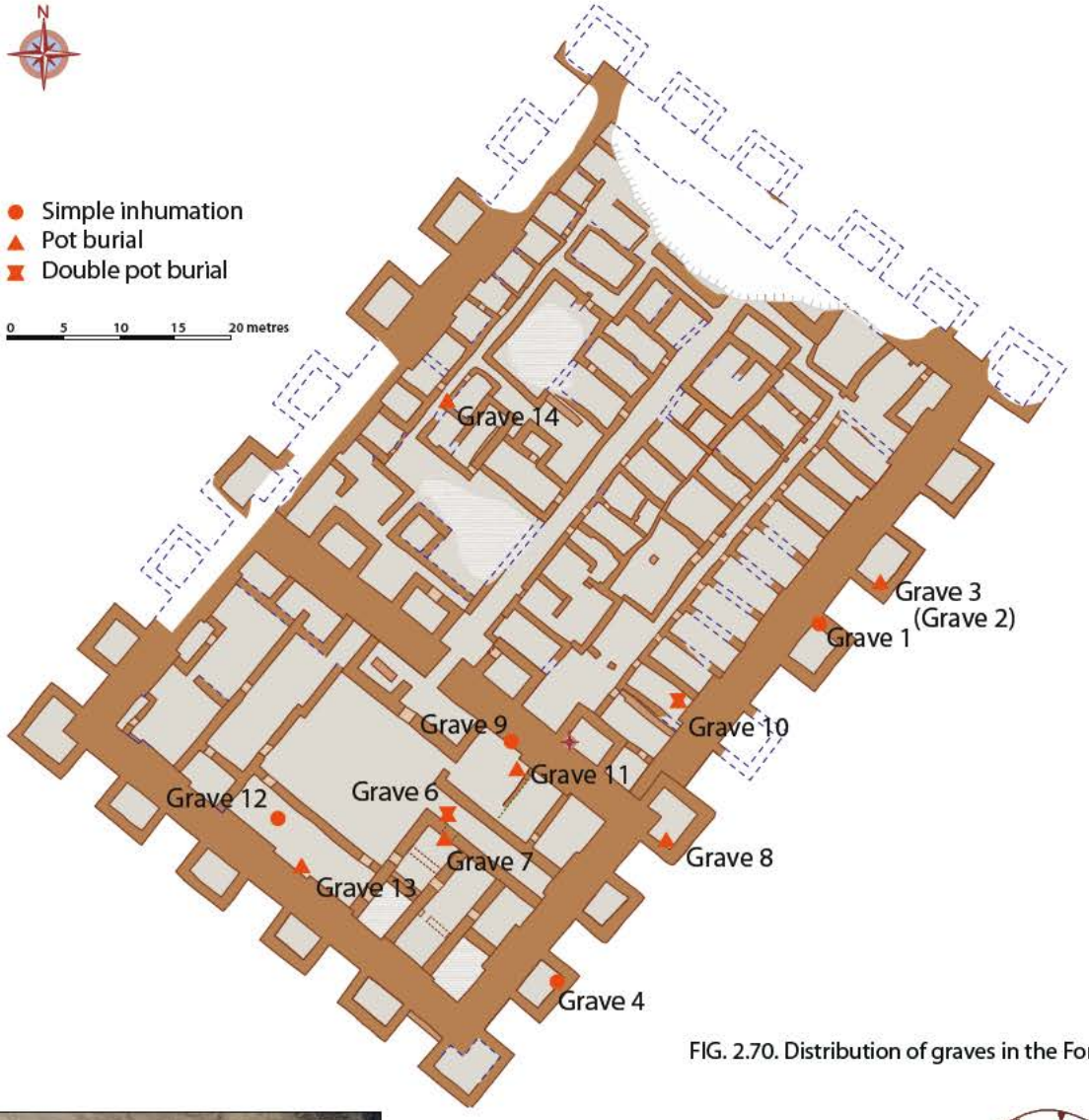
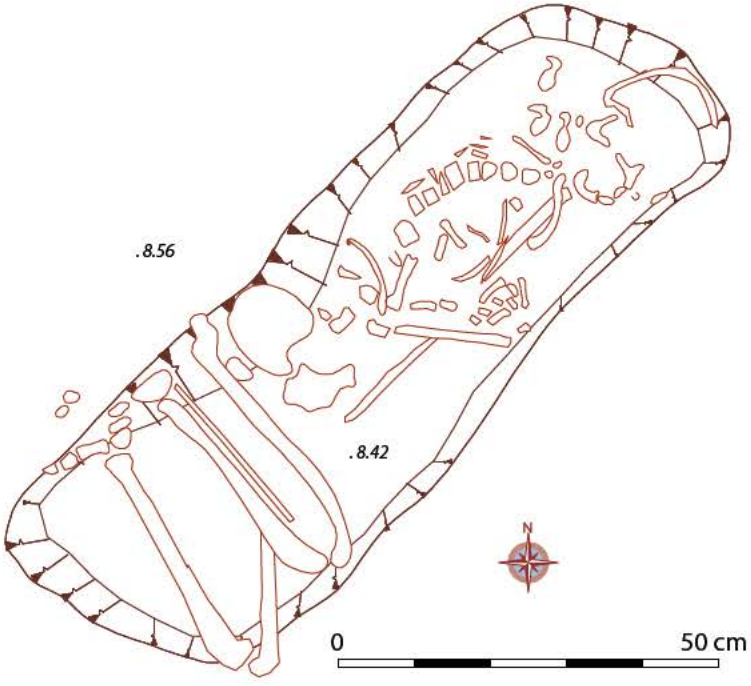


FIG. 2.70. Distribution of graves in the Fortified Building.

FIG. 2.71. Grave 4 (NE).



Grave 5: Double Pot Burial

The surface scrape above Room 403 of House 1 revealed a double pot burial (Figs. 2.75–7). It had been dug from a now eroded horizon, but parallel with the walls of the room. The two burial vessels (4038:02 and 03) were wide-mouthed ribbed vats. The skeleton was badly preserved and appeared to have suffered some disturbance, but it was clearly of an adult. It was bunched up in the eastern pot, lying in a flexed position on its left side, with both hands resting by the head. The western pot contained only a single clay bead (4039:01), while the rest of the grave goods lay close to the skull. These comprised a small jar (4041:01), two pins of a silver and lead amalgam (4041:10 and 11) and 49 beads of agate, lapis lazuli, carnelian, a green stone, possibly turquoise, and one of glass. A lapis lazuli bead found in the initial surface clearance (4001:03) was from the general area of the pot burial and may have originally come from it.

Grave 6: Double Pot Burial

A double pot burial was found in the corridor (Area 307) on the eastern side of the courtyard of the southern unit (Figs. 2.72–4). It had been dug into the upper fill of the corridor, parallel to the southern wall, from a now-eroded horizon. The cut for the burial could not be easily defined, but was probably not much bigger than the size of the burial vessels. Between the southeast burial pot and the corridor wall were two incomplete cups (3079:02, 03), and some articulated sheep bones (3079:04), which can be presumed to be grave goods.

The body lay in a crouched position tilted onto the right side with the head at the southeastern end. The skull was badly disturbed and fragmented. The main upper dome of the skull was intact and sat upright, but the palate, mandible and teeth were crushed and fragmented against the burial pot below. Most of the ribs and vertebrae were not preserved except some fragments of the left side ribs, which were crushed against the side of the burial pot, and the two lowest lumbar vertebrae which remained articulated with the sacrum. The left arm was tightly flexed and squashed flat against the southwest side of the burial pot. The two hands lay mixed together at the bottom centre of the burial pot. The right arm lay at the bottom of the burial pot, flexed to the extent that the bones of the forearm overlay the upper arm. The wrist was also acutely flexed with the hand pointing back towards the centre of the burial.

The pelvis and sacrum lay against the southwest side of the burial pot. The legs were flexed at the hips at an angle of approximately ninety degrees, and at a more acute angle at the knees. The left leg overlay the right, with the left leg slightly more tightly flexed than the right. Both tibias were truncated above the ankles with only a few foot bones preserved at the northwest end of the burial.

Many of the bones had been crushed flat by the collapse of the pots and were badly damaged by the growth of salt crystals. They were very poorly preserved, but it was possible to examine the upper left permanent first and second molars

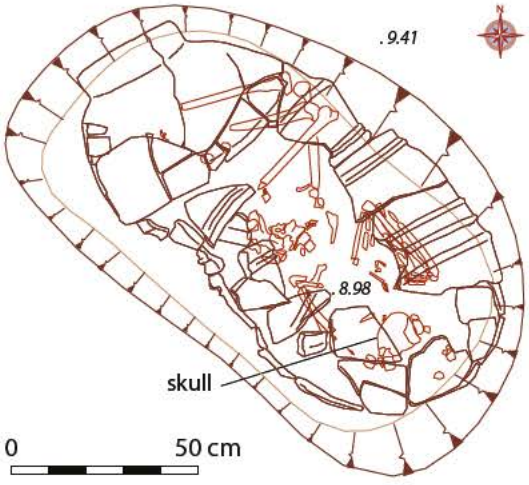


FIG. 2.72. Grave 6: Double pot burial.


FIG. 2.73. Grave 6: Double pot burial (SW).


FIG. 2.74. Grave 6. Food remains and cups lay outside the burial pots in the southeastern corner of the grave cut (SE).

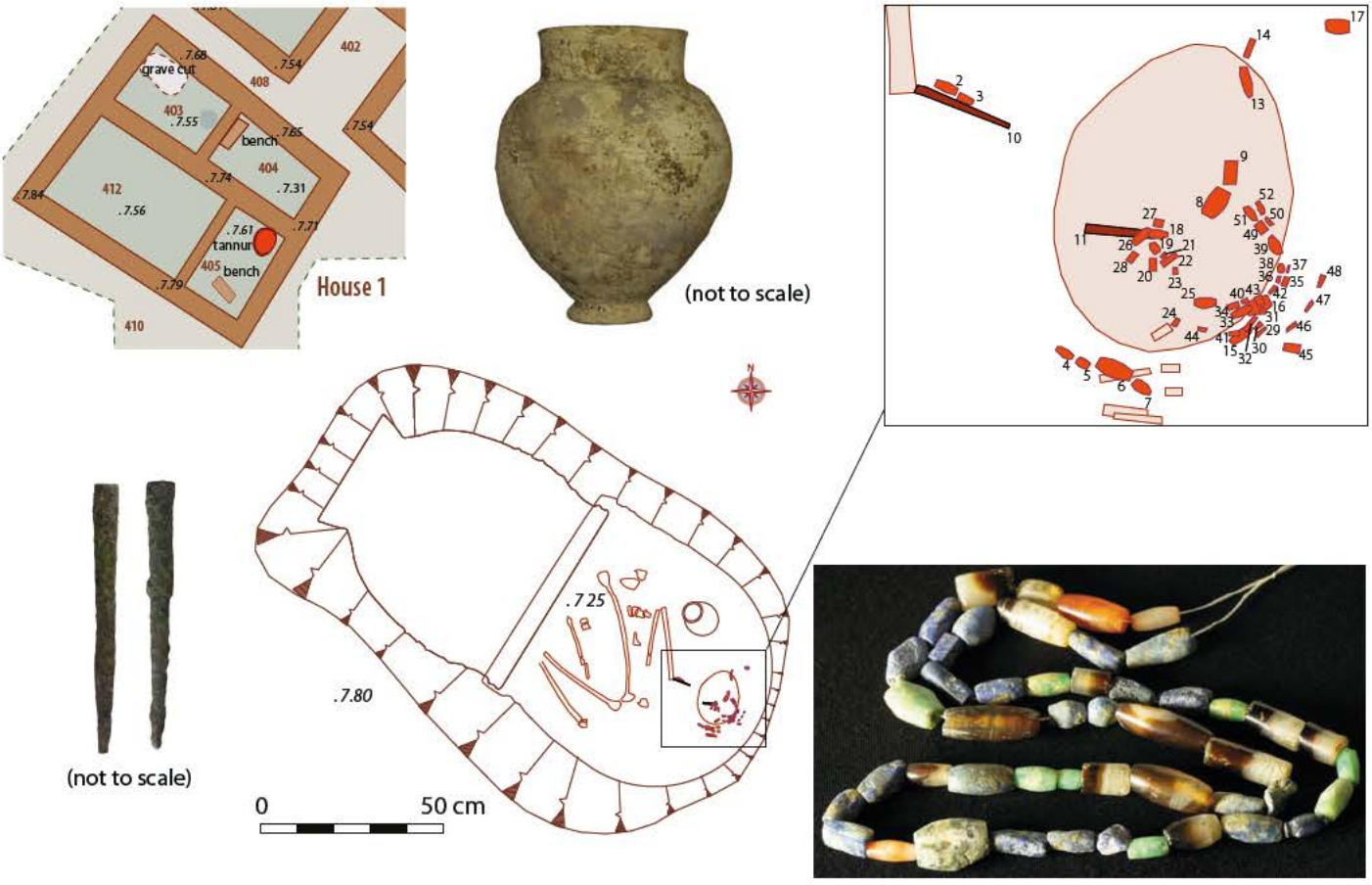


FIG. 2.75. Grave 5. Skeletal remains in the eastern pot (NE).

FIG. 2.76. Grave 5 burial pots lying under the modern surface (NE).

1	Pot	Pottery	160×129 mm
2	Bead	Agate	19×8 mm
3	Bead	Lapis lazuli	17×7 mm
4	Bead	Lapis lazuli	14×7 mm
5	Bead	Turquoise	14×11 mm
6	Bead	Agate	22×9 mm
7	Bead	Lapis lazuli	15×9 mm
8	Bead	Lapis lazuli	11×7 mm
9	Bead	Lapis lazuli	10×6 mm
10	Pin	Copper	74×70 mm
11	Pin	Copper	75×8 mm
12	Bead	Agate	11×5 mm
13	Bead	Carnelian	11×5 mm
14	Bead	Stone	16×12 mm
15	Bead	Lapis lazuli	13×6 mm
16	Bead	Carnelian	17×8 mm
17	Bead	Lapis lazuli	8×6 mm
18	Bead	Lapis lazuli	15×6 mm
19	Bead	Lapis lazuli	112×8 mm
20	Bead	Agate	9×6 mm
21	Bead	Turquoise	9×5 mm
22	Bead	Turquoise	11×5 mm
23	Bead	Lapis lazuli	11×6 mm
24	Bead	Lapis lazuli	8×7 mm
25	Bead	Lapis lazuli	10×6 mm
26	Bead	Lapis lazuli	14×5 mm
27	Bead	Lapis lazuli	9×5 mm
28	Bead	Lapis lazuli	11×7 mm
29	Bead	Lapis lazuli	11×8 mm
30	Bead	Agate	19×8 mm
31	Bead	Agate	9×7 mm
32	Bead	Agate	19×7 mm
33	Bead	Agate	23×8 mm
34	Bead	Agate	13×7 mm
35	Bead	Agate	10×7 mm
36	Bead	Agate	12×7 mm
37	Bead	Turquoise	6×5 mm
38	Bead	Turquoise	9×5 mm
39	Bead	Lapis lazuli	15×8 mm
40	Bead	Turquoise	9×5 mm
41	Bead	Lapis lazuli	9×8 mm
42	Bead	Details unavailable	
43	Bead	Lapis lazuli	125×9 mm
44	Bead	Lapis lazuli	70×60 mm
45	Bead	Lapis lazuli	133×60 mm
46	Bead	Glass	97×46 mm
47	Bead	Turquoise	10×6 mm
48	Bead	Stone	8×6 mm
49	Bead	Agate	13×9 mm
50	Bead	Agate	10×5 mm
51	Bead	Stone	11×7 mm
52	Bead	Lapis lazuli	12×7 mm

FIG. 2.77. Grave 5, with inset showing location of grave goods.

and lower second premolar. Occlusal wear on all teeth were consistent with middle adult age. There also seems to have been considerable rodent activity within the pots with several tracks and burrows as well as rodent bones, suggesting another source of disturbance and destruction. No burial goods were found inside the burial pots.

Grave 7: Infant Pot Burial

This burial had been dug down from an eroded horizon, and cut through part of the northeastern wall of Room 309 in the administrative suite (Fig. 2.78). The body had been place inside a small long-bodied jar with an apparently deliberate hole in the bottom (1097:01). The rim was missing, and the burial closed by placing a bowl (1098:01) over the mouth. The whole was badly crushed, and lifted as a block to excavate in the laboratory. The bones were of a small child, comprising the distal half of the left humerus, two rib shaft fragments and developing crowns of deciduous upper central and lateral incisors. These were not sufficiently well preserved to be certain of the complete position, but the skull fragments were nearest the mouth of the jar. There were no burial goods.

Grave 8: Infant Pot Burial

In the southern corner of tower 304 was an infant pot burial immediately adjacent to the walls (Fig. 2.79). The grave had been cut through the floor of the room, and through the layer of occupation above it, and so dates to a time after the primary use of the room. The body had been placed in a long, round-based jar (3091:01), closed by placing a shallow bowl (3091:02) base-down across the rim. The lower half of a high-shouldered jar (3091:03) was found between the main pot and wall 3052. All the vessels were crushed.

The flattening of the jar containing the body had resulted in the crushing of the skeleton, which was disarticulated, making it impossible to discern the original attitude. Bone preservation was comparatively good, however, and examination of a left side femur and rib suggest a neonate or very young infant. Lying below the bones and between the broken pot sherds were five broken glass beads (see p.171).

Grave 9: Infant Inhumation

A shallow cut dug partly into the external wall of the southern unit and partly within Room 316 contained the fully articulated remains of an infant (Fig. 2.80). It was lying on its right side with its head to the west, facing south, legs slightly flexed. The limits of the cut were difficult to discern except where it partly truncated the wall of the building.

Grave 10: Double Pot Burial

A disturbed double pot burial lay above Room 108 close to the external wall of the building (Fig. 2.81). Oriented northwest to southeast, it had been dug from a now eroded layer. It lay immediately below the surface and only the lower halves of the burial pots were still present (6092:01, 6093:01). The fragmentary bones were all heaped up in the southwestern pot, in similar fashion to Grave 6, reflecting post-burial disturbance. These included teeth with moderate occlusal wear and some with heavy occlusal wear, with exposed dentine, suggesting the grave is that of a young adult. A copper earring (6170:01; Fig. 6.63 on page 172) and bone pin (6094:04) were found with the skeletal material.

Grave 11: Infant Pot Burial

In the northeastern corner of Room 316 within a rectangular pit at least 50 cm deep was a large, badly broken jar (8047:01) containing the remains of a juvenile (Fig. 2.82). The skeleton was disturbed, and many of the bones (long bones and skull fragments) were well scattered and even splintered, but others exhibited some degree of articulation (hands/feet, ribs and vertebrae). The teeth included deciduous second molar and unerupted crowns of permanent first and second molars, which, along with the 5 mm of root development, suggest an age at death of about five years. There is some pathological periosteal new bone on the medial side of the ascending ramus

FIG. 2.78. Grave 7. Pot with bowl over mouth (Vertical, SW).

FIG. 2.79. Grave 8. Burial Jar (SE).

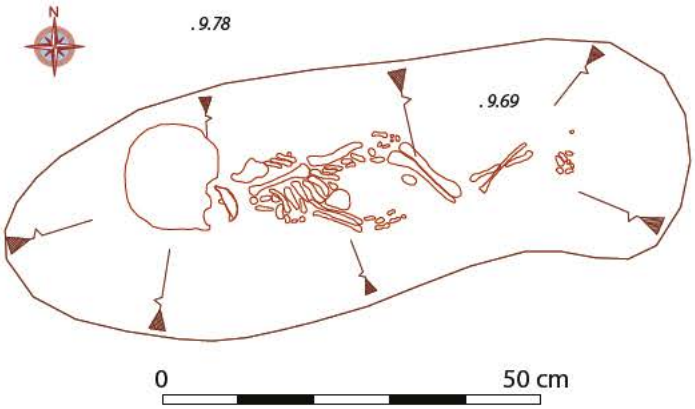


FIG. 2.80. Grave 9.

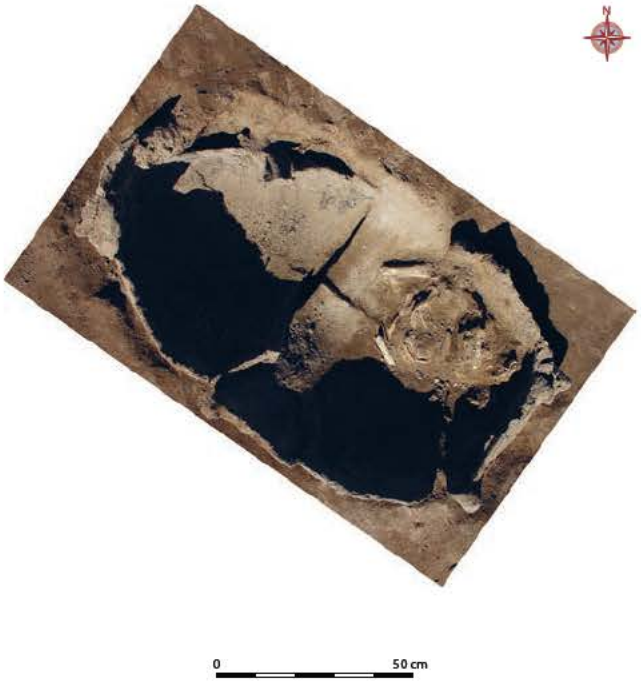
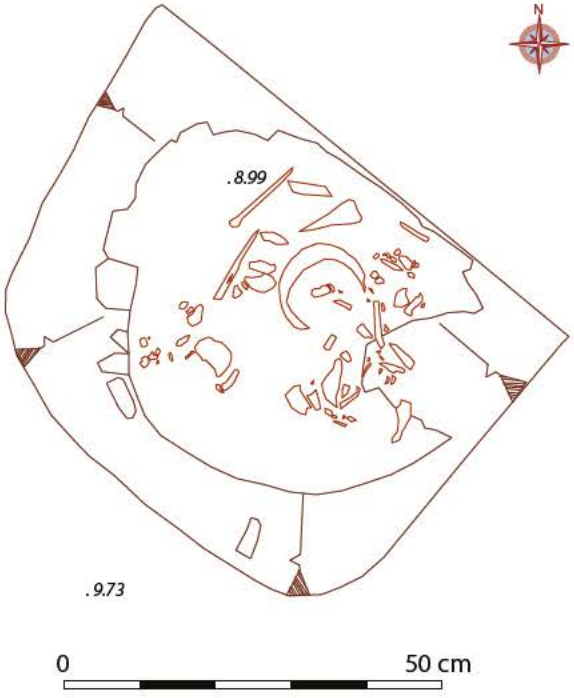


FIG. 2.81. Grave 10.



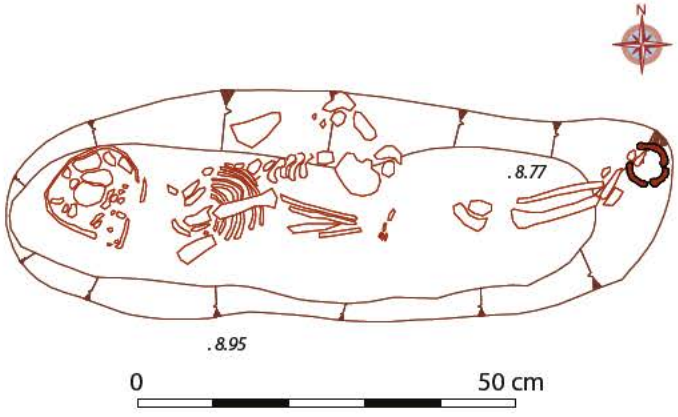


FIG. 2.82. Grave 11.

FIG. 2.83. Grave 12, with iron anklet.

and the permanent first molar has severe occlusal hypoplastic defects resembling the condition of 'mulberry molar', which has been associated with congenital syphilis.

The fill of the cut contained a wide, round-bodied shallow bowl (8029:03), also broken, which had probably capped the neck of the burial pot, as well as the remains of a smashed nipple-based cup (8029:04). There were no other associated artefacts.

Grave 12: Infant Inhumation

An infant skeleton, in poor condition, was found close to the mound surface in the western half of Room 314 (Fig. 2.83). It was lying on its right side, facing south, and was associated with an iron anklet (1144:01) in the corrosion of which could be discerned traces of cloth. The age of this grave is therefore assumed to be much more recent than the occupation of the settlement.

Grave 13: Infant Pot Burial

A pot containing the remains of a very young baby, probably a newborn or foetus, had been dug into an area of dense mudbrick tumble in Room 314 next to the external wall of the building. The burial pot (1151:01) was badly crushed, and the bones in such poor condition that they could not be photographed or planned. They have not been studied further.

Grave 14 Infant Pot Burial

It is unclear whether Grave 14 was actually a burial, as no bones remained. It consisted of a badly broken vessel (6141:01) with only the lower part extant, containing a single cowrie shell.

Grave 15: Baked Brick Tomb

On the eastern flank of the site, just north of the Eastern Houses, was a slightly mounded area and scatter of baked bricks that suggested a rectangular structure below (Fig. 2.84). The presence of the baked bricks was unusual: fragments of bricks of Ur III date were found at Tell Khaiber, but baked brick was not used in the construction of the Fortified Building or of the houses. These ones proved to be the remnants of a baked-brick tomb that had been robbed more than once.

The tomb had been dug into the mound from a now eroded surface. The original cut was clearly delineated. The sides were constructed of a single row of baked bricks, with a brick size of 40 × 40 × 6 cm. The internal dimensions of the chamber were 1.88 × 1.36 m. A maximum ten courses of brick survived to a height of 80 cm. The floor of the tomb had been completely removed by robbers as had any brickwork that might have been part of a vaulted ceiling.

The tomb had been robbed twice. The first occasion was in antiquity, when the robbers dug a shaft down the southwestern side and broke through the wall, removing a section of brickwork. More recently a second attempt was made and the entire top of the tomb was removed and the bricks crudely hacked away. This venture was entirely unsuccessful, the robbers digging half a metre below the bottom of the walls in a vain attempt to loot an already empty tomb. After this the tomb remained open and was infilled with windblown material, including a length of preserved wood of recent origin.

No human remains or grave goods were recovered so the dating of this tomb is conjectural, but it clearly post-dates the Eastern Houses and so is later than the First Sealand Dynasty.

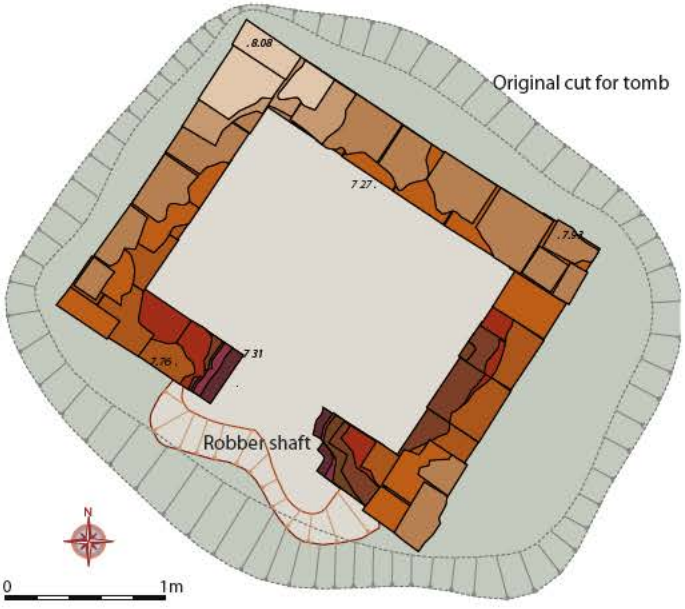


FIG. 2.84. Grave 15. Baked-brick tomb with robbed out section of wall and broken upper brickwork (S).

MARY SHEPPERSON

3. The Organization, Form and Function of the Fortified Building

INTRODUCTION

This chapter will examine the architecture and spatial organization of the Fortified Building and discuss its apparent functional priorities. The building has no strong architectural parallels in the region during this period, and several of its architectural features are unusual in the canon of Mesopotamian architecture. As it is the first recovered building plan that can be securely attributed to the Sealand state, it is not possible to say if the Fortified Building reflects a wider Sealand architectural style, which may be encountered at other Sealand sites in the future, or if it represents a unique structure; an atypical architectural response to a specific set of conditions.

The architectural remains of the Fortified Building offer a complementary source of information on the settlement's function to that which the written texts provide, and also offer a longer chronological window for tracing the building's development. The building's architecture represents a crucial source of data on the use of the Fortified Building, the nature of the Tell Khaiber settlement and, potentially, on the wider organization of the Sealand state.

MATERIALS

Despite the use of baked brick being common in neighbouring settlements both pre- and post-dating the Sealand Kingdom, the building at Tell Khaiber is exclusively constructed of unbaked mudbrick. The bricks were more or less homogeneous in size and shape, being rectangular with dimensions averaging around 32 × 22 cm, but varied considerably in colour and composition, often within the same structural feature, suggesting that bricks were produced in relatively small batches from multiple clay sources. These batches were then were mixed at some point during the transport and construction processes.

Traces of wall plaster were found in several interior rooms, recorded in colours ranging from pale grey or pink, to yellows and reddish brown, although no decorative designs were identified. Floors were either of simple pale brown clay plaster or of white or grey lime plaster. In addition to the mudbrick floors of the external towers, mudbrick paving was found in only one internal room of the building. One room was found with clear impressions of reed matting laid on its floor.

Only one significant piece of stonework was found; a tall limestone basin discovered in the courtyard. There were no stone architectural elements, the material for which would have had to be imported from some distance. The Fortified Building was essentially a structure of unbaked mud and reed; low cost materials available in the immediate vicinity.

THE SOUTHERN UNIT IN LEVEL 1

The initial building at Tell Khaiber was small compared to the Fortified Building's final form. The first part of the structure to be built was the 3.30 m thick perimeter wall with its closely spaced towers, describing a rectangle measuring approximately 53 × 27.5 m. The massive outer wall and prominent towers, which occupy a disproportionately large amount of space compared to the area they enclose, would have given the small building a heavily fortified appearance and made it a strong defensive structure. The height of the fortification walls is a matter for speculation and will be discussed further below, but the thickness of the outer wall, allied with the strong buttressing effect of the towers, suggest an intention to support a substantial height of brickwork. There was just a single narrow entrance, recessed between two towers at the centre of the long northeast side, making access to the building highly defensible.

The position of the southern unit on the highest point of the pre-existing third millennium settlement mound would also have enhanced its defensive qualities, despite the mound being relatively low. The few extra metres of ground elevation, in addition to the height of the walls, would have

given the building an unrivalled view across the flat, marshy landscape; at ground level sight-lines were probably much obscured by reed stands and vegetation. Any movements within a wide radius of Tell Khaiber would have been observable from the building's ramparts.

Only a few elements of the southern unit's Level 1 internal plan were identified in small areas where excavation proceeded to greater depth. The two walls securely assigned to Level 1 form part of the courtyard perimeter, defining its northwest and southeast sides. This strongly suggests that the earliest building, like the later incarnations of the southern unit, was arranged around a central courtyard space in the usual style of Mesopotamian buildings.

The most significant Level 1 internal feature identified from the building's earliest phase is the series of long, narrow, subfloor vaults, which run below the southern corner of the southern unit. They are not found under any other excavated part of the building. The vaults themselves seem unlikely to have had a storage role, but rather to have protected a storage space above from damp by allowing airflow below it. The commodity most likely to have required such measures is grain, similar arrangements for the storage of grain being known from other ancient sites.[25] This would be consistent with the known role of the building in collecting agricultural products in Level 2 when the text archive was produced. However, the need for elaborate damp-proofing under the storehouse, which appears to have been unnecessary in the Level 2 building, indicates that it was intended for foodstuffs to be stored here on a longer-term basis, including through the rainy winter months.

Function of the Level 1 Southern Unit

The architectural evidence suggests that the original building was primarily a fort. The architecture of the building and its position in the landscape overwhelmingly prioritise defence and surveillance, with the enclosed space within the walls sufficient for little more than the housing of a garrison with its equipment and supplies. The extraordinary proportion of the building effort which went into the building's fortification wall and towers indicates a very real and pressing need for defence; perhaps this small fort represents a first Sealand foothold into enemy territory, or at least into heavily contested territory.

In the ventilated storehouse, it is tempting to see the earliest evidence for the collection of agricultural resources, which the texts show to have been one of the primary activities of the Level 2 building. However, this is not necessarily the case. The storehouse is large for such a small building, but the damp-proofing demonstrates that it was supposed to hold stores over long periods of time. It seems equally if not more likely that it was simply the garrison's food store, which had to hold large reserves against the possibility of siege and the difficulties of resupplying a remote and threatened position. If the function was to collect produce for dispatch back to the central state, as it was in Level 2, long-term damp-proofed storage would not have been necessary.

The Level 1 southern unit, on the balance of the architectural evidence, represents a heavily fortified military outpost, perhaps aimed at establishing initial Sealand military control over new territory.

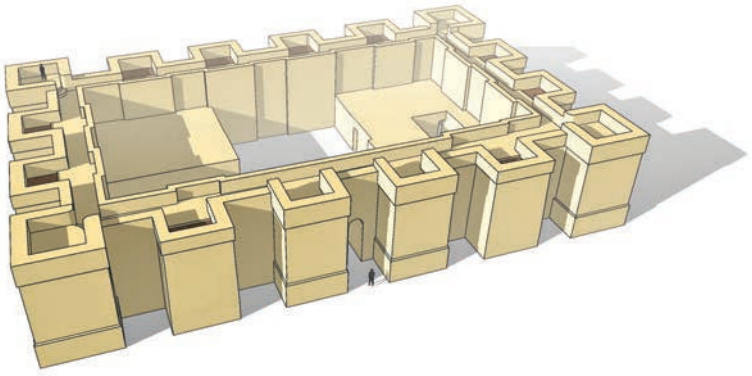


FIG. 3.1. Reconstruction of the southern unit in Level 1. The perimeter walls and towers are modelled at 8 m high. The interior is largely conjectural but conforms to what is known of the layout from limited excavation. View facing SW to show the entrance, lighting approximates 8 a.m. spring equinox shadows.

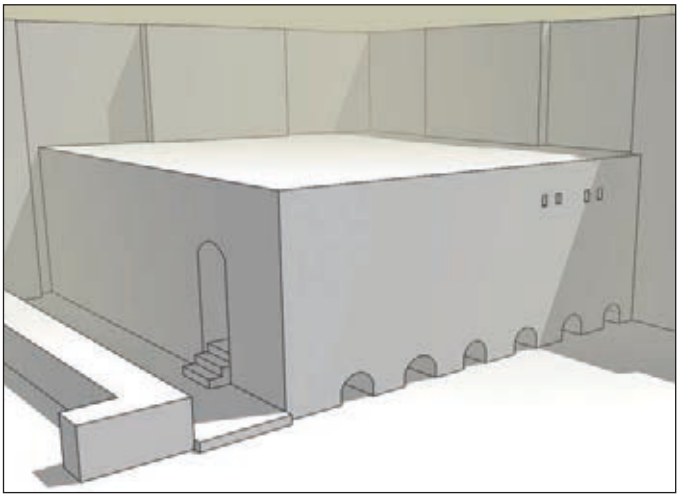


FIG. 3.2. Reconstruction showing the subfloor vaults of the southern unit, with their ends opening into the courtyard area. View from the north, upper structure is conjectural.

THE SOUTHERN UNIT IN LEVEL 2

The plan of the southern unit in Level 2 presents a very standard architectural form for Mesopotamian architecture of the second millennium. A large, square, central courtyard is surrounded on all sides by a series of rooms which are accessed from the courtyard. Such arrangements are common as residential units within second millennium palaces, such as that of Zimri-lim at Mari and Adad-narari at

[25] Breckwoldt 1995/96: 65

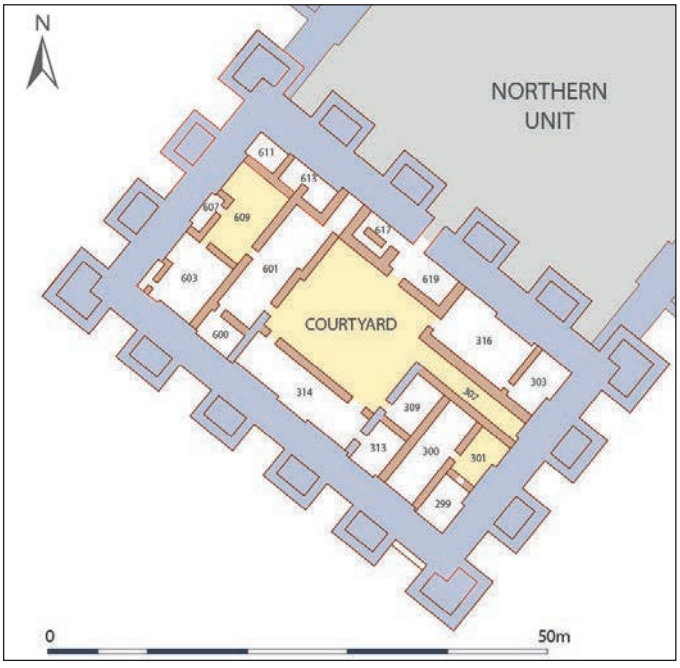


FIG. 3.3. The southern unit in Level 2. Proposed unroofed space is indicated in yellow.

Assur. The Level 2 southern unit also parallels the layout of large private houses of this period, such as those excavated at Ur, Nippur and Tell Harmal to name just a few.[26]

An architectural indication that the southern unit took on a new role in Level 2 is the construction of Room 314 on the southwestern side of the courtyard. The siting of this new room opposite the entrance to the courtyard is a position commonly occupied by second millennium houses' main reception room, as can be seen in the reception rooms of the large domestic houses at nearby Ur.[27] The reception room's façade also faces northward, as is usual for second millennium palace throne rooms.[28] Unlike any of the other rooms of the southern unit, the reception is provided with two external doorways from the courtyard, allowing access from either end of its length and providing the room with extra lighting and ventilation from the courtyard. Although the floor levels of the reception room were not well preserved, there are hints of more palatial elements, at least in its lower levels, in the form of yellowish plaster applied to the floor and walls. Similar plaster also occurs in some rooms of the administrative suite.

Although only two poorly preserved rooms of the western suite were excavated (Room 600 and part of 601), the layout of the walls allows some interpretation of the use of space. An important factor is that both the western and administrative suites have double ranks of rooms, i.e. there are rooms behind the rooms accessed from the courtyard. This creates a problem of light access for the 'buried' rooms, such as Rooms 603, 609 and 611 in the case of the western suite, which have no external doorways and no external wall elevations for window openings. There is the possibility of some sort of roof openings or clerestory lighting, but is seems more likely that one or more of these rooms was unroofed and provided light and air to the other spaces. Given its central position in the western suite, Room 609 appears most likely to fulfil this role; as a courtyard it could provide light to Rooms 603, 607, 611 and 613, and additional light to the large Room 601. The likelihood of Room 609 having been unroofed is enhanced by the presence of a *tannur* in the small space 607 on the northeast side of Room 609. However, Room 609 was not excavated so there is no data to prove or disprove the proposal that it was unroofed.

The Administrative Suite

The subfloor vaulting under the southern corner of the building was no longer required in Level 2. The vaults were filled in and built over with a new set of rooms; the administrative or scribal suite, from which the tablet archive was recovered. Between lowering the floor height in the formally vaulted area and the gradual rise in the level of the courtyard as the plaster floor was continually renewed, the new administrative suite and the courtyard were now more or less on the same level.

The administrative suite includes the only example of mudbrick paving identified in the Fortified Building within an occupation space. The unusual reinforcement of the floor of Room 301 suggests the possibility that it was unroofed, and this hypothesis is supported by the layout of the administrative suite. The whole suite of rooms has very poor potential access to natural light; only Room 309 has a doorway to the external space of the courtyard and none of the rooms have much wall length available for window openings, even if such were provided. Rooms 313 and 299 have no exterior wall elevations at all. Scribal work required good lighting and it appears common for architectural units where scribal work was performed to be provided with a well shaded outdoor working space.[29] If Room 301 was unroofed, it would not only provide such a working space but could also give light access to Rooms 299 and 300. It is perhaps also indicative that the paved Room 301 contained no tablets; as unroofed space it would have been suitable for writing documents but not for storing them.

Courtyard

The courtyard is a ubiquitous feature of Near Eastern architecture from the third millennium BCE until the mid-twentieth century. The main courtyard in the southern unit, as it existed in Level 2, measures approximately 14 × 12 m. The courtyard was a busy area, frequently being re-floored and hosting an ever-changing series of features and installations.

All of the excavated floors dipped markedly into a roughly circular depression close to the centre of the excavated half of the courtyard which is thought to have contained a large

[26] Woolley & Mallowan 1976; Stone 1987; Baqir 1948.

[27] Brusasco 2004: 148.

[28] Shepperson 2017: 219.

[29] Shepperson 2017: 138, 174.

FIG. 3.4. Tree pit, excavated from the level of plaster floor 3190.

FIG. 3.5. Limestone basin found outside the eastern doorway into the reception room (SE).

and long-lived tree. This tree must have been removed after this lowest excavated floor fell out of use as all subsequent floors are unbroken here, although their plaster surfaces slope quite dramatically into the persisting depression.

Also on this lowest excavated floor, a tall limestone basin with fluted decoration on its exterior was found toppled onto its side by the southern entrance to the reception room. This is by far the largest piece of stone found at Tell Khaiber and the only instance of decorative stonework. The depression in the top of the basin would have stood at approximately waist-height and it is tempting to interpret it as a hand washing basin for guests entering the reception room, although of course this is simply speculation. This floor level appears rough contemporary with the Level 2 remodelling, although the lack of clear floor preservation in the reception room, particularly around its doorway to the courtyard, makes this hard to conclusively demonstrate. Considering the presence on this same floor of the courtyard tree, the stone basin and a row of mudbrick pedestals, this floor level appears to represent a time of particular magnificence in the courtyard, at least compared to the later floor levels which replaced it.

Function of the Southern Unit in Level 2

As a whole, the southern unit in Level 2 has strong similarities with the layout of an elite residence and may in some respects have functioned as such. The addition of a reception room suggests that the southern unit had acquired some formal and executive functions and may indicated the presence of a governor or senior administrator of some kind who was expected to entertain peers or superiors from time to time. The addition of a reception room appears to approximately coincide with the construction of the northern unit and is an indication that the expansion of the building was accompanied by a change in role and a greater level of importance for Tell Khaiber within the Sealand administrative system. A dedicated administrative and executive function for the southern unit is further supported by the conversion of the vaulted storage area of Level 1 into the large administrative suite of Level 2. The addition of the northern unit would have added many more personnel and a greater volume and range of economic activities, necessitating a substantial scribal capacity. This expanded administrative apparatus was placed in the pre-existing southern unit through extensive remodelling rather than being purpose-built into the new northern unit.

THE NORTHERN UNIT

The addition of the northern unit in Level 2 tripled the size of the building, taking its area up from 1,460 sq m to approximately 4,490 sq m. The outer wall and towers of the northern unit exactly mimicked those of the southern unit in both form and material, producing a highly uniform exterior façade. The interior of the northern unit is, however, organized along drastically different lines to that of the southern unit.

Fortification and Appearance

It is significant that the new northern unit replicated the fortification wall of the southern unit. Such a large and elaborate outer wall was a huge investment of resources and it seems unlikely to have been undertaken unless necessary. It seems particularly unlikely that such effort would have been expended simply for the sake of making an impressive-looking, uniform façade in a building with very few other signs of status or display in terms of building fabric or material culture. It must be assumed therefore that the same fortification wall as the southern unit's was employed because a similar level of military threat persisted as at the time the southern unit was originally constructed, and because the building retained a military function, at least in part.

A question related to the relative military threat and the expenditure of resources on the defence of the building is

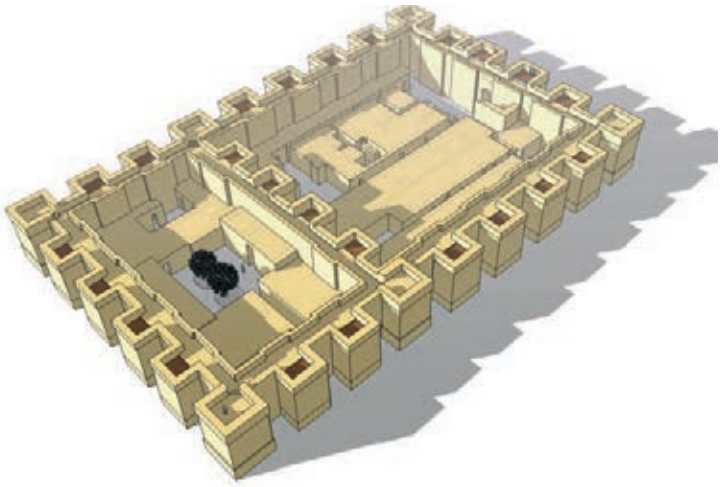


FIG. 3.6. A reconstruction of the Fortified Building in Level 2. View is from the south, with the southern unit in the foreground. The lighting approximates 3:30 p.m. at the spring equinox.

the possible height of the fortification wall. Estimating wall height from ground plans is of course an age-old problem for archaeology and, because there are a large number of variable factors, such as foundation depth, underlying deposits, building materials, climate, supporting structures and the competence of the ancient engineers, there is no simple formula which can be applied. However, some quantitative research has been done, at least for the limited case of a straight, freestanding mudbrick wall.[30] According to this model, a freestanding mudbrick wall of the thickness of the building's outer wall might be expected to remain structurally sound to a height of somewhat over 6 m. However, the external wall is far from freestanding. It is supported by twenty-six large, closely spaced towers, further buttressed on the interior by the abutting internal architecture and by the additional shallow buttresses behind each tower. It is also not one straight wall, but forms into two solid, closed rectangles; far more stable than a simple linear wall. Given these supportive factors, it seems likely that the walls rose well above 6 m and it is not impossible that they could have stood to 10 m or more. For the purposes of the reconstruction illustrations in this volume, the ramparts are modelled at 8 m.

As well as providing considerable support to the walls, the fortification towers would also have performed the usual defensive functions of such structures. The close-set towers would have made attempts to scale or breach the fortification wall much more difficult; any assault on the outer wall would have exposed attackers to flanking fire from the two adjacent towers. Attackers would be forced to target the narrow front faces of the towers where defenders could be easily concentrated. The outer wall is easily wide enough, at around 3.3 m, to have held a rampart walkway so that troops could be rapidly redistributed around the defences. Although the room was not excavated, the freestanding block of brickwork in Room 617 of the southern unit is most likely the remains of a staircase for accessing the ramparts; a further such access was probably incorporated into the gatehouse of the northern unit, although the ground plan could not be recovered.

A further indication that defence continued to be highly prioritised in the northern unit, and that the impressive, uniform façade was not just for show, is that the Level 2 building still only had a single narrow entrance. This is despite the fact that the building was now three times the size of the Level 1 southern unit and a secondary point of access would surely have made life easier for the much-expanded population (see below). Nevertheless, practical defence is still prioritised by giving the occupants just a single access point to defend. It may be significant that behind the entrance gateway, the closest two preserved walls are around double the thickness of the other walls of the building's internal architecture, and the western side of the gateway structure seems to be larger than the eastern one. It is hard to draw any detailed conclusions from these partial remains, but these thicker foundations do hint at some kind of elaboration of the gateway structure, probably to incorporate further defensive structures to the rear of the gate, such as a secondary gate, a chicane entrance,

[30] Trzciński et al 2017.

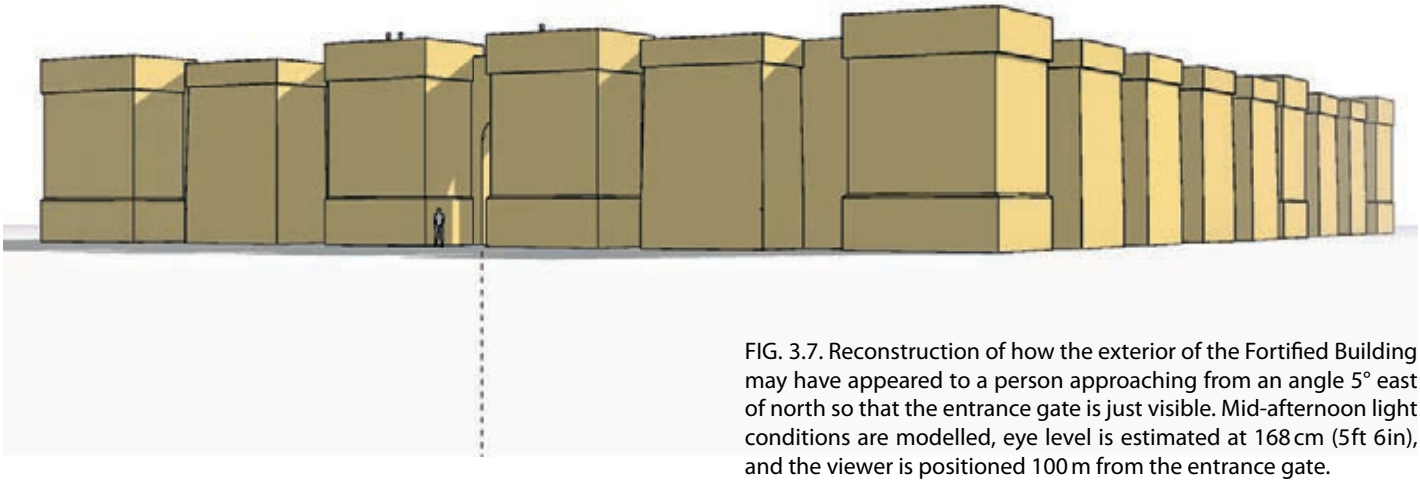


FIG. 3.7. Reconstruction of how the exterior of the Fortified Building may have appeared to a person approaching from an angle 5° east of north so that the entrance gate is just visible. Mid-afternoon light conditions are modelled, eye level is estimated at 168 cm (5ft 6in), and the viewer is positioned 100 m from the entrance gate.

a staircase to the ramparts or an upper structure to allow attackers in the gateway to be assaulted from above.

Having argued that the fortification of the Level 2 building was practical and functional and not just for show, it must be pointed out that part of the fortifications' functionality was visual. The exterior façade of the building seems intended to produce the visual impression of strength and impregnability. The frequency and magnitude of the perimeter towers would have presented a façade of stark vertical lines, emphasised through much of the day by alternating stripes of bright sunlit brickwork and deep shadow, enhancing the visual impression of height. The single entrance, semi-concealed between two towers and on the more shaded northern side of the building, would have been shadowed for most of the day and only visible at all from a small range of viewing angles (0–70^{0} from North). This visually de-emphasised the only access point, giving potential attackers the impression that the building was essentially a solid block with no way in.

The positioning of the gate on the most northerly facing side of the building may also have offered a defensive advantage during the majority of the day and year. Under most sunlight conditions, attackers would have had to approach the entrance with the sun in their faces, while their target would have been silhouetted; a distinct disadvantage to the attackers and advantage to the defenders, who would have had their targets clearly illuminated. It is notable, with the above in mind, that the northerly orientation of the entrance was retained between the Level 1 and Level 2 buildings, despite that meaning that the entrance was now on a short side of the rectangular Level 2 building, whereas it had been on a long side of the southern unit.

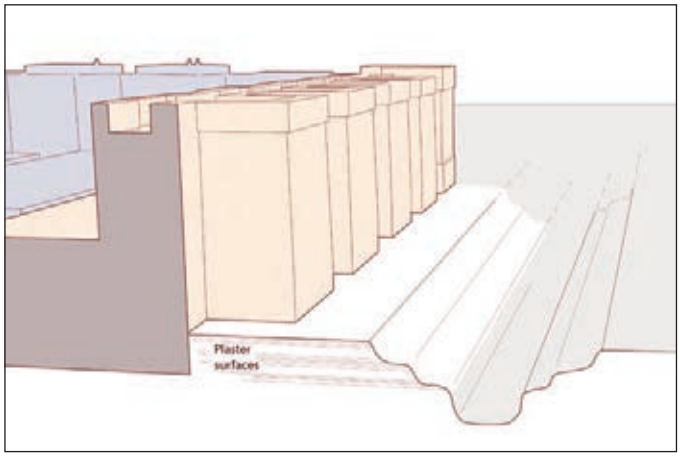


FIG. 3.8. Cut-away view of the plaster surfaces against the southeastern wall of the building. The ditch profile shown in white is based on the excavated section, while the grey-shaded area is a hypothetical reconstruction assuming a symmetrical cut. The walls are reconstructed to a height of 8 m (excluding the parapet). View is facing roughly north.

Plaster Surfaces and Ditch

Outside the Fortified Building, white plaster surfaces ran up to the external wall along its southeast side. Test excavations did not find plaster surfaces on the other sides of the building. Excavation through these surfaces against the southeast wall revealed that these were just the upper floors of a deep sequence of continually renewed surfaces, the full depth of which was approximately 1.70 m.

These overlaid floor surfaces were cut by a very large feature which, judging by the small section excavated, may be a large ditch, the western edge of which runs parallel to the southeast wall of the building at a distance of 7.4 m from the outer face of the external wall. The section excavated through the feature suggests it is substantial; over 2.60 m deep and potentially more than 9 m wide. The excavated evidence indicates that the ditch was cut after the latest preserved floors were laid, so a direct connection between the ditch and the building is not proven. Although the lowest deposits were not reached, there was no obvious water laid material to suggest this was a canal or water channel. The accumulation of distinct tipping deposits indicates that the ditch remained open for some considerable time, gradually filling with material over an extended period.

The long sequence of laid floors against the southeast wall of the building has no obvious function and suggestions as to the purpose of these floors must remain highly speculative. Creation of an impressive visual effect may have been intended, with the pale floors acting to underline the façade of the building with a bright strip of ground. However, if this is their main purpose the application of these plaster surfaces to only the southeast side of building is curious, as it is not the side with the entrance gateway and therefore unlikely to be the primary direction from which the building was approached.

One factor which supports the importance of visual effect in the function of the floor surfaces is that this is the side of the building which would have received the most sunlight. This long side is oriented towards morning sunrise and will continue to receive light through the morning and a little into the afternoon all year round. However, the reception of sunlight here has utility beyond the visual effect of brightly lit plaster. The orientation will also make this the driest, warmest side of the building, particularly in the winter. There are several possible reasons why an area of warm, dry plastered floor space may have been useful; one potential use is for the sorting and drying of agricultural products before transport or storage. We know from the archive texts that the building was collecting, recording and dispatching significant quantities of grain and other produce, yet there is little open space within the building where large volumes of material might have been laid out to facilitate this, except perhaps the rooftops. Before it is packed for storage, thorough drying of foodstuffs such as grain is vital to prevent the grain from rotting, and the clean, dry, sunlit plaster flooring along the building's southeast wall would have been perfect for this. The external plastered area may also compensate in some measure for the lack of the usual

courtyard space inside the building for outdoor work and other activities requiring well-lit shaded space. The shadow of the building would have shaded the exterior plaster floors in the afternoon, making it a peasant working environment at these times, or perhaps an area for social gatherings in the afternoon or early evening.

As it clearly postdates the floor surfaces, the function of the large cut feature may be wholly unrelated to the floor surfaces and the use of the building. The course of the cut was only traced for a few metres and it was not excavated to its full depth or full width, making it difficult to draw any firm conclusions about its extent and purpose. Although no waterlaid deposits were encountered, it is possible that the lowest, unexcavated level of the feature carried water and that this was a ditch for water supply or drainage. Another possibility, if the feature was contemporary with the late use of the building, is that the cut is a further defensive measure added late in the building's history, perhaps in response to a specific, imminent threat. Given its apparent depth and width it would have presented a significant obstacle to attackers, especially if the bottom was filled with water. If its purpose was defensive, it is likely that the ditch would have completely encircled the building, but this was not investigated.

Internal Architecture

Most of the internal plan of the northern unit was recovered through surface scraping, so it is not clear how much of it reflects the original Level 2 layout and how much represents later alterations or incomplete preservation. However, these limited soundings provide important results, sufficient to demonstrate that the gross architectural plan appears essentially unaltered from the original layout. Like the southern unit, the northern unit underwent a constant process of floor renewal and alterations to the division of internal spaces, but the general structure and organization remained unchanged through the life of the building.

Organization and Function

There are two distinctive and unusual features to the organization and function of the northern unit: firstly, unlike other Mesopotamian buildings of this period and later, its rooms are not arranged around courtyards but rather along three long, parallel passageways which run down the length of the northern unit. The second unusual feature is that, based on the limited evidence from excavation, the majority of the internal space seems to have been dedicated to accommodation.

The central of the three long passageways leads directly from the building's entrance gateway to the old gateway leading into the southern unit. This allows the southern unit, with its executive and administrative functions, to be accessed quickly from the entrance without passing through any other architectural space within the northern unit. The central passage, at 2 m, is approximately twice the width of the two flanking passageways, emphasising the primacy of this route.

FIG. 3.9. The three passageways of the northern unit and the rooms to which they give access are highlighted. Rooms accessed from the central passageway are shaded red, rooms accessed from the western and eastern passageways green and blue respectively.

The previous chapter describes how the three passageways of the northern unit divided the internal architecture into four separate architectural blocks. Another way of dividing up the internal architecture is in terms of access; into the spaces accessed from each of the three passageways. Although there are a couple of areas in which the architecture could not be completely recovered at the surface, making it hard to be absolutely certain, it appears that there were no spaces accessed from more than one of the passageways. Each passageway in effect formed its own isolated 'neighbourhood' within the building with communication between these areas only possible via the junction of the three passageways behind the entrance gateway.

These three neighbourhoods were of roughly equal size (Fig. 3.9). The boundary between the central neighbourhood (shaded red) and the eastern neighbourhood (shaded blue) is almost straight, formed by one long wall. The boundary between the central and western neighbourhood (shaded green) is far more irregular, as well as being partially undefined due to areas of unrecoverable architecture. The division of the compact interior architecture of the northern unit into three isolated areas is likely to signify some sort of division of the space by either function or personnel.

The narrower flanking passageways give access to ranks of small rooms which line the long sides of the building. One of the series of identical narrow rooms against the southeast outer wall was excavated to the lowest deposits

FIG. 3.10. Types of accommodation. The single-room barracks-like accommodation is indicated in red; suggested multi-room accommodation, such as domestic unit Rooms 140–3, is indicated in green. Areas which do not appear to fit either excavated type are unshaded. The two main places where architecture was not recoverable are indicated in orange.

(Room 101). Counter to an initial expectation that these rooms would be for storage, related to the building's known function in collecting agricultural products, the material recovered indicates that this room was residential. A series of plaster floors and stratified layers of cooking and eating wares, animal bones and high levels of organic material, including reed or straw impressions which may be related to bedding, persisted through the use-life of the room. The presence of a small *tannur* just inside the doorway, in common with most if not all of the other rooms in this row, also promotes a residential interpretation and dismisses a storage function. These appear to be dormitory-type rooms, lined with organic bedding and provided with an oven for heating and cooking.

A highly significant feature of the eastern passageway and the rooms leading off it is the high level of privacy it provides in terms of access. The passageway can only be entered at the northern end near to the main entrance gate and terminates into what appears to be a small, squarish courtyard at its southern end. There is no connection back to the central passageway and the rest of the building, either via a continuation of the passageway or by passing through any of the intervening rooms; the architectural spaces between the central passageway and the eastern passageway open on to one or the other but never both. Each passageway forms its own private neighbourhood as discussed above. A further indication of a desire for privacy along the eastern passageway is an apparent preference for doorways, where these can be identified, not to face each other across the passageway, but rather to be offset so that there was no direct sightline from one room to another.

The similarity in organization and symmetry of position between the residential rooms along the eastern passageway and the corresponding rooms along the western passageway strongly suggests a similarity of function. None of this row of smaller, squarer rooms were excavated so their residential nature was not confirmed, but this seems to be their most likely purpose by analogy with the eastern passageway. As with the rooms along the eastern passageway, the rooms do not appear to interconnect, but rather each is accessed separately from the western passageway. Contrary to the eastern passageway rooms, the western passageway rooms do not have *tannur*s, but this deficit may be compensated for by the provision of numerous ovens in the open space into which the western passageway terminates. The absence of *tannur*s is likely to be a product of the smaller size of the western passageway rooms rather than a difference in function compared to the eastern passageway rooms. Perhaps the smaller size of room and the different cooking arrangements of the western passageway residential block reflects the accommodation of a different type or rank of personnel to the occupants of the eastern passageway block.

The southern area of the western passageway is partially unclear due to the interference of a large erosion gulley, but it is clear that the end of the passageway is blocked to prevent access back to the central passageway. Like the eastern passageway, the western passageway terminates in a dead end, creating another private residential cul-de-sac.

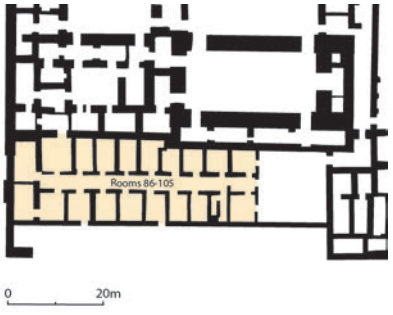


FIG. 3.11. The southwestern quarter of Zimri-Lim's Palace at Mari. Along the southern edge, two ranks of residential rooms are arranged along a straight central passageway. To the north of this area the rooms are arranged around courtyards, adhering to conventional Mesopotamian spatial organization.

The central rooms of the northern unit remain the most enigmatic in terms of function. They are of irregular size, shape and organization, although some of this irregularity is almost certainly due to the effects of alteration and remodelling. Nevertheless, the inconsistency in the form and arrangement of the architectural spaces suggests a multiplicity of functions, possibly changing over time. The only rooms of the central passage neighbourhood which were excavated was the suite of Rooms 140–3. These were found to have a broadly domestic character, suggesting that at least part of the central neighbourhood was also given over to accommodation, albeit of a different character to the single-room dormitory-type chambers of the eastern and western neighbourhoods. Rooms 140–3 have a greater resemblance to a small private house, possibly for a family unit, integrating cooking, eating, sleeping and a domestic scale of storage. Limited excavation in Room 152 at the northern end of the central corridor also suggests a domestic function.

The fact that the central neighbourhood was also residential in some proportion gives the impression that the overwhelming function of the northern unit was the accommodation of personnel. The nature of this accommodation would appear unusually dense, at least in the case of the rows of single-room chambers. One outcome of organizing the architecture around three narrow passageways, instead of the usual arrangement around courtyards, is that unbuilt space takes up a smaller proportion of the ground plan; it achieves a higher architectural density, which in this case seems to be aimed at cramming a relatively large population into the building.

A strong architectural parallel for the dormitory or barracks-style accommodation can be found in the Palace of Zimri-Lim at Mari, which predates the Sealand occupation of Tell Khaiber by a couple of centuries. Although the rest of the palace is organized conventionally around a series of courtyards, Rooms 86–105 near the southwest limit of the building form two ranks of small rectangular rooms opening onto a central passageway. This arrangement is very similar to that found in Tell Khaiber's northern unit and the rooms at Mari are of similar proportions, although somewhat larger at around 7 × 4 m. Like those at Tell Khaiber, the rooms along the passageway at Mari are interpreted as being residential, for the accommodation of minor personnel.[31]

SPATIAL ANALYSIS

In considering the functions and nature of the Fortified Building, basic space syntax analysis can help to highlight some of the key characteristics of the architecture's spatial organization. Although the architectural plan recovered through surface scraping is impressively complete, there remain areas of uncertainty, including the positioning of some doorways, as well as areas where the walls were only partially visible or completely unrecoverable. As the mathematical processes of space syntax do not allow for such uncertainty, a slightly altered plan of the building (Fig. 3.12) was used, in which walls and doorways which can be inferred with some certainty have been added, while areas where the access is not deducible or the walls are simply not preserved have been blocked off and discounted from the analysis. Consequently, there is more uncertainty than the exactitude of the quantitative results implies.

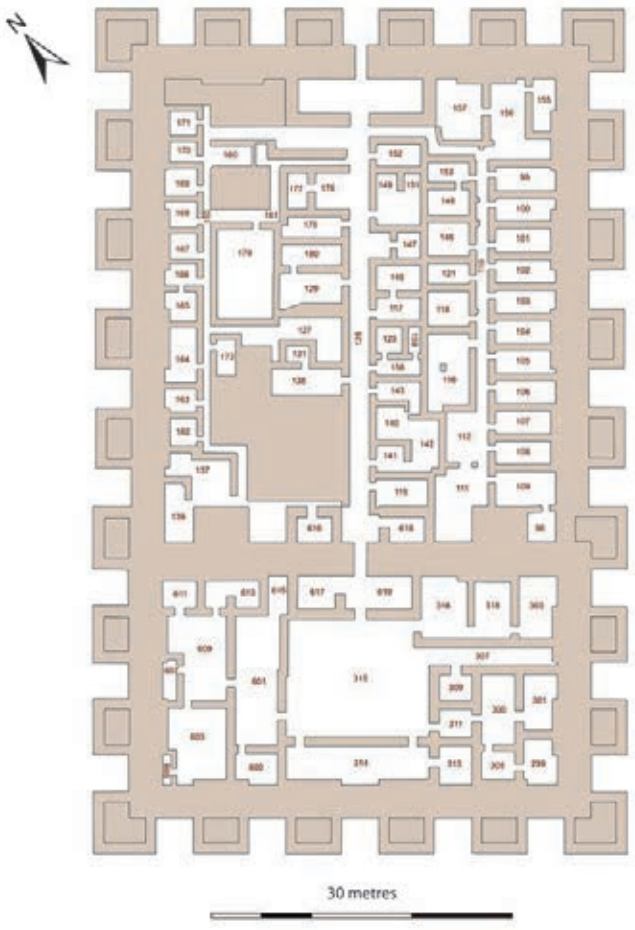


FIG. 3.12. Plan altered for use in space syntax analysis, with additional walls and doorways hypothesized and areas where the division of space is unknown discounted.

Justified Plan Graphs

When the Fortified Building is laid out as justified plan graphs, schematically layering the rooms in terms of access steps from a 'root' space, the effect of the three passageways in the northern unit becomes very apparent. For a building with sixty-five (included) spaces, the northern unit has just three layers of depth above the root space, when the root space is the central passageway, making the access graph extremely shallow. Compare this to the smaller southern unit, which itself is rendered relatively shallow by its central courtyard, but with twenty-four spaces still has greater plan depth than the much larger northern unit.

[31] Margueron 1982: 340–2.

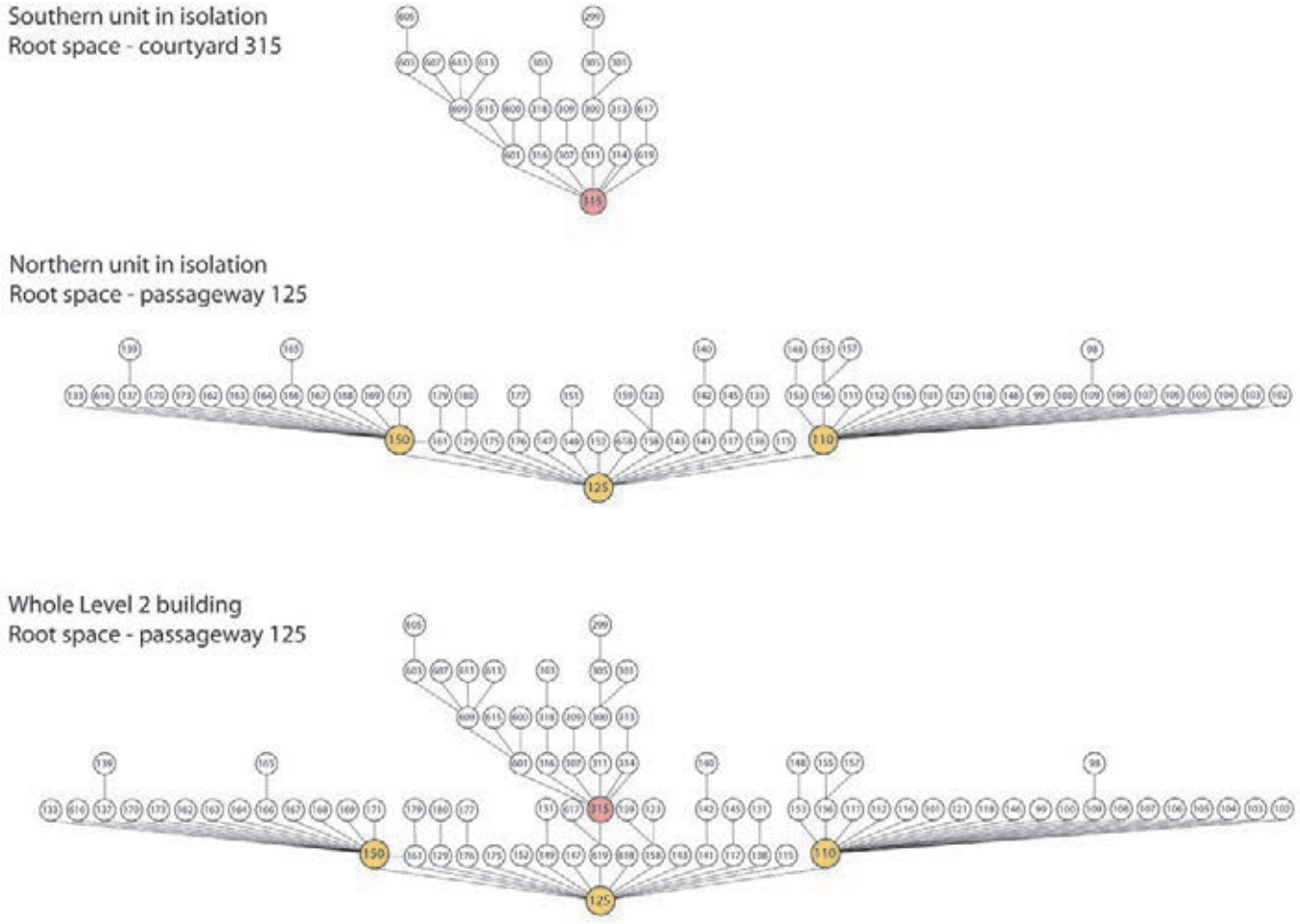


FIG. 3.13. Justified plan graphs showing the southern unit (top), the northern unit (centre) and the whole building (bottom) with their most integrated spaces as the root space. The three passageways of the northern unit are indicated in orange, while the courtyard of the southern unit (315) is shaded red.

A further unusual and significant feature is that there are almost no circular routes in the building, rather the justified graphs show access routes branching to a series of dead ends. There are no links between rooms with the same depth. The only exception to this is the circular route provided by the short passage 161, which allows an alternative access to the western passageway 150. A further anomaly is the two doorways which both access Room 314 from courtyard 315; the only example in the building of such an arrangement.

In the terminology of space syntax, these properties render the Fortified Building highly symmetric and nondistributed. If the northern unit is considered in isolation, the building is a good example of what Hillier and Hanson call the 'no neighbours' model,[32] described as 'a powerful way of achieving the greatest segregation of the greatest numbers'.

Relative asymmetry (RA) is a measure of the segregation of a space; the higher the relative asymmetry the more isolated and private the space is, the lower the value the more integrated and accessible it is. Relative asymmetry is calculated according to the method of Hiller and Hanson and ranges between 1 and 0.[33] RA numbers are all low in this range for the Fortified Building due to the high degree of symmetry, i.e. the shallowness of the of the justified plan graph.

As might be anticipated, the most integrated space is the central passageway 125, which gives direct access to the two side passageways and to the southern unit as well as more than a dozen rooms. It has the lowest RA value of 0.033 within the building as a whole. By comparison, eastern passageway 110 has RA of 0.043 and the courtyard of the southern unit is slightly further segregated with an RA value of 0.055, these being the next most accessible, integrated spaces.

The most isolated rooms are Rooms 605 and 299 in the furthest corners of the southern unit, with RA values of 0.138 and 0.142 respectively. The excavated barracks-type accommodation Room 101, has a moderate RA value of 0.066, as do all of the other accommodation rooms along the eastern passageway 110. All of the preserved rooms which open off the other western passageway, 150, have a very similar RA value, 0.070, to that of the known accommodation rooms (except for Rooms 165, 166 and 139). This further

[32] Hillier & Hanson 1984: 132, 152–3.

[33] Hillier & Hanson 1984: 108–9; Ostwald 2011: 451–3.

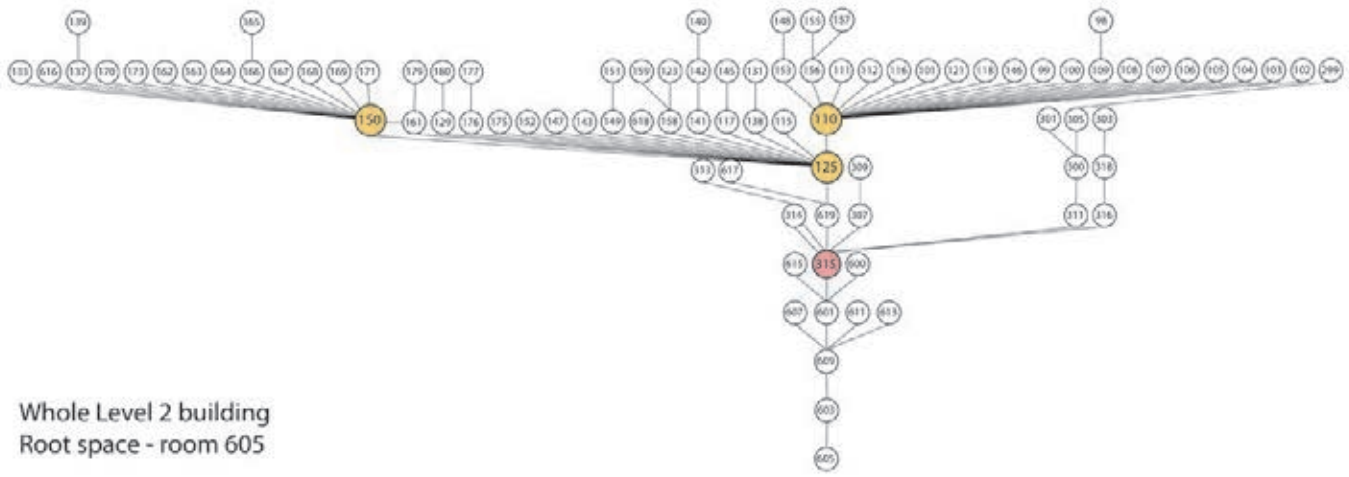


FIG. 3.14. Justified plan graph using Room 605, the most isolated room in the southern unit, as the root space.

supports the hypothesis that this rank of small rooms against the northwest wall had the same accommodation function as the corresponding rank of rooms against the southeast wall.

Segment analysis (Fig. 3.15 top left, top right and bottom left) is usually applied to the road networks of urban landscapes, so its applicability to the Fortified Building may be a matter for debate. However, the passageways which control circulation in the northern unit makes the layout similar in some ways to a street system so the model may have a good degree of applicability here. This analysis is less appropriate to the southern unit, which is organized around a courtyard rather than passageways. For some comparison, the top left diagram models only the passageways and open spaces, but in general, for all types of segment analysis the broad picture was the same whether enclosed rooms were included or not: the central passageway was always the warmest coloured area, indicting the highest values of each measure, followed by the eastern and western passageways and the southern unit courtyard. The top left diagram shows the building's pedestrian routes graded by connectivity; the number of spaces to which each segment is closely connected. Integration (top right) measures the number of different segments which must be passed through to reach all other segments from the origin segment; the lower the number, the greater the integration. Both connectivity and integration are strongly connected to choice analysis (bottom left) which assesses the frequency with which each path segment features in the shortest route between points in the building. This is perhaps the most socially significant measure as it is an indicator of encounter probabilities, meaning the likelihood of meeting other people in the space. Red/orange colours indicate routes on which social interaction is likely, while blues represent more isolated, or private, routes. The segment analyses all highlights the primacy of the northern unit's central passageway in terms of connecting the various parts of the building and for its potential for social interaction, followed by the two flanking passages. The roofed spaces of the building all

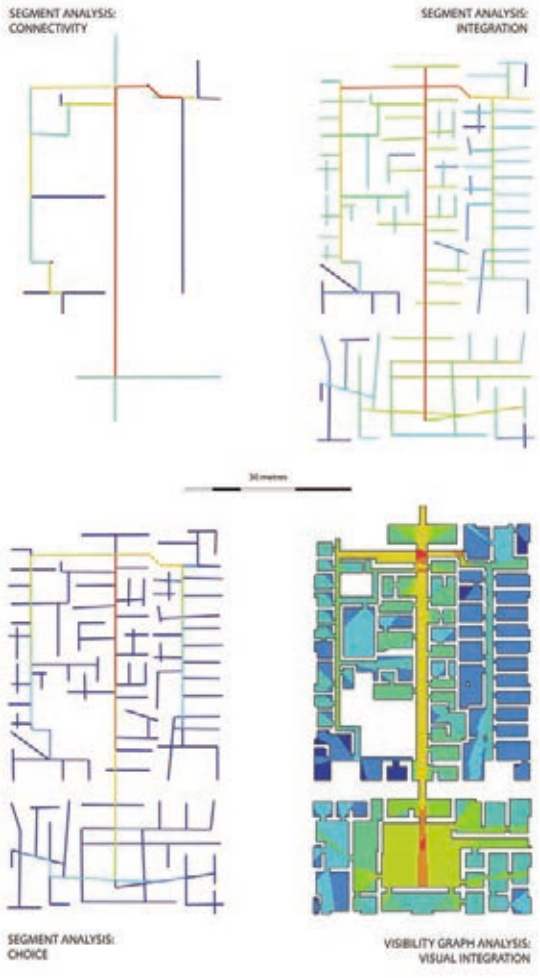


FIG. 3.15. Spatial analyses produced using depthmapX software. Segment analysis models the pedestrian routes of the building as a street system. The three analyses here rank routes in terms of connectivity (top left, applied to just corridors and open spaces, not rooms), integration (top right) and choice (bottom left). The visibility graph analysis (bottom right) is based on an overlapping grid of isovists, analysed here for visual integration; the mutual visual distance between points.

have lower values, particularly in the choice analysis where they are almost all coloured dark blue. This is reflective of the segregation indicated by the justified plan graph; none of the rooms constitute through-routes to other parts of the building but are rather dead ends.

The visibility graph analysis (bottom right) illustrates the intervisibility of space within the Fortified Building; how visible each point is from all other points in the building. The warmer colours, indicating high visual integration, are concentrated along the central passageway through the northern unit and in the courtyard of the southern unit. The two flanking passageways also have slightly enhanced visual integration, but their intervisibility is undermined by their narrowness. It is notable that the southern unit generally has higher visual integration than the northern unit, probably as a result of the subdivision of the northern unit into more, smaller spaces with shorter fields of vision than the somewhat larger spaces of the southern unit. It is notable that the least visually integrated spaces in the building, indicated in blues, are the small rooms proposed as accommodation.

Public and Private

The spatial analyses presented above serve to distinguish the more public spaces of the Fortified Building from the private areas. By public, it is not meant that these areas were accessible to anybody; access to the building itself and to areas, such as the southern unit, was likely to be restricted to certain people and according to circumstances. 'Public' here refers to the visibility and accessibility of the space for those who are admitted to and act within the spatial environment.

By all metrics examined, the most public areas in terms of relative asymmetry value, the potential for social encounter and visual integration, are the central passageway 125 in the northern unit and the courtyard 315 in the southern unit. These areas are the focus of both accessibility and visibility in the building. The visibility graph analysis suggests that the rooms which lead directly off these public spaces are also of a more visually public nature than the other areas of the building. In considering the roofed spaces of the building, the two most visually integrated rooms are the chamber behind the main entrance gateway and Rooms 619/617 at the entrance into the southern unit. Both of these spaces may have acted as vestibules for the regulation of access to the whole building and the southern unit respectively, making them public spaces which visitors were expected to access. The next most visually integrated rooms are those surrounding courtyard 315: Room 316; Room 309, the first room of the scribal suite; Room 314, the proposed reception room; and large Room 601. A more public spatial character fits with the proposed functions of at least the reception room, where guests would be received, and the entrance to the scribal suite, where frequent visitors might be expected on administrative business.

The two flanking passageways, 110 and 150, which give access to what are thought to be accommodation areas, appear to have a more private character. Although they are fairly accessible in terms of their RA values because they give access to so many spaces, their choice values are significantly lower than the central passageway and their visual integration is particularly low. The fact that neither passageway leads to further areas, but rather terminates in a dead end, limits their connectivity, integration and choice values. In terms of visual integration, the rooms accessed from these two passageways are the most private in the Fortified Building. This is particularly marked for the rooms along eastern passageway 110, which are known to be residential. The eastern passageway is obstructed by three additional small blocks of brickwork at its northern end. It is possible that these may represent door jambs or supports for gates to add even further restriction of access to this highly private area of the building. The privacy and restriction of access to this area may possibly suggest that this was secure accommodation of some kind; for confining slaves or prisoners. There is no supporting evidence for such a function but the possibility cannot be discounted.

FUNCTIONAL INTERPRETATION

The architecture of the Level 2 Fortified Building appears to incorporate three main functions: defence, accommodation and administration. The building's defences were both practically effective and resource-hungry, leading to the conclusion that they were not just intended to convey status or power through architectural design but were a response to a serious and pressing military threat to the settlement. Taken as a whole—thick outer wall, towers, a single entrance, high ground and possibly a late defensive ditch—the Fortified Building is an extremely formidable defensive structure for the period.

The majority of space within the northern unit appears to have been dedicated to providing accommodation for personnel. The usual Mesopotamian architecture, consisting of rooms arranged around courtyards, is replaced by a more compact arrangement organized around three parallel passageways. The passageways act almost as streets and the whole northern unit is organized more like a small compacted settlement than a second millennium building interior. The apparent need to maximise accommodation may in part be explained by the defensive function of the building; a fortress needs soldiers to defend it. Evidence for the presence of troops is found in the cuneiform archive which mentions two squads of ten royal auxiliary troops drawing rations. The ranks of single room accommodation could possibly represent barracks.

The compact packing of residential space into the northern unit, however, suggests that the accommodation may have been for more than a garrison. The relatively paucity of remains of additional structures outside the Fortified Building suggests the possibility that the vast majority of the

settlement's population, civilian as well as soldiery, resided inside the Fortified Building, or at least could be crammed in if the settlement was threatened. This would again suggest a strong prioritization of defence, with most of the settlement's functions and almost all of its personnel situated safely inside the fortified walls of the main building, despite necessitating what were clearly very cramped living conditions. It is perhaps even possible to view the building as a small fortified settlement rather than a large Fortified Building.

Perhaps as some compensation for the cramped living conditions, spatial analysis suggests that the residential areas off the eastern and western corridors were designed to be highly private. With all the rooms accessed from the passageways rather than through each other, the northern unit is set up to provide the 'greatest segregation of the greatest numbers' as Hillier and Hanson described this arrangement.[34] The accommodation blocks were private, both in terms of visibility and accessibility.

Population

Estimating the number of people who could have been accommodated inside the Fortified Building is of course subject to numerous unknowns but some informed speculation is possible. Each of the long narrow rooms down the south east side of the northern unit could probably sleep ten adults, perhaps the ten-man squads of troops mentioned in the archive, or maybe gangs of agricultural workers. This number of people may seem quite high for the size of the rooms, but is perfectly possible, if somewhat cosy (Fig. 3.16), if sleeping is the primary activity in the space. Another reason for a relatively high estimate is that not all the inhabitants may have slept in or otherwise used the rooms at the same time. This is especially likely if the personnel were troops, who would almost certainly have worked in shifts or watches. It is also likely that during the warm months of the year many people would have chosen to sleep on the roofs, assuming these were available, meaning that the roofed accommodation would only have been fully occupied for sleeping during the short cool winters and at times of bad weather.

If an average occupancy of ten is assumed for each, the eleven long rooms would accommodate 110 individuals. Most of the rooms along the northwest side are smaller and could sleep perhaps four or five, with the larger rooms closer to ten, adding perhaps another 60–70 people. The excavation of suite 140–3 suggests that at least some parts of the central blocks were also domestic. An estimate of 200 individuals in the northern unit may therefore be considered to have some basis in the architectural remains. The southern unit seems likely to have been less densely populated as it contained the official and administrative areas, but may reasonably have accommodated another 20–30 people. The total population of the building may have been far higher if, for instance, parts of the plan had a second storey, or if roof space was extensively used for sleeping. The excavated

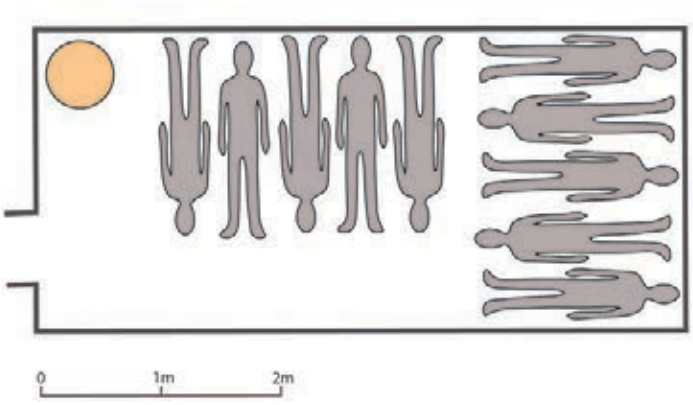


FIG. 3.16. Ten people, each the average height of a modern Iraqi man (1.65 m), distributed over the floor area of one of the southeastern accommodation rooms.

rooms may also have been significantly more or less densely populated than suggested above, effecting the estimated total. Given that economy of space and density of occupation seem to have been prioritised in the Fortified Building, the upper end of these estimates seem more likely. Allowing a generous margin for error, it seems reasonable to estimate the building's population at between 200 and 300 people.

Just as the northern unit seems predominantly devoted to accommodation, the southern unit seems to be predominantly administrative. It housed a scribal suite to handle the building's record keeping and administrative correspondence with other settlements, and incorporated what appears to be a formal reception room. The southern unit contains what few signifiers of status have been recovered from the Fortified Building in the form of the stone basin, the courtyard tree pit and the application of coloured wall plaster. It has the more standard, traditional courtyard layout of Mesopotamian buildings of this period and bears some architectural similarities to an elite residence. This similarity and the presence of a reception room most likely points to the presence of some sort or civil or military governor, along with his household and admin staff, occupying this part of the building.

Functions not reflected in the Architecture

A notable absence in the architectural plan of the building is any area which seems particularly devoted to the collection, processing and dispatch of agricultural produce. There is evidence for at least some grain processing inside the building, in the form of numerous grinding stones and pounders. These are scattered through most of the excavated areas rather than being limited to a few dedicated areas and at least some are likely to be for the domestic use of the building's inhabitants. It is possible that grain processing was done on the building's roofs and that the grinding stones have been redistributed as the ceilings collapsed, although this location would have necessitated carrying heavy bulk grain up onto the roof. Some areas of unroofed, shaded space, ideal for this sort of work, have been tentatively identified at the ends of the two lateral corridors (111, 112 and 137). However, these also appear problematic for processing large quantities of material as the

[34] Hillier & Hanson 1984: 153.

grain would have had to have been carried the entire length of these narrow (one metre wide) corridors to reach these spaces.

The problem of bulk access for goods into and out of the building is a broader issue. The single narrow entrance and narrow internal passageways are not well suited to the passage of large amounts of bulky goods, carts or pack animals. With only the single, difficult-to-access, courtyard in the southern unit, there doesn't seem to be any obvious place where goods could be loaded, unloaded or sorted.

Storage within the building is also problematic. No excavated space within the Level 2 building appears to have been used for storage, although this is obviously far from conclusive given the small sample of rooms excavated. If the arguments above for the dedication of most of the northern unit rooms to accommodation are valid, there seem to be few possible candidates for large-scale storage rooms within the walls. Some of the unexcavated rooms to which no clear function can be assigned are almost certainly for storage, but the potential storage space does not seem to greatly exceed the needs of the apparently large population. A possible solution is that the majority of processing, packing and short-term storage of the agricultural produce detailed in the text archive occurred *extra muros*, perhaps in part on the sunlit plaster surfaces on the southeast side of the building.

The other activity which is notable by its absence is cultic. Votive finds are limited to a handful of clay plaques and a single fragmentary figurine dedicated to the goddess Gula. No mention is made in the cuneiform archive of any religious personnel, despite extensive lists of other professionals, and no temple or shrine has been identified within the architecture, either through excavation or in the recovered plan. This absence is far from conclusive given the limited areas excavated, and it is perfectly possible that one of the many unexcavated structures served as a shrine. Perhaps in the need to cram as much accommodation space as possible into the building, there was no room for a dedicated religious structure and cult confined to personal practice in what seems to have been an overwhelmingly practical, functional building.

FIG. 4.1. Distribution of tablets in Archive Room 300 and Letters Room 309, with assigned tablet groups.

ELEANOR ROBSON

4. The Archive

INTRODUCTION

The 145 cuneiform tablets from Tell Khaiber are uniquely important in providing secure identification of this settlement as dating to the First Sealand Dynasty, which ruled the marshlands of southern Babylonia in the mid-second millennium BCE. They also represent the first full publication of an archaeologically contextualised find of cuneiform tablets in southern Iraq since the long hiatus in international fieldwork in the area, *c.*1990–2012. First in this chapter, I describe the find context of the tablets, their typology, and relationship to illicitly excavated tablets of the Sealand period from the Schøyen Collection published by Dalley and studied more recently by Boivin.[35] I then consider the historical, ethical, and methodological implications of the find. Finally, after an overview catalogue of the tablets, more detailed descriptions are grouped by tablet group, enabling micro-geographical study of the archive's remains.[36] An open-access, online edition, with photographs of all the tablets, plus glossaries of names and words in the corpus, can be found at https://oracc.org/urap.

FIG. 4.2. Archive Room 300 under excavation, with central bin.

Find context

The vast majority of the tablets were unearthed from the southernmost corner of the Fortified Building, Level 2, in two long rooms that were each later divided into two halves. Around eighty tablets, mostly lists, accounts, and school exercises, came from Room 300, while the remainder, mostly letters and payment records, were found in Room 309. Four tablets were found underneath the wall that split Room 300 soon after it was built and five under the later wall in the centre of 309, so it is clear these areas were in scribal use before the divisions took place.[37] For convenience, I shall sometimes refer to Room 300 as the Archive Room and Room 309 as the Letters Room.

Archive Room 300

Room 300 earns the name of Archive Room because tablets were found in distinct groups along its northeast and southeast walls, apparently the remnants of a once well-organized storage system (Fig. 4.1). There was no direct access to courtyard 315, as Room 309 intervened, though no clear doorway between Rooms 300 and 309 was found. A doorway in the southeast wall connected Room 300 to Room 301, whose paved floor suggests it was unroofed. Room 300 probably received relatively little light from this doorway, however, as the massive exterior walls of the Fortified Building immediately opposite would have kept it in shade for much of the day. It is therefore likely that Room 300 was primarily used for the storage and manufacture of tablets

[35] Dalley 2009; 2010; 2020. Boivin 2016a; 2016b; 2018; 2019; 2020a; 2020b.

[36] For a similar approach, see Tanret 2002.

[37] Thus in preliminary publications about the Tell Khaiber tablets, the southern half of Room 300 is referred to as Area 305 and the southern half of 309 as Area 311.

and tablet clay rather than for their inscription. The room also features a large, round clay bin (context 3081) in the centre of the northern sector, measuring approximately 750 mm in diameter and 150 mm high, and two similar ones along the southeast wall (contexts 3113 and 3114, just south of the doorway to Area 301). These bins were probably used to soak redundant tablets and remodel them into new ones.[38] Although they were empty when excavated, scattered on the floor around them were several small tablets and fragments, as if overlooked during the final cleaning process (Fig. 4.2).

The recycling bins are associated with floors 3111–3112, representing multiple replasterings. Tablets from contexts 3080 and 3119 were found on and above this floor, in a compacted sandy silt mixed with mud brick fragments. Pockets of ash overlay the floor surfaces in some areas, especially towards the centre of the room around feature 3081. There were also recognizable reed matting impressions in some areas. Some pottery and at least one cuneiform tablet (3080:06) appeared to be lying directly on the floor. The team recovered a considerable quantity of tablet fragments, mostly containing school exercises, from the eastern corner of the room. However, these finds cannot be directly associated to a floor as the deposit in this corner was badly disturbed by animal and/or root action.

Over this mixed debris was a stratum of moderately compacted fill of small-to-large mud-brick rubble with looser silty fill in between the brick lumps (contexts 3064 in the northern half of Room 300, 3111 under the later central wall, and 3006 to its south). Finds included several complete or near complete pots, as well as occasional bone, shell, stone and clay figurine fragments. Tablets and tablet fragments were found throughout the fill, mostly lower than around 150 mm below the top of the context and near the walls but also scattered through the whole area. Large bitumen chunks concentrated near centre of northern half of room, approximately above circular feature 3081, although this could be coincidental.

Post-excavation analysis of the tablets' precise spatial locations and, independently, detailed study of their contents, suggest that, in retrospect, the different context numbers are of minor importance and that the archive should be treated holistically. Nevertheless, the elevations and horizontal locations of the tablets do suggest that most were deposited in meaningful groups (Table 4.1 and Fig. 4.3).

The lowest-lying group, 300-E, was found in the eastern corner of the room. It is dominated by fragments of elementary school exercise tablets. Their discovery was a complete surprise, given that almost all known assemblages of Old and Middle Babylonian school tablets that have an archaeological context are from urban domestic settings.[39] Unlike the administrative tablets, many of which survive more or less intact, all but one of these had clearly been deliberately ripped up ready for recycling, perhaps immediately after production. I suggest that these represent oddments from the recycling bin, swept in into a corner one day to make way for fresh clay and then forgotten about, either prior to the laying of a new floor or before the stored administrative tablets collapsed on top of them.[40] A small group of low-lying tiny tablets near the northern rim of the recycling bin, namely 3080:01–05 from 300-NC, may have been similarly overlooked.

Then there are five distinct groups, dominated by large, complete tablets, ranged around the northeastern and

Tablet group	Number of tablets	Elevations	Find circumstances
300-E	23	8 30–8.42 m	Clustered in the eastern corner
300-NE	13	8 35–8.51 m	Clustered against the northeastern wall
300-NC	8	8 34–8.49 m	Around the perimeter of the recycling bin
300-N	14	8.40–8.49 m	Clustered in the northern corner
300-SE	2	8.42–8.43 m	Against the southeastern wall
300-S	4	8.45–8.46 m	Against the southeastern wall, south of the doorway to Room 301
300-SC	13	8 51–8.59 m	Dispersed across the southern half of the room, from the putative western doorway to the opposite wall
300-C	5	8.60–8.84 m	Clustered in the centre of the room between the doorways

TABLE 4.1. Tablet groups in Archive Room 300.

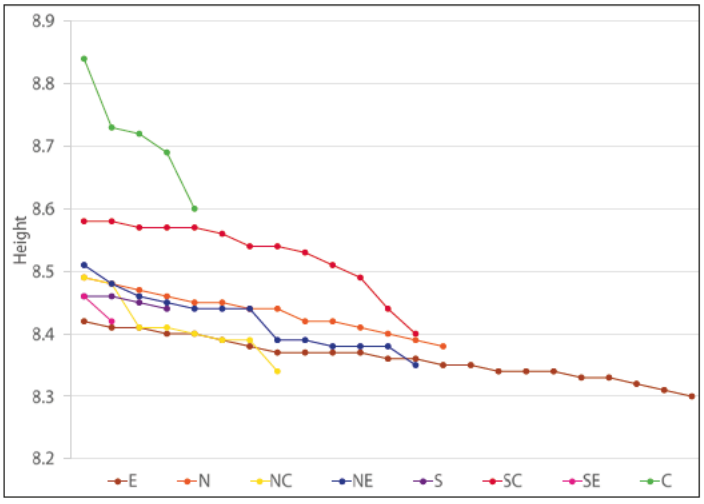


FIG. 4.3. Spot heights of tablets in Archive Room 300, arranged by tablet group and by highest to lowest elevation.

[38] On tablet recycling facilities, in both domestic scribal settings and institutional buildings, see Faivre 1995; Tanret 2002: 4–8; Robson 2008: 237.

[39] For convenient overviews and references to further literature, see Robson 2008: 94 (Old Babylonian); Veldhuis 2014: 242, 281, 297 (Middle Babylonian).

[40] Compare the fifty-four half-recycled school tablets left in and around the recycling bin (locus 4, phase IIId) in the courtyard of Ur-Utu's House in late Old Babylonian Sippar (Tanret 2002: 4–8).

Tablet group	Number of tablets	Elevations	Find circumstances
309-SC	13	8.53–8.63 m	Strewn across the centre of the southern half of the room
309-SE	5	8.54–5 58 m	Clustered near the centre of the southeastern wall, under the later wall
309-S	14	8.62–8.68 m	Scattered along the southwestern wall
309-E	8	8.62–8 71 m	Tightly clustered in the eastern corner
309-W	19	8.66–8 77 m	Scattered across the western corner in front of the doorway to courtyard 315
309-N	9	8.66–8 78 m	Scattered in the northern corner

TABLE 4.2. Tablet groups in Letters Room 309.

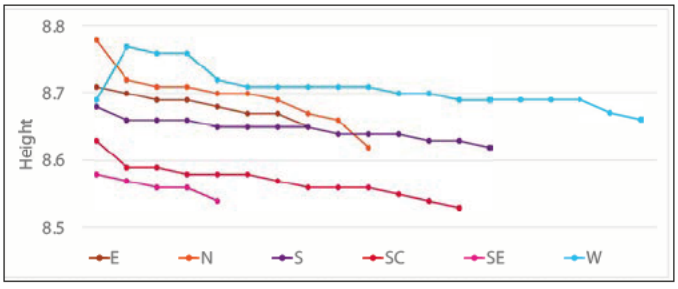


FIG. 4.4. Spot heights of tablets in Letters Room 309, arranged by tablet group and by highest to lowest elevation.

southeastern walls of the room: 300-N, NE, SE, and S, as well as the four administrative records from 300-E. Two possibilities suggest themselves. Either the tablets were found where they had been stored, in or on a long-perished medium; or they had been dumped from their erstwhile containers in the process of levelling the floor for the next phase of building or repair, now largely eroded away.

Finally, there are two distinct scatters of mostly fragmentary tablets. Group 300-SC is thinly dispersed wall-to-wall across the southern half of the room, at a higher elevation than the northern tablets. The fragmentary tablets in the more tightly clustered Group 300-C are higher up again. Nevertheless, as we shall see, there are strong prosopographical linkages between both of these tablet groups and the rest of the archive, and no reason to treat them as historically distinct.

Letters Room 309

Immediately to the west, Room 309 also yielded distinct find groups of tablets, around the northern and eastern edges of the room (context 1096), under a later dividing wall (context 1124), and in/on the centre of the floor in the southern sector (context 1114) (Fig. 4.1). A brick-paved area in the southern corner of the room might have served as a place for mixing tablet clay.[41] There are clear prosopographical linkages between the tablets found in this room and those in contexts 3006, 3064 and 3111 (but not 3080) in Room 300, though no connecting doorway was identified. I have labelled the tablet groups as per Table 4.2, from the lowest-lying deposits to the highest (Fig. 4.4).

Each of these groups has a distinct character. The tablets in the north corner, 309-N, most closely resemble those from the northern half of Room 300 in format and content, and like them are mostly complete. However, those in the eastern corner, 309-E, predominantly concern payment of *miksu*- and *šibšu*-revenues, and feature names that do not occur, by and large, in the rest of the corpus. Many appear to have been deliberately destroyed for recycling Finally, the four groups in the southern half of the room are dominated by small, complete tablets containing payment records and worker lists for another set of people again, as well as flour processing documents featuring a small number of individuals well known from Room 300. While the members of 309-SE were found very tightly packed together, the rest were dispersed across the fill and could well have been dumped there in a single act of deposition. Group 309-SC, furthest from the walls, was at the lowest elevation, 309-SW near the doorway at the highest.

Other rooms

Room 301, a brick-paved, unroofed space accessed only from Room 300, was eroded down to floor level with no surviving contents. One small tablet fragment was found in each of the nearby reception Rooms 314 and 601 of the southern unit, while various fragments of inscribed bricks, a healing figurine, and anepigraphic clay turned up elsewhere in and around the Fortified Building: in/above Rooms 122 and 124, two towers at the northern end of the eastern external wall; and above Room 179, a large room between the western and central passages of the northern unit. The legible pieces are edited at the end of this chapter but not discussed in any detail.

State of preservation

The tablets found inside the Fortified Building were made with carefully prepared clay, of a quality otherwise found only in the highest-quality pottery wares from the site.[42]

By and large, it appears that when the archival tablets were abandoned in antiquity they were still intact. Only the school exercises in the eastern corner of Room 300, and the tax accounts in 309-E, showed signs of deliberate destruction for recycling purposes. However, because many of the tablets were found so close to the surface of the site, they were not always well preserved. Generally speaking, the surface

[41] Compare the bitumen-covered surface covered in unused tablet clay, bone styli and old tablets in Room 3 of the scholar's house in Uruk Ue XVIII/1 (Level III), late fourth century BCE (Schmidt et al. 1979: 28–9, pl. 69; Robson 2008: 237–8).

[42] Pers. comm. Daniel Calderbank, April 2016, based on microscopic analysis (magnification × 150) of loose anepigraphic fragments from eight tablets: 1096:43, 1114:03, 1114:12, 1114:50, 3064:120, 3064:121, 3064:123, and 3064:135.

Dalley name	Transliteration	Translation	Tablet	Tablet group	Elevation
Year I	mu a-a-ᵍdara₃ᵍ-[galam-ma lugal-e]; har za-gin₃ ku₃-[sig₁₇ ...]	Year that ADG the king […] a ring of lapis and gold	3064:129	300-SC	8 51 m
Year J	ᵍmu aᵍ-[a]-dara₃-ᵍgalamᵍ-ma ᵍlugalᵍ-e; [ĝeš-alam didli] kug-sig₁₇ huš-a ĝar-ra; [d]en#-lil₂ ᵈen-ki in-[ne-en-kur₉-ra]	Year that ADG the king: installed [statues] of Ellil and Ea covered in red gold	3064:135	300-SC	8 53 m
Year K	mu a-a-ᵍdara₃-galamᵍ-ma ᵍlugal-eᵍ; [mu] ᵍgibil?ᵍ	Year of ADG the king: new year(?)	3006:17	300-SC	8 57 m
Year K	mu a-a-dara₃-galam-ma lugal-e; mu gibil	Year of ADG the king: new year	3064:67	300-NE	8.46 m

TABLE 4 3. Year names in the Tell Khaiber tablets.

that had been uppermost in the ground—whether obverse or reverse—was badly eroded through exposure to the environment, while the lowermost surface remained intact and fully legible. Two tablets had continued to be written once the clay was too dry to receive a stylus (3064:26 and 3080:06). One (3111:01) had been smashed to pieces when a wall was erected on top of it, dividing Room 300 into two.

Dating

Four of the Tell Khaiber tablets from Room 300 are dated to the year, all within the reign of the Sealand king Aya-dara-galama (abbreviated here as ADG). Following Dalley's nomenclature for dates on the illicitly excavated Sealand tablets in the Schøyen Collection, they are as shown in Table 4.3.[43]

Where Dalley notes two distinct year names, mu ADG lugal-e (Year D) and mu gibil (Year K), the dates on 3006:17 and 3064:67, if read correctly, combine the two year formulae (as in fact does Dalley 2004: no. 421). We can rule out the possibility that 'mu gibil' is a general-purpose notation used at the start of a year, before its official name had been promulgated: not only are 3006:17 and 3064:67 dated to the fifth and eighth month of the year respectively but the twenty-one 'Year K' tablets published by Dalley are also distributed across the year with nearly two-thirds of them from the second half.[44] Indeed, Dalley points out that Year K shares an intercalary month XII with Aya-dara-galama's seventh regnal year (mu ADG mu 7) and conjectures that they might be alternative names for the same year.[45] Further, van Koppen suggests that Dalley's Years D–J collectively represent the first six years of Aya-dara-galama's reign; both remain agnostic about their relative order.[46] Then, he argues, mu gibil (i.e., Year K)/mu 7 represents a switch from naming to counting years. Whether or not this turns out to be the case, we can conclude that the Tell Khaiber archive spanned at least three years during the rule of Aya-dara-galama. However, we must wait for further evidence in order to establish the exact internal chronology of this king's reign.

The findspots of these four dated tablets tell us nothing useful about the internal chronology of the archive either, while the orthography and palaeography are both consistent with a late Old Babylonian date.[47] As for its absolute dating, further evidence has recently come to light in the form of a literary composition from Nippur published by Elyze Zomer.[48] The so-called Epic of Gulkišar, which survives in fragments in Penn Museum and the Hilprecht Collection, recounts the speech of this Sealand king as he goads his contemporary Samsu-ditana, the last king of Babylon, into battle. Both the Babylonian King List (BKL) and the Synchronistic King List (SKL) give Gulkišar as the sixth king of the Sealand and Aya-dara-galama as either the eighth (BKL) or the ninth (SKL).[49] That places the Tell Khaiber archive just a few generations or so after the fall of Babylon, dated to 1595 according to the Middle Chronology. For now, it seems reasonable to estimate that the archive was active for several years in the period *c.*1550–1500 BCE.

[43] Dalley 2009: 11–12.

[44] See Boivin 2018: 249 for a convenient list.

[45] Dalley 2009: 10.

[46] Koppen 2010: 456.

[47] For instance, CV and VC syllabic values predominate over CVC values but Akkadian nouns and adjectives are not systematically mimated. Here, simply for consistency and clarity, I use non-mimated forms of transliterated words, except for those personal names where mimation is clear.

[48] Zomer 2019: 3–38.

[49] See most conveniently Boivin 2018: 34, Table 2.

Notation	Akkadian reading	Sub-units	Metric equivalent
1 SÌLA	*qû*	–	*c.*1 litre
1(BÁN)	*sūtu*	10 *qû*	*c.*10 litres
1(BARIG)	*parsiktu*	6 *sūtu* = 60 *qû*	*c.*60 litres
1(AŠ) GUR	*kurru*	5 *parsiktu* = 30 *sūtu* = 300 *qû*	*c.*300 litres

TABLE 4.4. Capacity measures used in the Tell Khaiber archive.

TABLET TYPOLOGY

Categorising the Tell Khaiber archival tablets has been a challenge because of their poor state of preservation and lack of surviving administrative metadata. I have therefore used three complementary strategies to make sense of them. First, I drew on my own prior work on the description and classification of tabular accounts.[50] Based on the tablets' formal layouts, I divided them into four distinct types:

- numerical lists, with one quantitative column, followed by one or two descriptive ones and containing no calculations;
- tabular lists, with two or more quantitative columns, followed by one or two descriptive ones and containing no calculations;
- tabular accounts, containing two or more quantitative columns, which include calculated data, and a final descriptive column or two;
- and non-numerical lists and prose documents, including informal memoranda, letters, letter-orders and payment records.

I was also heavily influenced by the work of Nicholas Postgate on Middle Assyrian archives.[51] Accordingly, the administrative tablets from Archive Room 300 are mostly unilateral records, storing information, rather than bilateral ones, being transactions between two parties.[52] The tablets from Letters Room 309, by contrast, also include three types of bilateral document, recording transactions or communications between two or more members of the internal administration: namely letters, letter-orders and payment records.

Second, although internal textual evidence is scant—even the surviving headings are often frustratingly terse, and there is next to no apparatus of accountability such as names of responsible officials—the quantifications themselves proved very useful. Most obviously, the tablets can be grouped by metrological system: the vast majority use capacity measures, for grain and grain products; a smaller number use counting numerals, for pottery, people and unidentified commodities; and a very few use the sexagesimal place value system, for calculations. For convenience, the relevant metrological units and their modern-day equivalents are given in Table 4.4.

Document type	Quantity	Publication numbers (Dalley 2009)	Years
Numerical lists	27	368, 368a, 369, 371–2, 374–8, 380, 383, 385–9, 390–5, 407, 412, 413a, 417, 423, 427, 429, 431, 433, 437, 439–40	C, E, F, H, I, J, K, M, N
Tabular accounts	31	408–11, 413–6, 418–22, 424, 426, 428, 430, 431a, 432, 434–6, 441–8, 450	D, F, I, J, K, L, M, N, O
Memoranda	17	382, 396, 398–9, 402–6	N
Letters (OB style)	4	2, 12, 13, 14	—
Payment orders	—		

TABLE 4.5. Comparanda in the Schøyen Collection.

It was also helpful to disambiguate document types according to relative size and uniformity of the capacity measures they recorded. In this way, for instance, it became possible to distinguish between daily, bi-monthly and monthly records, and high-value *hargallû*-grain versus mass-produced barley.

Third, administrative documents from Tell Khaiber are very similar in their format, content, terminology, ductus, and orthography to about 80 of the 475 unprovenanced Sealand Dynasty tablets from the Schøyen Collection published by Dalley (Table 4.5).[53] As they are generally better preserved than their excavated counterparts, having had to survive the rigours of looting and international smuggling, and were furnished with more fulsome administrative apparatus by their ancient scribes, they provide useful amplification, correction and clarifications on the functions of each document type. Likewise, Dalley's and Boivin's studies of the Schøyen Collection at times proved valuable in making sense of the Tell Khaiber tablets, in particular when deciphering personal names and table headings. Conversely, clearer readings and new interpretations of some aspects of the Schøyen material are made possible by this edition.

These strategies have enabled me to assign types and posit functions for seventy archival tablets whose uses were not immediately self-evident. However, there remain twenty-one fragments of administrative documents, inscribed either

[50] Robson 2003; 2004. This section is an updated version of the preliminary analysis presented in Campbell et al. 2017a; 2019.

[51] Postgate 2014.

[52] Postgate 2014: 414.

[53] The Schøyen Sealand administrative tablets cover a much wider range of subject matter than the Tell Khaiber archive, including animal husbandry, beer brewing, textile production, and offerings to the gods. Some documents even make reference to courtiers and members of the royal family.

with capacity measures or with personal names, which are not complete enough to typologize.

As noted above, Room 300 also yielded over twenty fragments of tablets bearing elementary scribal exercises, mostly in context 3080. Three small inscribed fragments could not be identified at all as to genre, while many other pieces of tablet-clay were entirely anepigraphic. These pieces include one or two uninscribed whole tablets (e.g. 1114:50, found in the centre of Room 309) as well as many pieces from the interior or erased or damaged surfaces of otherwise inscribed tablets. The anepigraphic fragments found in the archive rooms are listed briefly in this chapter while the few found elsewhere in the building are not considered.

Lastly, two fragments of Ur III-period stamped baked bricks were found elsewhere on the site, as well as a fragmentary therapeutic dog-figurine inscribed on its flank. These artefacts are treated at the end of this chapter.

Unilateral records: numerical lists

All but four of the thirty-eight numerical lists in this archive enumerate quantities of grain or grain products against named individuals. After the quantitative column on the left, some also have one or more intermediate columns containing occasional check-marks or annotations. The name and sometimes also patronym, profession and/or relationship to another person is given in the final column or (rarely) two. Almost all the lists were originally headed but none is totalled, and none is attributed to a named scribe or functionary. A few are dated to the month and day, two also to the year. A further two have illegible traces on their edge which may be compatible with a year name. They were perhaps collated from memoranda or maybe written as primary documents.[54] I have classified them into eight subtypes, some of which might turn out to be variants of each other (Table 4.6).[55]

The headings on the seven *hargallû*-grain lists consist only of '*hargallû*-grain', followed by MU.BI.IM, for 'their names' (of the recipients).[56] Mean values of surviving entries mostly cluster around 1 *sūtu*, roughly 10 litres, though a few lists, marked ' and * in Table 4.6, have mean entries of the order of 1 *qû* (ten times smaller) or a few *parsiktu* (5–8 times larger) respectively. On four of the eight tablets there are stylus check-marks next to the first half-dozen or so entries. As check-marks are otherwise found only on receipt lists at Tell Khaiber, it seems reasonable to suggest that these lists serve the same function. The tablets are mostly in portrait or near-square landscape format, measuring 40–60 by 55–140 mm. Half are dated to the month and day (Fig. 4.5).

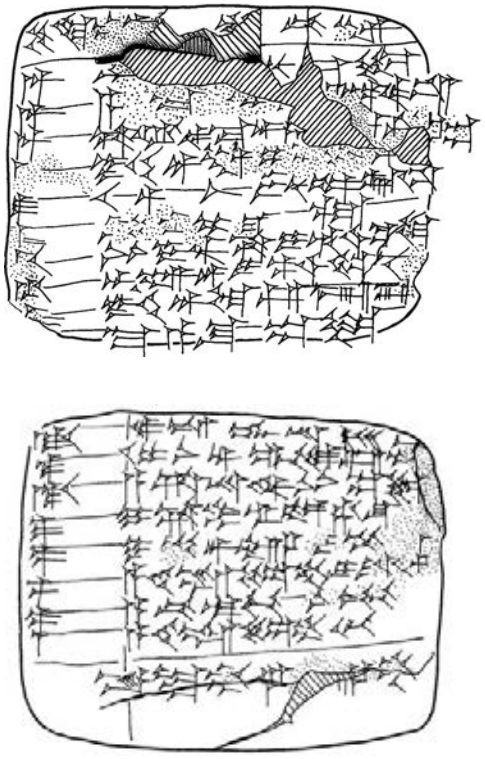


FIG. 4.5. Headed, dated *hargallû*-grain list 3064:052 (obverse and reverse).

Three headed *hargallû*-flour delivery lists record 1-*sūtu* quantities of *hargallû*-flour (ZÍD.DA HAR.GAL-^{ú}-MEŠ/*har-gal-lu-ú*) assigned to a few dozen individuals each. One explicitly mentions 'deliveries [of(?) (… and)] palace men', MU.ᵀTÚMᵀ [...] LÚ É.GAL (1124:01). All are on portrait-format tablets, measuring 40–55 mm wide by 65–80 mm high.[57] One unheaded list (1124:02) with check-marks and one broken one (3080:27), on portrait-format tablets of a similar size, could belong to either to this type or the *hargallû*-flour delivery lists.

Just two lists, from a single tablet group in the Letters Room, state that they are '*hargallû*-grain receipts', ŠU.TI.A, to a group of farmers and palace servant-women. Mean values cluster tightly around 2 *sūtu*, *c.*20 litres, with check-marks next to some or all of the entries. The tablets are laid out in landscape format, measuring 36–43 mm high by 67–81 mm wide.[58]

[54] See Postgate 2014: 79–80.

[55] A type of numerical list attested in the Schøyen Collection but not at Tell Khaiber comprises extracts from, or drafts for, numerical lists, containing 1–5 two-column entries (Dalley 2009: nos. 390–2, 395, 439–40).

[56] There are six Schøyen tablets with very terse '*hargallû*-grain' headings and check-marks (Dalley 2009: nos. 368A, 369, 374–7).

[57] All three Schøyen *hargallû*-flour lists also explicitly state that they are outgoings, ZI.GA, or deliveries, MU.TÚM, one of which is *ana ēkalli*, 'to the palace' (Dalley 2009: nos. 368, 413a, 417). These, however, are all on landscape-format tablets.

[58] Four numerical lists in the Schøyen Collection are also grain receipts. They assign *hargallû*-grain for *tillatu*-auxiliary troops, barley for guards, travel-rations for workers, and barley as wages (Dalley 2009: nos. 371, 378, 412 433; see also no. 393).

Opposite: TABLE 4.6. Numerical lists in the Tell Khaiber archive.

Type	Tablet	Tablet group	Format	Cols	Heading	Check-marks	Mean value (litres)	Date
Grain	3064:83	300-E	P	2	*hargallû*-grain	•	9.8	
	1096:50	309-N	P	2	*hargallû*-grain		13.2	Month 8, day 5
	1114:36	309-S	P	2	*hargallû*-grain		11.4	Month 10, day [n]
Grain'	1114:05	309-W	P	2	*hargallû*-grain	•	1.1	
	1114:17	309-W	L	2	*hargallû*-grain	•	1.2	
Grain*	3064:52	300-NE	L	2	*hargallû*-grain		48.8	Month 1, day 7
	1124:03	309-SE	L	2	*hargallû*-grain	•	85.0	Month 5, day 25
Flour	3064:48	300-E	P	2	*hargallû*-flour		12.7	
	1124:01	309-SE	P	2	*hargallû*-[flour?] deliveries of palace men		10.0	
	1114:40	309-SC	P	2	*hargallû*-flour		10.0	
Flour/ grain	3080:27	300-NC	P	2	Missing (capacity measures)		9.6	
	1124:02	309-SE	P	2	— (capacity measures)	•	10.0	
Receipts	1124:04	309-SE	L	2	*hargallû*-grain receipts of palace servant-women	•	22.0	Month 8, day 1
	1124:05	309-SE	L	2	*hargallû*-grain receipts of farmers	•	20.0	
Daily receipts	3064:72	300-N	L	2	Barley receipts	•••	18.0	Month [n], day [n]
	3064:67	300-NE	L	2	Barley receipts of farmers		20.0	Month 8 day 24; ADG year K
	3064:101	300-NC	L	2	[Barley receipts] of farmers		—	Traces of date on reverse
	3064:128	300-SC	L	2	*hargallû*-grain		10.0	Month 10 day [n]
Long	3064:49	300-E	P	3	Missing (capacity measures)		135.8	
	3064:53	300-E	P	3	Missing (capacity measures)		173.3	
	3064:57	300-SE	P	2	Missing (capacity measures)		31.7	
	3064:118	300-S	P	2+	Missing (capacity measures)		164.0	
	3064:123	300-S	P	3	Missing (capacity measures)		161.8	
	3111:1	300-S	P	3	Missing (capacity measures)		320.0	Traces of date on left edge?
	3006:1	300-SC	P	3	Missing (capacity measures)		258.0	
	3064:120a	300-SC	frag		Missing		—	
	3064:120b	300-SC	frag		Missing		—	
	3064:135	300-SC	P	3	Missing (capacity measures)		252.3	Month 8 day 25; ADG year J
	3064:136	300 sieve	frag	2	Missing (capacity measures)		300.0	
	1096:58	309-N	frag		Missing		—	
Grain/ other	3064:74	300-N	round	2	Received (commodity unknown, counted)		10.0	
	3080:06	300-NE	P	2	— (commodity unknown, counted)		10.8	Traces of date on top edge?
Pottery	3064:65	300-NE	L	2	Received (pottery vessels)			2 months from month 8
	1096:55	309-N	L	2	— (pottery vessels)			
Unclear	3080:04	300-NC	P	2	Missing (capacity measures)		270.0	
	1096:59	309-E	L	2	Missing (capacity measures)		918.0	

Four particularly interesting daily receipt lists leave narrow, empty columns in the centre of the landscape-formatted tablet for the scribe to mark with stylus-holes *ša ūmišu innaddinu*, '(that) which is given daily' (3064:72), to the recipients over the course of 5–15 days. The mean values cluster tightly around 2 *sūtu* for barley, 1 *sūtu* for *hargallû*-grain payments.[59] All are dated to the month and day, one also to the year.

While these three types of grain receipt, most with dates and check-marks, all seem to serve similar functions, it is mostly impossible to tell whether they record rations or grain for processing into flour, as suggested by a heading on one of the Schøyen tablets*: še'u hargallû ša ana ṭēni amāt ēkalli imhurā, 'hargallû*-grain that the palace servant-women received for grinding'.[60]

The longest type of numerical list assigns large, variable quantities of grain, probably barley, to people grouped into eight or more *ešertu*-workteams of around ten members each. Unfortunately, no headings survive, except for a faint ŠU.TI.A, 'receipts', on 3064:135, which is also dated to the day, month and year. There are no check marks on these documents. With one exception, the mean value of entries in this document type cluster around 1 *kurru* (*c.*300 litres) or half that amount. To judge from parallels in the Schøyen Collection, they seem to represent monthly or bi-monthly ration payments to the Tell Khaiber workforce.[61]

Three fragmentary tablets which also list recognizable *ešertu*-workteams are included in this category even though they now lack quantifications. Complete tablets range from 50 × 90 mm to 110 × 160 mm. The wider tablets put personal names in the second column and patronyms or professions in the third. All but one of the twelve lists of this type come from Archive Room 300.

Finally, two documents list quantities of different pottery vessels received, one headed *mahir*, 'received' but with no receiving authority figure named.[62] Another two lists, one also headed *mahir*, write the numeral 10 next to the names of multiple individuals. There are three possible interpretations. First, each person may be receiving ten countable objects;[63] or the 10-sign is being used as a check-mark against each name. Third, this may be an alternative writing of 1(BÁN), i.e., 10 *qû*, based on parallels with the *hargallû*-grain list 1114:36, which switches from 1(BÁN) on the obverse to 10s on the reverse. Finally, two lists of unclear function, with missing or damaged headings assign large amounts of grain to named individuals, but without *ešertu*-groupings. The very large quantities in 1096:59 are commensurate with tax records such as 1096:40 and 41, with which this tablet was found, while those in 3080:04 more resemble the long receipt lists.

Unilateral records: tabular lists and accounts

The three tabular lists and thirteen tabular accounts from Tell Khaiber are all concerned with the management of grain (Tables 4.7, 8). Based on their headings and quantitative structures, they can be assigned to four main categories: multi-commodity delivery lists; balanced delivery accounts; and tax or revenue accounts and lists.[64] As in the numerical lists, there are no summations or attributions of accountability at the end of the tabular accounts, but by definition the accounts all include horizontally calculated data columns in each row. At least some were dated to the month and day, if not to the year. There are equal numbers of portrait and landscape orientation tablets, which do not correlate to document type, plus several substantial fragments. The complete tablets range in size from *c.*45 × 70 mm to *c.*65 × 125 mm.

There are two very long multi-commodity receipt lists. One heading explicitly describes multiple types of grain products, ŠE TUR.TUR *ù* ZÍD Ì.BA NUMUN, 'Minor crops and flour, paste and seeds' (3064:33). Their recipients may be described, in a damaged section of the heading, as LÚ É.GAL, literally 'palace men'. The heading of the other (1096:48) is missing but the contents are otherwise identical in structure, with two quantitative and two qualitative columns, and a very close match in personnel. The absence of horizontal calculations suggests that each column was reserved for a separate commodity and are thus classified here as tabular lists rather than tabular accounts. Quantities involved are substantial, averaging just under 1 *kurru* per commodity per person. In both documents, the people are grouped into multiple *ešertu*-workteams, as in the long numerical receipt lists, and indeed the same individuals predominate.[65]

[59] There are also three Schøyen tablets marked out in up to 15 narrow, blank columns for *ūmiša*, 'daily', payments of ŠUKU$^{-at/-tum}$ (*kurummatu*) rations of barley, *terru*-grain, fodder and other commodities to brewers, a princess, and perhaps donkeys (Dalley 2009: nos. 383, 423, 427).

[60] Dalley 2009: no. 372.

[61] Five of the Schøyen tablets explicitly state that they concern monthly or bimonthly payments of 20–50 or 300–400 litres of grain as ŠE.BA (*ipru*-allowances) or ŠE.ŠUKU-at (*kurummatu*-rations) to single *ešertu*-workteams (Dalley 2009: nos. 380, 386–8, 394, 431).

[62] See Calderbank 2021a for further discussion.

[63] cf. Rositani 2011: no. 79, a numerical list of the number of harvesters provided by each of eight *iššiakku*-farmers, probably from about Hammurabi year 40.

[64] There is an open debate as to whether this type of state revenue should be considered as tax or rent: e.g. the contributions in Mynárová and Alivernini 2020. For convenience, I mostly refer to it as tax in this discussion.

[65] The Schøyen tablets include seven multi-commodity accounts that document different types of grain products without reconciling them to an expected amount (Dalley 2009: nos. 408, 414, 416, 418, 444, 450?). Most are for different grades of flour but one is for wheat, dates and oil (no. 408). Two are receipts, ŠU.TI.A (nos. 416, 418) while a fourth documents outgoings, ZI.GA (no. 414). One unheaded, undated table with heavily abbreviated names seems to represent a draft of a similar account (no. 450).

Type	Tablet	Tablet group	Format	Cols	Heading	Mean value (litres)	Date
Long multi-commodity	3064:33	300-SE	P	4	Minor crops, flour, paste, seeds: receipts of palace men(?)	165 278	
	1096:48	309-N	frag	4	Missing (capacity measures)	300 294	
Miksu-tax	1096:40	309-E	L	3	*miksu*-tax of dependents	918	

TABLE 4 7. Tabular lists in the Tell Khaiber archive.

Type	Tablet	Tablet group	Format	Cols	Heading	Mean value (litres)	Date
Delivery	1114:48	309-SC	L	5	*hargallû*-flour, farmers' deliveries: balance–brought–deficit	17.7	Month 8, day 7
	1096:47	309-N	P	5	[Missing]: balance–brought–[deficit]	10.0	
	1096:51	309-N	L	4	[Missing]: balance–brought–deficit	17.0	
Delivery*	3064:12	300-N	frag	4	Missing [balance–brought–deficit]	361	
	3064:26	300-C	frag	2+	Missing [balance–brought–deficit]	—	
	3064:51	300-NE	P	4	Milled barley: balance–brought–deficit	528	Month 4, day 29
	3064:89	300-NE	P	4	Missing [balance–brought–deficit]	258	
	3119:03	300-SC	frag	2+	Milled barley: balance–brought–[deficit]	900	
Šibšu-tax	1096:26	309-E	frag	4?	*šibšu*-tax of dependents, receipts of the palace	—	
	1096:41	309-E	L	6	*šibšu*-tax: balance–dependents' share–palace share–*kiṣru*-tax–city-gate tax	4,274	
Tax	3064:15	300-N	frag	7+	Missing	—	
	3064:18	300-NC	P	6	Missing	1,038	
	1114:04	309-W	L	4	Missing	1,243	

TABLE 4.8. Tabular accounts in the Tell Khaiber archive.

The eight delivery accounts reconcile expected quantities of incoming grain products with the amounts that were actually received, using three or four quantitative columns followed by the name of the individual concerned. Several begin with a descriptive title, from the simple ŠE ÀR.RA, 'milled barley' (3064:51), to the more extensive preamble ZÍD.DA *har-ga-lu-ú* MU.TÚM ÉNSI.MEŠ LÚ.MEŠ É.GAL, '*hargallû*-flour, deliveries of the farmers and palace (servant-wo)men' (1114:48, Fig. 4.6). The column headings always read, from left to right: SAG.NÍG.GA = *rēš namkūri*, 'opening balance' (literally 'head of the account'); *ub-lam*, 'brought'; and LÁL.Ì = *muṭû*, 'deficit'. In this column entries typically read Ì.SÁ, probably a writing for *išaru*, 'correct', lit. 'straight, proper', when equal amounts are entered in columns 1 and 2.[66] An optional final quantitative column, ŠE ŠU.TI.A, 'grain

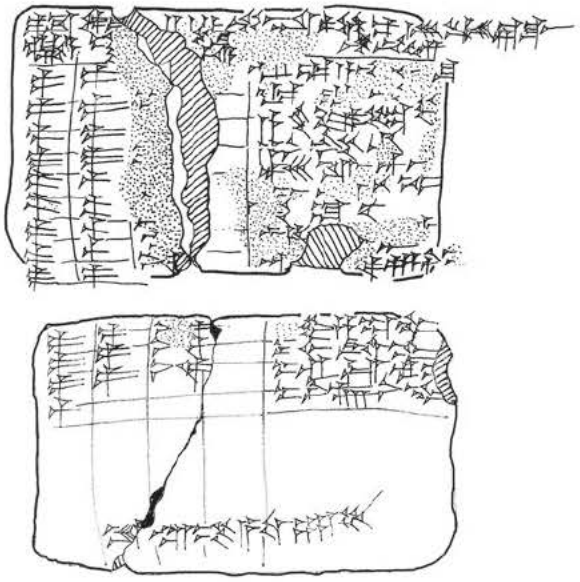


FIG. 4.6. Headed, dated delivery account of *hargallû*-flour, 1114:48 (obverse and reverse).

[66] Correcting Dalley 2009: nos. 225, 239, 241, 247, 249, 258, 269, 271, who reads GÚ for LÁL.Ì and *ni-di* for Ì.SÁ without translation or commentary.

delivered', was often omitted, as its contents replicate column 2. Two of these delivery accounts are dated to the month and day, none to the year. The quantities involved are either very small, in the order of 1–2 *sūtu* per entry in the tablets from Letters Room 309, or rather large, with 1 or more *kurru* per entry in those from Archive Room 300 (marked * in Table 4.8). We might interpret these differences either as pertaining to commodities—*hargallû*-flour in Room 309, barley in Room 300—or to daily versus monthly reckonings.[67]

The six tax lists and accounts each divide the harvested grain in a 2:1 split between dependent individuals and the palace, under the headings SAG.NÍG.GA = *rēš namkūri*, 'opening balance'; HA.LA MAŠ.EN.KAK = *zitti muškēni*, 'share of the dependent'; and HA.LA É.GAL = *zitti ēkalli*, 'share of the palace' XXX. In all legible cases the 'opening balance' in column 1 is split between the dependent and palace in the ratio 2:1. Some of these accounts also include columns for the transport duty KA.KEŠDA = *kiṣru* and local tax KÁ.URU = *bāb āli*, 'city gate', always very tiny amounts.[68] On two documents the very fragmentary preambles name the tax as *šibšu*; another is classified as NÍG.KUD.DA = *miksu*.[69] In the remaining cases the preamble is missing and it is impossible to assign them to one tax or another. Surviving column data suggest individual harvests in the order of 3–4, exceptionally 14, *kurru*.[70]

Unilateral records: memoranda and work lists

These are ephemeral notes for an informal record of one or more pieces of information or instruction, mostly on very small landscape-format tablets ranging in size from 20 × 40 mm to 60 × 75 mm. They are usually in the form of a prose narrative but sometimes a non-numerical list, with horizontal rulings dividing the sections. Five of the seventeen documents, all from Room 300, are dated: three to the month and day, two also to the year, while four from Room 309 have headings (Table 4.9).

The majority are concerned only with membership of *ešertu*-workteams—the most clearly defined group—and/or the transfer of workers, while a number also record movements or calculations of commodities (Fig. 4.7). Tablet 3080:02 must have been used to compile a *šibšu*-tax account. The text on 3064:12 has been palimpsested onto a tablet originally used for keeping a daily receipt list (see above). Three tablets are too fragmentary to be classified.[71]

Bilateral documents: letters and letter-orders

Five short letters and one letter-order are all written on landscape orientation tablets, ranging in size from *c.*20 × 45 mm to *c.*50 × 55 mm (Table 4.10). They are undated and unsealed. All but one were found in Room 309 with the payment records, discussed below.[72]

The letters open with the classic Old Babylonian greetings formula, e.g. [*a*]-*na a-ta-na-ah-ì-*[*lí*] / *qí-bí-ma* / *um-ma* DUMU-20.KAM / *a-hu-ka-ma*, 'Speak to Atanah-ili, thus Mar-ešre, your brother' (3064:93, Fig. 4.8), while the letter-order has no sender but names the recipient, or possibly sender, at the end (1096:53).[73] They give either information or orders about stored commodities, the workforce and legal matters. Five are addressed to one or other of the two scribes of the archive, Atanah-ili and Mayašu, and their associates, the other to a certain Nuratum. Senders are Uraš-ibsasa and his son Adad-ilum, Ahi-illikam and Mar-ešre. The first two senders do not appear elsewhere in the archive, whereas the latter two names are so ubiquitous it is almost impossible to identify them with one particular individual. I discuss these documents, and the individuals featured in them, on pp.95–6.

[67] Nine of the Schøyen Collection's tabular accounts record MU.TÚM *ana ēkalli* 'deliveries to the palace' of processed goods, reconciling amounts owed with amounts delivered in identical format to the Tell Khaiber accounts. They too encompass flour deliveries, as the work-quotas of a mixed group of men and women overseen by guards (Dalley 2009: nos. 414, 419, 422, 424, 436; Boivin 2018: 147–9) but also bricks from ploughmen, made in the hot summer months (420), grinding stones (421) and perhaps also a weighed commodity whose identity is now lost (435).

[68] See Boivin 2016a for a very useful discussion of these terms.

[69] This document, 1096:40, clearly headed ŠE NÍG.KUD.DA *ša* MAŠ.EN.KAK.MEŠ, 'barley of the dependents' *miksu*-tax', confirms Boivin's (2016a: 59) tentative suggestion that 'the individuals paying the *miksu* may also have been *muškēnū*'.

[70] Sixteen tabular accounts in the Schøyen Collection record grain taxes paid by (the *muškēnū* of) named communities to the palace, analysed in detail by Boivin 2020a; see also Fiette 2020's helpful review of Boivin 2018. The large majority concern *šibšu*-tax (Dalley 2009: nos. 411, 412, 415, 426, 428, 431a, 432, 434, 441, 442, 446–7), either in grain or, once, in *sahlû*-crop (no. 446), and three times divided equally (*ša ezūzu immandū*) between palace and temple (nos. 428, 430, 447). A further three record *miksu*-tax (nos. 410, 442, 448) and one *kiṣru*-duty (no. 445). No. 429 is a dated record, in numerical list format, of one individual's *šibšu*-tax payment: not a receipt but maybe a preparatory note for a tax account (cf. 3080:2).

[71] I have identified nine relevant memoranda amongst the Schøyen materials. Five are undated lists of 8–16 workers belonging to one or two *ešertu*-workteams (Dalley 2009: nos. 396, 398–9, 402–3). Only one of these is headed, simply ÉRIN.MEŠ 'workers', (no. 396), while three others include subscripts naming their leader or community (nos. 398, 402–3). There is also one dated list of three workers (no. 382) and rough calculation associated with the names of seven individuals (no. 404).

[72] Four of the Schøyen Collection letters have Old Babylonian-style greeting formulae like those at Tell Khaiber. Two concern similar topics: the conduct of a court case, *dīnu* (Dalley 2009: no. 12, cf. 1114:01); and the collection of *šibšu*-tax (no. 14). This last is from Uraš-ibsasa, presumably the same sender as at Tell Khaiber. Nos. 405–6 may be letter-orders.

[73] cf. Dalley 2009: nos. 2, 12–14.

Type	Tablet	Tablet group	Format	Heading	Date
Commodities	3080:02	300-NC	L		
	3080:03	300-NC	L		Month 1, day 24
	3080:05	300-NC	L		
	1114:47	309-SC	L		
ešertu-teams	3064:73	300-N	L		
	3064:129	300-SC	L	*ešertu*-workteam, correct, opening balance(?)	Month 3; ADG year I
	1114:26	309-S	L	Workers […]	
	1114:12	309-W	P	Workers […]	
	1114:14	309-W	L	Workers, sons of (free?) men	
	1114:15	309-W	L		
Workers	3064:76	300-N	L		
	3064:94	300-N	L		Month [n], day 1
	3064:13	300-NE	L		
	3064:122	300-SC	L		
	1096:25	309-E	L	Workers who have behaved dishonestly	
Unclear	3080:01	300-NC	L		Month [n], day 2
	3006:17	300-SC	L		Month 5, day [n]; ADG year K
	3064:121	300-SC	L		

TABLE 4.9. Memoranda in the Tell Khaiber archive.

Tablet	Tablet group	Sender	Recipient	Topic
3064:93	300-N	Mar-ešre	Atanah-ili	Transporting barley
1096:52	309-N	Adad-ilum, son of Uraš-ibsasa	Mayašu, Adad-šemi and Sin-išmanni	Transporting Nuratum's wool
1096:53	309-N	—	Adad-šemi, son-in-law of Mayašu	Order to record labourers
1114:01	309-S	Ahi-illikam	Atanah-ili	A court case
1114:45	309-SC	Uraš-ibsasa	Atanah-ili	The mayor and missing barley
1114:06	309-W	Uraš-ibsasa	Nuratum	Transporting flour

TABLE 4.10. Letters and letter-orders in the Tell Khaiber archive.

FIG. 4.7. Dated memorandum 3080:03, recording grain 'by the royal measure' (obverse and reverse).

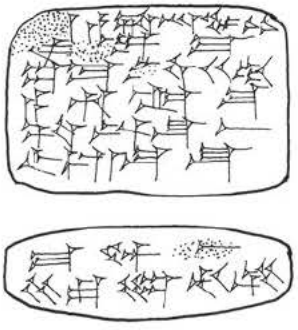


FIG. 4.8. Letter from Mar-ešre to Atanah-ili, 3064:93 (obverse and bottom edge; reverse blank).

Tablet	Tablet group	Recipient	Authorization	Barley (litres)	Silver (grams)	Date
1114:07	309-W	Ahi-illikam		150	4	Month 4, day 9
1114:10	309-W	Re'i-Ninurta		123 5	4	Month 4, day 19
1114:11*	309-W	Manni-Šamaš	Atanah-ili	100	4	Month 4, day 22
1114:13	309-W	Ahi-illikam		120		Month 3, day 27
1114:16*	309-W	Ile"i-bulluṭa		20		Month [n], day 27
1114:18	309-W	Nuratum		100		Month 4, day 12
1114:21	309-S	Nuratum		130	4	Month 4, day 2
1114:22	309-S	Nuratum		70		Month 4, day 28
1114:25	309-S	Re'i-Ninurta		42		Month 3, day 11
1114:27	309-S	Re'i-Ninurta		81		Month 4, day 10
1114:29*	309-S	[Nura]tum?		missing		Month 3, day 18
1114:30	309-W	Re'i-Ninurta		140		Month 4, day 13
1114:31	309-W	Atanah-ili		missing		Month 4, day 19
1114:32*	309-W	Atanah-ili		80		Month 4, day 10
1114:33	309-W	Re'i-Ninurta		430		Month 4, day 17
1114:34	309-S	Re'i-Ninurta		132		Month 2, day 29
1114:38	309-SC	Re'i-Ninurta		80	4	Month 4, day 11
1114:39	309-SC	Nuratum		120		Month 3, day 26
1114:41	309-SC	Nuratum		120	4	Month 3, day 22
1114:43	309-SC	Nuratum		120		Month 4, day 16
1114:44	309-SC	(illegible)		missing		Month 4, day 4
1114:49	309-SC	Ahi-illikam		150	4	Month 3, day 21
1114:51	309-SC	Arzazu		150	4	Month 4, day 5
1114:52	309-SC	Re'i-Ninurta		50		Month 3, day 22

TABLE 4.11. Payment records in the Tell Khaiber archive.

Bilateral documents: payment records

Twenty-four tiny, landscape orientation tablets contain highly formulaic records of payments to individual people in either grain or silver or both (Table 4.11). They are dated to the month and day, but not the year, and almost never give the name of the authorising official. The twenty-one surviving barley payments range from 20 to 430 litres, with mean and median both 120 litres, while the eight silver payments are all for ½ shekel, *c.*4 grams. Four slightly anomalous records, marked * in the table, are discussed further on pp. 97–8 (Fig. 4.9). The tablets range in size from *c.*15 × 35 mm to *c.*25 × 45 mm. All were found in the southern half of Room 309.[74]

Fragments

A number of fragmentary administrative tablets cannot be further typologized. They are listed here for completeness (Table 4.12).

Scribal exercises

The twenty-one fragments of tablets bearing scribal exercises were all found in the north and eastern sectors of Archive Room 300, with the exception of one illegible piece from the western doorway of Letters Room 309 (Table 4.13). All had been deliberately broken in antiquity and many were deformed, presumably during the (interrupted) process of recycling. Most appear to have originally been large multi-column format tablets, that is to say Type I or perhaps Type II in the typology of Old Babylonian Nippur.[75] Although most preserve very little by way of legible inscription, eight

[74] There are no Tell Khaiber-style payment records amongst the Schøyen material.

[75] See, for example, Veldhuis 2014: 204–5.

Tablet	Tablet group	Date	Contents
3006:09	300-C		PNs from the final column of a numerical list or tabular account
3064:20	300-C		PNs from the final column of a numerical list or tabular account
3064:106	300-C		PNs from the final column of a numerical list or tabular account
3064:108	300-C		PNs from the final column of a numerical list or tabular account
3064:62	300-NE		Capacity measures from the first column of a numerical list or tabular account
3064:63	300-NE		Final column of a headed numerical list or tabular account
3064:64	300-NE		PNs from the final column of a numerical list or tabular account
3064:71	300-N		PNs from the final column of a numerical list or tabular account
3064:98	300-N		Capacity measures from the first column of a numerical list or tabular account:
3064:116	300-N		Small fragment; only numerals survive
3064:119	300-SC		Capacity measures from the first column of a numerical list or tabular account:
3064:125	300-SC	traces?	PNs from the final column of a numerical list or tabular account
3064:133	300-S		PNs from the final column of a numerical list or tabular account
3080:25	300-N		Small fragment; only elements of PNs survive
3119:03	300-SC		Final column of a headed numerical list or tabular account
1096:24	309-E		Final column of a headed numerical list or tabular account
1096:27	309-E		Small fragment; only numerals survive
1096:42	309-E		Small fragment; mostly numerals survive
1096:60	309-N		Two small flakes with small capacity measures and single signs
1114:03	309-W		Final column of a headed numerical list or tabular account
1114:23	309-S		Round tablet; text mostly erased
1114:55	309-S		Crumpled clay with crudely written numerals; may be scribal exercise
1142:07	314		Capacity measures and traces of PNs from a numerical list or tabular account
6136:12	179 surface		Round tablet; traces only

TABLE 4.12. Administrative fragments in the Tell Khaiber archive.

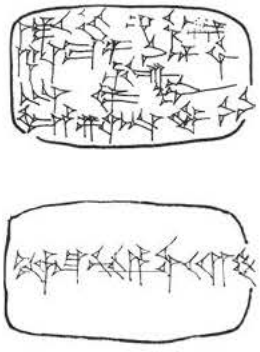


FIG. 4.9. Anomalous payment record 1114:11, authorised by Atanah-ili (obverse and reverse).

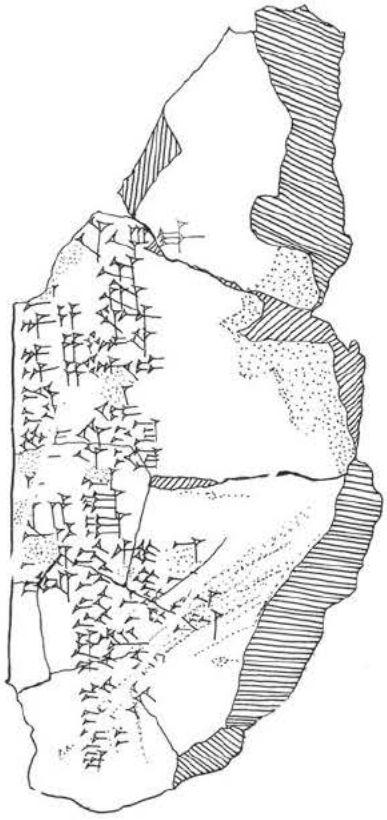


FIG. 4.10. Extract from the thematic word list Ur_5-ra, metals and stones section, 3080:15 (obverse only; reverse missing).

Tablet	Tablet group	Exercise
3064:14	300-N	Elementary writing exercise
3064:97	300-N	(Unidentified)
3064:88	300-NE	Extract from Ur_5-ra Metals
3064:79	300-E	Extract from the sign-list Ea?
3064:82	300-E	Extract from Ur_5-ra Wild Animals
3064:84	300-E	Extract from Ur_5-ra Metals
3080:07	300-E	(Unidentified)
3080:09	300-E	Extract from Ur_5-ra Leather?
3080:10	300-E	(Unidentified)
3080:11	300-E	(Unidentified)
3080:12	300-E	(Unidentified)
3080:13	300-E	Extract from Ur_5-ra Stones
3080:14	300-E	Extract from Ur_5-ra Metals
3080:15	300-E	Extracts from Ur_5-ra Metals and Stones
3080:16	300-E	Extract from a sign-list such as Izi?
3080:17	300-E	Extract from the sign-list Ea?
3080:18	300-E	(Unidentified)
3080:19	300-E	Extract from Ur_5-ra Stones
3080:20	300-E	(Unidentified)
3080:21	300-E	(Unidentified)
1114:09	309-W	Extract from a sign-list such as Ea?

TABLE 4.13. Elementary scribal exercises in the Tell Khaiber archive.

identifiable extracts are from the word-list known as Ur_5-ra, drawn from the sections on leather objects, metals, stones and wild animals (Fig. 4.10). A few further badly executed pieces appear to be extracts from sign lists like Ea or Izi, while a small, complete tablet contains a well-preserved exercise in writing the component elements of cuneiform signs. Some of the remaining eight may also be identifiable in due course, while others might in fact turn out to be fragments of archival records. The implications of this find are discussed further below.

HISTORICAL ANALYSIS

At first reading, the tablets from Tell Khaiber are mostly dry lists and tables, which yield disappointingly little about Sealand history writ large. They tell us virtually nothing about the chronology, events and centres of power of the period. However, when read in context, they reveal a great deal about economy, society and the uses of literacy and numeracy in the Babylonian Sealand. Here I present a preliminary historical analysis, focusing first on the people of Tell Khaiber and their relationship with the Sealand authorities; then on the micro- and macro-economic implications of the archive; and finally on the quite revolutionary consequences for our understanding of the uses, and users, of writing in cuneiform culture.

People, professions and authorities

Who were the people named in the Tell Khaiber tablets? The archive contains a vast amount of information about the professional, social and familial status of many individuals and their relationships. There are significant challenges to identifying them with confidence, however, due to the poor state of the tablets' preservation and the scribal habits of documentation. This presents at least three layers of ambiguity for anyone wishing to work this data. First, many individual entries on the tablets are very damaged and hard to read, even with excellent RTI. In restoring them I have often made educated guesses, based on proximity patterns in better preserved tablets. For instance, the sequence:

Nur-Inšušinak[76]
Habzazu
Sizzu
Ubarrum
Ahu'atum
É.GI
Abi-Laguda
Qišti-Amurru
Burra-Šugab

is well preserved on 3064:34 r 13–21, 3064:53 r 7–15, and 3111:01 o 45' – b 2, where the men are listed as members of Sebitti-nada's *ešertu*-workteam of palace auxiliary troops. It seemed reasonable to restore most of the same sequence in the more damaged 3064:123 r 26 – t 2, where Nur-Inšušinak is the *ešertu*-leader of the same profession. Similarly, the same list seems to occur on the very badly preserved surface flake 1096:58 5'–13', prompting me to restore whole names from the visible traces. However, there I have not filled in the missing lines 7'–8' with the names Sizzu and Ubarrum, though I think it highly likely that they were present on the original tablet; and nor have I restored the missing professional designation, even though the repetition of Sebitti-nada's (damaged) name in lines 4' and 14' confirms that this is a fourth attestation of the same *ešertu*-workteam. While I have been careful not to overplay this restoration methodology, it has probably led to a certain degree of confirmation bias, resulting in over-attribution of some names, professions and relationships, and under-attribution of others.

Second, even assuming that I have made no reading errors or inappropriate restorations—a false assumption, I can confidently assert—there is an inherent ambiguity in the dataset, given that professional titles and family relationships are often absent, whether never recorded or now missing. For instance, we cannot know whether the Ahu'atum being transferred to the palace in 3064:76 o 3 is the same individual from Sebitti-nada's *ešertu*-workteam or another. Likewise, the Ahu'atum listed in 1114:17 r 12 might be another person again. Following the practice of *The Prosopography*

[76] I am very grateful to Jeremiah Peterson (pers. comm. July 2022) for identifying the correct reading of this name.

Profession	Writings	Instances of term	Named individuals	Total attestations	Schøyen (term)	Schøyen (individuals)
iššiakku-farmer	ÉNSI	22	14	173	8	10
nukaribbu-gardener	NU.GIŠ.KIRI$_6$	24	11	24	5	4
bā'eru-fisherman	ŠU.KU$_6$ and syllabic	6	5	12	4	3
re'û-shepherd	SIPA	8	4	8	16	10
usandû-bird catcher	MUŠEN.DÙ	6	1	6	—	—
ikkaru-ploughman	ENGAR	2	1	3	4	4
kullizu-ox driver	ŠA$_3$.GU$_4$	—	—	—	2	1

TABLE 4.14. Food producers in the Tell Khaiber archive.

of the Neo-Assyrian Empire,[77] I have therefore disambiguated individuals in the online glossary by profession and family relationship, but cannot exclude the possibility that some people might have been designated differently in different records or by different scribes. Sebitti-nada himself is described in 3064:33 only as the son of Innibu; fortunately, 3064:53 lists both his professional and familial ties. But this is unusual. For example, there might have been one, two or three separate individuals named Ili-iddinam: the farmer, the father of Dassu-karabu, and the son of Ukkulu-Naze: it is impossible to tell.

Finally, we have to contend with variant spellings and short forms of names. For example, the *iššiakku*-farmer Ili-ya'u is attested just twice in the corpus. Should we understand this name as a familiar version of the name Ili-iddinam—also attested as a farmer but not in the same documents as Ili-ya'u?[78] A particular father and son have their names spelled Sin-išm(e)anni and Ili-iyatum/-iyati, apparently interchangeably, presumably depending on scribal preference.

I have therefore reluctantly concluded that the community documented by the Tell Khaiber tablets is not easily susceptible to Social Network Analysis, but I offer it as an exciting challenge to colleagues with better prosopographical and data analysis skills than I. Instead, I offer a more qualitative preliminary overview, starting with professions and professional relationships, then the question of the *muškēnu* tax-payers and the community's relationship(s) with authority. I then briefly look at family ties, finally considering theological commitments, as evidenced in the theophoric elements in personal names.

Professions

About thirty different professions are attested at Tell Khaiber. The most prominent are, of course, the *iššiakku*-farmers. But alongside them worked a host of other people, most of whom, on the face of it, had nothing to do with grain production. In order to make sense of why they were all documented in the archive, I shall first give a general survey before focusing in on particular groups. Exact numbers are difficult to ascertain, given the ambiguities in nomenclature described in the introduction to this section, and the fragmentary state of many tablets. Nevertheless, for indicative purposes I have given simple counts of the occurrence of each professional term, the number of discrete individuals associated with it, and the minimum total number of attestations.[79] This number can be significantly higher than instances of the term would suggest, as many individuals turn up repeatedly, for example in professional *ešertu*-workteams or named as TAB.BA.NI, *tappašu*, the 'partner' or 'workmate' of a colleague.

Working relationships between equals can also be expressed as PN$_1$ *u* 'and', or more rarely *itti*, 'with' PN$_2$. Enduring subordinate relationships, meanwhile are described as PN$_1$ NÍG(.ŠU) PN$_2$, perhaps to be rendered *ša qāt*, literally 'of the hand of', or perhaps *pīhāt* 'responsibility of', here translated 'subordinate of'. Both men and women served as subordinates, apparently to people they were not related to. More informal, occasional substitutions, for instance by family members who are acting on a senior relative's behalf, are noted with the familiar PN$_1$ GÌR PN$_2$, or *šēp*, literally 'foot of', here translated 'authority of'.[80]

Those family relationships were, not surprisingly, overwhelmingly sons and fathers. But mothers, daughters, brothers, and occasionally sisters and wives are also attested, all written with the normal logograms. The one rather more unusual term is *hatanu*, written syllabically, '(son-)in-law', and apparently used only in relation to the scribes (see further below). Multi-generational families are very rarely detectable.

The food-producing professions dominate the archive, revealing a mix of agriculturalists, herdsmen and wetland hunters, as befits Tell Khaiber's location on the edge of

[77] Parpola et al. 1988–2011.

[78] Ili-ya'u cannot be a short form of Ili-iqiša, the name of another farmer, for both are named in 1096:40, the former as (the farmer) Sin-leqe-unninni's substitute and the latter as his subordinate. I follow Zadok (2014) in interpreting *-ya'u* and *-ya'utu(m)* as diminutive suffixes.

[79] For details, go to https://oracc.org/urap/qpn and search for the relevant professional term, in English or Akkadian.

[80] See Boivin 2016b: 11–14 for a discussion of the writings NÍG(.ŠU) and GÌR in the Schøyen Sealand tablets.

Profession	Writings	Instances of term	Named individuals	Total attestations	Schøyen (term)	Schøyen (individuals)
nagāru-carpenter	NAGAR	18	3	18	8	16
atkuppu-reedworker	AD.KID	6	3	6	8	6
aškāpu-leatherworker	AŠGAB	7	4	7	9	32
nappāhu-smith	SIMUG	6	3	6	2	2
sasinnu-bowyer	ZADIM	4	1	4	1	1
mukabbû-tailor	^{lú}TÚG.KAL.KAL.LA	3	2	3	4	3
purkullu-seal cutter	BURGUL	1	1	1	1	1
kutimmu-goldsmith	KÙ.DÍM	–	–	–	8	8
kabšarru-stone carver	KAB.SAR	–	–	–	2	1
qurqurru-coppersmith	URUDU NAGAR	–	–	–	1	5

TABLE 4.15. Craftsmen in the Tell Khaiber archive.

Profession	Writings	Instances of term	Named individuals	Total attestations	Schøyen (term)	Schøyen (individuals)
ṣāhitu-oil-presser	Ì.ŠUR	5	3	6	–	–
nuhatimmu-cook	MUHALDIM	4	3	4	46	8
sīrāšû-brewer	^{lú}LUNGA	2	1	2	24	2
bāqilu-maltster	^{lú}BULÙG	–	–	–	44	11
sābû-brewer	^{lú}KURÚN.NA	–	–	–	1	8

TABLE 4.16. Caterers in the Tell Khaiber archive.

the marshes (Table 4.14).[81] The large number of date-palm gardeners, almost as many as the farmers, hints at the economic importance of this crop to the community, even though dates themselves are not documented in the archive. By contrast, only four named gardeners appear in the Schøyen tablets, three of them in tax accounts from settlements like Tell Khaiber.[82] Fishermen are also poorly represented there and bird catchers do not feature at all, while shepherds and ploughmen are well attested.[83] This difference in professional profiles strongly suggests that the source of the Schøyen tablets was outside the marshes.

Similarly, the craft professions at Tell Khaiber almost all worked with locally available, low-cost materials: wood, reed, leather and cloth (Table 4.15). We might suppose that some of them, at least the smiths and bow-makers, serviced the military personnel stationed at the Fortified Building.[84] One of the tailors, on the other hand, is associated with a group of four palace servant-women (1124:04), while Kussašu-gamil is attested as a leatherworker in the Schøyen tablets and a 'royal leatherworker' at Tell Khaiber (1114:40).[85] There are no workers in precious stone and metal, such as those listed in a roster of *ummānu*-craftsmen in the Schøyen tablets, reflecting the wealth disparities documented in the two archives.[86] More intriguingly, nor have I identified any potters (^{lú}BÁHAR = *pahāru*), despite the large number and range of ceramic vessels found in and around the Fortified Building.[87]

[81] Note the flint sickle blades for reaping and the large number of clay disks found in and around the Fortified Building that could have served as net-sinkers, as well as bone needles suitable for making nets (see Chapter 6).

[82] Dalley 2009: 302, s.v. NU.GIŠ.KIRI$_6$. NB in no. 374, Nergal-abi's profession should be corrected to MUHALDIM, 'cook'.

[83] The ox-driver Arad-Anzakti, son of Abu-ṭabu is probably to be identified with the *iššiakku*-farmer of same name (Dalley 2009: nos. 356, 366).

[84] Craftsmen's tools found in and around the Fortified Building included copper awls, an adze, and a knife, copper and lead nails, flint blades and points, stone scrapers and polishers, and bone pins and needles (see Chapter 6).

[85] Dalley 2009: no. 381.

[86] In Dalley 2009: no. 381 r 35'–36' the profession of Ahušina and Šamaš-bari is probably to be read LÚ *ša* SAG'(GI), 'eunuch', after no. 397 o 5.

[87] The Tell Khaiber pottery is analysed by Calderbank 2020; 2021a; 2021b. Amanda Podany (pers. comm. November 2022) notes a general absence of potters in the Old Babylonian textual record. ARCHIBAB contains only seventeen attestations of the term in nearly 22,500 OB documents (https://www.archibab.fr, accessed December 2022). For instance, there are three potters amongst 173 artisanal ration-recipients at the palace of Dur-Yahdum-Lim in the early 18th century BCE (ARM 33 35 [M.6231] = ARCHIBAB T20261).

Profession	Writings	Instances of term	Named individuals	Total attestations	Schøyen (term)	Schøyen (individuals)
ne' rār ēkallim palace auxiliary	ÉRIN.TAH É.GAL	21	20	76	–	–
tillatu-reinforcement	Syllabic	1	1	1	1	–
hurādu-soldier	Syllabic	1	–	–	–	–
ša rēši-eunuch	LÚ SAG and syllabic	–	–	–	9	7
maṣṣaru-guard	^{lú}EN.NU.UN	–	–	–	8	5
ša abulli-gatekeeper	LÚ KÁ.GAL	–	–	–	5	3
atû-doorkeeper	Ì.DU$_8$	–	–	–	4	3
rēdû-soldier	AGA.ÚŠ	–	–	–	3	2

TABLE 4.17. Soldiers and guards in the Tell Khaiber archive.

Profession	Writings	Instances of term	Named individuals	Total attestations	Schøyen (term)	Schøyen (individuals)
ašlāku-washerman	^{lú}ÁZLAG	21	4	21	–	–
malāhu-boatman	$^{(lú)}$MÁ.LAH$_{4/5}$	11	6	19	4	–
ṭupšarru-scribe	DUB.SAR	11	3	17	5	4
kisalluhhu (courtyard) sweeper	(KISAL.)LUH	7	1	7	1	–
nāgiru-herald	Syllabic	3	2	3	–	–
hazannu-mayor	Syllabic	3	1	3	2	2
mār šipri-messenger	LÚ.KIN.GI$_4$.A and syllabic	–	–	–	12	5
gallābu-barber	ŠU.I	–	–	–	10	8
tamkāru-merchant	DAM.GÀR	–	–	–	5	3
ša dalî-water drawer	Syllabic	–	–	–	1	1
dayyānu-judge	DI.KUD	-	-	-	1	1

TABLE 4.18. Scribes, functionaries and service-providers in the Tell Khaiber archive.

Compared to the preponderance of outdoor food producers in the Tell Khaiber archive, there are very few references to indoor preparers of food and drink (Table 4.16). The brewers' raw material was presumably the barley documented there, while the presence of the oil-pressers implies the existence of a sesame crop too. By contrast, a large proportion of the Schøyen tablets documents the labour of the cooks, brewers and maltsters (but not oil-pressers) who provisioned the human and divine residents of the palace and royal temples.[88] We should also note the apparent absence of butchers (^{lú}GÍR.LÁ = *ṭabbihu*) from both archives.[89]

There was a sizeable contingent of 'palace auxiliaries' at Tell Khaiber, who were issued grain and flour, usually in *ešertu*-workteams (Table 4.17). They do not seem to have been responsible for delivering flour or grain, unlike the *maṣṣaru*-guards who oversaw flour-milling in the palace workhouse.[90] Nor do they seem to have much in common with the *rēdû*-soldiers who received animal carcasses for the palace.[91] However, they could be synonymous with the *tillatu*-auxiliaries and/or *hurādu*-soldiers who make occasional appearances at Tell Khaiber and in the Schøyen tablets. There were seemingly no designated security staff at the entrances to the Fortified Building: perhaps the palace auxiliaries served this function.

Not surprisingly, the archive also features several named and unnamed scribes and their apprentices, who are discussed further on pp.94–5 (Table 4.18). A mayor and two heralds attest to local governance at Tell Khaiber and while I

[88] In the Schøyen tablets, the terms ^{lú}LUNGA, ^{lú}ŠEM and ^{lú}BULÙG are used interchangeably to denote the same eleven individuals, who supplied the temples and palace with malt and beer (Dalley 2009: nos. 151–304).

[89] Likewise, ARCHIBAB contains only four attestations of the term in nearly 22,500 OB documents (https://www.archibab.fr, accessed December 2022).

[90] Boivin 2018: 147–9.

[91] Dalley 2009: nos. 317, 320, 324.

Profession	Writings	Instances of term	Named individuals	Total attestations	Schøyen (term)	Schøyen (individuals)
šangû-priest	SANGA	6	2	6	5	6
ša ebbūbi-piper	LÚ GI.GÍD	2	1	4	1	1
nāru-musician	NAR	1	1	1	7	4
asû-healer	A.ZU and syllabic	–	–	–	6	4
nadītu-priestess	LUKUR/NIN.DINGIR	–	–	–	4	–
bārû-diviner	MÁŠ.ŠU.GÍD.GÍD	–	–	–	3	2
ša gipāri-cloister man/ woman	LÚ/MUNUS É.GI$_6$.PÀR	–	–	–	2	3
(mu)raqqû-perfumer	Ì.RÁ.RÁ and syllabic	–	–	–	2	1
apiltu-prophetess	Syllabic	–	–	–	1	1
aluzinnu-jester	ALAN.ZÚ	–	–	–	1	1
enu-priest	Syllabic	–	–	–	1?	–

TABLE 4.19. Temple personnel and performers in the Tell Khaiber archive.

Tablet group	300-E		300-S		300-SC	300-SE	
ešertu-leader	3064:49	3064:53	3064:123	3111:01	3064:135	3064:33	3064:57
Dalilu, son of […]	(1)	(1)	(1)	(1)	1	1	
Burra-dabani, son of Qiš[…]	(2)	(2)	(2)	(2)	2	2	
Dassu-karabu, boatman*	(3)	(3)		(3)			
Iddin-Ninurta, courtyard sweeper*	(4)	(4)	(4)	(4)			
Habbil-ilu, farmer	5	5	5		(4)	8	1
Sebitti-nada, palace auxiliary	6	6	6	5			
Hablu-banutum, Elamite	(7)	(7)		6	3		
Nanaya-eriš, fisherman	(8)	(8)					
Šimanni-ili, Babylonian		9	3	8		(7)	
Šamayutum						3?	
Surarum, son of Ubarrum						4	
Habzazu, palace auxiliary					(4)	5	2
Nergal-gamil, son of Iddin-Adad						9	
Ea-eriba					(4)		3
Gimil-Gula, herald					5		
unclear		10		7		6	4

TABLE 4.20. *ešertu*-workteams in the Tell Khaiber archive.

have not been able to identify any judges, the memo 1096:25 and letter 1114:01 show that miscreants were identified and court cases conducted there. Other palace agents and functionaries—merchants, messengers and eunuchs—that appear in the Schøyen tablets have not yet been found in the Tell Khaiber archive either. The Fortified Building and its occupants were kept clean by sweepers and washermen, while boatmen were essential to the delivery of grain and life in the marshes more generally. But there was apparently no need for specialist water-drawers or barbers.

Finally, the wide social divide between Tell Khaiber and the palace is also apparent in the types of temple personnel and performers documented at each place (Table 4.19). One of the two Tell Khaiber priests, Arad-Bel-Akusi, is presumably the same individual who occurs in the Schøyen tablets as partner of Abi-lišir, priest of Ninurta, along with other high-

Type	Tablet	Tablet group	People	Description in heading
Delivery	1114:48	309-SC	farmers, women	Deliveries of farmers, palace men
	1096:47	309-N	mixed principals, farmers, and women	(missing)
	1096:51	309-N	principals	—
Delivery*	3064:26	300-C	farmers, principals	(missing)
	3064:51	300-NE	principals	—
Flour	3064:48	300-E	principals	—
	1114:40	309-SC	principals	—
	1124:01	309-SE	women, principals	Deliveries [of …] palace men
Flour/grain	3080:27	300-NC	principals, farmers	(missing)
	1124:02	309-SE	principals?	—
Grain	1096:50	309-N	farmers, women, principals	—
	1114:36	309-S	mixed principals, women, and farmers	—
	3064:83	300-E	principals, farmers	—
Grain'	1114:05	309-W	outliers	—
	1114:17	309-W	outliers	—
Grain*	3064:52	300-NE	principals	—
	1124:03	309-SE	principals	—
Other	3064:74	300-N	principals	—
	3080:06	300-N	principals	—
Receipts	1124:05	309-SE	farmers, women	Receipts of […]
	1124:04	309-SE	women	Receipts of palace servant-women
Daily receipts	3064:67	300-NE	farmers	Receipts of farmers
	3064:72	300-N	farmers	—
	3064:128	300-SC	women	—
Unclear	3080:04	300-NC	outliers	(missing)

TABLE 4.21. Types of workers in ration lists, flour and grain lists and delivery accounts at Tell Khaiber.

status men remitted from their *miksu*-dues.[92] Musicians were also on hand, whether for secular entertainment or religious ceremonies.

Workteams and professional groups

In fourteen long receipt lists and tables, and six memos, workers are explicitly or implicitly assigned to an *ešertu* 'decury' or workteam of ten (Tables 4.6, 8, 9). The ten men (or more or less) may be identified by patronym and/or profession, followed by a summary line stating 10^{-ti} PN, '*ešertu* of PN'. Where the workteam includes a professional group, the occupation of the first man is given and those following are described as TAB.A.NI = *tappašu* 'his partner'. Some individuals are both *ešertu*-leaders and professional group leaders. In most cases, *ešertu*-membership is relatively stable, enabling confident restoration of damaged passages in the long receipt lists. This also allows the lists to be clustered according to the order of the *ešertu*-workteams they contain, even when the decury leader is not explicitly named (Table 4.20).[93] Perhaps not surprisingly, the tablets found together are most similar to each other.[94]

As the fluidity of these receipt lists suggest, and the memos show explicitly, men were regularly moved around

[92] Dalley 2009: no. 384.

[93] Where the *ešertu*-teams never have a named leader, I have provisionally named them after the final member of the group, marked by * in Table 4.20, where the implicit *ešertus* are shown in parentheses. On the reverse of 3064:135 the farmers' team is named as such without individuals being listed, in a damaged sequence that also seems to list known *ešertu*-leaders.

[94] The more fragmentary 3064:136 starts with Dalilu's workteam and then breaks off. The remains of 3064:120a start with Hablubanutum's team; the second, unclear, is perhaps Habzazu's. The order of names on 1086.48 and 3006:01 most closely matches 3064:33, which contains the names of farmers followed by auxiliaries.

ešertu-workteams. Most clearly, the memo 3064:129 assigns at least five men to Dassu-karabu's workteam, noting that he is subordinate to Habzazu, while 3064:76 moves another half-dozen to 'the palace', 'the fishermen' and 'the palace auxiliaries' in ones, twos and threes. 3064:94 simply names two of the famers, 1114:14 lists six ÉRIN.MEŠ DUMU.MEŠ LÚ, 'workers, sons of (free) men', who belong to one Abi-ili's *ešertu*, including two of his brothers. Conversely, 3064:73 names seven men who are currently 'surplus', *watar*. Only a few of the individuals in these memos can be identified, even tentatively, with those in the long receipt lists.

Conversely, many members of the core *ešertu*-workteams, whom I shall collectively denote as the principal workforce, also dominate the other types of lists and flour delivery accounts (Table 4.21; see commentary to Table 4.6 for definition of types). Here, however, they appear seemingly in random order, with the frequent exception of the farmers' workteam and two small groups of GÉME É.GAL = *amāt ēkalli*, literally 'palace servant women'. Even so, whereas in the long grain receipt lists the farmers are always led by Habbil-ilu, in these documents any one of them may be listed first.

As Table 4.21 shows, the flour delivery accounts, and the *hargallû*-flour/grain lists minimally record members of the principal workforce, sometimes also the farmers' *ešertu* at the start or end of the document. The farmers in turn may be followed by one or other of the women's groups. Alternatively, farmers, women and other members of the principal workforce may be mixed in with each other individually. The few Grain* and Other receipt lists exclude women and farmers, while the (daily) receipt lists are apparently for those groups only. The few Grain' and Unclear receipt lists seem to name outlier individuals who do not feature elsewhere in the archive.

Relationships with the palace

In the headed lists discussed so far, members of the principal workteams are sometimes described as LÚ/GÉME.MEŠ É.GAL, 'palace men/servant-women' (see Table 4.21). At the same time, headed memos categorize the same demographic as ÉRIN.MEŠ, 'workers' (Table 4.9), even while documenting the movement of small groups to, and possibly from, the palace.[95] And we have already seen that over twenty men belonged to the palace auxiliary guard, ÉRIN.TAH É.GAL (Table 4.17). In my view this does not mean that any of these individuals were high-status courtiers; their professions belie that interpretation. Rather, these terms indicate that they received rations from the palace in exchange for their labour, as these very documents show.

One plausible interpretation is that the document types in Table 4.21 record their production of high-value flour from grain that was provided to them by palace authorities, which was then delivered to the palace according to quotas recorded in daily and monthly delivery accounts.[96] The memo 1114:47 records family members deputising for three farmers in the production and delivery of flour, while 3080:03 explicitly refers to 'barley by the royal measure', ŠE LUGAL (Fig. 4.7).

This leaves us with the tax (or revenue) accounts, in which *muškēnu*-people or their representatives pay one-third of their harvests to the palace (Table 4.22). Only 44 sets of names are preserved in these very fragmentary documents. On the 11 occasions when *šibšu* or *miksu* is paid on behalf of someone else, four of the seven legible names belong to known farmers. Of the remaining 33, four are explicitly named as farmers or farmers' sons, and four more have names known from the farmers' *ešertu*-workteam. Similarly, ten entries can be plausibly assigned to members of the principal workforce, eight to individuals whose names I have been able to identify only once elsewhere in the archive, and seven whose names do not recur at all. A further seven fragmentary names cannot be identified.

In short, between a tenth and a quarter of the attributed *šibšu* and *miksu*-payments were made by or for farmers, and similar amounts again by other members of the principal workforce. What are we to make of this?

The classic model of Old Babylonian palatial economy (Renger's Palastgeschäft) argues that there were two types of royal agricultural regimes: the directly controlled royal reserve, *eqel ēkalli*, and tenured subsistence fields, *šukussu*, held in return for state service by people who would otherwise receive rations. Dues were payable on both types of land, but the technical terminology of royal revenue collection was highly variable and localised: no earlier set of terms and practices maps neatly onto the Sealand evidence.[97] However, as Baptiste Fiette has suggested, the regime operated by Hammurabi's provincial officials in Yamutbal, the former kingdom of Larsa, after its conquest in 1762 BCE may well have been its precursor.[98]

According to Fiette's detailed study of the famous Šamaš-hazir correspondence and related documents, the royal reserve was the responsibility of provincial governors.[99] They provided tools, seeds and labour to *iššiakku*-farmers, who worked the land in return for rations. The governors paid a third or a half of the harvest to the crown each year, as *biltu*-duties. By Sealand times, Fiette argues, this duty was known as *šibšu*—a term also well attested in Mari, Eshnunna and elsewhere in the Old Babylonian period. Meanwhile, particularly favoured palace dependents could be allocated subsistence fields

[95] 3006:17, 3064:13, 3064:76.

[96] Note the hundreds of fragments of flat stone querns, grinders and pounders found in the Fortified Building, especially in Rooms 316 and 616 (see pp.178–86).

[97] Ellis 1974; Mynárová and Alivernini 2020; De Graef 2020; Goddeeris 2020; Boivin 2016a; 2020a; 2020b.

[98] Fiette 2020: 325.

[99] Fiette 2018a; 2018b; 2019; 2022.

Tablet	Tablet group	Type	Usable entries	Designated farmers	Farmers' substitutes	Possible farmers	Other principals
1096:26	309-E	*šibšu*	1	—	—	—	Sin-šemi, son of […]
1096:40	309-E	*miksu*	26	Ili-ya'u for Sin-leqi-unninni Uṣi-ana-nurišu	Ili-eriš for Sin-leqi-unninni Ili-iqiša for Sin-leqi-unninni […] for Habbil-ilu	Ilanutum, son of Iddin-Erra Ili-iddinam, son of Ukkulu-Naze	Arad-Sin for […] Beliyatum, son of Sin-išmeanni Dassu-karabu, boatman Qišti-Amurru for […]-Sin Silli-Sin, shepherd, for Sin-bel-kali Taribatum for […]
1096:41	309-E	*šibšu*	6	—	—	Ali-tillati	Arad-Ea Silli-Šamas, son of […]
1114:04	309-W	unclear	11	Ili-ya'u for Sin-leqi-unninni Uṣi-ana-nurišu	—	Ahi-illikam	Damiq-Šakkan, chief smith

TABLE 4 22. Farmers and other likely members of the principal workforce in tax accounts at Tell Khaiber.

under *ṣibtu*-tenure instead of receiving rations. They were to live off this land, either by farming it directly or by contracting *iššiakku*-farmers to do the work for them. In return these *muškēnū* contributed both regular labour to the state, in the form of *ilku*-service (or paid for substitutes), and a fraction of the harvest, known as *miksu*. In other words, different members of the same profession, in the same community, might be ration-recipients or *muškēnu*-tenants (and individuals might change status in the course of their lives). And *iššiakku*-farmers might cultivate land in the royal reserve, in exchange for rations, and/or work their own tenured land as *muškēnu*-dependents, and/or be contracted by other *muškēnū* to farm on their behalf.

This model certainly fits the Tell Khaiber evidence, where, for instance, most boatmen, reedworkers and shepherds receive rations but some pay *miksu*-dues on their harvest; while a group of ten *iššiakku*-farmers, organized into an *ešertu*, regularly receive rations; deliver harvest revenues as *muškēnū* or have subordinates do it for them; and pay *šibšu*, perhaps on behalf of their superiors.[100] I return to the question of superiors on pp.95–6.

Ethnicity, religion, migration: hints from personal names

The Tell Khaiber community, as attested in the archive, comprised people with local roots and those from much further afield. Most often family origins are discernible through naming practices, via theophoric elements referencing members of regional panthea. Geographical designations are used much more rarely, and interestingly these tend to belie the personal names themselves. Finally, as we shall see, the overall image of diversity generated here, while sharing much with the unprovenanced Schøyen tablets, also shows significant differences.[101]

Not surprisingly the largest proportion of theophoric names reference the gods of the southern cities: overwhelmingly Sin of Ur, just 20 km away. But we also find Ea of Eridu; Anu, Ištar and Nanaya of Uruk; Šamaš of Larsa; and Naze (Nanše) of Šurgul. The fishermen, boatmen and bird-catchers have local, marshland names such as Ea-abi and Sin-iddinam. One palace auxiliary is even called Ištu-tamtim-Anu, 'Anu-from-the-sea'; another man is Mar-Eridu-ali, 'Son of Eridu, my city'. Some local names are attached to ethnonyms from further afield: for instance Nur-Ea the Elamite, or Ṭeh-tamtim-išemme (lit. 'He listens next to the sea') of Babylon. I understand these as *nisba*-names, indicating ancestry or family origin, rather than labels for very recent incomers.

A rather smaller number of theophoric names reference deities from mid-Babylonia: Adad of Karkar, Gula of Isin, Ninurta and the Sebitti of Nippur, and Sugallitum of Zabalam. Enlil of Nippur is notably absent, given his prominence in the Schøyen offering lists.[102] The gods of the northern cities are perhaps better attested: Marduk of Babylon, Uraš of Dilbat, Nergal and Erra of Kutha, Ištaran of Der, and Ištar-Akkaditu or Belet-Akkade. We should probably include the Amorite god Amurru in this list, and the obscure Bel-Akusi. Neither of the two men who are explicitly named as 'sons of Babylon', DUMU KÁ.DINGIR.RA^{ki}, have particularly northern names: the just-mentioned Ṭeh-tamti-išemme and the *ešertu*-leader Šimanni-ili.

Most of the people with Elamite origins are recognizable only from the label 'Elamite' attached to their names, written ^{lú}ELAM.MA or syllabically. They all have unremarkably Akkadian names, though with the exception of an Adad-[…], they conspicuously avoid Babylonian theophoric elements:

[100] Although the very damaged *šibšu* accounts do not explicitly document farmers paying tax, the fragmentary memo 3080:02 records ŠE *ši-ib-šu* […] *a-na* É.GAL, '*šibšu*-barley […] to the palace' paid by an unknown *iššiakku*-farmer and at least one partner. There is not enough evidence in the Tell Khaiber accounts to confirm or refute Boivin's hypothesis that '*šibšu*-payers were less close to the palace than *miksu*-payers' (Boivin, 2020a: 289).

[101] See Zadok 2014; also relevant is Boivin 2018: 231–7. The Tell Khaiber names glossary is at https://oracc.org/urap/qpn-x-people.

[102] Boivin 2018: 197–8.

Name	Identifier	Tell Khaiber	Schøyen tablets
Ahi-illikam	carpenter	Receives grain (as rations?) in Surarum's *ešertu*; receives *hargallû*-grain and delivers flour (1096:47, 48, 51, 58; 1124:03; 3064:49, 52, 53, 57, 83)	One of 14 carpenters in a list of craftsmen (Dalley 2009: no. 381, year I)
Ahuni, Anzak-rabi(at), Habbil-ilu and Iddin-ya' utum	various	Ahuni: receives rations via Dummuqum (3064:33); Anzak-rabiat: gardener, delivers milled barley (3064:51); Habbil-ilu: see below; Iddin-ya'utum: pays *miksu*-tax for Iqiša-ili (1096:40)	Four of five men ordered to deliver grain to the town Quppat-Nikkal (Dalley 2009: no. 1, year I)
Arad-Bel-Akusi	priest (of Ninurta)	Receives grain (rations?) in Habzazu's *ešertu*; delivers flour (1096:48, 51; 3006:01; 3064:33, 57, 120a)	Is exempted from *miksu*-tax; pays *miksu*-tax in Kar-Šamaš (Dalley 2009: nos. 384 year N, 443)
Arad-Sin	father of Eribu	Listed with 10 other men who are perhaps 'of the palace', ˹*ša*¹ É.[GAL?] (memo 3064:13)	Delivers calf carcass to the palace (Dalley 2009: no. 344 year N)
Arad-Šamaš	shepherd	Receives grain (as rations?), delivers milled barley (3080:04, 3064:51)	Sends single ewes to the palace via Nanna-mansum (Dalley 2009: nos. 18, 21, 22, years E and F)
Beli-iddinam	leatherworker	Receives grain (as rations?) in Šamayutum's *ešertu* (1096:47, 48; 1114:36; 3064:33, 57, 83, 135 year J)	One of at least 27 leatherworkers, with Kussašu-gamil, in a list of craftsmen (Dalley 2009: no. 381, year I)
Habbil-ilu	farmer	Receives rations, delivers *hargallû*-flour to the palace, pays *miksu*-tax; mentioned with Ili-iqiša in a memo (1096:40, 47, 50; 1114:48; 1124:05; 3064:33, 57, 67 year K, 122, 123)	Pays *šibšu*-tax in the town Kiribti-Ellile (Dalley 2009: no. 442)
Ili-iqiša	farmer	Receives rations, delivers *hargallû*-flour to the palace; mentioned with Habbil-ilu in a memo (1096:58; 3064:33, 48, 49, 53, 57, 67 year K, 72, 83, 122, 123; 3080:27)	Pays *šibšu*-tax for Ahiya'utum in the town Nur-šarri (Dalley 2009: no. 415); Pays *šibšu*-tax in the town Kiribti-Ellile as a 'servant of the palace' ARAD É.GAL (Dalley 2009: no. 442)
Kalbiatum	father of Arad-Ea	Arad-Ea receives rations (3006:01, 3064:120b)	Mentioned in letter by senior official Ṭab-kidenšu as the father of his (unnamed) young servant (Dalley 2009: no. 5)
Kussašu-gamil	leatherworker	Delivers(?) *hargallû*-flour, named as 'royal leatherworker', AŠGAB LUGAL (1114:40)	One of at least 27 leatherworkers, with Beli-iddinam, in a list of craftsmen (Dalley 2009: no. 381, year I)
Nuratum	(senior official)	Superior of eight men who often work together; receives payments of silver and grain; receives letter from Uraš-ibsasa; mentioned in letter from Uraš-ibsasa's son Adad-šemi about transporting sheep's wool he is responsible for (1096:52, 1114:06, 18, 21, 22, 39, 41, 43; 3064:33, 49, 53, 106, 135, year J)	Receives delivery of 1 sheep (Dalley 2009: no. 17, year E)
Ṭab-kidenšu	(senior official)	Receives *hargallû*-grain, named as *ša tillati*, 'of the auxiliary guard' (1114:05)	Author of two letters 'of a type written to a senior official to a king', including one mentioning Kalbiatum (Dalley 2009: nos, 4, 5)
Uraš-ibsasa	(senior official)	Gives orders in letters to scribes and Nuratum and is mentioned in one by his son Adad-ilum (1096:52; 1114:06, 45)	Gives order in letter to take *šibšu*-tax of Dur-Ninurta town; receives ghee (Dalley 2009: nos. 14, 104 year J)

TABLE 4.23. Possible prosopographical connections between the Tell Khaiber archive and the Schøyen tablets.

Atanah-ili, son of Etena-pišu; the *ešertu*-leader Hablu-banutum; Gamilu-šemi, Šanumma, and Ubarrum, son of Nur-Ea. One of the auxiliary guards is called (in Akkadian) Nur-Inšušinak, after the major deity of the Elamite pantheon, and a second is Ṭab-kidenšu. A small group of men and women, without ethnonyms, share the Elamite goddess Šimut in their otherwise Akkadian names: Imdi-Šimut, Kuri-Šimut, Ṣilli-Šimut. Finally, there is a short sequence of purely Elamite names in the fragment 3064:63: […]-hater, son of Šimut-[…], followed by the son of Kukšia.

The Kassite deities, meanwhile, appear in the purely Kassite names Burra-Sah, Burra-Šugab, and Burrun-dassi, as well as the Akkadianising Damiq-Šumuqan. Also from the far north are the Hurrian gods Haldi (in Merri-Haldi), Išhara (in the woman Ummi-Išhara) and Šeriš (Šeriš-ilum and a damaged name). Finally, Gulf connections are hinted at through Dilmunite theological commitments: two men with classically Akkadian names have (damaged) patronyms featuring the deity Anzak, while a gardener has the Akkadianised name Anzak-rabiat, 'Anzak is great', and palace auxiliary is called Abi-Laguda, 'Laguda is my father'.

All of this suggests a significant degree of assimilation—although there could well be purely Dilmunite, Elamite, Hurrian, and/or Kassite names amongst those I have not been able to read correctly. Coincidentally or not, there is a preponderance of non-Babylonian names amongst the palace auxiliaries.

Prosopographical links with the Schøyen tablets

About a hundred names—around a quarter of those attested at Tell Khaiber—are also identifiable in the Schøyen tablets.[103] For the most part, it is impossible to tell if the same individuals are meant, as many are commonly found throughout the Old and Middle Babylonian historical record. However, where the same profession, patronym or activity is found in both archives, there is a possibility that we are dealing with a single person. That likelihood increases if the name is a more unusual one. Boivin already tentatively identified eight possible matches, five of which are borne out.[104] I suggest a further dozen or so (Table 4.23).

As can be seen, these fall into four categories, more or less secure: first, the priest Arad-Bel-Akusi and the senior officials Nuratum, Ṭab-kidenšu and Uraš-ibsasa are the most convincing matches; I return to Nuratum and Uraš-ibsasa below. Next are the two farmers Habbil-ilu and Ili-iqiša. The fact that they both pay *šibšu*-tax (on others' behalf?) in Kiribti-Ellile suggests that this might have been the name of Tell Khaiber; however, the fact that Ili-iqiša also does so for Ahiyaʾutum in Nur-šarri reminds us that people could and did move around, so we should not be over-confident in plumping for either toponym. Third, of the three craftsmen who appear in the palace roster, the unusually named Kussašu-gamil is most likely to be our man at Tell Khaiber; Beli-iddinam and Ahi-illikam are less secure, given the ubiquity of these names. Finally, the other men—Ahuni, Anzak-rabiat, and Iddin-yaʾtum; Arad-Sin, Arad-Šamaš and Kalbiatum—seem least likely, based only on circumstantial evidence.

Archival practice and the Sealand economy

In this section I give a brief overview of the range of commodities covered by the Tell Khaiber archive. I attempt to quantify the amount of grain the community produced each year, for the palace and themselves, and how much was processed into flour. These figures can also be used to estimate the storage capacity needed and the amount of land under cultivation. I then explore how much people were paid for their labour, in grain and in silver. Finally, I look for patterns in the distribution of records and activities over the archival and agricultural year.

Commodities

As will already be obvious, grains and grain products dominate the Tell Khaiber archive. Twenty-two of the headings on the archival documents refer to *hargallû*-grain and *hargallû*-flour and a further eight to ŠE, 'barley' (Tables 4.6 and 8). There are also two references to *kunāšu*, 'emmer wheat' in damaged tax accounts (3064:15 and 71).

As Odette Boivin discusses, *hargal(l)û*, a term which is attested only rarely outside the Babylonian Sealand, may pertain to either a variety or a quality of grain.[105] The Tell Khaiber documents do not help clarify that matter but they do point to a very clear distinction in use contexts between barley and *hargallû*, also apparent in the Schøyen tablets.

[103] Namely Abi-ili, Abu-ṭabu, Ahi-illikam, Ahuʾatum, Ahušina, Ali-tillati, Apil-Amurru, Apil-Šamaš, Arad-Ištar, Arad-Kinuni, Atanah-ili, Atanah-Šamaš, Atta-ilamma, Bahu, Belšunu, Dassu-karabu, Dummuqu, Ea-abi, Ea-eriba, Ea-kidinnišu, Ea-šarrum, Egi-ana-mešu, Eribu, Gimil-Gula, Gubbuhu, Habbil-kenu, Huzalum , Iballuṭ, Ibašši-ilum, Ibbi-Sin, Ibni-Amurru, Iddin-Adad, Iddin-Amurru, Iddinu, Ili-ahi-iddin, Ili-eriš, Ili-iddin(am), Ili-iqulam, Ili-išm(e)anni, Ili-iyatum, Ili-ya'u, Ilima-abi, Iluni, Inbi-ilu, Inbuša, Iqulam-Šamaš, Išaggum, Itti-ili-uballiṭ, Mannu-balu-Šamaš, Mar-ešre, Mayašu, Muranu, Nanaya-eriš, Nur-Ištar, Qiš-kubi, Qišti-Amurru, Qišti-Ea, Qištum, Quttunu, Ruqi-lumur, Sanqum, Sin-ahi-iddin(am), Sin-bel-apli, Sin-eriš, Sin-gamil, Sin-iddin(am), Sin-iqiša, Sin-iqulam, Sin-išm(e)anni, Sin-mušallim, Sin-nadin-šumi, Sin-napšera, Sin-šemi, Sizzu, Surarum, Ṣilli-Adad, Ṣilli-Sin, Ṣilli-Šamaš, Ṣilli-Šimut, Ša-ili-bana, Šamaš-rabi, Šelebu, Šep-Adad, EŠeriš-ilum, Šumman-la-Adad, Šummuhu, Šunu-gamilu, Taribatum, Taribu, Ṭab-Addaru, Ubarrum, Ukkulu-Naze, Ummi-ṭabat, Uṣi-ana-nur-Adad, and Uṣi-ana-nurišu.

[104] Boivin (2018: 71) correctly identifies Ahi-illikam, Arad-Šamaš, Beli-iddinam, Habbil-ilu, and Ili-iqiša. The palace carpenters Egi-ana-mešu and Uṣi-nur-Adad are unlikely to be the same as the boatman and *miksu*-payer attested at Tell Khaiber, while the two names in the third suggested comparison are both too damaged to be conclusive.

[105] Boivin 2018:137. It is not impossible that *hargallû* refers to soybean, Akkadian term hitherto unknown and now identified in residue form at Tell Khaiber (Chowdhury et al. 2021).

Type	Tablet	Complete entries	Sum of complete entries (litres)	Mean of complete entries (litres)	Median of complete entries (litres)	Damaged entries
miksu-tax	1096:40	21	19,285	918	720	4
šibšu-tax	1096:41	23	96,531	4,274	1,096	6
tax unknown	1114:04	12	14,910	1,243	1,356	0
	3064:18	29	30,101	1,038	1,030	13
Total			160,827			

As Tables 4.6, 7 and 8 show, *hargallû*-grain occurs almost exclusively in grain receipt lists, while *hargallû*-flour appears in delivery lists and accounts. By contrast, the large majority of receipt lists, and all tax accounts are made in barley (and secondarily emmer).

Some commodities are not directly attested in the archive but their role in the local economy can be inferred from the existence of related professions (see pp.79–82), and references in letters (Table 4.10). Thus we find fisherman and bird-catchers, woodworkers and reedworkers, all presumably active in the marshes surrounding the settlement. In the fields and orchards, shepherds provided wool and leather, and doubtless meat and milk products, while date-palm gardeners and oil-pressers harvested and processed their respective foodstuffs.

Metal and stone artefacts found in and around the Fortified Building and neighbouring houses show that the smiths and a seal-cutter might have been working their raw materials onsite. The archaeologically abundant pottery vessels, on the other hand, seem to have been delivered from elsewhere. The apparent absence of potters in the archive explains the two receipts for a variety of small containers, bowls and drinking vessels, almost 700 in total (1096:55 and 3064:65).[106] These must have represented significant shipments.

Grain quantifications

How much grain was documented in the archive? We can use the better-preserved tax accounts to estimate the total harvest yield at Tell Khaiber (Table 4.24). As the palace systematically took one third of the harvest, even when individual yields are not preserved, they can be calculated with confidence, either as 1.5 of the *muškēnu*'s share or as 3 times the palace share (with the usual estimate of 1 *qû* ≈ 1 litre). The totals, means and medians of these 'complete' entries are shown in columns 3–5. Some producers in 1096:41 were particularly productive, skewing the mean, but the median harvest per individual was consistently around 1,000 litres +/- 30%. I therefore made two estimates of total yield per tablet. The minimum, in column 7, is calculated as the sum of the complete entries plus the sum of the partially preserved ones, using the largest preserved entry in each row to calculate minimum total yield (=1.5 × *muškēnu* or 3 × palace). Then, I estimated the sum of the missing entries using the median values of the complete entries and added this to the minimum estimate. Finally, I used an online convertor to estimate the weight of these large volumes of barley in metric tonnes.[107] For comparison, a modern ISO-standard 20 ft shipping container, measuring 5.87 × 2.35 × 2.38 m externally, has an internal volume of 33.1 cubic metres (33,100 litres) and can bear a maximum load of 28.23 metric tonnes.

In short, each *muškēnu* at Tell Khaiber typically supplied the palace with 350–400 litres of grain per harvest. If we suppose for a moment, purely as a thought experiment, that 1096:40 and 1096:41, which were found together, represent one year's *šibšu*- and *miksu*-payments, then the settlement as a whole was producing over 75 metric tonnes of barley a year, occupying a volume of around 126.7 cubic metres—almost enough to fill four modern 20 ft shipping containers. A third of that volume was sent to the palace each year: some 25 metric tonnes, over 1¼ shipping containers' full. This is the same order of magnitude as the barley deliveries to Larsa in the late nineteenth century BCE, when, as Tina Breckwoldt has shown, seven neighbouring settlements each shipped between 32 and 130 metric tonnes to central storage facilities in the city.[108]

The barley flour delivery accounts are commensurate with this picture: see Table 4.25, where complete tablets are marked with '*'. In these documents, individual entries typically average 250–500 litres, with one outlier that falls into the same range as the tax accounts (3119:03). The total grain each record deals with ranges from about 3.5 to 8 metric tonnes, roughly 5–10% of Tell Khaiber's putative annual barley yield, much less than half of a modern 20 ft shipping container. It is unclear whether this was delivered to the palace as part of the community's *šibšu*-dues or on top of them.

The production of *hargallû*-flour represented a tiny proportion of the volume of grain flowing through Tell Khaiber (Table 4.26), even on a generous estimate. Document types that probably record this commodity together account for less than 6,500 litres of flour and its grain precursor, under 4 metric tonnes, which is about five percent of the estimated barley harvest. This volume would fill just less than 1/5 of a modern 20 ft shipping container.

Where might all this grain have been stored? In her study of grain storage at nearby Larsa during the reign of Rim-Sin I

[106] Calderbank 2020; 2021a; 2021b.

[107] https://www.aqua-calc.com/calculate/volume-to-weight (accessed August 2021), using the conversion factor 1 litre = 0.6 kg barley.

[108] Breckwoldt 1995/96: 66–8.

Min. sum of damaged entries	Min. original total (litres)	Missing entries	Est. sum of missing entries (litres)	Est. original total (litres)	Est. weight equivalent (metric tonnes)
1,337	20,662	3	2,160	22,822	12.6–13.9
7,296	103,827	0	—	103,827	63.2
0	14,910	1	1,356	16,266	9.1–9.9
17,835	47,936	2	2,060	49,996	29.2–30.4
26,468	187,295		5,576	192,911	114.0–117.5

TABLE 4.24. Estimated harvest yields at Tell Khaiber, based on tax accounts.

Tablet	Complete entries	Sum of complete entries (litres)	Mean of complete entries (litres)	Damaged/ missing entries	Est. sum of damaged/missing entries (litres)	Est. original total (litres)	Est. weight equivalent (metric tonnes)
3064:12	10	3,610	361.0	7+	2,527+	6,137+	3.68+
3064:51*	19	10,030	527.9	6	3,167	13,197	7.92
3064:89*	9	2,320	257.8	13	3,351	5,671	3.40
3119:03	5	4,500	900.0	1+	900+	5,400+	3.24+
Total	43	20,460			9,945	30,405	18.24+

TABLE 4.25. Estimated barley flour production at Tell Khaiber.

Type	Tablet	Sum of complete entries (litres)	Complete entries	Mean of complete entries (litres)	Damaged/ missing entries	Est. sum of damaged/missing entries (litres)	Est. original total (litres)	Est. equivalent (metric tonnes)
Delivery	1096:47	710	72	9.9	1	10	720	0.45
	1096:51	17.5	6	2.9	6	16 5	35	0.02
	1114:48	230	13	17.7	0	—	230	0.14
Flour	1114:40	450	45	10.0	0	—	450	0.27
	1124:01	100	10	10.0	0	—	100	0.06
	3064:48	380	30	12.7	0	—	380	0.23
Flour/grain	1124:02	140	14	10.0	0	—	140	0.06
	3080:27	220	23	9.6	0	—	220	0.13
Grain	1096:50	450	34	13.2	34	450	900	0.54
	1114:36	320	28	11.4	18	206	526	0.32
	3064:83	440	45	9.8	0	—	440	0.26
Grain'	1114:05	35	32	1.1	9	10	45	0.03
	1114:17	34	29	1.2	4	5	39	0.02
Grain*	1124:03	170	2	85.0	8	680	850	0.51
	3064:52	780	16	48.8	2	98	878	0.53
Grain/other	3064:74	100	10	10.0	2	20	120	0.07
	3080:06	355	33	10.8	5	54	409	0.25
	Total	4,391.5				1,549.5	6,481	3.89

TABLE 4 26. Estimated *hargallû*-flour production at Tell Khaiber, based on lists and accounts.

in the late nineteenth century BCE, Tina Breckwoldt was able to document the existence of a large warehouse, É.KIŠIB.BA É.ÚS.GÍD.DA = *bīt kunukki (ša) bīt ašahhāti*, in the central square with capacity for at least 1,156 *kurru* or *c.*209 metric tonnes. When this filled up with arrivals from neighbouring agricultural settlements, a temple granary (at least 221 *kurru*, *c.*40 metric tonnes), and two privately owned storerooms (at least 230 and 278 *kurru*, *c.*41 and 50 metric tonnes) could also be put to use.[109] Contemporary letters suggest that the grain was stored and transported in standard-sized cloth sacks of perhaps 1 *parsiktu*, 60 litres.[110]

The Larsa tablets do not describe storage arrangements in the agricultural centres, so, for want of a different model, let us for argument's sake, imagine that at Tell Khaiber the grain was deposited in the Fortified Building, at least temporarily. Rooms 99–109, the range of small, long, single-entrance rooms between the Eastern Passage and eastern exterior wall of the northern unit, are superficially very similar to the storage rooms in two late third-millennium fortified buildings that Tate Paulette interprets as institutional storehouses: namely Naram-Sin's 'palace' at Tell Brak in northern Mesopotamia, and the Ur III period Enunmah at Ur, much closer to hand.[111] As each of these Rooms 99–109 has a floor area of *c.*12.2 square metres, the 127 cubic metres of barley estimated above would fill them all to a depth of about a metre. However, in practice, the *tannurs* found in around half of these spaces suggest human habitation and cooking, while it would have been challenging to carry heavy sacks of grain down the very narrow Eastern Passage itself.

Estimating population size

How much labour was needed to manage that output, and how many mouths would it feed? We can attempt a minimum estimate, based on Seth Richardson's work. He used the much richer documentation from Old Babylonian Larsa—whose territory included the marshlands around Tell Khaiber—to calculate that land producing 6.6 million litres of barley required 1.9 million labour days per annum, for tasks encompassing land preparation, planting, crop maintenance and harvest.[112] That is, one agricultural labour day yielded 3.44 litres of grain. If we continue the fiction that the best preserved *miksu* and *šibšu* accounts, 1096:40 and 1096:41, together represent Tell Khaiber's typical annual yield (Table 4.24), these 126,649 litres of barley would have required some, 37,250 labour days to produce, namely 124 workers for 300 days each. And indeed, the longest grain receipt lists at Tell Khaiber, 3064:33 and 3111:01, do account for roughly this number of workers, namely 108 and (at least) 121 respectively.

Conversely, inspired by Rosemary Ellison's classic analysis of the nutritional content of barley rations, we can guesstimate the number of people that Tell Khaiber's crop yield could support—bearing in mind that, even for palace dependents on rations this would have been supported by hunted fish and wildfowl, as well as a range of domestically grown plant foods.[113] Data available to her put the calorific content of 1 litre of barley at 2,700 calories, enough to fuel a reasonably active adult man for a day if supplemented by nutritionally varied foodstuffs to prevent Vitamin A and C deficiencies. Let us say, then, that 360 litres of barley could sustain a healthy adult for a year. Let us also suppose that just under half of the Tell Khaiber crop, some 63,000 litres, were available for feeding its workers and their families, given that a third went to the palace, and some was needed for seeding and cattle feed. In that case, we arrive at an adult population estimate of 175 people, about 1.5 times the number of labour-years needed to produce the crop. Now, there were presumably plenty of people associated with Tell Khaiber who were only peripherally involved in agricultural labour, if at all, as the variety of their professional titles attests (see pp.79–93). All told, a total all-age population of some 300–500, including infants, children and economically inactive adults, seems like a reasonable first approximation.

Land under cultivation

Following Boivin, we can use the harvest yield figures to estimate the amount of land under cultivation around Tell Khaiber (Table 4.27).[114] As she notes, based on Marten Stol's work with Old Babylonian evidence, it is reasonable to assume an average yield of 20 *kurru* per 1 *buru* of land.[115] This conveniently approximates to 1,000 litres per hectare (an area of 100 × 100 m). The results are surprisingly small. Seth Richardson, meanwhile, calculates that fields under cultivation in Old Babylonian Larsa yielded more like 800 litres per hectare.[116] Stol estimates the average area of an Old Babylonian subsistence field to have been 1 *buru*, *c.*6.5 ha.[117] The mean areas estimated here are all significantly less than that, on both Stol's and Richardson's models, even in the tax accounts which we might expect to have represented the entire holdings of individuals.

It is instructive to compare these estimates with those made by Boivin for the Schøyen Collection tax accounts.[118] I have recalculated those values in modern units and added totals for reasonably complete tablets, which Boivin does not provide (Table 4.28). As some individual entries are

[109] Breckwoldt 1995/96: 75–7.

[110] Breckwoldt 1995/96: 65–6 on AbB 6 219 = ARCHIBAB T16205. See also CAD N/I, 380 s.v. *naruqqu* 1b); S, 168–9 s.v. *saqqu* 1.

[111] Paulette 2015: 78–82, 157–61; 2016: 93–5.

[112] Richardson 2015: 294.

[113] Ellison 1981.

[114] Boivin 2018: 134–5.

[115] Boivin 2018: 134; Stol 2004: 840–5.

[116] Richardson 2015: 288–91.

[117] Stol 2004: 844.

[118] Boivin 2018: 135.

Type	Tablet	Mean complete entries (litres)	Mean area (ha): Stol model	Mean area (ha): Richardson	Est. total grain (litres)	Est. total area (ha): Stol	Est. total area (ha): Richardson
miksu-tax	1094.40	918	0.92	1.14	22,822	22.8	28.5
šibšu-tax	1094.41	4,274	4 27	5.34	103,827	103.8	129.8
tax unknown	1114:04	1,243	1 24	1.54	16,266	16.2	20.3
	3064:18	1,038	1.04	1.30	49,996	50.0	62.5

TABLE 4 27. Estimated areas of land under cultivation at Tell Khaiber, based on tax accounts.

Type	Tablet	Settlement	Year	Mean entry (litres)	Mean area (ha): Stol model	Median entry (litres)	Median area (ha): Stol	Total grain (litres)	Total area (ha): Stol
miksu	443	Kar-Šamaš	—	5,550	5.56	3,180	3.18	238,653	238 7
	448	—	—	236	0.24	135	0.14	8,246	8.2
šibšu	411	Kiribti-Ellile	F	6,747	6.75	4,658	4.66	80,961	81.0
	413	—	F	142	0.14	120	0.12	7,521	7.5
	415	Nur-šarri	I	5,066	5.07	1,026	1.03	157,042	157.0
	426	—	L	4,666	6.67	2,611	2.61	74,649	74.6
	428	Kar-Šamaš	M	875	0.88	530	0.53	28,031	28.0
	431A	Kar-šeduanni	N	2,701	2.70	565	0.57	70,230	70.2
	432	*mēreštu*-land	N	1,109	1.11	330	0.33	21,069	21.1
	434	Kar-a…	L	1,320	1.32	1,067	1.07	—	—
	441	Kar-[…]	—	4,412	4.41	1,545	1.55	—	—
	442	Kiribti-Ellile	—	1,282	1.28	900	0.90	39,756	39.8

TABLE 4 28. Estimated areas of land under cultivation in the Sealand, based on tax accounts from the Schøyen Collection.

exceptionally large, I have given both mean and median values for individual entries.[119]

Several features emerge. First, both the individual and total grain yields—and thus areas of land—estimated from the Tell Khaiber tax accounts are entirely in line with those in the settlements attested in the Schøyen Collection. They are neither unusually large, nor unusually small. Second, there is no appreciable difference between tax type: the few *miksu*-tax accounts deal with grain (and therefore land) in the same kinds of quantities as the more numerous *šibšu*-accounts. Third, the same settlement could submit wildly different grain harvests to the palace authorities from year to year. For instance, the total grain in the two accounts from Kiribti-Ellile varies by a factor of two, and the individual averages (mean and median) by a factor of five. The figures from Kar-Šamaš are even more variable. Therefore, the fact that the four most complete Tell Khaiber tax accounts give very different estimates should not in itself be a matter of concern. These accounts certainly warrant further investigation, however.

Rations and wages

How much were people paid for their labours? That question is difficult to answer, as it is mostly impossible to tell whether individuals received grain for consumption or for further production. The Tell Khaiber tablets listed in Tables 4.6 and 21 lack headings such as those found on Schøyen Collection comparanda that refer to, for instance, *še'u hargallû ša ana ṭēni amāt ēkalli imhurā*, '*hargallû*-grain that the palace servant women received for grinding'; *še'u ša kīma idīšunu ana epšēti innadinu*, 'barley that was given instead of their wages for work'; or ZAG.HI.LI NUMUN, '*sahlû*-seeds', presumably for sowing.[120] Terms such as ŠUKU^{-at} = *kurummāt(u)*, 'rations' and ŠE.BA= *ipru*, 'allowance', which occur in daily receipt lists and those for *ešertu*-workteams, are absent from Tell Khaiber too.[121]

However, if we continue to assume that each document type had the same function in both places, it seems reasonable to posit that the long lists which group grain recipients into workteams are records of ration payments. We can test this hypothesis by comparing them with seven similar documents from the Schøyen Collection, many of whose headings or subscripts explicitly state that they are ration

[119] To estimate areas according to Richardson's model, multiply the figures from Stol's model by 1.25.

[120] Dalley 2009: nos. 372, 378, 407.

[121] Dalley 2009: nos. 380, 383; 386–8, 443.

Tablet	Ration size (litres)	Recipients	Months	Daily equivalent (litres)	Heading	*ešertu*-leader
380	20	6	1	2/3	Barley rations (ŠUKU) of workmen from Ulli, that are from day 1 to day 30 of Month VI	Šamaš-šemi
386	50	4	—	1 2/3?	Allotments (ŠE.BA) for the ploughmen	—
387	400	10	1	13 1/3	Allotments (ŠE.BA) for 1 month	Kašaktu
388	20	10	—	2/3?	Allotments (ŠE.BA)	Mannu-ki-beliya
389	400	10	—	13 1/3?	—	Mannu-balu-ilišu, subordinate of Ten-huruppi
394	400	10	2nd	13 1/3	—	—
431	300	2	1	10	Allotments (ŠE.BA) for 1 month, that are from day 1 to day 30 of Month VII	—

TABLE 4 29. Recipients of monthly rations in tablets from the Schøyen Collection.

Tablet	Dalilu's *ešertu*	Burra-dabani's *ešertu*	Farmers	Palace auxiliaries	Nuratum's subordinates	Gimil-Gula's *ešertu*
3064:33/1	300	300	300	—	60–140	—
3064:49	240	240	(missing)	60	30–120	—
3064:53	250?	(missing)	150–240?	100	60–100	—
3064:123	(missing)	(missing)	100	60	—	—
3064:135	450	300–450	(missing)	—	—	60, 100
3111:01	560	(missing)	—	100–180	160	—

TABLE 4.30. Grain receipts (in litres) for six workteams in tablets from Tell Khaiber.

payments to *ešertu*-workteams for one month (Table 4.29). The equivalent daily allotments fall into two ranges: from ⅔ to 1⅓ litre; and from 10 to 13⅓ litres. There does not seem to be a quantitative distinction between ŠUKU and ŠE.BA.

Looking now at the six best-preserved long grain receipt lists from Tell Khaiber, in which the recipients are grouped by profession and/or *ešertu*-workteam, the quantities are similar (Table 4.30).[122] Just as in the Schøyen comparanda, grain is doled out in multiples of the *sūtu* (*c.*10 litres); the smaller *qû* measure which dominates the flour documents, and also occurs frequently in the tax accounts, is entirely absent. Quantities are also in the same range, namely 30–560 litres, suggesting daily allotments of 1–18⅔ litres a day if these do indeed record monthly payments too. Workteams listed earlier in each document—those headed by Dalilu and Burra-dabani—are paid most, at the equivalent of 8–18⅔ litres a day. These men, almost always listed ahead of the farmers, do not have professional titles, so perhaps they laboured full time on the fields. The more *ad hoc ešertu*s following the farmers, which include a variety of professions, may have been assembled just at peak times of the agricultural year for part-time work. Sometimes team leaders receive more than their partners; perhaps absences explain why individual members occasionally receive less.

However convincing the parallels with the Schøyen *ešertu*-ration lists, neither document type can have represented regular monthly payments all through the year, as the volumes are simply too great. As we have already seen on p. 90, according to Richardson's data an Old Babylonian agricultural labour day yielded 3.44 litres of barley, a year therefore roughly 1,000 litres. It simply was not economically sustainable to pay the workforce 10 litres a day each, every day of the year. And nor, as we have seen in examining the *miksu*- and *šibšu*-tax accounts (pp.90–1), was the harvest large enough to support a large, undocumented workforce to whom our *ešertu*-men redistributed the bulk of their allotments.

In the absence of surviving headings or dates on these long receipt lists, we must therefore fall back on their other characteristics to make sense of them. As already noted, they are noticeably different to the other document types in the archive in two respects: first, the labourers are organized into *ešertu*-workteams, many but not all of which are internally consistent from list to list; second, they document large amounts of grain in conspicuously round quantities. Together these features suggest a programmatic or planning

[122] Only the data from the first column of the multi-commodity tabular list 3064:33 are included in this table, as the second column is too damaged to yield much. The notation '—' means that the team or professional group is absent from the tablet; (missing) means the names are present but not the quantifications.

Month / Tablet group	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Total
300-NC	1												1
300-NE	1			1				2					4
300-SC			1	1	1			1		1			5
309-N								1			1		2
309-S		1		2				1		1			5
309-SE					1			1					2
309-SC			6	5									11
309-W		1	2	6									9
Total	2	2	9	15	2	—	—	6	—	2	1	—	39

TABLE 4 31. Distribution of dated tablets from Tell Khaiber by tablet group.

Month / Document Type	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Total
Flour deliveries				1				1					2
Grain receipts	1				1			2		1			5
Memos and fragments	1		1	1	1								4
Payment records		2	8	13									23
Pottery receipts								1			1		2
Ration payments								2		1			3
Total	2	2	9	15	2	—	—	6	—	2	1	—	39

TABLE 4 32. Distribution of dated tablets from Tell Khaiber by document type.

function. Perhaps they are rosters which assemble all the available workforce for a particular agricultural season, such as sowing and harvest, estimating in round numbers the grain they will require, whether for personal consumption or use in the fields. If so, the very similar 3064:49 and 53 (found together) and 3111:01 would date to within a year or two of each other, while the others document how the workforce changed over a period of years. But, as with so much of my analysis of these laconic and badly damaged records, this can be no more than a very tentative hypothesis based on a frustrating paucity of data.

Finally, as already noted, one of the Schøyen numerical lists describes a series of payments in the range 120–900 litres to 16 named individuals as *še'u ša kīma idīšunu ana epšēti innadinū*, 'barley that was given instead of their wages for work'.[123] This might be a helpful way to interpret the twenty-four payment records to single individuals, found in Letters Room 309 (Table 4.11). As the table shows, the quantities handed out range from 20 to 430 litres of barley and, in a third of the payments *c.*4 grams of silver. Together they amount to just over 2,500 litres or 1500 kg of grain and around 33 g of silver—about the weight of a bracelet and worth just £8–£16 in 2021 market prices, depending on purity. As most of the recipients do not belong to the principal workforce involved in grain and flour production, they seem not to have been ration-receiving palace dependents but free men or senior officials.

Timings

About forty of the Tell Khaiber tablets are dated to the month and day, enabling us to gain a (limited) sense of the archival year. These impressions are confirmed by the forty or so dated documents from the comparable Schøyen corpus (Table 4.5). Almost all of these are also dated to the year, demonstrating, as Boivin has already pointed out for the tax accounts, that the annual cycle seems to have been relatively consistent.[124] As Table 4.31 shows, almost all tablet groupings with dated tablets yielded dates spread across the year. This strongly suggests that the data is not skewed by, for instance, tablets having been stored by month in any particular part of the archive. The obvious exceptions are the tablet groups S, SC and W in Letters Room 309, which produced a large number of payment records from the summer months. Overall, we see one surge of activity from the spring solstice in the Babylonian new year, through to high summer (Month V, approx. July–August). This presumably corresponds to the spring harvest and its aftermath. Documentation picks up again as the weather cools and the agricultural year restarts,

[123] Dalley 2009: no. 378.

[124] Boivin 2016a: 55 n82.

Document Type \ Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Total
Flour, etc. deliveries			2	3	1			3		1			10
Flour lists								1	1	1			3
Grain receipts		1	1							1			3
Memos and miscellaneous					2						1		3
Ration payments	1				1	2	1	2	1			1	8
Tax accounts				6	2			1					9
Total	1	1	3	9	6	2	1	8	2	3	1	1	37

TABLE 4.33. Distribution of comparable dated tablets from the Schøyen Collection by document type.

petering out in the cold, wet months of winter and early spring. Looking at the same data, organized by document type (Table 4.32), there are no clear sub-patterns apart from the spring cluster of payment records already noted.

We get a similar, slightly clearer picture from the Schøyen tablets concerning grain and agricultural workers (Table 4.33). The largest peak of activity in the summer months, III–V, as flour deliveries and tax accounts arrive, presumably from places such as Tell Khaiber.[125] Then little happens apart from payments to workers until the late autumn. Flour deliveries and tax accounts again peter out in the winter and early spring. Overall, though the evidence is meagre, it is consistent between the two corpora: late spring and late autumn were the periods when grain and flour production were most intensively documented.

Literacy and numeracy at Tell Khaiber

The Tell Khaiber archive challenges assumptions about cuneiform literacy in several interesting ways. Not only does it reveal professionally literate scribes active in the Babylonian countryside in a period long thought to be without writing; others could interact with them through reading and writing too. The phenomenon of non-professional cuneiform literacy is well documented for wealthy urbanites of the early second millennium BCE; it is somewhat unexpected to find it at Tell Khaiber. Here I first investigate the identity of the scribes, their apprentices and their superiors, and then explore the evidence for formal, Sumerian-language schooling, Akkadian-language on-the-job apprenticeship, professional scribal practice, and non-professional literacy.

Professional scribes and their apprentices

Three men are given the title DUB.SAR = *ṭupšarru*, 'scribe' in the Tell Khaiber archive: Atanah-ili, Mayašu, and Iluni.[126]

Atanah-ili is one of the commoner names at Tell Khaiber, with twenty-four instances across seven disambiguated individuals and a handful that are not further qualified. Atanah-ili DUB.SAR is attested at least six times: twice in well-preserved numerical lists and three or four times in more heavily restored passages in the same type of document. A payment record assigns him 80 litres of grain, and it is reasonable to assume that an untitled recipient of the same name in a second one is the same individual. As I shall argue further below, I also infer that the untitled Atanah-ili to whom three letters are addressed is this same scribe.

The name Mayašu also occurs frequently, with nineteen instances across three or more individuals. Mayašu DUB.SAR appears three times in numerical lists as a recipient of grain, once just a few lines above Atanah-ili, proving their contemporaneity, and once sending a certain Rešu-qablu-Ištar to receive it in his stead. He is probably also the addressee of a letter, although no title is given there.

Lastly, Iluni is the name of perhaps five different men in a total of fifteen instances. Iluni DUB.SAR appears just once, as the superior of a woman receiving grain in a numerical list. However, the name also occurs once as an authorised substitute, GÌR = *šēpu*, receiving 30 litres of grain on behalf of an untitled Mayašu in another numerical list. As will become clearer in the following paragraphs, it seems likely to me that here we are also dealing with the two scribes.

Mayašu the scribe is amongst at least fifteen men who authorise named substitutes—in his case, Rešu-qablu-Ištar and Iluni—to receive grain or pay taxes on their behalf. Another of these fifteen is an untitled Atanah-ili, who uses substitutes on three occasions. Ana-ṣillišu-abluṭ twice receives grain on his behalf, in numerical lists, while an anonymous *šēpu*-substitute scrawls a terribly written record of grain and silver paid to one Manni-Šamaš (discussed further on p.97). It is tempting, then, to suggest that Iluni was Mayašu's scribal apprentice, while the anonymous record-writer (Ana-ṣillišu-abluṭ?) was Atanah-ili's.[127]

This hypothesis is strengthened by the circumstantial evidence of family ties. The name Iluni is twice denoted as Mayašu's son-in-law, *hatan*, as is one Adad-šemi—a name that also appears amongst the recipients of letters and letter-orders. Conversely, Mayašu is described at least once as

[125] Likewise, most grain arrived in late nineteenth-century Larsa from surrounding agricultural regions between late in Months III and V (Breckwoldt 1995/96: 67).

[126] See the online names glossary https://oracc.org/urap/qpn-x-people for references to all the individuals discussed in this section.

[127] There is no evidence one way or another to suggest that Mayašu's one-time substitute Rešu-qablu-Ištar was also a scribal apprentice. This name does not reappear in the archive.

Name	DUB.SAR	Letter recipient	Substitute of	Son-in-law of
Sin-igištu				
Mayašu	×	×		Sin-igištu
Iluni	×		Mayašu	Mayašu
Adad-šemi		×		Mayašu
Rešu-qablu-lštar			Mayašu	
Atanah-ili	×	×		
Ana-ṣillišu-abluṭ			Atanah-ili	

TABLE 4.34. Scribal relationships at Tell Khaiber.

the son-in-law of a Sin-igištu, not otherwise attested in the corpus, and as the brother of one Ṣilli-belti-Akkade.[128]

This overlapping cluster of three types of evidence—the professional title DUB.SAR, the receipt of letters, substituting for men with the same name as scribes, and in-law-relationships between them—suggest at least three generations of scribes in one family: Sin-igištu (not otherwise attested)—Mayašu and Ṣilli-belti-Akkade—Iluni and Adad-šemi. Mayašu's contemporary Atanah-ili clearly had at least one apprentice, presumably Ana-ṣillišu-abluṭ, but their familial relationship remains unclear (Table 4.34).

The scribes' superiors: senders and subjects of letters

All but one of the surviving letters in the archive are addressed to one or other of the scribes Atanah-ili, Mayašu and his son-in-law Adad-šemi, all in large, careful but error-riddled script as if the senders were not used to writing very often (Table 4.10, Fig. 4.8). The messages, information and orders they contain are terse to the point of abruptness. Nevertheless, it is possible to detect some formal chain of command, beyond the very fact that the tablets needed to be written at all. I shall return to the identities of the addressees Sin-išmeanni and Nuratum shortly, but first let us consider the senders.

Uraš-ibsasa and his son Adad-ilum are not otherwise attested in the Tell Khaiber archive, but the father appears twice in the Schøyen tablets (Table 4.23). In a letter he orders one Anam-dingira to collect the *šibšu*-dues of a settlement named Dur-Ninurta, while another document records his receipt of a 20-litre *kaptukkû*-vessel of ghee.[129] Uraš-ibsasa, with his high-status Sumerian name, was clearly a man of power in the Sealand, giving orders for the movement of goods across the kingdom and delegating some of that work to his son. We might posit that he had a similar position to Šamaš-hazir in Old Babylonian Larsa, who served as $SA_{12}.DU_5$ = *šassukku*, manager of the royal lands under Hammurabi.[130]

Ahi-illikam, conversely, is one of the most frequently occurring names in the corpus, with 38 instances representing up to eight individuals. The various Ahi-illikams' professions encompass carpenter (eleven times), farmer (four times), date-palm gardener (twice), and tailor (once). An Ahi-illikam is also one of Nuratum's subordinates (four times) and the name occurs three times as the recipient of grain (and twice silver) in payment records. A similarly bewildering range of contexts and professions is also associated with the thirty-four instances of this name in the Schøyen tablets, but not as a letter-writer.[131] Whichever of the Ahi-illikams wrote to Atanah-ili, he had the authority and status to criticise Atanah-ili about the conduct of a recent course case. Nevertheless, he struggled with the spellings of personal names, as discussed further on p.98.

The fourth and final sender, Mar-ešre, is the only one to style himself as *ahāka*, 'your brother', to the recipient, namely as a social equal. Perhaps he is the most likely to appear elsewhere in the archive. Indeed, the name is found twenty-seven times at Tell Khaiber, representing up to five individuals. The only associated profession is date-gardener (five times); but confusingly the name is also attested once as the 'subordinate' of one Ma-a-šum (not -šu) and at least seven times as the son of one Iluni. We should probably discount these as instances of the scribes Mayašu and his son-in-law Iluni, as it is *a priori* unlikely that one of their subordinates would give written orders to Atanah-ili, a contemporary of his supposed grandfather. The name Mar-ešre is also widely attested amongst the Schøyen tablets, but not in a context that fits this one.[132]

Now let us turn to the non-scribal addressees and subjects of the letters. Nuratum receives one letter and is referred to twice as the owner of sheep's wool in another (Table 4.10). In the Schøyen tablets, a man of the same name receives a sheep (Table 4.23). In six tabular accounts and numerical lists he appears as the superior of a group of eight men, three of whom are listed in Adad-šemi's letter-order, while he is the recipient of grain and silver in six payment records. He is never given a patronym or profession: the scribes seem to know exactly who he is. Sin-išmeanni, meanwhile, is addressed together with Adad-šemi in Adad-ilum's second letter. This name, plus the variant spelling Sin-išmanni, occurs no less than thirty-five times in the Tell Khaiber archive, representing three or more individuals, distinguished by their patronyms. There is also a Sin-išm(e)anni amongst the farmers' *ešertu*-workteam.

We have already seen that the names Atanah-ili, Ahi-illikam and Nuratum all feature in the little payment records found in Letters Room 309. In fact, together these three individuals appear in fully half of them (Tables 4.11 and 35) and account for almost half of the total payments.

[128] The only other in-law relationship found in Tell Khaiber tablets is [....]-mi *hatan* Ilu-bani (3006:01 r 10, 1124:01 o 7). The name Ilu-bani is given the title $NU.GIŠ.KIRI_6$ 'date-palm gardener' in 1096:51 o 10; cf. 1096:48 o 7', 1114:26 o 5', where the traces after the name are suggestive but inconclusive.

[129] Dalley 2009: nos. 14, 104.

[130] Fiette 2018a: 102–6.

[131] Dalley 2009: 285 s.v. *a-hi-il-li-ka*.

[132] Dalley 2009: 293 s.v. Mār-ešrê.

Name	Frequency	Average grain payment (litres)	Total grain payment (litres)	Total silver payment (shekels)	Attested elsewhere
Re'i-Ninurta	8	148	1078	1	—
Nuratum	7	110	660	1	Letters
Ahi-illikam	3	140	420	1	Letters
Atanah-ili	2	80	80		Letters, scribe
Arzazu	1	150	150	0.5	Accounts and lists (9)
Ile"i-bulluṭa	1	20	20		Accounts and lists (3), Leather-worker
Manni-Šamaš	1	100		0.5	Dalley 2009: no. 8, where he is the sender of a letter to 'my lord'
[Missing]	1	[Missing]			—

TABLE 4.35. Payees of grain and silver in the Room 309 payment records.

Name	Letters	Payments	Associated professions
Ahi-illikam	×	×	Carpenter (11), farmer (4), date-gardener (2), tailor (1)
Nuratum	×	×	Superior of 8 men (6)
Mar-ešre	×		Date-gardener (5)
Manni-Šamaš		×	—
Re'i-Ninurta		×	—
Uraš-ibsasa and his son Adad-ilum	×		—

TABLE 4 36. Letter-senders and payees as the scribes' likely superiors.

Only Re'i-Ninurta, not attested elsewhere at Tell Khaiber or in the Schøyen tablets, receives more.

While none of this evidence is completely conclusive, there appears to be a strong correlation between sending and receiving letters and being paid in grain and/or silver via individual payment records, but not receiving grain via numerical lists (except in the farmers' case). We end up with a cluster of half a dozen likely superiors to the scribes, who give them orders and regularly receive individual payments, but do not generally appear to be directly involved in the harvest or flour production documented in the rest of the archive (Table 4.36).

Scribal schooling in Sumerian

Despite being on the administrative periphery, the archival scribes of Tell Khaiber also belonged to, or at least aspired to, a more intellectual level of cuneiform culture. As mentioned above, twenty-one of the tablets in the archive, some 14%, are in fact scraps and fragments of learners' exercises, ripped up into tiny pieces and abandoned in the eastern corner of the Archive Room 300 after their contents had been committed to memory (Table 4.13). They do not teach the Akkadian vocabulary of Babylonian administration, however, or any other practical aspect of cuneiform literacy. Instead they draw upon a centuries-old tradition of urban learning in Sumerian, the ancient scholarly language which the Sealand dynasty particularly favoured.[133] Given that almost all archaeological evidence to date situates formal schooling in city houses in the early second millennium BCE,[134] it is a huge surprise to find clear evidence for it in a rural administrative centre.

There was, unsurprisingly, never a fixed 'curriculum' for learning cuneiform script, in the absence of any central authority to control it, but rather a shared culture, or habitus, whose specifics varied from place to place and time to time. For the Old Babylonian period, Veldhuis usefully divides the common practice of elementary scribal training into four levels, recognizable across Babylonia from Ur and Uruk in the south to Kish and Sippar in the north.[135] This heuristic tool is also helpful for analysing the Tell Khaiber fragments.

Level 1 is, in Veldhuis's terminology, 'the basics': learning how to write simple signs and string them together in short sequences. At Tell Khaiber, this level is attested by 3064:14, which carries a very elementary exercise in writing horizontal cuneiform wedges, and probably also by four almost illegible fragments that may contain extracts from one or more elementary sign lists similar to the widespread Syllable Alphabet A.[136] Likewise, the poorly executed and preserved 3080:10 might represent an exercise in writing personal names.

[133] Dalley 2020.

[134] Yamada 2016.

[135] e.g. Veldhuis 2014: 205–10; 2016.

[136] 1114:09, 3064:97, 3080:11, and 3080:21.

Veldhuis's Level 2, 'thematic word lists', is dedicated to the acquisition of Sumerian-language nouns, predominantly grouped by their materiality. It is well represented at Tell Khaiber, where eight tablets bear extracts from the thematic word list Ur_5-ra. This mainstay of elementary scribal education underwent substantial expansion over its long history. The loosely standardized version used in eighteenth-century Nippur comprised around 3600 entries in monolingual Sumerian, formally divided into six chapters, but it had at least doubled in length and acquired optional Akkadian translations by Kassite times.[137] The Tell Khaiber fragments, not surprisingly, represent an intermediate phase in the development of Ur_5-ra: they are all monolingual, they expand on the Old Babylonian version(s), and, like Kassite exercises, they often omit the first sign of a word if it is identical to the preceding entry.[138] Most of the fragments are from the chapters of Ur_5-ra about metals and about stones; one is a list of wild animals and another may be from the chapter on leather objects. Together they are drawn from chapters 2–4 of the OB Nippur version, chapters 7, 9 and 10 of the Middle Babylonian recension.

Level 3, 'advanced lists', offers a more abstract and theoretical approach to cuneiform script. The sign list Ea drills students in alternative readings of signs that students have already encountered: this exercise, or one very like it, appears on 3064:79 and 3080:17. So-called acrographic lists, meanwhile, group Sumerian words by their first sign, regardless of meaning. 3080:16 is perhaps one such example. Level 4, in which whole phrases and sentences of Sumerian are introduced for the first time, is not attested at Tell Khaiber. This is not unusual: we find the same pattern of survivals in, for instance, the so-called Scherbenloch, or sherd-pit, from early eighteenth-century Uruk, Ur-Utu's house from late Old Babylonian Sippar, and in several Old Babylonian findspots at Tell Uhaimir, Kish.[139] There is now general consensus that this was the level of formal education in cuneiform deemed sufficient for starting to learn Akkadian through on-the-job apprenticeship, at least in the second quarter of the second millennium BCE.[140]

Learning the Akkadian language

The apprentice scribes and some of the senior letter-writers faced similar challenges to each other when writing Akkadian: forming the cuneiform signs correctly; choosing contextually appropriate sign-values, particularly in relation to naming conventions, syllable boundaries and vowel choice; and adhering to correct word order. All of these problems are visible in the payment records written in Atanah-ili's stead, and in the letters sent by Ahi-illikam and Uraš-ibsasa. The large majority of the twenty-four payment records (Table 4.11) are drawn up to a highly standardized formula, including line breaks:

n ŠE (½KÙ.BABBAR)	n litres of grain (optionally: ½ shekel of silver)
a-na PN	to PN
šu-un-nu-(ú-)ma	re-measured and
na-di-in	given.
^{iti}y U$_4$ z-KAM	Month y, day z.

The four that do not conform to this formula also betray other errors. For instance, 1114:11 was written by an anonymous substitute of Atanah-ili (Fig. 4.9). In obverse line 1, he successfully writes the grain measure, after which the rest of the line deteriorates. The next sign may be an attempt to write the sign MAŠ, for '½', or KÙ, followed by a misshapen BABBAR in which the lower of the two initial diagonals is much smaller than the upper. The final sign of the line appears to be an unexpected *-ú*, giving either '½ <KÙ>.BABBAR$^{-ú}$ or 'KÙ.BABBAR$^{-ú}$. Line 2 begins with a rather messy ligatured *a+na*, after which the name of the recipient, *ma-an-ni-*^{d}UTU, slopes gently down to the middle of the tablet as the scribe struggles with the correct vertical sizing and alignment of the signs. Line 3 consists solely of a single BI sign in the centre of the tablet, followed by a very faint and elongated *-ú*, instead of the expected *šu-un-nu-ú-ma*. The final two lines of the obverse, *na-di-in* / GÌR *a-ta-na-ah-ì-lí*, are correctly rendered, as is the date on the reverse.

Similar errors can be identified in three other payment records. After a correctly written grain measure, the first line of 1114:16 ends with the sign sequence IL AN NU TU. This seems to be an idiosyncratic writing of the name commonly written in the rest of the archive as *i-la-nu-(ú-)tum*, influenced by a conventional spelling of the word 'these', *an-nu-tu*, after a highly unconventional breaking of the syllable boundary with *il-* rather than *i-la*. Was Ilanutum, a well attested farmer, the source of the grain being given out? The usual third line of the record is omitted entirely, as also in 1114:29. That tablet is badly damaged but the unconventional writing [KÙ?].BABBAR$^{-ú}$ also seems to appear at the end of its first line. Finally, 1114:32 also takes a unique approach to word order, though its sign-forms and spellings are all correct. Here, *šu-un-nu-ú* appears at the end of line 1, followed by the name of the recipient and—uniquely—his profession in a subordinate clause in lines 2–3. However, although this clause starts with the subordinating *ša*, 'that', the sentence ends as usual with indicative *na-di-in* rather than the grammatically correct *na-di-nu*.

Is it coincidence that the recipient of 1114:32 is none other than Atanah-ili DUB.SAR 'scribe', who therefore delegated the writing of this document to an apprentice? It seems reasonable to hypothesise that Atanah-ili was normally responsible for writing these payment records, allowing a junior to substitute

[137] Veldhuis 2014: 149–57, 228–9.

[138] See Veldhuis 2014: 250–2.

[139] Cavigneaux 1996; Ohgama and Robson 2010; Tanret 2002.

[140] Veldhuis 2014.

for him on this simple, short and formulaic task when he was the payee or otherwise engaged.[141]

Some of the letters sent to Atanah-ili betray similar struggles with orthographic and palaeographic convention.[142] In 1114:01, Ahi-illikam writes with a beautiful hand and an elegant eye for spacing the signs on the tablet. However, he does not appear to have been versed on the very specific conventions for writing personal names, rendering his addressee as *a-ta-na-ah-hi-li* (cf. *a-ta-na-ah-ì-lí*) in o 1 and himself as *a-hi-i-lik-kam* (cf. *a-hi-il-li-kam*) in o 3. A professional scribe, by contrast, would respect the word boundary between *ātanah* 'I have strived' and *ilī* '(for) my god' and distinguish between single and double consonants in *illikam* '(he) arrived'. It would also be second nature to write the conventional *ì-lí* for '(for) my god' instead of the many other phonetically equivalent alternatives. Uraš-ibsasa, by contrast, renders both his name and his addressees' correctly in 1114:06 and 1114:45.

However, in the terse messages that comprise the bodies of all three letters, the syntax, vocabulary, sign forms and novel spellings all make them difficult to interpret. To some extent that might be more a reflection of idiomatic Akkadian, closer to the spoken language than found in formulaic archival records, than any failing on the authors' part. Nevertheless, the distance between professional scribal practice and that of the letter-senders is noticeable. For instance, the scribes show the doubled final consonant in the word *hazannu*, 'mayor', thus: *ha-za-an-nu* (3064:49 o 38'; 3064:123 r 10) whereas Uraš-ibsasa writes just one: *ha-za-ni* (1114: o 4). In the same letter (b 2), the writing *ù-tu-e-ri* seems to represent the verb *utīr*, 'he brought back' but the vocalisation has more in common with Assyrian than 'polite' Old Babylonian. Compare the 'correct' scribal writing *ú-te-er* in the memo 1114:47 r 4. Adad-ilum's verb *tu-im-lu-uh* (1096:52 t 1) has such an unorthodox vowel pattern that I am not convinced I have understood it at all: the closest I can get is *malāhu*, 'to tear out', in the form *tamluh*, but the context suggests that the D-form of *malû*, in its meaning 'to hand over', *tumalli*, is what is really meant.

Scribal practice

As we have already seen, comparing the Tell Khaiber tablets with the illicitly excavated Schøyen archive reveals that both sets of scribes were trained in the same administrative conventions. They draw up the same document types, used the same terminology, and shared the habit of checking off entries in multi-person receipts using stylus-marks. Neither community attributed its documents to named scribes, overseers or other officials. However, it is also possible to discern differences between the two groups and perhaps, in due course, even between the individual Tell Khaiber scribes. Here I will point to a few possible lines of enquiry and leave more detailed study to others.

In order to compare like-for-like I have limited myself to the archival document types shared between the two communities: that is, the numerical lists, tabular lists and accounts and the memos. This amounts to 69 documents from Tell Khaiber (Tables 4.6, 7, 8 and 9) and 75 from the Schøyen Collection (Table 4.5). It is immediately clear that the Tell Khaiber scribes use much less administrative paratext, or metadata, than their palatial counterparts.

For instance, although about three-quarters of documents from both places are formally headed, the Tell Khaiber tablets' headings name only the commodity, omitting the transaction type, about twice as often as the Schøyen tablets, over a third of the time.[143] Likewise, 41—well over half—of the Schøyen tablets are dated to the year, and just two only to the month and day, a ratio of 20:1. Conversely, the Tell Khaiber scribes rarely used year dates, as we have seen, much preferring month-day dates by a ratio of 1:4, or 1:10 if we add in the payment records.[144] They presumably knew perfectly well whether grain was coming or going, and which Sealand year they were currently living through, and saw little need to document the obvious. But, as we have amply seen, this leaves us with considerable interpretative challenges.

A further noticeable feature of the Tell Khaiber accounts, especially compared to tabular book-keeping in cuneiform culture more generally, is that they are never totalled. By contrast there are final totals on four of the 31 tabular accounts from the Schøyen Collection, all in different styles.[145] The simplest format is an overall total, ŠU.NÍGIN 9.52(AŠ) GUR 5, written on the left edge of a large *šibšu*-tax account (Dalley 2009: no. 415). A flour delivery account gives separate totals for the quantities provided collectively by the seven women and four guardsmen (EN.NU.UN) listed in the document (no. 424). In a third level of complexity, another *šibšu*-tax account provides totals for both major and minor crops provided by the merchants' house(?), as well as that from the *muškēnu*-people and palace servant-women (no. 434). Cutting the data yet another way, the left edge of a *miksu*-tax account gives totals only for the small *kiṣru* and *bāb āli*, 'city gate', duties entered in its fourth and fifth columns (no. 443).

The absence of totals on the Tell Khaiber tabular accounts does not mean that our scribes were incapable of complex calculations, however. Four small fragments

[141] Note that 1114:31, in which Atanah-ili is the payee, is correctly rendered.

[142] 3064:93, from Mar-ešre, is clearly and competently written. 1096:52, addressed to Mayašu and others by Adad-ilum, is too damaged for analysis.

[143] Headings: 57/75 = 75% of Schøyen tablets and 40/55 = 74% of Tell Khaiber tablets with (partially) extant first lines. Transaction type omitted: 10/57 = 18% of Schøyen tablets and 12/35 = 34% of Tell Khaiber tablets (excluding those too damaged to use).

[144] There are 4 extant year-dates from Tell Khaiber and 39 (partially) extant month-day dates, all but 15 of which are on payment records.

[145] Dalley's conjectural restoration of ⌜ŠU⌝.[NÍGIN …] on the very small flour delivery account no. 416 is disregarded here.

of tablet found in the archive prove otherwise. As will be apparent to anyone who has tried to do so, working with the metrological systems of cuneiform culture entails a lot of fiddly arithmetic. For instance, the classic Ur III-OB capacity system used by the Tell Khaiber scribes involves working with bases 10, 6 and 5 in order to convert between successively larger units (Table 4.4).

As I showed some years ago, from the late third millennium onwards, many professional scribes only used these number systems to measure, record, and to do simple addition and subtraction. To perform more complex calculations, such as totalling the entries in a long tabular account, they first converted those multi-unit measures to what we now call the sexagesimal (base 60) place value system, SVPS.[146] Like the modern numeral system, the SPVS has two particularly relevant virtues: it can be used to write numbers of any length and complexity, without the need for new units at the lower or upper end; and it only uses one number base, namely 60, instead of many. That is, in order to total the entries in one column of a grain account, a scribe would convert them all from a mixture of *kurru*, *parsiktu*, *sūtu* and *qû* to the equivalent number of *qû*, however large. He could write them down in sexagesimal place value system, tot them up, and convert the answer back to capacity measures.[147] Such calculations rarely survive because scribes were trained to dispose of them.

However, semi-erased traces of SPVS notation so survive on four of the Schøyen tablets, including one of the totalled tables (nos. 385, 392, 404 and 443), and on four tiny fragments from the Tell Khaiber archive. 3080:02 is a preparatory note for *šibšu*-tax account for two or more farmers, according to its heading, while 3080:05 records the outcome of a large capacity measure calculation, perhaps even the same one as they are numerically almost equivalent. It is no coincidence, in my view, that they were found amongst the minuscule scraps around the recycling bin in Room 300-NC. Meanwhile 1096:27 and 42, from Room 309-E, are possibly fragments from a single original tablet. They both show sexagesimal numerals carefully laid out in columns and rows as if for a calculation, with the notation ŠU.NÍGIN, 'total', offset in the left margin of the latter. It is just possible that these are the remains of a school exercise, rather than a professional scribe's workings, but either way it proves that the Tell Khaiber men were competent users of the SPVS.

[146] See Robson 2008: 15–16, 75–83 for an example and a brief history of the origins of the SPVS.

[147] If the answer were really large, he'd leave the number of *kurru* in base 60, as there were no larger units to use: in the total above, for instance, 9.52(AŠ) GUR means $9 \times 60 + 52$, or 592 *kurru*. The transliteration 2(AŠ) simply notates that the scribe wrote the numeral 2 with horizontal than vertical wedges, as was the convention for writing GUR.

CONCLUSIONS

The edition and analysis of the Tell Khaiber archive presented here are necessarily provisional. Nevertheless, I think we can reasonably deduce some plausible hypotheses about how the community worked, triangulating between the archive itself, the illicitly excavated Schøyen tablets from the Sealand, and the Old Babylonian Yamutbal tablets, plundered from Larsa over a century ago. I put forward this sketch in the hope and anticipation that others will correct and improve on it in years to come.

Economy, community and society at Tell Khaiber

At the time the archive was active—probably around 1500 BCE, give or take half a century—the Fortified Building was a grain collection and distribution centre, storing barley and *hargallû*-grain, and perhaps also the produce of local date-palm orchards, grazing grounds and marshlands. A third of the barley harvest was shipped annually to the Sealand palace (wherever that might have been), paid as *šibšu*-dues from directly managed crown land and *miksu*-taxes from land bestowed by the king on favoured individuals. Much of the agricultural labour was performed by a team of ten *iššiakku*-farmers, who worked both as ration-recipients for the palace and as entrepreneurs for tenant land-holders. They were supported in the fields by two or three dedicated *ešertu*-workteams, plus *ad hoc* extra labour from the community's other professions as needed, including the servants or dependents of high-status men. The farmers in turn sometimes sent brothers or sons to the archive in their stead. The principal agricultural workforce, together with a few female palace dependents, also milled barley and *hargallû*-grain, at least some of which was likewise sent to the palace. Around twenty palace auxiliaries guarded the place.

The community was perhaps a few hundred adults strong. The principal agricultural labour force and the typically marshland professions were dominated by local men, while the palace's auxiliary forces also included individuals of Elamite, Kassite and Dilmunite descent.

This endeavour was managed locally by two or three scribes, overseen by a few senior officials who were responsible for much larger territories. We cannot know their exact responsibilities, but they cannot have been too different to those of the *šassukku* Šamaš-hazir, who had managed this same region for Hammurabi a few centuries earlier. In any case, these men communicated with the scribes by letter, and presumably also visited. While the scribes managed the workforce themselves, assembling and reorganizing labour as needed, storing and recycling tablets, the officials sent instructions about the movement of grain, flour and wool, and when necessary came to settle legal disputes. But where Šamaš-hazir had overseen a complex system of land surveying and forecasting with multiple levels of documentation and accountability, the Sealand bureaucracy had a much lighter touch.

Literacy and power in cuneiform culture

Even compared to agricultural documentation from other second-millennium sites, such as late Old Babylonian Sippar, Kassite Nippur, Middle Assyrian Dur-Katlimmu and Tell Sabi Abyad, the archive's laconic nature is striking.[148] The Tell Khaiber scribes, so far as we know, did not keep records of labour contracts (if any were ever written),[149] record field sizes, monitor agricultural activity throughout the year, or account for seed grain, draft animals or field equipment such as ploughs or sickles. Of course, it is always possible that such documents were produced and/or stored elsewhere, written on perishable media, and/or shipped elsewhere with their grain.[150] However, the tablets that do survive suggest that this was a small scale, relatively unhierarchical operation in which much was left undocumented. For instance, it was not always necessary to document whether grain was being paid out or coming in, as this was also apparently self-evident. I have therefore assumed that lists record outgoings, which did not need to be reconciled, while accounts show actual income tallied against expected receipts. But no credits or debits are ever totalled, or compared against one another. Likewise, there appears to be no formal apparatus of accountability on the documents, such as sealings, or the names and titles of responsible officials or institutional authorities. It must have been clear to all concerned who was in charge.

The scribes operated as a family, training the next generation through traditional Sumerian-language word lists as well on-the-job practice in Akkadian archival documentation. It is often asserted that scholarly literacy was a form of power in the ancient world. For instance, the Old Testament scholar David Carr stated in an influential monograph:

> The literacy that counted most in … ancient societies often was not a basic ability to read and write. Rather it was on oral-written mastery of a body of texts. Moreover this 'literacy' was something that separated the members of an elite from their contemporaries.[151]

This is a useful generalization, especially for ancient alphabetic literacies, but there is not a simple correlation between knowledge of writing and social status in cuneiform culture, as the letters in this archive show. The palace officials told the scribes what to do; gave them news during their absences; and rebuked them when they made mistakes. They often seem to have been angry. Their letters are full of handwriting and spelling errors: one of them, did not even know how to spell his own name. But they did not seem to care. Perhaps, like the senior *kalû*-priest Ur-Utu in late Old Babylonian Sippar, they had received a very elementary education in cuneiform but had since forgotten a great deal of it.[152]

As I now understand it, knowledge of cuneiform came in several degrees of strength in the Old Babylonian period *c.*1750–1500 BCE. The professional scribes did not only need to learn practical skills—indeed their training was not at all practical. Rather, they learned how to become members of a scribal community, one that was both nostalgic and proud. But what was the use of this education, intrinsically impractical and concentrated largely on the dead Sumerian language? Consider the men, such as Ur-Utu in Sippar and Ahi-illikam in Tell Khaiber, who knew enough cuneiform to get by in their professional and family lives. If they wanted to, men like that could easily live without scribes, writing their own documents, using only everyday signs and words in Akkadian. The curriculum could easily have been reformed to better fit the Akkadian language. But there was a social value, for the scribes and their employers too, to preserve the status quo. The wealthy and the powerful were too busy, too important to write correctly, while the scribes managed to persuade themselves that they were not simply writing mundane documents for a bad-tempered boss. In truth, they thought, they worked for the gods and the king, defending the long-established social order. Inadequate training was appropriate for both groups equally, and weak knowledge was a signifier of relative social power.

Although the traditional repertoire of Sumerian vocabulary begins with the familiar material world—wooden objects and reed ones, leather and clay—the surviving exercises from Tell Khaiber focus on high-status materials and animals. They laboriously reproduce the Sumerian words for valuable stones such as chlorite and lapis lazuli, carnelian and flint, and for powerful wild animals such as the elephant, bison and wolf.[153] None of this learning would have been of any practical use, for all the scribes' day-to-day documentation was in Akkadian, but it enabled them to aspire to and feel a connection with, to the greater world of cuneiform learning and scribal professional identity.

Archaeology, Assyriology and Iraq

Finally, a few words about the extraordinary privilege of working on a tablet assemblage found under controlled archaeological conditions. So much can be learned from their deposition context and I have only just started to scratch the surface.

[148] Rositani 2011 (late Old Babylonian Sippar); Sassmannshausen 2001: 103–9 (Kassite Nippur); Wiggermann 2000 (Middle Assyrian Tell Sabi Abyad); Postgate 2014: 313–25 (Middle Assyrian Dur-Katlimmu).

[149] See, for example, the harvest contracts from (mostly late) Old Babylonian Sippar published by Rositani 2011: nos. 1–78, which are closely contemporary with the Tell Khaiber tablets.

[150] See the notes in alphabetic scripts on some of the tablets published by Dalley 2009 (Hamidović 2014) and post-firing pot marks found on five vessels at Tell Khaiber (Calderbank 2021a: 76).

[151] Carr 2005: 15.

[152] Tanret 2002.

[153] See p.171 for beads made of these stones found at Tell Khaiber. Elephants were indigenous to Syria and the upper Euphrates valley but were hunted to extinction in the early first millennium BCE (Pfälzner 2016). For the present-day distribution of grey wolves in Iraq, see Al-Sheikhly et al. 2020.

First, if these tablets had had the misfortune to be discovered by illicit diggers, they would not have survived the first shovel. They required expert excavation and weeks of conservation before they were robust enough for me to handle. The many thousands of tablets in circulation in the international market and private collections must represent a tiny fraction of what looters have discovered over the years. Second, the historical insights afforded by the micro-geography of the Archive Room and Letters Room are unique. Most obviously, the presence of Sumerian school exercise tablets, in the eastern corner of Room 300, invite radical rethinking of our assumptions about the location and purpose of scribal training. More than that, however, the tablet groups within the archive—whether primary storage contexts or secondary dump sites—are also proving meaningful. Both the school tablets and many of the tiny memos in the Archive Room seem to have been emptied from the central recycling bin. In the Letters Room the *miksu-* and *šibšu*-tax accounts cluster tightly in the eastern corner, while all the payment records are spread across the southern half the room. Barley flour delivery accounts are all from the Archive Room, while those for *hargallû*-flour are all from the other one. And I am sure that detailed prosopographical analysis, once combined with archival placement, will help to disambiguate small-scale chronological changes in personnel and document formatting that I can only intuit as yet.

I want to finish on a note of regret, however. I became epigrapher to this project by the pure dumb luck of visiting the site just after the first tablets had been unearthed in early 2013, during one of my first post-war visits to Iraq. Since then a family bereavement and a very heavy administrative workload have radically constrained the time I have had available to work on them, both in the field and at home. If I had my time again—and much more of it!—this would have been a collaborative project with one or more Iraqi Assyriologists, published in Arabic as well as English. There would have been time for discussion and mutual learning, and a much richer and rewarding publication would have resulted.

Descriptive Catalogue

This descriptive catalogue should be read in conjunction with the accompanying online edition at https://oracc.org/urap, where the Tell Khaiber corpus is also organized by tablet group. To go straight to an individual transliteration and translation, use a URL of the form https://oracc.org/urap/Pxxxxxx, where xxxxxx = the 6-digit P-number given for each tablet in Table 4.37. From there one can also browse and search the whole archive and associated glossaries of words and names.

THE ARCHIVE ROOM 300

300-N: Room 300 north

Fourteen tablets and inscribed fragments were found in the northern corner of Room 300, where the dividing wall with Room 309 meets the northeastern boundary wall of the under-vaulted complex. The large majority are archival documents, encompassing a range of types, but they also include a complete letter and two fragments of school exercises. Numerous anepigraphic fragments were scattered amongst them. Just one archival fragment comes from the lower stratum, context 3080. Unlike the other assemblages from this area, this group does not include any intact tablets of any size, and many of the fragments appear to have been created in antiquity. Overall they give the impression of being the abandoned remnants of a recycling bin.

3064:12 is a triangular fragment from the bottom left-hand corner of a tabular account, measuring 34 mm wide × 53 mm high at its maximum extent. Three columns survive, the first two of which record capacity measures and the third the notation Ì.SÁ 'correct'. It is therefore almost certainly a delivery account (Table 4.8).

3064:15 is a surface fragment from a large tabular account of at least seven columns, measuring 32 mm high × 86 mm wide at its maximum extent. No quantitative data is preserved—the first six columns are mostly blank—but the fact that the first three are considerably wider than the second three is strongly suggestive that this was intended to be a tax account (Table 4.8). If so, the wider columns were intended to record the opening balance and the respective shares of the *muškēnu*-dependents and the palace, and the narrower columns the local duties. However, it appears that this data was never entered, although names have been listed the final column. The occurrence of the phrase KI-2 *ša kunēše*, 'second time, of emmer wheat' also strongly suggests that we are dealing with a *šibšu*-tax account, as this phrase occurs seven times in documents of this type from the Schøyen Collection.[154] The few legible names in this text are unremarkable.

3064:71 is the upper right corner of a landscape orientation tablet, measuring up to 52 mm wide × 47 mm high. The obverse contains the remains of nine personal names, one in each line, two of which are legible, and the word *kunēše*, 'emmer wheat'. The surviving surface of the reverse, top edge and right edge are blank (Table 4.12).

3064:72 is an almost complete landscape orientation tablet, measuring 29 × 130 mm, with the lower right corner missing and reverse badly abraded. Below the heading,

[154] Boivin 2018: 124–6.

Tablet	P-number	Tablet group	Genre	Subgenre	Type	Date	Height	Width	Thickness
1005:18	P523880	Room 122	medical	dog figurine					
1039:19	P523861	Room 124	brick	Amar-Suen 01			105*	81*	55
1096:24	P523922	Room 309-E	admin	fragment			56	44	19
1096:25	P523920	Room 309-E	admin	memorandum	workers		86	44	19
1096:26	P523925	Room 309-E	admin	tabular account	*šibšu*-tax		57	44	22
1096:27	P523923	Room 309-E	admin	fragment			46	23	19
1096:40	P523943	Room 309-E	admin	tabular list	*miksu*-tax		86	58	24
1096:41	P524002	Room 309-E	admin	tabular account	*šibšu*-tax		97	69	27
1096:42	P523944	Room 309-E	admin	fragment			33	30	16
1096:47	P523942	Room 309-N	admin	tabular account	deliveries		124	64	26
1096:48	P523952	Room 309-N	admin	tabular list	multi-commodity		124	47	24
1096:50	P523953	Room 309-N	admin	numerical list	grain receipts	08-15	138	42	26
1096:51	P523951	Room 309-N	admin	tabular account	deliveries		85	54	20
1096:52	P523950	Room 309-N	letter	letter			57	50	20
1096:53	P523945	Room 309-N	admin	letter-order			45	31	15
1096:55	P523947	Room 309-N	admin	numerical list	pottery receipts	11-06	49	30	20
1096:58	P523946	Room 309-N	admin	numerical list	long receipts		31	28	8
1096:59	P523949	Room 309-E	admin	numerical list	unclear		63	49	26
1096:60	P523948	Room 309-N	unclear	fragment			46	33	23
1114:01	P523973	Room 309-S	letter	letter			45	31	17
1114:03	P523980	Room 309-W	admin	fragment			85	38	23
1114:04	P523985	Room 309-W	admin	tabular account	tax		84	52	22
1114:05	P523984	Room 309-W	admin	numerical list	grain receipts		74	59	18
1114:06	P523976	Room 309-W	letter	letter			44	21	15
1114:07	P523954	Room 309-W	admin	payment record		04-09	41	19	12
1114:09	P523979	Room 309-W	school	Ea?			82	70	22
1114:10	P523983	Room 309-W	admin	payment record		04-19	38	24	12
1114:11	P523986	Room 309-W	admin	payment record		04-22	38	21	13
1114:12	P523989	Room 309-W	admin	memorandum	*ešertu*-team		69	48	21
1114:13	P523974	Room 309-W	admin	payment record		03-27	39	24	18
1114:14	P523978	Room 309-W	admin	memorandum	*ešertu*-team		66	32	18
1114:15	P523955	Room 309-W	admin	memorandum	*ešertu*-team		43	72	
1114:16	P523982	Room 309-W	admin	payment record		00-27	41	20	14
1114:17	P523987	Room 309-W	admin	numerical list	grain receipts		63	56	22
1114:18	P523956	Room 309-W	admin	payment record		04-12	38	19	16
1114:21	P523966	Room 309-S	admin	payment record		04-22	43	24	15
1114:22	P523967	Room 309-S	admin	payment record		04-28	33	16	11
1114:23	P523968	Room 309-S	unclear	fragment			73	71	27
1114:25	P523975	Room 309-S	admin	payment record		03-11	42	26	14
1114:26	P523977	Room 309-S	admin	memorandum	*ešertu*-team		59	27	13

Tablet	P-number	Tablet group	Genre	Subgenre	Type	Date	Height	Width	Thickness
1114:27	P523981	Room 309-S	admin	payment record		04-10	36	16	12
1114:29	P523988	Room 309-S	admin	payment record		03-18	38	27	12
1114:30	P523957	Room 309-W	admin	payment record		04-13	38	25	14
1114:31	P523958	Room 309-W	admin	payment record		04-19	33	23	14
1114:32	P523959	Room 309-W	admin	payment record		03-10	42	24	12
1114:33	P523960	Room 309-W	admin	payment record		02-17	42	22	13
1114:34	P523969	Room 309-S	admin	payment record		02-29	40	19	13
1114:36	P523970	Room 309-S	admin	numerical list	grain receipts	10-00	110	48	26
1114:38	P523993	Room 309-SC	admin	payment record		04-11	41	21	13
1114:39	P523961	Room 309-SC	admin	payment record		03-26	37	22	13
1114:40	P523990	Room 309-SC	admin	numerical list	flour deliveries		71	41	18
1114:41	P523962	Room 309-SC	admin	payment record		03-22	34	20	12
1114:43	P523963	Room 309-SC	admin	payment record		04-16	39	21	10
1114:44	P523994	Room 309-SC	admin	payment record		04-04	29	22	12
1114:45	P523995	Room 309-SC	letter	letter			45	26	14
1114:47	P523971	Room 309-SC	admin	memorandum	commodities		52	29	18
1114:48	P523992	Room 309-SC	admin	tabular account	deliveries	08-07	70	44	20
1114:49	P523964	Room 309-SC	admin	payment record		03-21	44	22	15
1114:51	P523996	Room 309-SC	admin	payment record		04-05	45	25	16
1114:52	P523965	Room 309-SC	admin	payment record		03-22	41	23	12
1114:55	P523972	Room 309-S	unclear	fragment			34	32	21
1124:01	P524000	Room 309-SE	admin	numerical list	flour deliveries		80	57	20
1124:02	P524001	Room 309-SE	admin	numerical list	flour and grain		66	40	22
1124:03	P523998	Room 309-SE	admin	numerical list	grain receipts*	05-25	81	46	18
1124:04	P523991	Room 309-SE	admin	numerical list	receipts	08-01	81	36	20
1124:05	P524006	Room 309-SE	admin	numerical list	receipts		67	43	20
1142:07	P524009	Room 314	admin	fragment			38	37	22
3006:01	P523878	Room 300-SC	admin	numerical list	long receipts		65	50	27
3006:09	P523879	Room 300-C	admin	fragment			42	46	21
3006:17	P523864	Room 300-SC	admin	memorandum		05-00 K	45	26	12
3064:12	P523865	Room 300-N	admin	tabular account	deliveries		53	34	22
3064:13	P523866	Room 300-NE	admin	memorandum	workers		29	47	15
3064:14	P523867	Room 300-N	school	writing exercise			45	37	15
3064:15	P523868	Room 300-N	admin	tabular account	unclear		32	86	17
3064:18	P523869	Room 300-NC	admin	tabular account	tax		103	40	29
3064:20	P523870	Room 300-C	admin	fragment			77	46	
3064:26	P523871	Room 300-C	admin	tabular account	deliveries		64	96	27
3064:33	P523872	Room 300-SE	admin	tabular list	multi-commodity		189	80	25
3064:48	P523873	Room 300-E	admin	numerical list	flour deliveries		95	54	24
3064:49	P523874	Room 300-E	admin	numerical list	long receipts		141	100	224

Tablet	P-number	Tablet group	Genre	Subgenre	Type	Date	Height	Width	Thickness
3064:51	P523875	Room 300-NE	admin	tabular account	deliveries	04-29	100	74	23
3064:52	P523876	Room 300-NE	admin	numerical list	grain receipts*	01-07	70	55	22
3064:53	P523877	Room 300-E	admin	numerical list	long receipts		160	90	31
3064:57	P523881	Room 300-SE	admin	numerical list	long receipts		147	58	34
3064:62	P523928	Room 300-NE	admin	fragment			28	20	19
3064:63	P523884	Room 300-NE	admin	fragment			69	59	22
3064:64	P523900	Room 300-NE	admin	fragment			37	36	17
3064:65	P523882	Room 300-NE	admin	numerical list	pottery receipts	08-00	55	35	20
3064:67	P523885	Room 300-NE	admin	numerical list	daily receipts	08-24 K	98	34	22
3064:71	P523886	Room 300-N	admin	fragment			47	52	28
3064:72	P523895	Room 300-N	admin	numerical list	daily receipts		130	29	19
3064:73	P523902	Room 300-N	admin	memorandum	*ešertu*-team		46	27	17
3064:74	P523883	Room 300-N	admin	numerical list	other receipts				
3064:76	P523897	Room 300-N	admin	memorandum	workers		66	44	20
3064:79	P523913	Room 300-E	school	Ea?			57	37	18
3064:82	P523915	Room 300-E	school	Ur_5-ra Wild Animals			38	52	23
3064:83	P523894	Room 300-E	admin	numerical list	grain receipts		91	45	23
3064:84	P523892	Room 300-E	school	Ur_5-ra Metals			57	49	22
3064:88	P523898	Room 300-NE	school	Ur_5-ra Metals			33	32	10
3064:89	P523887	Room 300-NE	admin	tabular account	deliveries		108	73	23
3064:93	P523916	Room 300-N	letter	letter			50	31	19
3064:94	P523899	Room 300-N	admin	memorandum	workers	00-01	43	22	16
3064:97	P523896	Room 300-N	school	unidentified			59	47	19
3064:98	P523914	Room 300-N	admin	fragment			28	20	16
3064:101	P523918	Room 300-NC	admin	numerical list	daily receipts		33	31	17
3064:106	P523893	Room 300-C	admin	fragment			52	42	30
3064:108	P523890	Room 300-C	admin	fragment			47	30	26
3064:116	P523917	Room 300-N	admin	fragment			53	21	22
3064:118	P523936	Room 300-S	admin	numerical list	long receipts		87	47	29
3064:119	P523937	Room 300-SC	admin	fragment			67	48	23
3064:120a	P524007	Room 300-SC	admin	numerical list	long receipts		40	21	19
3064:120b	P524007	Room 300-SC	admin	numerical list	long receipts		45	23	18
3064:121	P523932	Room 300-SC	admin	memorandum	workers		76	58	18
3064:122	P523933	Room 300-SC	admin	memorandum	*ešertu*-team		41	21	17
3064:123	P523941	Room 300-S	admin	numerical list	long receipts		128	94	27
3064:125	P523934	Room 300-SC	admin	fragment		04-00	35	25	17
3064:128	P523931	Room 300-SC	admin	numerical list	daily receipts	10-00	56	26	16
3064:129	P523935	Room 300-SC	admin	memorandum	*ešertu*-team	03-00 I	47	24	15
3064:133	P523938	Room 300-S	admin	fragment			25	20	15
3064:135	P524003	Room 300-SC	admin	numerical list	long receipts	08-25 J	100	78	22

Tablet	P-number	Tablet group	Genre	Subgenre	Type	Date	Height	Width	Thickness
3064:136	P523940	Room 300	admin	numerical list	long receipts		58*	72*	19
3080:01	P523921	Room 300-NC	admin	memorandum		00-02	46	23	18
3080:02	P523888	Room 300-NC	admin	memorandum	commodities		62	32	18
3080:03	P523891	Room 300-NC	admin	memorandum	commodities	01-24	50	27	
3080:04	P523889	Room 300-NC	admin	numerical list	unclear		73	35	22
3080:05	P523901	Room 300-NC	admin	memorandum	commodities		47	25	18
3080:06	P523903	Room 300-NE	admin	numerical list	other receipts		87	44	21
3080:07	P523924	Room 300-E	school	unidentified			44	27	16
3080:09	P523908	Room 300-E	school	Ur_5-ra Leather?			49	38	21
3080:10	P523906	Room 300-E	school	unidentified			53	41	19
3080:11	P523909	Room 300-E	school	unidentified			37	33	19
3080:12	P523919	Room 300-E	school	unidentified			54	46	24
3080:13	P523910	Room 300-E	school	Ur_5-ra Stones			55	45	20
3080:14	P523905	Room 300-E	school	Ur_5-ra Metals			48	42	21
3080:15	P523930	Room 300-E	school	Ur_5-ra Metals			150	72	29
3080:16	P523927	Room 300-E	school	Nigga?			52	26	33
3080:17	P523929	Room 300-E	school	Ea			75	49	20
3080:18	P523911	Room 300-E	school	unidentified			46	41	17
3080:19	P523904	Room 300-E	school	Ur_5-ra Stones			87	59	18
3080:20	P523926	Room 300-E	school	unidentified			52	33	28
3080:21	P523907	Room 300-E	school	unidentified			47	27	17
3080:25	P523912	Room 300-N	admin	fragment			42	21	13
3080:27	P523997	Room 300-NC	admin	numerical list	flour or grain		51	55	24
3111:01	P524004	Room 300-S	admin	numerical list	long receipts		160	111	26
3119:01	P523999	Room 300-SC	admin	fragment			27	18	12
3119:03	P524008	Room 300-SC	admin	tabular account	deliveries		41	33	21
6058:07	P523863	Room 601	brick	Amar-Suen 01			62*	84*	
6136:12	P524005	Room 179	admin	fragment			41	22	18

TABLE 4 37. List of all tablets in the archive, arranged by find number.

which runs across the entire width of the tablet, there is one quantitative column containing small capacity measures, fourteen blank columns, some of which contain round stylus-marks, and a final column containing pairs of names, each entry split across two lines (Table 4.6). As the heading explains, this record enumerates barley given daily over the course of half a month to pairs of men—in fact ten of the *iššiakku*-farmers who are central figures in this archive, seven of whose names survive here. On the reverse of the tablet the document was originally dated to the month and day. The memorandum 3064:94 was perhaps a day-note of the sort that was used to compile records of this type.

3064:94 is a complete landscape-oriented tablet, measuring just 22×43 mm. It contains a brief memorandum recording only the names of two well-attested *iššiakku*-farmers, who are also listed together in 3064:72, the cumulative record of daily grain payments found close by (Table 4.9). Given that this document is dated to the month and day, perhaps this is a day-note of the type that went into compiling such overviews.

3064:73 is a complete landscape-orientation tablet measuring 27 mm high by 46 mm wide. Reconstructed from three fragments, it contains nine short, rather damaged lines of text running from obverse to reverse. The document is a memorandum recording the names of seven individuals, almost all of whom are also attested elsewhere in the archives, who are said to be *watar*, 'excess', or surplus to requirements (Table 4.9). The final line is very damaged but it may have contained a month-day date.

3064:74 is one of just four or five lenticular tablets found at Tell Khaiber, including one uninscribed complete tablet

and two or three fragments.[155] Originally around 70 mm in diameter, it too was pieced together from fragments and is still missing a substantial portion of its lower left. Much of the writing surface on the obverse has flaked away, making the text very challenging to read. The text is an unheaded numerical list, annotated with the word *mahir*, 'received', on the upper edge (Table 4.6). Over the obverse and reverse it originally recorded the number 10 against the names of at least thirteen individuals, five of which can currently be read. The text does not state which commodity is documented; but 3080:06, found close by in the northeast of Room 300, also records unknown, countable commodities in tens.

Tablet **3064:76** is a complete but badly abraded landscape-oriented tablet measuring 44 × 66 mm. Four lines are illegible at the bottom of the reverse. Nevertheless, it clearly bears an undated memorandum recording the transfer three separate groups of individuals to the palace or to the fishermen's and palace auxiliaries' professional groups respectively (Table 4.9). The two men to be transferred to the palace are otherwise attested as palace auxiliaries, as is the one of the men to be sent to work with the fishermen, if this name has been correctly restored. Conversely, the first two men sent to replace them in the auxiliary guard are not otherwise attested in the archive, while the third has the same name as a man who is frequently attested as one of Nuratum's eight subordinates.

Four tablet fragments were registered with the context number **3064:98**. Only one, measuring at most 20 × 28 mm, is inscribed. It is a surface fragment bearing four lines of large capacity measures, probably from a tabular account, as the numerical lists rarely contain measures of this size and complexity (Table 4.12).

3064:116 is the lower right corner fragment of a much larger tablet, measuring 21 mm high by 53 mm wide at its maximum extent. The surface is very abraded and only two horizontal line rulings are visible on the obverse. The much better preserved reverse contains just a few isolated jottings of capacity measures and numerals (Table 4.12).

3080:25 is a right-edge fragment, either from a lenticular tablet or a conventionally shaped one that has been deformed in the course of recycling. Three lines of script are visible, at least two of which contain elements of personal names (Table 4.12). It measures 21 × 42 mm at its maximum extent. Four tiny anepigraphic fragments were found with it, which may or may not belong to the same tablet.

3064:93 is a complete, well preserved landscape-orientation tablet measuring 31 mm high by 50 mm wide (Table 4.10, Fig. 4.8). It bears the only letter to have been found in Room 300, written in eight lines on the obverse and bottom edge. The reverse is blank. The letter is addressed to Atanah-ili, well attested as a scribe of this archive, by one Mar-ešre. There are a number of individuals with this name at Tell Khaiber, as discussed further on p.94. Although Mar-ešre addresses Atanah-ili as 'my brother', implying equal status, the letter gives quite peremptory orders to allow the entire stock of barley to be sent away.

3064:14 is a very roughly shaped little piece of clay, maximum 37 × 45 mm. On each side it bears five lines of clumsily executed horizontal cuneiform wedges, undoubtedly a very elementary student exercise (Table 4.13).

The substantial upper left corner fragment **3064:97** measures 47 mm in width by 59 mm in height. Its interior edges show clear evidence of recycling in progress. The obverse contains the remains of seven lines of a simple cuneiform sign list, which I have not been able to identify; the reverse is blank (Table 4.13).

300-NE: Room 300 northeast

Ten archival tablets and fragments, and one school exercise, were found in a discrete group, stretching from the middle of the northeast wall of Room 300, southwestwards towards the location of the recycling bin (context 3081) in the stratum below. Many of the tablets are both substantial and intact, suggesting storage or abandonment, rather than recycling. Two anepigraphic fragments, **3064:60** and **3064:90**, are not considered further here.

Tablet **3064:13** is a landscape-format tablet, measuring 47 × 29 mm. It is missing its lower right corner and the surface of the reverse is badly damaged. It contains a memorandum listing the names of eleven men, only the first five of which are fully preserved (Table 4.9). With the exception of Sin-ma-ilum, these are not well-attested names in the rest of the archive but they probably comprise an *ešertu*-workteam. The memo concludes with a frustratingly damaged note about the individuals listed. The reading of the final line is highly uncertain but may refer to 'the palace'.

3064:51 is a complete portrait-format tablet measuring 74 × 100 mm, with a well-preserved obverse and somewhat damaged reverse. It contains a tabular delivery account of milled barley (Table 4.8). The sixteen entries on the obverse describe deliveries by nine different individuals or pairs, many listed twice in order to record deliveries measured by the small *sūtu*-capacity measure as well as, presumably, by the normal one.[156] On the left-hand side there are marginal annotations against some entries, marking them as 'second' to 'fourth'; it is not clear to me what these refer to. The bottom third of the obverse is uninscribed. The central third of the otherwise blank reverse contains nine further entries for another group of people, this time apparently with only one entry each. The tablet is dated to the month and day on the top edge. Most of the legible names in this document are well attested elsewhere in the archive. The quantities of barley they deliver range from 180 to 900 litres.

Tablet **3064:52** is a complete landscape-format tablet, measuring 70 × 55 mm. Some of the writing surface has

[155] Fragments: 3080:25 from the same find context; 6136:12 from the surface of Area 179; and 1114:23, from the centre of Room 309, found with the blank tablet 1114:50.

[156] Compare Dalley 2009: no. 451, which tabulates (much smaller) measures delivered or received by the 'bronze *sūtu*-measure' and the 'usual' one, BÁN ZABAR and BÁN GI.NA.

broken away on the obverse but the reverse is in reasonably good order. It contains a headed numerical list of eighteen individuals receiving *hargallû*-grain in capacities ranging from 20 to 100 litres (Table 4.6, Fig. 4.5). Almost all the recipients are described by patronym, profession or ethnicity including the two scribes Mayašu and Atanah-ili (thereby showing that they were contemporaries). About half of the individuals in this list are attested elsewhere in the corpus. The document is dated to the month and day.

Fragment **3064:62** is the bottom left corner of a numerical list or—more likely, given the complexity of the capacity measures on it—a tabular account (Table 4.12). The obverse surface is missing and the reverse contains traces of five lines from the first column. It measures 20 × 28 mm at maximum extent.

3064:63 is a badly damaged landscape-orientation tablet missing the upper right corner and all of the left hand side. Measuring 59 mm high by 29 mm at its maximum width, it contains the final, qualitative column of a headed numerical list or perhaps a tabular account (Table 4.12). The obverse is very abraded to the point of illegibility and reconstruction of its contents is hampered by the fact that few of the legible name fragments can be matched with any certainty in the rest of the archive. The heading is almost too damaged to read. After a ruling, the document presumably concluded with a date (month and day) but this too is now illegible.

3064:64 is also the right hand side of a small landscape-oriented tablet, measuring 37 mm high by 36 mm at its maximum extent. One surface has been almost lost while the other—possibly the reverse—bears seven lines of text containing names and patronyms, some of which are attested elsewhere in the archive (Table 4.12). There are no traces of a heading or date.

The small landscape-orientation tablet **3064:65**, which is missing its upper right corner, measured 55 × 35 mm when complete. It contains a summary receipt in headed, numerical list format for a variety of pottery vessels, received over a two-month period (Table 4.6). The document 1096:55 from Room 309 north is closely related in content. In particular, lines o 2 and 5–7 appear to parallel o 1–4 in the latter document. My readings of several of the words in these texts are highly conjectural and open to revision. Nevertheless, together these two documents are a tantalising link to the pottery found on site, as discussed elsewhere by Daniel Calderbank.[157]

The elongated, landscape format tablet **3064:67** is essentially complete, measuring 98 × 34 mm at maximum extent. Its obverse surface is badly weathered but its ten lines are almost entirely legible thanks to parallels from elsewhere in the archive. The reverse is better preserved. This numerical list records, as its heading states, small quantities of barley received by ten well-attested *iššiakku*-farmers (Table 4.6). Across three otherwise blank central columns the scribe has made up to a dozen stylus-holes on each line. Comparison with the similarly structured document 3064:72, whose heading explicitly states that it records 'barley … that was given daily', suggests that these are tally-marks for day-by-day payouts over the immediately preceding (or following?) period. The document ends with a month-day-year date which is likely to have been in the 7th regnal year of Aya-dara-galama if Dalley's reckoning is correct (see p.68).

The portrait-orientation tablet **3064:89** is missing its top and bottom edges but is otherwise complete. Measuring 108 × 73 mm, it contains a tabular account in four columns on the damaged obverse (Table 4.8). The well preserved reverse, although likewise ruled in four columns, is otherwise blank. Although the heading is now largely missing, the structure of the entries in the first three columns reveals this document to be a balanced delivery account, recording quantities of (processed) grain expected, delivered, and still owing by some twenty-five individuals. Unfortunately the tablet's parlous state of preservation is such that not a single one of their names is fully legible.

Tablet **3080:06** is a small, complete portrait-orientation tablet measuring 44 × 87 mm. It contains an unheaded numerical list running from the relatively well-preserved obverse onto the more damaged reverse, top and right edge (Table 4.6). The final twenty lines were lightly impressed into drying clay and are now impossible to read, even with RTI imagery. Unusually, on this tablet the quantities are recorded not in capacity measure but in counting numerals. The only other document in this archive with the same notation is the numerical list 3064:74 from Room 300 north, with the notation *mahir*, 'received', on its edge. However, beyond inferring that the goods were countable objects, it is impossible to guess what they might have been. We can do much better with the identities of the recipients, however, even though few are given patronyms or professions. Many are well attested elsewhere in the archive, both individually and in identifiable informal clusters.

The surface fragment **3064:88** measures 32 × 33 mm at its maximum extent, with the left-hand edge probably representing a column ruling. It contains a well-executed extract from the scribal lexical list Ur_5-ra, from the chapter on Metals (Tables 4.13, 39). The versions from Old Babylonian Nippur contain only one entry for šim-bi-zi-da, 'kohl'. The closest parallels are from Middle Babylonian Emar, where the word is written at least twice in the monolingual MVF IV/75–2502 (o iv 5'–6', immediately followed by a break) and four times in the bilingual Msk 74193b (r iii 12'–15').[158] Further, as Niek Veldhuis notes,[159] the omission of the first sign of the word in repeated entries is typical for Middle Babylonian Emar and Ugarit but almost unattested in the Old Babylonian lexical corpus. It is not clear whether this particular exemplar was written in Sumerian only or originally included translations into Akkadian.

[157] Calderbank 2020; 2021a; 2021b.

[158] Watanabe 1987: 289–91; Arnaud 1985: I 257 (https://oracc.org/dcclt/P250373, P271466).

[159] Personal communication, 16 June 2015.

300-E: Room 300 east

Four numerical lists were found very close together towards the eastern end of the northeast wall of Room 300, immediately to the northwest of, and in a stratum immediately above, a group of seventeen school exercise tablets, to which they are not related. The four lists share a great deal of their prosopography, while the pairs 3064:48 and 83 and 3064:49 and 53 resemble each other very closely. It seems reasonable to assume that they were discovered together in their intended storage location, the original shelf or container having long since perished.

3064:48 is a complete portrait-oriented tablet, measuring 94 × 54 × 20 mm. It contains a headed numerical list recording small quantities of *hargallû*-flour associated with thirty named individuals (Table 4.6). The twenty-two individuals on the obverse—21 men and one woman—each deliver(?) 10 litres of flour. All are attested elsewhere in the archive, not least on the obverses of 3064:49 and 53, found together with this tablet. Indeed the individuals concerned were apparently so well known to the scribe that only six are assigned patronyms, none is given a professional designation, in order to disambiguate them from others of the same name. However, given the frequency with which these names cluster together in other tablets, often with further information attached to them, in fact it is possible to assign patronyms and/or professions to most of these individuals with some confidence.

The eight lines of text on the reverse of this tablet are written towards the bottom, marking a clear separation between this section of the list and the obverse. The men in this list are all assigned 20 litres of flour. The first is described explicitly as an *iššiakku*-farmer and the following four as his partners. In fact the remaining three men in the group are also well attested as belonging to the same profession, for instance in 3064:49 and 53, also from this tablet group (albeit in a different order). Usually, the farmers are listed as an *ešertu*-workteam of ten, but here a single ruling under the eighth entry shows that this list was complete.

3064:83 must have been almost identical in size and format to 3064:48, although most of the lower half is now missing. It contains a headed numerical list, of twenty-four lines on each of the obverse and reverse, recording small quantities—always 10 litres where extant—of *hargallû*-grain (Table 4.6). At least twelve names are missing from the obverse; the extant ones are rarely qualified by professional designation and never given patronyms. Many of these individuals also appear on the reverse of 3064:49 and 53, also from this tablet group. Parallel to 3064:48, the fourth member of this group, the names of nine men are written in a separate section at the bottom of the reverse. Although they are not designated explicitly as *iššiakku*-farmers here, that is undoubtedly who they are, as all nine names recur together frequently, including on 3064:49 and 53, with that same title.

3064:49 is a substantial, portrait-oriented tablet, missing its upper edge. It contains a three-column numerical list, missing its heading, with 41 extant lines on the obverse and 42 on the reverse (Table 4.6). The first column contains quantities of grain in the range 30–600 litres, while the second two columns list personal names and their associated professions, patronyms or ethnonyms respectively, grouped implicitly into *ešertu*-workteams. The order of the individuals named is almost identical to 3064:53, discovered next to this tablet; only the quantities of grain differ. That parallel suggests that perhaps three lines are missing from each side.

3064:53 is a largely complete, substantial portrait-oriented tablet, missing only its bottom right-hand corner. Like 3064:49, to which it is very similar, it contains a three-column numerical list (Table 4.6), with 44 lines on the obverse, 4 on the bottom edge, 26 on the reverse, and 4 on the top edge. The left edge is also divided into two columns containing three and five lines respectively. As in 3064:49, the first column contains quantities of grain in the range 60–300 litres, while the second two columns list personal names and their associated professions, patronyms or ethnonyms respectively, grouped into *ešertu*-workteams. Barring the quantities of grain, the two tablets are almost identical in content, where extant, though some spellings differ from tablet to tablet, as well the membership of the second *ešertu*.

Unlike the archival tablets from in the eastern corner of Room 300, the seventeen fragments of elementary scribal exercises found with them had clearly been deliberately broken up in antiquity and some had had even been partially reshaped (Table 4.13). It is suggestive that the majority were found in context 3080, on or just above the same floor as the nearby round recycling bin (context 3081), from which they might have been dumped. The remainder come from the higher context 3064, along with almost all of the archival documents from this room. Seven can be identified as extracts from the long thematic word list Ur_5-ra, widely used for scribal training for millennia across the cuneiform world. Three others may belong to the elementary sign exercises Ea (or Aa) and/or Nigga. The rest have not yet been identified but I give my reasons below for provisionally assigning them as scribal exercises rather than archival documents. To my knowledge, this is a unique archaeological findspot for school tablets, which are otherwise only known from urban domestic, palatial and temple settings. I discuss the implications of this find further on pp.96-7, within a broader analysis of cuneiform literacy at Tell Khaiber.

There are six fragments registered under the number **3064:79**, only one of which is epigraphic. This is a piece from the upper (or lower) edge of a tablet, maximally measuring 57 × 37 mm. One side—the obverse?—is ruled and carries the remains of an exercise like Ea, which gives the readings and pronunciations of simple cuneiform signs.[160] If interpreted correctly, it is in two columns. Only a single sign is preserved in the first, while there are five entries in the second. The other side—the reverse?—is unruled and contains only traces of crudely written signs. It too seems to be in two columns.

3064:82 is a left-edge fragment of a tablet which shows clear signs of having been deliberately destroyed in antiquity.

[160] Veldhuis 2014: 178–82.

Entry	Translation	OB Nippur Ur_5-ra 3	MB Ur_5-ra 9 (SLT 45, Nippur)	MB Ur_5-ra 9 (Msk 731058, Emar)	SB Ur_5-ra 14
nin-ka_6	mongoose	371	[…]	[…]	202
nin-ka_6 tir-ra	forest mongoose	—	[…]	[…]	205
am	bison	319	o i frag B 18′	[…]	48
am-si	elephant	320	o i frag B 19′	o i 1′	53
ur-[mah?]	lion(?)	286	o i frag B 26′	o i 7′	64
ur-bar-ra	wolf	288	o i frag B 27′	o i 9′	68

TABLE 4.38. Comparison of 3064:82 with entries in Wild Animals chapter of Ur_5-ra.

It measures 38 × 52 mm at its widest extent and originally had writing on both sides, although one of them is now illegible. The surviving text is an extract from the chapter of Ur_5-ra on Wild Animals. I have not been able to find an exact parallel but the order of the entries more closely resembles later recensions than Old Babylonian ones, as shown in Table 4.38.[161]

3064:84 is the bottom left corner of a sizeable school tablet, deliberately broken in antiquity. It now measures 57 × 49 mm. The ruled obverse contains the remains of a now illegible exercise in two columns. The unruled reverse contains a sequence from the scribal exercise Ur_5-ra, from the start of the chapter on Metals, duplicating o 4'–6 and 9'–11' of 3080:15 from the same tablet group (Table 4.39). It does not, however, join 3064:88 from nearby Room 300-NE, which contains the immediately following lines, as the latter is ruled and written by a much more competent hand. The corresponding lines of OB Nippur Ur_5-ra 2 are 478–82 and 489 in Veldhuis's reconstruction.[162]

3080:07 is a fragment from the top right corner of a school tablet, measuring 44 × 27 mm. The pattern of breakage and damage to its surface strongly suggests that it was recycled in antiquity. Just a few malformed signs survive on each lightly ruled surface, making it impossible to identify which scribal exercise it represents.

3080:09 is a piece from the right edge of a school tablet, broken up for recycling in antiquity. It now measures 38 × 49 mm. Some lines on the lightly ruled obverse can be identified as belonging to the scribal exercise Ur_5-ra, from the section on Leather. Lines o 5'–6' correspond to OB Nippur Ur_5-ra 2, 411 and 413 in Veldhuis's reconstruction.[163] Obverse 3', which appears to consist of the Akkadian gloss *lā pīdu*, literally, 'unforgiving,' is reminiscent of an unprovenanced OB exemplar of OB Ur_5-ra 2, BM 85983 o iii 31 and 43, which Veldhuis suggests may refer to a leather strap or lash.[164] Only isolated signs remain visible on the reverse of this tablet.

3080:10 is a surface fragment from a partially recycled tablet, now measuring 41 × 53 mm. It bears four lines of script in a large, crude hand that may be from an *ad hoc* exercise in writing personal names and professions. Line 3' appears to contain the common element from Akkadian personal names, *-ilīšu*, 'of his god,' while line 4' may be an attempt at writing the Akkadian professional title *hazannu*, 'mayor.'

3080:11 is a piece from the right-hand edge of a tablet, deliberately destroyed in antiquity, which now measures 33 × 37 mm. The final signs of four ruled lines appear on the obverse while only traces are visible on the reverse. I was not able to identify what, if any, scribal exercise, these meagre traces represent.

3080:12 is the upper left corner, measuring 46 × 54 mm, of a tablet deliberately destroyed in antiquity. Only a few traces of writing remain on one side, perhaps including the sign GAG repeated three times on consecutive, unruled lines.

3080:13 is the triangular top left corner of a large school tablet, now measuring 45 × 55 mm. The well preserved, unruled obverse contains a sequence from the thematic word-list Ur_5-ra, from the chapter on Stones. It parallels lines 200–201, 203, and 205–206 of Veldhuis's reconstruction of OB Nippur Ur_5-ra 4.[165] The badly preserved reverse is ruled into three unequal columns but its contents are now otherwise illegible.

3080:14 is a fragment from near the top left corner of a tablet that had been broken up in antiquity. It measures 42 × 48 mm at its maximum extent. The obverse contains an unruled extract from the start of the Metals section of Ur_5-ra, largely duplicating a sequence also found on 3064:84 and 3080:15, found just nearby (Table 4.39). Lines o 1–3 and 6–8 correspond to lines 476–7, 478–9 of OB Nippur Ur_5-ra 2 in Veldhuis's reconstruction.[166] However, o 4–5 are interpolations: the word a_2-kar_2, 'utensil,' appears in OB Nippur Izi II 78,[167] while KA-kar_2, within the entry kir_4-$kar_2^{mušen}$, appears in the Birds section of OB Ur_5-ra 4.[168] The reverse is more difficult to read but it is possible that

[161] Following Veldhuis's reconstructions (https://oracc.org/dcclt/Q000001, Q000072, Q000089, accessed January 2020).

[162] https://oracc.org/dcclt/Q000040, accessed January 2020.

[163] https://oracc.org/dcclt/Q000040, accessed January 2020.

[164] Veldhuis 2017: 366; https://oracc.org/dcclt/P247857, accessed January 2020.

[165] https://oracc.org/dcclt/Q000041, accessed January 2020.

[166] https://oracc.org/dcclt/Q000040, accessed January 2020.

[167] https://oracc.org/dcclt/Q000050, accessed January 2020

[168] AO 6034 o ii 6 (https://oracc.org/dcclt/P492406, accessed January 2020).

Line	Entry	Translation	3080:15	3064:84	3064:88	OB Nippur Ur_5-ra 2	MB Ur_5-ra 7 (Msk 731054)	MB Ur_5-ra 7 (Msk 74123a)
1′.	an-ta-sur-ra	(a precious stone or metal)	o 3′				o iv 38	r iii 10′
2′.	a_2-kar_2	(a utensil)	o 4′					
3′.	KA-kar_2	…	o 5′					
4′.	an-za-ah	glass	o 6′	r 1		478	o iv 39	r iii 1′
5′.	an-za-ah babbar	white glass	o 7′	r 3		480	o iv 40	
6′.	an-za-ah gi_6	black glass	o 8′	r 2		479	o iv 41	
7′.	na_4 babbar	white stone						
8′.	na_4 gi_6	black stone						
9′.	su_3-ud-aĝ$_2$	(a precious stone or metal)		r 4		481		r iii 5′
10′.	su_3-ud-aĝ$_2$	(a precious stone or metal)		r 5		482		
11′.	a-gar_5	lead		r 6		489	o iv 44	r iii 7′
12′.	gag a-gar_5	lead nail				490	o iv 45	
13′.	$dilim_2$ a-gar_5	lead spoon					o iv 46	r iii 8′
14′.	šim-bi-zi-da	kohl			1′	483	o iv 47	r iii 11′
15′.	šim-bi-zi-da […]	[…] kohl			2′			r iii 12′
16′.	<šim>-bi-zi-da […]	[…] kohl			3′			r iii 13′
17′.	<šim>-bi-zi-da […]	[…] kohl			4′			r iii 14′
18′.	<šim> ku_3-sig_{17}	golden <aromatic>				484		
19′.	<šim> $gu_2^?$-$še^?$ […]	…						
20′.	<šim> $gu_2^?$-$še^?$ […]	…						
21′.	<šim> $gu_2^?$-$še^?$ […]	…						
22′.	<šim> $arina_x$	<aromatic> madder-root				485		
23′.	$piš_{10}$ id_2-lu_2-ru-gu	sulphur				488	o v 3	

TABLE 4.39. Parallels to the Ur_5-ra Metals sequence in 3080:15.

it includes entries from the Leather and/or Wild Animals section(s) of Ur_5-ra.

3080:15 is the left edge of a once very substantial multi-columned school tablet, broken up for recycling in antiquity and now measuring 150 × 72 mm (Fig. 4.10). One column of text survives on the obverse, passages of which duplicate 3064:84 and 3080:14, both found nearby, and 3064:88 from Room 300-NE. It represents a sequence from the Metals chapter of the thematic word list Ur_5-ra (Table 4.39).[169] The reverse does not survive.

3080:16, measuring 52 × 26 mm, is a left- or right-edge fragment from a school tablet that was deliberately broken up for recycling. The tablet turns left-to-right rather than top-to-bottom and it is not clear which side was intended to be the obverse. One surface contains four lines beginning with the sign niĝ$_2$, strongly suggestive of an extract from the Old Babylonian school exercise Nigga.[170] It appears that the remains of two columns survive on other surface but I have not been able to identify which school exercise the traces are likely to represent.

3080:17 comprises two fragments, one of which is anepigraphic. The other is the upper or lower left-hand corner of a tablet broken up in antiquity. It measures 49 × 75 mm. One surface bears four lines of text written in a large, crude hand with deliberate erasures and crossings out. The other surface is now missing. The surviving lines can provisionally be identified as a passage from the sign list Ea, with o 1–2 corresponding to lines 83a and 83 of OB Nippur Ea in Veldhuis's reconstruction, and o 3–5 probably matching some combination of lines 81–82 and/or 86–88.[171]

[169] Following Veldhuis's reconstructions (https://oracc.org/dcclt/Q00040,Q00070, accessed January 2020).

[170] Possible parallels include lines 64–68, 79–82 and 95–98 in Veldhuis's reconstruction of OB Nippur Nigga (https://oracc.org/dcclt/Q000052, accessed January 2020).

[171] https://oracc.org/dcclt/Q000055, accessed January 2020.

3080:18 is a right edge fragment measuring 41 × 46 mm with lightly ruled lines on each side. The few remaining signs at the end of each line are too badly preserved to identify. Although provisionally classified as a school exercise, on the basis of its findspot, this tablet may equally well represent a small piece of an administrative document recording patronyms and professions.

3080:19 is a substantial piece from the upper left corner of a school tablet, broken up in antiquity. It measures 87 × 59 mm at is maximum extent and is ruled into at least six columns on the obverse; the reverse does not survive. The obverse contains three inexpertly written columns of text which only approximately fit the column rulings: the second and third columns of text start in columns 4 and 6 of the rulings respectively but the text does not consistently respect either right or left column boundaries.

The exercise presented on this tablet is an idiosyncratic version of the Stones chapter of the thematic word list Ur_5-ra. It largely follows the scheme of OB Nippur Ur_5-ra, as reconstructed by Veldhuis, but adds several entries of its own and, like many Middle Babylonian manuscripts, avoids repetition of head words as much as possible, and even systematically omits the crucial sign na_4, 'stone'. Nevertheless, the sequence o i 1–6 otherwise matches OB Nippur Ur_5-ra 4 lines 14–19 and o i 8–11 corresponds to lines 20 and 22–23.[172] The two exceptions can also be accounted for: o i 6 matches IM 73301 o 16, a manuscript of OB Ur_5-ra from Larsa;[173] while o i 12, if restored correctly, is an entry commonly found in relation to other stones (e.g. in o ii 6). Likewise the entries in the second column mostly correspond to OB Nippur Ur_5-ra 44–52, with the exceptions of o ii 2—which substitutes zu_2 'flint' for gazi 'veined'—and o ii 7, which I cannot read but does not correspond to the expected gug $burud_x$(U)-$burud_x$(U)-da 'perforated carnelian'. Note too that in o ii 3–6 the sign zu_2 is erroneously carried over from o ii 2. The third column preserves only a few traces of signs, which I cannot identify with any confidence.

3080:20 comprises three crumpled fragments of clay, two of which are anepigraphic. The third is from the upper or lower right corner of a tablet, measuring 33 × 52 mm. Its misshapen form shows that it was deliberately broken, probably for recycling. I have not been able to identify the four partially preserved lines of text on one surface but have provisionally marked it as a school exercise, given the poor ductus and irregular column rulings.

3080:21 is a surface fragment of a tablet, deliberately broken in antiquity. Measuring 27 × 47 mm, it is ruled into two columns, in which text is preserved only in the second. I have not been able to identify the composition on which it is based but it is likely to have been a sign list, given the repetition of the sign IGI in the first three lines.

[172] https://oracc.org/dcclt/Q000041, accessed January 2020.

[173] Arnaud 1994, no. 1; https://oracc.org/dcclt/P322830, accessed January 2020.

300-NC: Room 300 north centre

The tablets from the centre of the northern half of Room 300 were all found scattered round the cleaned-out recycling bin (context 3081). The two fragments 3064:18 and 3064:101 may have been deposited when the bin was emptied, while the tiny, essentially complete memoranda 3080:01–05, found on the floor on which the bin had been constructed, seem to have been trampled into earth around it. Maybe someone had attempted to throw them in, missed, and had not bothered to pick them up again.

3080:27 was found with an anepigraphic piece of tablet clay—destined for or dropped from the bin?—between the bin and the western wall.

3064:18 is a fragment from the left-hand edge of a multi-column tabular account (Table 4.8). Up to five quantitative columns survive to maximum dimensions of 104 × 80 × 31 mm. The first three columns contain capacity measures, while the fourth lists integers in the range 1–3. The fifth, where it survives is blank. The fact that the quantities in columns i–iii are, where complete, all in the ratio 3:2:1 strongly suggests that this document is the remains of a *šibšu*-tax account in which two-thirds of the grain is kept by the *muškēnu*-dependent and one third is taken by the palace.

3064:101 is the central third of what was originally a small landscape-oriented tablet. What remains is almost entirely anepigraphic, except for traces of the heading, mentioning *iššiakku*-farmers, and perhaps a date at the bottom of the reverse. The narrowly formatted columns give it the same appearance as 3064:72, recording daily disbursals of grain to named individuals (Table 4.6).

3080:01 consists of the right hand side of tiny landscape-oriented tablet. It originally contained a memorandum, of which two badly abraded lines are barely visible on the obverse (Table 4.9). The one line on the reverse comprises the remains of a month-day date.

3080:02 is a tiny, complete landscape-oriented tablet. Its badly abraded obverse contains five lines of an administrative memorandum; the well-preserved reverse is blank, except for three line-ends that run over from the obverse (Table 4.9). Even though most of the surface of the text is lost, it is possible to identify this document as a note recording over 3,000 litres of grain to be sent to the palace as *šibšu*-tax on behalf of two farmers, whose names are unfortunately missing. It presumably found its way into the recycling bin once it had been incorporated into a tabular account recording payments from the whole community.

If I have read the very damaged final line correctly, this memo contains rare evidence that the scribes of Tell Khaiber used the sexagesimal place-value system (SPVS), the numeration used by scribes of the Ur III and Old Babylonian periods for converting between metrological systems and performing complex calculations.[174] The fact that another tablet with the results of a similar calculation on it, 3080:05, was found nearby, suggests that such efforts were generally

[174] Robson 2008: 15–16.

destined for the recycling bin. Likewise, the sexagesimal calculations from Room 309 E are also on tiny fragments, 1096:27 and 42 (see p.99).

3080:03 is a tiny but largely complete landscape orientation tablet, missing the left half of the obverse (Table 4.9). It contains an administrative memorandum in four lines, recording two (missing) quantities of grain ŠE LUGAL, 'barley by the royal measure', each associated with an otherwise well-attested protagonist: Sin-ma-ilum, frequently described as a subordinate of Nuratum; and Mayašu: either the scribe of that name or another homonymous individual. The completely preserved reverse contains a single line containing a month-day date (Fig. 4.7).

3080:04 is a small, badly damaged portrait orientation tablet whose top edge, top left and bottom right corner are missing. The obverse contains twenty-six lines of a 2-column tabular numerical list of grain capacities and workers in extremely small and sometimes illegible script; the damaged reverse is blank where extant (Table 4.7). As the heading of this document, if it had one, is now missing, it is difficult to tell its intended function; but it seems reasonable to assume that the very round numbers of grain measures—from 1 *parsiktu* to 2 *kurru*, or 60–600 litres, where surviving—represent payments rather than deliveries. Many of the names, where legible, are not otherwise attested in the archive but Alatum (o 3'), the woman Sutitum (o 5'), Arad-Sin (o 8'), Arad-Šamaš the shepherd (o 10') and Arzazu (o 13') tie this document into the rest of the corpus. It is the only one to describe pairs of men as being *itti*, 'with' each other (in o 8', 10' and 13'). As the artefacts from context 3080 were found in a slightly lower stratum than those with prefix 3064 in the same space, it is possible that this tablet represents an earlier phase of the archive, which was otherwise recycled or removed.

3080:05 is another tiny, almost complete landscape orientation tablet, missing some of the left side of the obverse. It contains a one-line memorandum recording a quantity of at least 17,004 litres of grain in a mixed notation (Table 4.9). The largest numerals, to the left, appear to be in capacity measure with horizontal wedges denoting the *kurru* unit, while immediately to the right is written 4 40(?) in sexagesimal place value system (SPVS). Perhaps this note records a half-finished attempt to total the entries in a numerical list or tabular account, which a fully competent scribe would accomplish by converting fully to SPVS for the calculation and then back into capacity measure to record the result (see p.99).

The lower half of a portrait-oriented tablet now measuring 51 × 58 mm, **3080:27**, bears a numerical list (Table 4.7). Without a heading it is difficult to be confident of its function, though the small quantities of grain—consistently 1 *sūtu*, *c.*10 litres—in the first column strongly suggest flour deliveries or grain receipts. Most, but not all, of the names on the obverse are attested elsewhere in the archive. The two legible names on the reverse are both those of *iššiakku*-farmers. Given that the members of this professional group are almost invariably documented together, it is likely that the rest of this sequence also represents other individuals of that profession.

300-SE: Room 300 southeast

Two large, substantially complete tablets were found together, just to the north the doorway between Areas 300 and 301. They both record large numbers of individuals receiving grain and grain products, often in *ešertu*-workteams.

The long portrait-orientation tablet **3064:33** has been reconstructed from several large fragments and is now almost complete, barring damage around the joins and significant surface damage to the bottom half of the obverse. It measures 189 × 80 mm. The tablet contains a long tabular list, which, according to its damaged heading, records unreconciled receipts of various grain commodities in two columns (Table 4.7). The latter half of the phrase ŠU.TI.A ⌜ LÚ É.GAL⌝, 'receipts of palace men', is tentatively restored from traces based on parallels with 1114:48 and 1124:01 (and cf. 1124:04). Quantities are mostly large, round numbers, from 1 *parsiktu* to 2 *kurru* (*c.*60–600 litres). Individual recipients are all given patronyms, professional designations, ethnonyms or other descriptors, and systematically grouped into at least five *ešertu*-workteams.

The tablet **3064:57** is an almost complete but badly damaged portrait oriented tablet missing its top and bottom edges, as well as the extreme left of the reverse. It now measures 58 × 147 mm at maximum extent. The tablet contains a long, two-column numerical list, with a much-damaged heading, recording small quantities of grain (20–50 litres where preserved), presumably allocated to the roughly 75 individuals originally named in the document (Table 4.6). The list starts by naming and identifying the ten *iššiakku*-farmers, then mentions two *ešertu*-workteams by the names of their leaders. After that, there is a mix of better and lesser attested individuals from the rest of the archive, sometimes further identified by profession or patronym. There is no further evidence of workteams or professional groups and no surviving date.

300-C: Room 300 central

Six fragments of administrative tablets, plus one piece of anepigraphic tablet clay (3064:24), were discovered in the centre of Room 300, to the southwest of the recycling bin Context 3081 and opposite the doorway to Area 301. 3064:26 was joined with another fragment, found some distance away and in a later season. The original tablet appears to have been deliberately broken in antiquity.

3006:09 is a fragment from the lower right corner of a tablet, now measuring 42 × 46 mm. Only names and professions remain in fifteen lines from the final column of an otherwise unidentifiable administrative record (Table 4.12). At least one individual, Egi-ana-mešu the boatman, can be firmly identified elsewhere in the archive.

3064:20 is a large surface flake from the right hand side of a portrait-format tablet, now measuring 46 × 77 mm. It preserves the remains of fifteen names and patronyms from

the final column of an otherwise unidentifiable administrative record (Table 4.12). Several of the names are also attested elsewhere in the archive but none is a central figure.

3064:26 comprises two fragments from right hand side of a landscape tablet, now measuring 96 × 64 mm. Inscribed as the clay was drying out, it preserves the final two columns of a balanced tabular account, in which all the surviving payments have been reconciled (Ì.SÁ). The entries on the obverse mostly concern the farmers, while several of the individuals on the reverse are also well known (Table 4.8).

3064:106 is a right-edge fragment of a tablet, measuring 52 × 42 mm at its maximum extent. It contains several, largely illegible lines on each side from the final column of an archival document (Table 4.12). The only identifiable individual is Nuratum, a powerful individual who is discussed further on p.95.

3064:108 is a bottom edge fragment, maximally measuring 47 × 30 mm. It contains the remains of several lines from the final column of an archival record, listing personal names (Table 4.12). Only a few are legible enough to reconstruct with any confidence.

300-SC: Room 300 south central

Thirteen small tablets and fragments were found scattered across the southern half of Room 300. Most were in isolated locations, except for 3064:120a and 120b (which might be parts of the same tablet) and 3064:121 and 122, also found together.

3006:01 comprises two joining fragments from the bottom half of a tablet, measuring 65 × 50 mm and bearing a three-column numerical list (Table 4.6). The obverse is largely destroyed, save for traces of the signs 10^{-ti} for *ešerti*, 'decury workteam', approximately six lines from the bottom. The reverse contains ten lines, containing large capacity measures, and the names and patronyms or professions of their recipients. All of the individuals are also attested elsewhere in the archive, with particularly close parallels in the sequencing on 3064:33 and 3064:120b from Room 300 and 1096:48 from Room 309.

3006:17 is a tiny, crudely made landscape-orientation tablet measuring just 26 × 45 mm. The obverse appears to contain a three-line memo recording the transfer for two individuals from (or to?) the palace, which may continue onto the bottom edge, now illegible (Table 4.9). The reverse contains a date, giving the month, day (now illegible), and year, namely Aya-dara-galama year K. Neither individual named in this memo is attested anywhere else in the archive, so far as I can tell.

3119:01 is a small fragment from the upper (or lower) right hand corner of a tablet, with maximum measurements 18 × 27 mm. The ends of four barely legible lines remain extant on one side, including a month-day date (Table 4.12).

Fragment **3119:03** is the top left-hand corner of a tablet, maximally measuring 41 × 33 mm. It contains a tabular account of milled barley deliveries (Table 4.8). Only the start of the introductory rubric, two column headings and first six entries of the obverse survive; the reverse is ruled but otherwise blank.

The fragment **3064:119**, now measuring 48 × 67 mm, preserves the top and bottom but not the left or right edges of the original tablet. On both sides it is ruled into two columns. The only writing that survives is a series of fairly small capacity measures on one side, with the rest of the surface bearing traces of mostly erased signs at top left, and otherwise apparently left blank. Although the other side is now badly damaged it appears to have been inscribed in a similar fashion (Table 4.12).

The fragment **3064:120a**, measuring 40 × 21 mm, represents part of the lower obverse and bottom edge of a tablet. Neither left or right edge survives. It preserves a sequence of seven personal names, some originally with patronyms, of the members of a well attested *ešertu*-workteam. Likely a fragment from a numerical list (Table 4.6), it may be a piece of the same tablet as 3064:120b, with which it was found.

Fragment **3064:120b** is the top right corner of a tablet, preserving several lines of the reverse and a small part of the top edge. Measuring 23 × 45 mm at its maximum extent, it might have belonged to the same tablet as 3064:120a, discovered nearby. While it now bears only patronyms and professional designations, the sequence can be matched exactly with that on the better preserved 3006:01 from Room 300, as well as partial matches with 3064:33 from Room 300 and 1096:48 from Room 309, in which the men are organized into *ešertu*-workteams (Table 4.6).

The very fragmentary landscape-orientation tablet **3064:121** now measures 78 × 58 mm at its maximum extent. It is missing much of its left-hand side as well as much of the surface of the obverse. However, the twenty-odd very narrow column rulings on this side, plus the traces of names to the right of them, show that this tablet was originally meant to contain a daily tally of grain receipts, like 3065.072 and others, found elsewhere in Room 300 (Table 4.6). By contrast, instead of the expected date, the unruled reverse appears to contain the remains of an informal memorandum concerning payment of *hargallû*-grain to a particular professional group, now illegible (Table 4.9).

The tiny, complete landscape tablet **3064:122** measures just 41 × 21 mm. Its obverse bears a partially illegible three-line memo about two of the archive's *iššiakku*-farmers (Table 4.9). The reverse is blank.

The fragment **3064:125** is an upper (or lower) edge fragment measuring 35 × 25 mm. Its unruled surface suggests that it originally contained a memo rather than a list or account. However, only four partially preserved names survive on the obverse; what remains of the reverse is too abraded to read (Table 4.12).

The small, landscape-oriented tablet **3064:128**, measuring 56 × 26 mm, is missing only its lower right corner. It bears a headed and dated numerical list, ruled as if for a five-day tally, of daily payments of 10 litres of grain to seven named women (Table 4.6). However, none of the narrow columns is checked off with a stylus impression, suggesting it was never

used for that purpose. The women are documented only by the first names, without professions or relationships, with the possible exception of o 4, where Halputu is described as [...].A.NI, 'her [...]', in relation to Šimat-Šamaš in the line above. Only Banitum, in o 6, is also attested elsewhere in the archive, just once (on 1096:47, a long tabular account from Room 309). The document is dated to the day and month.

The small landscape orientation tablet **3064:129** measures 47 × 24 mm, minus a substantial chunk of the top right hand corner. It contains a headed, dated memo documenting the names of half a dozen men, belonging to Habzazu's *ešertu*-workteam, who have a zero opening balance on their grain account (Table 4.9). Habzazu is also attested as an *ešertu*-leader on 3064:57 o 13, and perhaps also on 3064:118 o 12', both found elsewhere in the southern half of Room 300. Habzazu and Dassu-karabu (r 1) are frequently attested together as auxiliaries, but the rest of the list has a rather *ad hoc* feel to it, thanks to the throw-away phrase *u mamman* 'and whoever (else)' on b 1. Unfortunately the line immediately before the date, which we might expect to contain useful summary information or a statement of location or purpose, is largely illegible. The document is dated to the second month of Aya-dara-galama year I.

3064:135 is the upper two-thirds of a portrait orientation tablet, now measuring 78 × 100 mm at maximum extent. It contains a headed, dated numerical list of workers in receipt of large quantities of grain, grouped by *ešertu*-workteams (Table 4.6). Although the obverse is very abraded, the sixty or so names this document contains can be read almost entirely, thanks to parallels with 3064:33, found at the other side of the same doorway. The reverse shows rather greater variance with other lists in the archive. The tablet is dated to day 25, month VIII of Aya-dara-galama year J.

300-S: Room 300 south

This group contains the remains of three substantial three-column numerical lists, plus a number of unplaced fragments, which presumably originate from one or more of these tablets, found close together near the southeast wall of Room 300, south of the doorway to Room 301. As noted on p.66, Context 3111 represents the floor on which the recycling bin in Room 300 was constructed, while 3064 is the fill above it.

Despite their highly fragmentary state—crushed under a partition wall built to divide the long archive room into two—the two more complete tablets in this group have proved vital to understanding the composition of the community documented in the archive. This is because they both consistently give patronyms, ethnonyms and/or professional titles of the individuals recorded, as well as grouping them consistently into *ešertu*-workteams and more informal clusters. These groupings are discussed further on pp.83–4.

The find number **3064:118** is given to two non-joining fragments, the remains of a large three-column numerical list (Table 4.6). The larger of the two, now measuring 87 × 47 mm, is from the left hand side of the tablet. It contains 17 lines in three columns on the obverse and traces of 5 + 14 lines from one column on the reverse. The capacity measures in the first column range from 40 to 400 litres, mostly in whole, large units, on both obverse and reverse. Three *ešertu*-workteams are listed in consecutive lines of the second column on the obverse, which is otherwise blank, while the third contains the first few signs of personal names. The smaller fragment, measuring 38 × 30 mm, contains mostly illegible traces of signs from the right edge of one surface, which have not been transliterated.

3064:123 is a complete but badly damaged tablet, reconstructed from multiple fragments, measuring 128 × 94 mm in portrait orientation. Its obverse is badly abraded, especially in the top right and bottom left hand corners, but the text on the reverse is largely well preserved. It contains a three-column numerical list (Table 4.6), with capacity measures (insofar as they are preserved) ranging from 60 to 300 litres, followed by personal names with patronyms, ethnonyms and/or professional titles. If the tablet originally had a heading, it is now missing. Although only one *ešertu*-workteam is noted explicitly, other identifiable professional clusters include the ten *iššiakku*-farmers headed by Habbil-ilu (r 14–23) and the nine auxiliary troops led by Nur-Inšušinak (r 26–t 3). Very many of the individuals and groupings found in this list also appear multiple times elsewhere in the archive, across both rooms.

The four small surface fragments grouped under the find number **3064:133** were found very close to the large numerical list 3064:123. They almost certainly belong to the obverse of that tablet but cannot currently be placed. The largest of them, containing a few signs from the start of personal names, on each of six lines, measures 20 × 25 mm; the second has signs from probably the middle of names over five lines (23 × 13 mm) and the two smaller pieces just a single sign on each of two lines (Table 4.12).

The very badly damaged portrait-oriented tablet **3111:01** was smashed in antiquity by the weight of the wall constructed on top of it. A significant section of the middle of the upper half has been completely destroyed, as well as the top edge. Nevertheless, thanks to brilliant conservation work by Giulia Barella, much of it can now be reconstructed. Like 3064:123, found close nearby, it contains a three-column numerical list (Table 4.6), but it is about 25% greater in size, measuring roughly 110 × 160 mm and with over fifty lines per side. As the top of the obverse missing, no heading survives. In the first column are capacity measures ranging from 60 to 660 litres. The second and third columns contain the names of the recipients and their patronyms, professions, and/or (rarely) ethnonyms. The reverse follows a similar layout, albeit more tightly ruled, in order to make room for a second, two-column list of capacity measures and recipients on the right hand side of the tablet. Two *ešertu*-workteams are explicitly noted in the surviving sections but, as shown by close parallels to the other lists of this type, in fact most or all of this list is structured this way.

Room 300 unplaced

The tablet fragment **3064:136** was found when dry-sieving the fill from Room 300. Its exact findspot is therefore unknown. It is a surface flake spanning the whole width of the upper obverse of a tablet, to maximum dimensions 72 × 58 mm. The fragment bears a headed numerical list in two columns, recording large, rounded quantities of grain, presumably barley, but the identifying element of the heading is now missing. The remains of only two lines survive on the bottom of the reverse plus traces of a further line on the left edge. Although many of the thirteen personal names on the obverse are damaged, they can be restored with confidence, as they belong to members of two *ešertu*-workteams that are well documented in similar receipt lists across the archive (Table 4.6).

THE LETTERS ROOM 309

In the Letters Room, 309, the 64 tablets and fragments were found in three distinct groups close to the walls in the northern half of the space and three more scattered distributions over the southern end. The tablets in the northern groupings are very similar in content and genre to those in Archive Room 300, while the southern groupings also include a large number of payment records, which are not attested at all in Room 300.

309-N: Room 309 north

In the northern corner of Room 309 were found nine tablets and fragments, plus an uninscribed piece of clay. They comprise three tabular accounts, a dated numerical list, a letter, two memos and two fragments of administrative records.

1096:47 is a long, portrait orientation tablet measuring 124 × 64 mm. The obverse surface is badly abraded and is entirely missing the upper right corner, while the reverse is much better preserved. It contains a five-column balanced delivery account of flour(?) in over 70 entries (Table 4.8). Only traces remain of its one-line title and column headings and there is no evidence of dating. The capacity measures listed are all either 10 or 20 litres. While patronyms, professions and other signifiers are scarce, many of the names are clearly recognizable as those of individuals and groups well-attested elsewhere in the archive, including the ten *iššiakku*-farmers (o 20–29). Unusually, at least nine women are named, including two of the palace servant-women (r 1, 28).

1096:48 comprises two joining surface fragments of a large tablet, maximally measuring *c.*125 × 125 mm, spanning almost the entire width of the original tablet. The remains of two quantitative and two qualitative columns survive, covering thirty-one lines. Multiple structural similarities with 3064:33, including columnar configuration, the presence of the writing 10^{-ti} for *ešerti*, 'decury workteam' in the second column, and the capacity range, from 40 to 600 litres, strongly suggest that it too was a multi-commodity tabular receipt list (Table 4.7). All the individuals named in this document are also attested multiple times elsewhere in the archive.

1096:50 comprises the left-hand side of most of a long portrait orientation tablet, measuring 42 × 138 mm at its maximum extent. It contains a headed numerical list of recipients of small amounts (10–20 litres) of *hargallû*-grain, dated to the month and day on the left edge (Table 4.7). It must have contained about 70 entries originally, the first of which can be identified from parallels with other tablets in the archive as ten *iššiakku*-farmers and four palace servant-women. Thereafter many of the names become harder to reconstruct and the reverse is abraded to the point of illegibility. The list finishes with two entries on the left edge, written at 180 degrees to the month-day date.

1096:51 is a small landscape-orientation tablet measuring 85 × 54 mm. Its surface-damaged obverse contains a headed 4-column tabular delivery account comprising twelve entries (Table 4.8). The column rulings continue onto the well-preserved reverse, which is otherwise blank, save for a few fingernail marks on the top edge. The fact that many of the entries in columns 2 and 3 of the obverse are blank also suggests that this document was never finished. The individuals listed, many with professions, patronyms or other identifiers, are all attested elsewhere in the archive too.

1096:52 is an almost square tablet measuring 57 × 50 mm, which has been restored from fragments. The obverse surface is weathered, while the reverse, though mostly in better condition, has been eroded in parts by plant roots. It contains two short letters from one Adad-ilum, son of Uraš-ibsasa (Table 4.10). The first is to Mayašu the scribe, the second to his son-in-law Adad-šemi and a Sin-išmanni, perhaps the *iššiakku*-farmer of that name. Although badly damaged, both appear to give orders about managing the affairs of the sender's father and a certain Nuratum, whose sheep's wool needs to be transported. Tablet 1096:53, found in the immediate vicinity, appears to be related. These men and their business relationships are discussed further on pp.95–6.

1096:53 is a small, well preserved landscape-orientation tablet measuring 45 × 31 mm. The obverse contains an eight-line letter-order, which appears to instruct the names of five people to be entered into an account (*izzuzu* Š) (Table 4.10). All but the first are also attested elsewhere in the archive, the last three as the subordinates of Nuratum. The man named on the bottom edge, Adad-šemi, may, as I argue on p.95, have been a trainee scribe apprenticed to his father-in-law Mayašu. If so, it might not be too far-fetched to imagine that Mayašu was the author of this memo and Adad-šemi the addressee, or vice versa. The tablet 1096:52, containing letters addressed to Mayašu and Adad-šemi about sheep's wool belonging to Nuratum, was found right next to this one.

The small landscape-orientation tablet **1096:55** measures 49 × 30 mm. It is largely intact although there is some surface damage to both obverse and reverse. Like 3064:65 from Room 300 northeast, it contains a numerical list of seven different types of pottery vessels, in quantities from

ten to sixty (Table 4.6). Four of the vessel names in the first four lines are also found in the other list, though only two, *kaptukkû* and *kukkubbû* (o 1, 4), can be confidently identified as known types. In o 6, I take *lurmū* to be a variant of the well-known *lummu*, a type of cup or beaker. Four entries remain only partially read and unidentified. The list is dated to the day and month but, unlike 3064:65, is unheaded.

The two surface fragments together numbered **1096:58** measure 31 × 28 and 32 × 21 mm respectively. Although they do not join, they can confidently be related to each other, as between them they list eight members of Sebitti-nada's *ešertu*-workteam of palace auxiliary guards, plus five other men who are attested either immediately before or after them in several long grain receipt lists in this archive (Table 4.6). The fragments do not seem to join any of the other pieces found in this room either.

1096:60 is a small piece (46 × 33 mm) from the centre of a thick, and therefore probably originally very large tablet. It appears to have contained a two-column numerical list that ran over two (newspaper-style) columns on the surface of the tablet. Small capacity measures are preserved in the right-hand column; only small fragments of syllabic signs or logograms are visible in the left column. I have not attempted to edit it (Table 4.12).

309-E: Room 309 east

The remains of seven tablets, plus two pieces of uninscribed tablet clay, were found in the eastern corner of Room 309. They include three tabular tax accounts and a tantalising list of men 'who have behaved dishonestly'. A further numerical list, 1096:59, was found a little further away, along the southeast wall of the room.

1096:24 is a fragment from the top right corner of a tablet, measuring 44 × 56 mm. Its obverse preserves the right-hand column of a headed numerical list or tabular account, containing partially preserved personal names, often with professions, patronymics or other identifiers (Table 4.6). Several can be recognized as occurring elsewhere in the archive. The reverse, now badly damaged, appears to have continued the list.

1096:25 is a complete landscape-orientation tablet measuring 86 × 44 mm. Its slightly abraded obverse contains a headed memorandum with just three entries, written in a tiny hand (Table 4.9). The rest of the obverse is blank. Uniquely, the document records the names of 'workers who have behaved dishonestly', *ṣābū ša sārta īpušū*, according to the heading. Interestingly, the individuals listed—insofar as the names are legible—do not generally appear elsewhere in the archive, suggesting that they were removed from the workforce. Only a Sin-napšera (o 3) is once attested as a palace auxiliary (1114:17, b 1) but this appears to have been a different person.

1096:26 is the top left corner of a tablet, now measuring 57 × 44 mm. It is badly damaged and partly erased, giving the appearance of having been deliberately destroyed in antiquity. The obverse contains a tabular tax account, containing two, possibly three, quantitative columns and a qualitative one (Table 4.8). A fragmentary preamble describes its contents as *še' šibšu* [….] *muškēnī ša* […], 'barley of the *šibšu*-tax [….] *muškēnu*-dependents of/that […]'. The first column lists grain 'received by the palace', while, following Boivin (2016a), we expect the second, now mostly erased, column to have enumerated that kept by the *muškēnū*—typically twice the amounts sent to the palace. Only one name survives. The reverse is blank. As discussed further on pp.84–5, these tax accounts are important evidence for understanding the relationship between the inhabitants of Tell Khaiber and the palatial authority of the Sealand.

1096:27 is a fragment from the lower (or upper) edge of a tablet, now measuring 46 × 23 mm. It records four rows of numerals in two columns, apparently in the sexagesimal place value system (Table 4.12). This tablet and 1096:42 found close by, represent rare evidence for calculation, rather than just recording, of quantities in the whole archive. It is possible that they are two pieces of the same tablet. They are discussed further on p.99, along with 3080:02 and 3080:05, from around the recycling bin in Room 300.

1096:40 is a landscape-orientation tablet measuring 86 × 58 mm. It is complete but damaged, and the script is thus illegible in places. It contains a headed, three-column tabular list of *miksu*-tax paid by *muškēnu*-dependents to the palace, the only one securely identified in the archive (Table 4.7). Unlike the four Sealand *miksu*-accounts analysed by Boivin, this document records only the grain kept by the *muškēnū* and not the grain sent to the palace—typically twice the amount. The quantities involved range from around 250 to over 2,600 litres, and few are in round numbers. The small amounts in the second column might represent payments of *kiṣru*-duty. Many of the payees are described as substitutes/representatives or relatives (sons, daughters, wives) of others, perhaps receiving (or paying) the grain on their behalf. The *iššiakku*-farmers and their representatives are prominent in the first lines of the text, countering Boivin's tentative suggestion that *miksu*-payers 'were not primarily farmers'.[175]

1096:41 was reconstructed from three tablet fragments found a short distance apart from each other. Most of the upper part of the obverse can thus be restored, while the left half of the tablet has survived in its entirety. The larger piece measures 97× 69 mm and the smaller ones 44 × 20 and 20 × 13 mm respectively. When complete, the original tablet would have been at least 120 × 70 mm in size. The tablet contains a six-column, headed tabular account documenting *šibšu*-tax, like the simpler 1096:26 found nearby (Table 4.8). It records quantities of grain split in proportions of 2:1 for the 'share of the *muškēnu*-dependent' and 'the share of the palace'. In addition, small amounts are assigned to *kiṣru*-duty and city-gate tax. Such names as are legible cannot be firmly identified with other individuals attested elsewhere in the archive.

1096:42 is a small fragment from the lower left corner of a tablet, now measuring 33 × 30 mm. Tantalisingly, it is

[175] Boivin 2016a: 55.

the only document in the entire archive that records a total, ŠU.NIGIN, alongside numerals, written in relatively large script (Table 4.12). As discussed on p.99, some of these may be written in sexagesimal place value notation, for purposes of calculation. If so, this and 1096:27, found nearby, are important evidence that the scribes of this archive not only measured, counted and recorded capacities and other numbers but could also add and subtract them. It is possible that they are two pieces of the same tablet.

1096:59 comprises most of the left hand side of a landscape orientation tablet, measuring 49 × 63 mm. The full height of the tablet is preserved, although the first lines of the obverse have eroded away, including any heading the document may have had. The reverse is in much better condition. It contains the remains of a two-column numerical list (Table 4.6), with large, unrounded quantities of grain ranging from dozens to thousands of litres, a feature more characteristic of entries in tabular accounts. Perhaps it should be understood as *miksu*-tax document, like 1096:40 from this same tablet group. By and large, only a few traces of associated personal names survive. Some individuals are given multiple consecutive entries, marked KI-2 to KI-4 (e.g. o 9'–10', 14', r 11–13).

309-SE: Room 309 southeast

Five very similar tablets were found together against the central section of the wall separating Room 309 from 300. They underlay the point at which a later wall bisecting the room from northwest to southeast. All five concern deliveries of small quantities of *hargallû*-grain, to recipients including the farmers and palace servant-women.

1124:01 is a very badly damaged portrait-orientation tablet, measuring 57 × 80 mm. It is inscribed only on upper half of obverse, with a headed numerical list of *hargallû*-[flour] deliveries to the palace (Table 4.6). It comprises ten entries, both male and female. All surviving quantities are for 1 *sūtu*, *c.*10 litres. Some but not all the legible names are also attested elsewhere in the archive. There is no final ruling, suggesting that the document may have been left unfinished.

1124:02 is also a badly damaged portrait tablet, somewhat smaller than 1124:01 at 40 × 66 mm. Unlike 1124:01, it has no heading but it too is inscribed only on the obverse with a numerical list in which all entries are for 1 *sūtu*, *c.*10 litres of flour or grain (Table 4.6). The horizontal wedges to the right of this column may have served as check marks: see also 1124:03–05 found nearby. The names in this document are mostly illegible and can only be read where the traces match familiar names from elsewhere in the archive.

1124:03 is a landscape orientation tablet measuring 81 × 46 mm. It is in better condition than others found with it, with only the bottom left corner missing. The tablet contains a headed numerical list of *hargallû*-grain, dated to the month and day (Table 4.6). The few numerical entries surviving are in the 70–100 litre range and have all been checked off with a stylus mark. The list names eleven men, all well attested in the archive, but nevertheless giving their patronyms or professions. The list begins with the scribe Mayašu and ends with his son-in-law Iluni.

1124:04 is also a landscape-orientation tablet, measuring 81 × 36 mm. It has been restored from several fragments but its writing surface is in good condition. The obverse carries a headed numerical list of small, rounded quantities of *hargallû*-grain received by four 'palace servant-women', and a tailor (Table 4.6). Each entry is marked with a round check-mark, like 1124:03 and 1124:05. The women co-occur in several other tablets from Room 309, and the tailor only once more, without them.

1124:05 comprises four substantial fragments of a landscape-orientation tablet which must originally have measured some 67 × 43 mm. Although much of the writing in the central part of the tablet has been destroyed, the text can confidently be restored based on parallels, including **1124:04** foun0d with it. The document comprises a headed, dated list of *hargallû*-grain received in small, rounded quantities (Table 4.6). The named recipients are ten and four women, amply documented across the archive as *iššiakku*-farmers and palace servant-women respectively, and who are discussed further on pp.83–4.

300-S: Room 309 south

In the southern corner of Room 309, to the west of the low brick installation, the archaeologists unearthed eleven tablets and fragments, plus three pieces of uninscribed tablet clay. This group mixes document types familiar from Room 300 and the northern half of Room 309—a letter, a memorandum of workers and a list of *hargallû*-grain recipients—with the payment records that otherwise dominate the assemblage in this southern half (Table 4.11). The finds include a complete round tablet, 1114:23, measuring 72 mm in diameter. It was originally inscribed but is now illegible.

1114:01 is a small landscape-orientation tablet in good condition, measuring 45 × 31 mm. It contains a badly written letter, full of spelling errors and grammatical infelicities, to the scribe Atanah-ili from one Ahi-illikam, who queries the former's conduct of a court case, *dīnu* (Table 4.10). The implications of this letter for literacy and for the conduct of law at Tell Khaiber are discussed further on pp.95–6.

1114:26 is a small landscape-orientation tablet with surface damage to the obverse, measuring 59 × 26 mm. It contains a headed list of four workers, whose names can now only partially be read, and a note on the back, *ištēnma*, literally 'one', which probably means that it has been checked and verified (Table 4.9).

1114:36 is a long, portrait-orientation tablet measuring 48 × *c.*100 mm, reconstructed from four large fragments. Some passages of text are therefore missing at the joins and the corners, and there is some further surface damage to the obverse. A lot is still legible, nevertheless. The tablet contains a headed, dated numerical list of small, rounded quantities of *hargallû*-grain, originally comprising some forty entries (Table 4.6). At least eight names associated with the *iššiakku*-farmers are listed on the obverse, mostly

between o 5–17, while at least three of the palace servant-women are also present (o 3, 2', r 9). All other legible names are also well attested individuals elsewhere in the archive.

1114:21 is a small landscape-orientation tablet in good condition, measuring 43 × 24 mm. It contains a record, dated to the day and month, that Nuratum, who also features in the archive's letters as discussed on pp.95–6, has been paid a sizeable amount of grain and silver.

1114:22 is a very small landscape-orientation tablet in good condition, measuring 33 × 16 mm. It contains a record, dated to the day and month, that Nuratum has been paid a sizeable amount of grain but no silver.

1114:25 is a small landscape-orientation tablet in poor condition, measuring 42 × 26 mm. It contains a record, dated to the day and month, that one Re'i-Ninurta—attested frequently in such orders but nowhere else in the archive—has been paid a quantity of grain.

1114:27 is a very small, perfectly preserved landscape-orientation tablet, measuring 36 × 16 mm. It contains a record, dated to the day and month, that Re'i-Ninurta has been paid a quantity of grain.

1114:29 is the left hand portion small landscape-orientation tablet in poor condition, measuring 38 × 27 mm. It contains the remains of a payment record, dated to the day and month.

1114:34 is a small landscape-orientation tablet in good condition, measuring 40 × 19 mm. It contains a record, dated to the day and month, that Re'i-Ninurta has been paid a sizeable amount of grain but no silver.

1114:55 is a fragment of ill-formed tablet clay, possibly recycled, measuring 34 × 32 mm. One side contains several capacity measures, roughly jotted down, in two columns (Table 4.12). The other contains a date.

309-SC: Room 309 south central

Thirteen small tablets were found scattered across the floor of the southern end of Room 309, away from the wall towards the centre of the room. The tablets comprise a letter, a memo, and two documents about *hargallû*-flour, plus eight payment orders (Table 4.11). The round tablet 1114:50, measuring 93 mm in diameter, was found blank and looks as though it had never been inscribed.

1114:40 is a complete, mostly well-preserved portrait-orientation tablet measuring 41 × 71 mm. Some text is missing, especially along joins on the reverse of the tablet. It contains a headed but undated numerical list of small, rounded quantities of *hargallû*-flour (Table 4.6). The forty-five or so entries do not appear to be organized in any particular order. The *iššiakku*-farmers do not feature while many, but not all, of the names are also attested elsewhere in the archive.

1114:45 is a small landscape-orientation tablet with some surface damage to the obverse, measuring 45 × 26 mm. It contains an incompetently written letter to the scribe Atanah-ili from one Uraš-ibsasa, whose son mentions him in other letters found elsewhere in this room (Table 4.10). The syntax of the first sentence after the greeting, and morphology of the key verb, are both unclear, but he appears to report that an official has returned from the city to discover that all the barley has been removed. The relationship between Uraš-ibsasa and the scribes, and the implications for the chain of command at the Tell Khaiber grain archives, are discussed further on pp.95–6.

1114:47 is a small, almost perfectly preserved landscape-orientation tablet measuring 52 × 27 mm. It contains a very interesting and well executed memorandum documenting the flour production of three male relatives of well-attested *iššiakku*-farmers, perhaps on their behalf (Table 4.9). A certain Rib-ibe(?), not otherwise mentioned in the archive, is consulted and deferred to.

1114:48 is a small landscape-orientation tablet measuring 70 × 44. It is similar to 1124:05, found a few metres away in the southeast tablet group of Room 309 (Fig. 4.6). The obverse especially is badly damaged but much of the text can be restored with confidence as it concerns the ten men and four women identified here, and elsewhere in the archive, as *iššiakku*-farmers and palace servant-women respectively. This headed and dated tabular account records deliveries of small, rounded quantities of *hargallû*-flour in four quantitative columns (Table 4.9).

1114:38 is a small landscape-orientation tablet with some surface damage to the obverse, measuring 41 × 21 mm. It contains a record, dated to the day and month, that Re'i-Ninurta has been paid a quantity of grain and silver.

1114:39 is a small landscape-orientation tablet in good condition, measuring 37 × 22 mm. It contains a record, dated to the day and month, that Nuratum has been paid a sizeable quantity of grain.

1114:41 is a very small landscape-orientation tablet with some damage to the lower half, measuring 34 × 20 mm. It contains a record, dated to the day and month, that Nuratum has been paid a quantity of grain and silver.

1114:43 is a small landscape-orientation tablet, measuring 39 × 21 mm. It contains a record, dated to the day and month, that Nuratum has been paid a quantity of grain.

1114:44 is the right-hand portion of a small landscape-orientation tablet in poor condition, measuring 42 × 26 mm. It contains a payment order, dated to the day and month, for a quantity of grain.

1114:49 is a small landscape-orientation tablet in poor condition, measuring 42 × 26 mm. It contains a record, dated to the day and month, that one Ahi-illikam has been paid a sizeable quantity of grain and silver.

1114:51 is a small landscape-orientation tablet in good condition, measuring 45 × 25 mm. It contains a record, dated to the day and month, that one Arzazu has been paid a sizeable quantity of grain and silver.

1114:52 is a complete but slightly damaged landscape-orientation tablet, measuring 41 × 23 mm. It contains a record, dated to the day and month, that Re'i-Ninurta has been paid a quantity of grain.

309-W: Room 309 west

Nineteen tablets and two anepigraphic pieces of tablet clay were found scattered over the western corner of Room 309, between the walls and the floor. They include a tabular account, several numerical lists and two memoranda, as well as ten payment orders (Table 4.11) and a fragment of a possible school exercise.

1114:03 is a landscape orientation tablet measuring 85 × 38 mm. It is missing its top left corner and much of the rest is also in poor condition. It must have originally contained a numerical list of some sort, although the quantitative column and any heading are now entirely missing (Table 4.12). Traces of familiar names can be read in a few lines of the obverse. There may have been a date on the reverse, which was probably otherwise blank.

1114:04 is a landscape orientation tablet now missing its top edge and lower left corner. It is otherwise reasonably well preserved, measuring 84 × 53 at its maximum extent. The tablet contains a four-column tabular tax account (Table 4.8), recording payments of hundreds of litres of the grain to the palace, plus small quantities of *kiṣru*-duty and city-gate tax. As the preamble in the first line is missing, it is impossible to tell whether this document records *šibšu* or *miksu*-tax as both types typically gave one-third to the palace and two-thirds to the producer. At least four of the individuals named here are *iššiakku*-farmers or their representatives; only some of the others are also attested elsewhere in the archive.

1114:05 is a portrait orientation tablet measuring 59 × 74 mm. The obverse surface is badly damaged but the reverse is in much better condition. One can even see the stylus impressions becoming shallower as the tablet dried out in the course of being inscribed. The tablet contains a headed list of very small quantities of *hargallû*-grain, with some entries at the top of the reverse marked by stylus holes (Table 4.6). About forty individuals are listed, mostly men, many of them apparently otherwise unattested in the archive.

1114:06 is a small, well preserved landscape orientation tablet measuring 44 × 21 mm. It contains a letter written by Uraš-ibsasa to Nuratum, telling him to take a large quantity of flour, and informing him that he, Uraš-ibsasa, will take what remains (Table 4.10). Although a few words are difficult to interpret, the overall intention of the letter is clear. The two men, their role in the archive's management, and their relationship to cuneiform literacy, are discussed further on pp.95–6.

1114:07 is a small landscape-orientation tablet in good condition, measuring 41 × 19 mm. It contains a record, dated to the day and month, that Ahi-illikam has been paid a sizeable quantity of grain and silver.

1114:09 is a large surface piece from the right hand side of a large tablet, now measuring 82 × 70 mm. One surface preserves ten lines of a school exercise, which appears to be a sign-list like Ea (Table 4.13). The other surface is not preserved.

1114:11 is a small landscape-orientation tablet in good condition, measuring 38 × 24 mm. It contains a very badly written order, dated to the day and month, that one Manni-Šamaš has been paid a sizeable quantity of grain and silver, as authorised by the scribe Atanah-ili (Fig. 4.9). This document is discussed in more detail on pp.97–8, as key evidence for scribal apprenticeship.

1114:12 is the upper portion of a portrait orientation tablet, now measuring 48 × 69 mm. The obverse, in very bad condition, preserves the remains of a list of workers, presumably comprising an *ešertu*-workteam (Table 4.9). Only four names can be read; the perfectly preserved reverse is blank.

1114:13 is a small landscape-orientation tablet in good condition, measuring 39 × 24 mm. It contains a record, dated to the day and month, that Ahi-illikam has been paid a sizeable quantity of grain.

1114:14 is a well preserved landscape-orientation tablet measuring 66 × 32 mm. It contains a headed memorandum listing seven members of one Abi-ili's *ešertu*-workteam, including two of his brothers (Table 4.9). Most of the names are otherwise unattested in this archive. The significance of the numeral 48, written on the reverse of the tablet, is unclear to me.

1114:15 is a landscape orientation tablet measuring 72 × 43 mm. Its has been reconstructed from fragments but its writing surface is otherwise in good condition. It contains an unheaded, undated list of eleven men, most of whom are also attested elsewhere in the archive (Table 4.9). The individual named in o 1, Ṭeḫ-tamti-išemme, is noted elsewhere in the archive as coming from Babylon (3064:33 r 13; 3111:01 o 27'). Perhaps he is the *ešertu*-leader of this team.

1114:16 is a small landscape-orientation tablet, measuring 41 × 20 mm, with some damage to the reverse. It contains a record, dated to the day and month, that one Ile''i-bulluṭa has been paid a sizeable quantity of grain from, or belonging to, Ilanutu. As I suggest on pp.97–8, it may be evidence for on-the-job scribal training.

1114:17 is an almost square, landscape orientation tablet measuring 63 × 56 mm. Although complete, its obverse surface is in terrible condition but the reverse is relatively well preserved. It contains a headed numerical list of *hargallû*-grain (Table 4.6), in very small amounts with some entries at the top of the obverse checked off with stylus marks. The thirty or more individuals recorded here, including a few women, appear to be listed in no particular order. Many are recorded with their profession or family status. Some are otherwise attested elsewhere in the archive but several are not.

1114:18 is a small landscape-orientation tablet in good condition, measuring 38 × 19 mm. It contains a record, dated to the day and month, that Nuratum has been paid a sizeable quantity of grain.

1114:30 is a small landscape-orientation tablet in good condition, measuring 38 × 25 mm. It contains a record, dated to the day and month, that Re'i-Ninurta has been paid a sizeable quantity of grain.

1114:31 is the right-hand portion of a small landscape-orientation tablet, measuring 33 × 22 mm. It contains a

record, dated to the day and month, that Atanah-ili has been paid a quantity of grain, now missing.

1114:32 is a small landscape-orientation tablet in good condition, measuring 42 × 24 mm. It contains a record, dated to the day and month, that Atanah-ili the scribe has been paid a sizeable quantity of grain. Given its variant word-order, it is probably a further example of scribal education in practice, for which see pp.97–8.

1114:33 is a small landscape-orientation tablet, measuring 42 × 22 mm. It contains a record, dated to the day and month, that Re'i-Ninurta has been paid a large quantity of grain.

1114:51 is a small landscape-orientation tablet in good condition, measuring 38 × 23 mm. It contains a record, dated to the day and month, that Re'i-Ninurta has been paid a sizeable quantity of grain and silver.

OTHER FINDSPOTS

As mentioned in on p.67, a few other tablets and inscribed artefacts were found elsewhere in the Fortified Building, beyond the Archive Room and the Letters Room.

Room 122

A headless, fragmentary clay figurine of a seated animal (**1005:18**) was found in the surface clearance over Room 122, a tower room at the northern end of the Fortified Building's eastern external wall, . It carried the following inscription on its left flank:

A.ZU GAL ^{d}GU. ⌜LA⌝	Great healer (of) the goddess Gula […]
mu-bal-li-⌜iṭ⌝	[…] reviver […]
KUR GAL [...]	great land/mountain […]

The symbol of Gula is a dog, and the figurine might be of one, although the paws, which survive, are more lion-like.[176]

Room 124

Two small fragments of a single baked brick were discovered above nearby tower room 124, also at the northeastern exterior corner of the Fortified Building. **1039:19** bears signs from the first few lines of the standard 9-line inscription of the Ur III king Amar-Suen, stamped into the surface of the clay.[177] Pieces of baked brick occur occasionally in excavation and in surface clearance, but not in the quantities one might expect, given their relative indestructibility, if a building of royal patronage were represented, and we assume for now that they may originate elsewhere.

Room 179

Two edge fragments of a round tablet were found on the surface above 179, a large room in the west-central block of the Fortified Building's northern wing. The constituent parts of **6136:12** bear the scant remains of a headed administrative document, probably a tabular account given the size and complexity of the extant capacity measures (Table 4.8).

Room 314

Room 314 is the southern room of the Fortified Building, immediately to the west of the Letters Room. **1142:7**, a tablet fragment found here, measures 37 × 38 mm. It contains nine lines from the surface of an archival document, containing capacity measures and the initial signs of personal names (Table 4.12).

Room 601

Room 601, in the west wing of the southern unit, faces Letters Room 309 across courtyard 315. Here another fragment of a stamped brick of Amar-Suen was discovered, **6058:7**, partially preserving the first seven lines of the nine-line inscription.[178]

[176] See Nett 2021 for a recent discussion of Gula's dogs, with references to earlier literature.

[177] RIME 3/2.01.03.01. See, most conveniently, https://oracc.org/etcsri/Q000981, accessed July 2021.

[178] RIME 3/2.01.03.01 (https://oracc.org/etcsri/Q000981, accessed July 2021).

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DANIEL CALDERBANK

5. The Pottery: A Typological and Technical Overview

INTRODUCTION

Pottery was the most abundant type of artefact found at Tell Khaiber. The total assemblage is composed, firstly, of second millennium material (9,328 diagnostic sherds) associated with primary and secondary use of the Fortified Building, and secondly, of a significant late fourth to early third millennium assemblage that predates the Fortified Building (8,905 diagnostic sherds), yet through a mix of human action and site formation processes found its way into the site's later second millennium contexts. Only the second millennium material is dealt with in this report.[179]

The Tell Khaiber assemblage is almost entirely plain and undecorated in style and encompasses a limited range of functional types. Pots were locally produced, involving heavy use of organic tempering practices and wheel-based forming techniques. While Tell Khaiber's assemblage does, therefore, in many respects fit the profile of the so-called Mesopotamian tradition,[180] chronologically comparative material for the centuries of the mid-second millennium BCE across the Mesopotamian plains is effectively non-existent. Almost all traditional urban centres, as far as excavated evidence goes, show occupational breaks consistent with the disintegration of the Old Babylonian state (*c.*1740–1595 BCE), with only some cities—Uruk, Isin, Nippur, and Tell ed-Der—yielding evidence for reoccupation aligning with the emergence of the Kassite Dynasty (*c.*1450–1150 BCE) across the northern and southern alluvial plains.

Armstrong and Gasche have recently synthesised the securely stratified second millennium pottery from sites across Mesopotamia into a unified typology. In their opinion, the most chronologically relevant sequences for the mid-second millennium hiatus are:[181]

- Tell ed-Der: Area B (0a), Area E (D23), and Area E (IIIa), dating to *c.*1650–1630 BCE.
- Tell ed-Der: Area B (D30), Area F (Burial 392), dating to approximately *c.*1450–1425 BCE.
- Nippur: WA IVC, dating to approximately *c.*1450–1425 BCE.

Nevertheless, this re-analysis of relevant strata still leaves a period of approximately 200 years unaccounted for. This, Armstrong and Gasche bridge typologically using the Susa sequence (Chantier A: Levels XI–XV; Chantier B: Level VI–V), asserting that it provides the only 'useful ceramic evidence to fill this gap at the mid-millennium.'[182] However, none of the sixty-one Susa vessels chosen for inclusion in their Mesopotamian pottery typology show strong parallels with the material from Tell Khaiber. On the other hand, their typology largely overlooks reliably stratified mid-second millennium material from sites in the Gulf, such as Failaka Island (Tell F3 and F6, Periods 3A–B) and Qala'at al-Bahrain (Period IIIa). Tell Khaiber's assemblage proves Højlund's long-held assertion that the Gulf ceramics reflect the pottery styles in common use in southern Mesopotamia during this poorly understood period.

Tell Khaiber provides us with an extensive mid-second millennium pottery assemblage from southern Mesopotamia, and the first assemblage that can be reliably associated with the Sealand Dynasty and its emergent state apparatus through textual association. It is for this reason that I will refer to the assemblage as a *Sealand period* assemblage

[179] For more information on the earlier material, see Calderbank and Moon 2017 and Calderbank in prep.

[180] Armstrong and Gasche 2014; van As and Jacobs 2014.

[181] Dates used here, as elsewhere in this volume, conform to the Middle Chronology and have been modified from dates given in referenced publications where necessary.

[182] Armstrong and Gasche 2014: 2.

throughout this analysis.[183] This Sealand assemblage is of critical importance, firstly because it fills a long-standing typological void, and secondly because its secure retrieval and its comprehensive recording also allows us to pursue lines of technological and sociocultural enquiry beyond typology building. As a snapshot of Sealand period craft engagements, this assemblage provides information regarding pottery production, vessel use, and the distribution of activities across the Fortified Building. Likewise, stylistic parallels allow for a theoretically informed discussion of Sealand period society beyond Tell Khaiber, as a distributed state system that spread throughout the waterways of southern Mesopotamia and the Gulf and was supported by everyday commensal habits.[184] While some of these varied interpretive strands are dealt with in this pottery report and are interspersed throughout this volume, others are developed more substantially in the associated pottery monograph.[185]

Collection and recording procedures

All pottery from Tell Khaiber followed a consistent process of recording that was of necessity designed to maximise expediency. Pottery was brought back to the Ur dig house every day to be washed by Nasrullah Mohsen. Bulk sherds were laid to dry, before being sorted into several categories — diagnostic sherds, body sherds, wasters,[186] and slag.[187] Sherds from secure contexts, such as a discrete room surfaces, were kept in the short term in order to increase the chances of identifying associated sherds for refitting. Once a context was fully excavated, these sorted categories were counted and recorded. Complete vessels and diagnostics (rims, bases, and decorated sherds) were subjected to further analysis.[188]

Each complete vessel and diagnostic sherd was entered into a Microsoft Access database, where it received its own unique pottery number. The pottery number was based on the context in which it was found, thus all pottery from context 3064 took the initial designation p3064; each diagnostic sherd then took an additional individual number based on the order in which it was recorded, for example p3064-1, p3064-2, and so on. In the database, several general features—shape type, rim and/or base diameter, fabric type and texture—were measured. If a new shape type, or a particularly good example of an existing type, was encountered, the sherd was routinely illustrated and photographed, and more detailed description of the vessel colour and fabric type was conducted. Complete vessels were always illustrated and photographed, and a detailed visual and microscopic analysis[189] of the vessel fabric was undertaken where possible. Other morphometric measurements were also taken for complete vessels; these were often specific to the vessel type, but always included maximum height, maximum width, and volumetric capacity.[190]

Typological framework

The Tell Khaiber second-millennium shape typology operates as a multilevel framework of classification, which is made possible due to a large number of complete or mostly complete vessel profiles (*c.*400). Firstly, a series of essential shape-based seriations (*Families*) are identified, which are broadly organized according to their degree of openness, with open shapes appearing before more closed vessel shapes. Families are designated by multiples of five (5, 10, 15…) and are labelled with commonly used ceramic terms, such as bowl, goblet, cup, jar, etc.[191]

Primary shape families are separated further by more small-scale variations in rim shape, base shape, and occasionally body shape or decorative feature. These *Types* are folded into the overarching *Family* and are represented by single numbers (e.g. 5.1, 5.2, 5.3…), with the lowest numbers being reserved for complete shapes, then rim shapes, body shapes, base shapes, and miscellaneous features in ascending numerical order. For example:

Family: Family 5. Bowls with plain, rounded rims.
Type: 5.1. Carinated body.

This hierarchical system was designed in order to correspond better with Armstrong and Gasche's second millennium vessel typology, thus permitting ease of reference. Yet, unlike their typology, which also incorporates technical aspects of production, the Tell Khaiber typology follows a shape-based seriation. The reason for this is that

[183] I will use culture historical terminology throughout this report. In doing so, I do not intend to uncritically associate pottery types with political entities, or to view pottery as a passive materialisation of political power. When these terms are used to qualify pottery, for example Sealand pottery or Kassite pottery, they are done so simply to signify the general date of those vessels and to aid readability. Terms carrying less interpretive baggage, such as Middle Bronze Age or Late Bronze Age, do not bear the necessary level of chronological refinement.

[184] Calderbank 2020.

[185] Calderbank 2021a. Specific vessels will be referred to in this report by their pottery number. For more information on these individual vessels, see above.

[186] Sherds rendered unusable due to being overfired to the point of vitrification and warping.

[187] Vitrified waste material that gathers in a pottery kiln.

[188] Due to a lack of long-term storage space, Tell Khaiber's bulk sherds and diagnostics, once processed, were returned to the site for controlled discard. Complete vessels, on the other hand, were routinely taken to the Iraq Museum in Baghdad at the end of each excavation season, in accordance with the regulations of the Iraqi State Board of Antiquities and Heritage (SBAH).

[189] Using a digital microscope (Supereyes B008). Images were routinely taken at a magnification between ×100 and ×150.

[190] Vessel volumes were measured using computer software named Pot_Utility v. 1.05 (©J.P. Thalmann & ARCANE).

[191] These primary shape designations are not intended to passively imply specific vessel functions (see Rice 1987: 211–2). Rather, because the use of these loaded terms is so widespread in archaeological discourse, I feel that the use of neutral geometric designations of shape (e.g. Ericson and Stickel 1973; Riemer 1997) would render the text incomprehensible.

while Armstrong and Gasche's typology deals *only* with complete vessels, where the signatures of production are easier to discern, Tell Khaiber's typology also incorporates fragmentary diagnostic sherds, which are more difficult to categorize technologically.

SEALAND AND KASSITE PERIOD POTTERY TYPOLOGY

Eighteen main vessel families have been identified, comprising 77 constituent types. To these, a further family of vessels can be added that demonstrate repurposing of other, sometimes third millennium, vessel types (Family 95). These families are briefly introduced here, together with family counts per phase and relative percentages of families and types compared to the total assemblage for each phase (Figs. 5.25–46). What is not accounted for in this typological outline is detailed descriptions of each vessel type, or a visual presentation of the stylistic variation between vessels of each type. This information may be found in the comprehensive typology presented in Calderbank 2021a.

Family 5: Bowls with plain, rounded rim shapes and undecorated bodies

These are the most frequently attested family in the assemblage, with five distinct types. These vessels as a rule exhibit open, shallow shapes and flat string-cut bases (Type 15.1) or occasionally platformed string-cut bases (Type 15.2). Rim diameters show great diversity (Range 70–370 mm); the majority fall within a small-medium size range of <=200 mm. Vessel volumes correlate well with rim diameters, with the majority yielding relatively small capacities (Avg. 0.41L; Range 0.07–1.85L; n=47), with most yielding volumes smaller than 0.5 L. The typological differences between these vessels occur in the shape of the body, with by far the most numerous types having carinated (Type 5.1) or curved (Type 5.2) body shapes. Less frequently attested are deep curved (Type 5.3), wavy-sided (Type 5.4), and straight-ripple-sided (Type 5.5) variations.

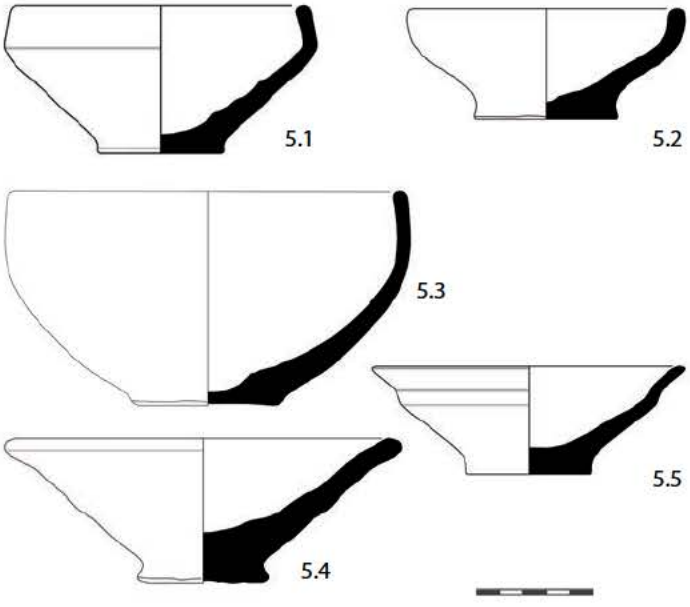


FIG. 5.1. Family 5 Types.

Family 10: Bowls with shaped elements

These are less frequent than their plain counterparts, but come in four types. No complete profiles have been discovered, meaning it is difficult to be sure of the corresponding base shapes. However, it seems likely that complete profiles were essentially similar to Family 5. Thus, base Types 15.1 and perhaps also Type 65.1 should be associated with these rim types. Typical of this family are the extensive range of rim diameters demonstrated (110–380 mm). On the whole, they are somewhat larger than those vessels of Family 5, tending to fall into a medium–large size range (Avg: 235 mm; n=213) and usually falling over 200 mm. While each type demonstrates broadly the same carinated body shape, variations occur in the treatment of the exterior surface (plain or grooved), the shape of the rim (rounded or squared), and in the combination of these elements.

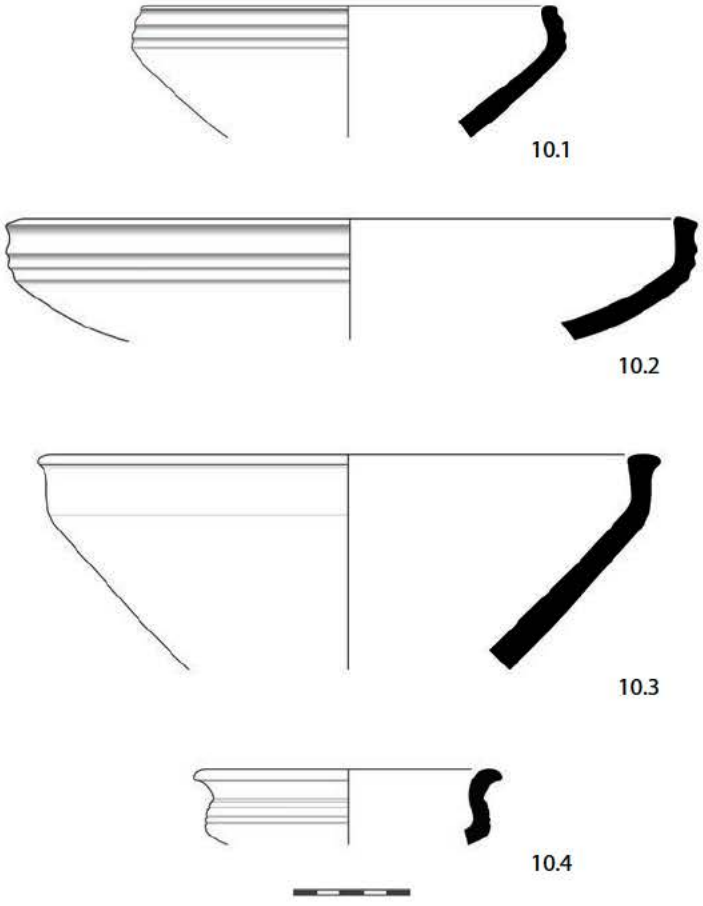


FIG. 5.2. Family 10 Types.

Family 15: Bases that can be reliably associated with open bowls of Families 5–10

Bases are invariably string-cut, with the exterior exhibiting the concentric ellipsoidal markings indicative of the vessel's separation from the wheel-head using a string. Base diameters vary (Range 30–130 mm: Avg. 61 mm; n=492), but most cluster tightly between 40 and 70 mm. Two constituent types form this family, with the only difference lying in the relative height of the base platform.

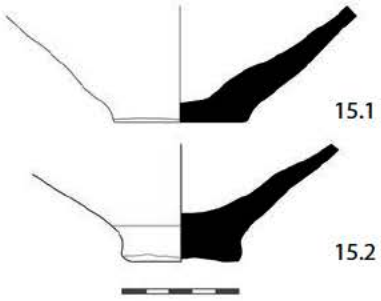


FIG. 5.3. Family 15 Types.

Family 20: Trays or basins

These are rare amongst the total assemblage and show little morphological standardization in comparison with other vessel families. There is substantial variability in rim diameters (Range: *c.*120–600 mm; Avg. 379 mm; n=28) and base diameters (Range: *c.*120–330 mm; Avg. 252 mm; n=6). However, accurate diameters are often not possible due to both the large size and irregularity of rim and base shapes. Vessel fabrics are invariably coarse and thick walled (Avg. 23 mm). Vessels of this family are broadly separated into those with everted shapes (Type 20.1) and those with more restricted shapes (Type 20.2).

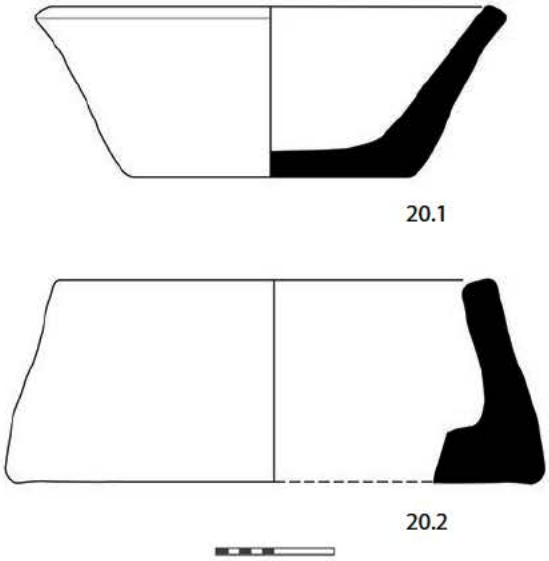


FIG. 5.4. Family 20 Types.

Family 25: Barrel-shaped pithoi

These usually have rolled, thickened rims and applied ring bases. Six constituent types make up this family: Type 25.1 has a simple thickened rim band; Type 25.2 has a thickened rim band with grooves; Type 25.3 has a thickened rim band and a closed body shape; Type 25.4 has the same rim shape as Type 25.1, but is smaller in size; Type 25.5 is a typical applied ring base. Depending on the constituent type, these vessels have either vertical, open body shapes (Types 25.1–2 and 25.4), or more rounded, slightly closed shapes (Type 25.3). Overall, the range of rim diameters measured presents great diversity (Range 200–825 mm; n=328), although a large number of diagnostic rim sherds were too large for a standard recording chart (>600 mm). Vessel volumes are also substantial (Avg. 147.3 L; Range 78–228 L; n=6).

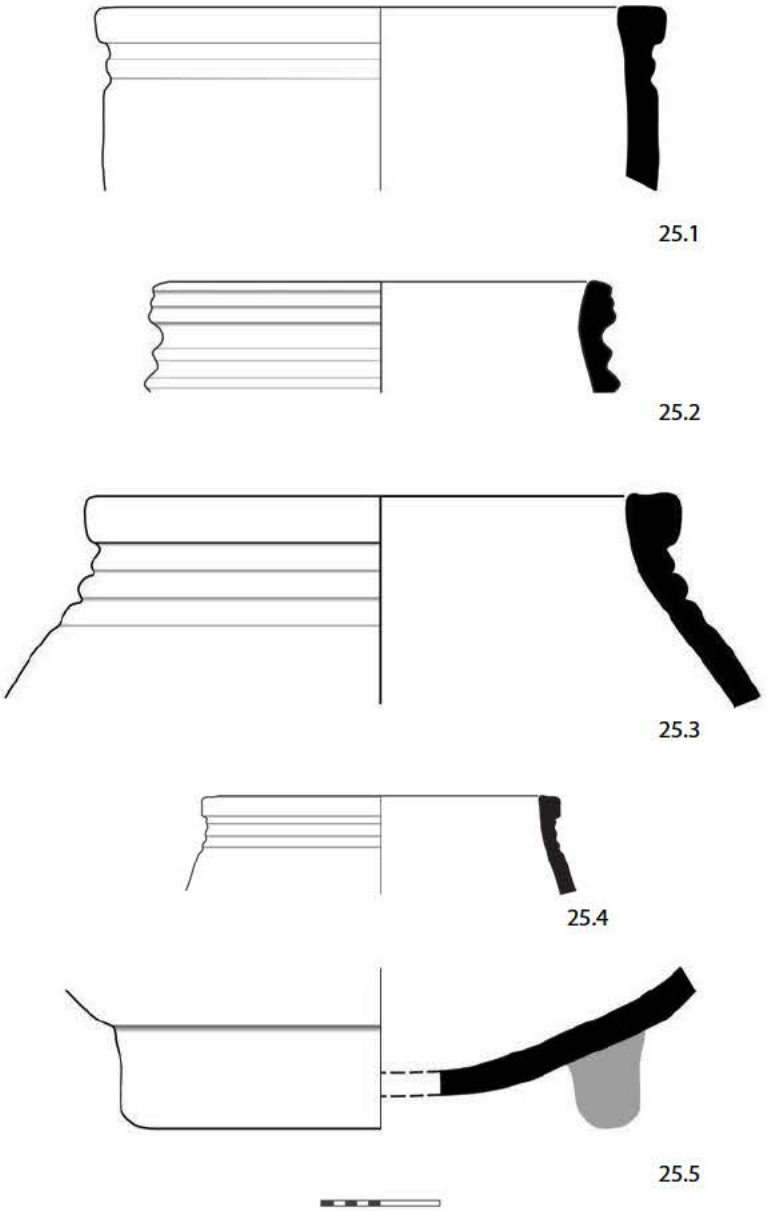


FIG. 5.5. Family 25 Types.

Family 30: Barrel-shaped pithoi with perforated bases

Family 30 vessels are essentially identical in shape to vessels of Family 25 (especially Types 25.1, 25.2 and 25.4).[192] The defining feature of Family 30, however, is the perforated 'bunghole' base (Type 30.2), which fundamentally separates the function of these vessels from that of regular pithoi (Family 25). Accordingly, these vessels were never equipped with the ring bases of Type 25.5, but presumably instead sat in separate cylindrical pot stands (Types 85.2–3). Another typical element of this vessel type is the regularity with which decorated features occur; decorative techniques include impressed bands, wavy bands, incised lines or raised ledges and incised crescent designs. These decorative features are usually located at fixed points: directly beneath the rim, at the midpoint of the vessel, and directly above the base. Volumetric measurements show significant range (10.4L, 15.3L, and 60.6L). This is consistent with the range recorded in rim diameters (230–430mm; Avg. 335; n=6), base diameters (45–110mm; Avg. 66.2mm; n=17), and perforation diameters in the base (13–30mm; Avg. 22mm; n=16). Three variant types encompass this family: Type 30.1 has a simple thickened rim band and decoration associated with this family; Type 30.2 is the typical perforated base; and Type 30.3 is a body sherd with decoration associated with this family.

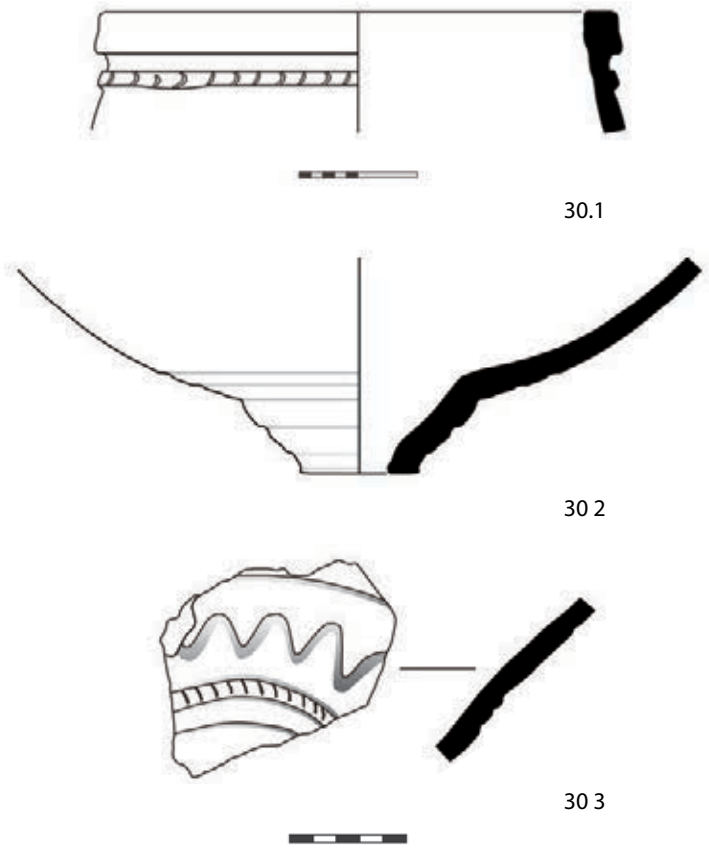


FIG. 5.6. Family 30 Types.

[192] Due to these similarities, where rim sherds are ambiguous, they have been assigned to Family 25, thus partially resulting in the disparity in frequency between these two families.

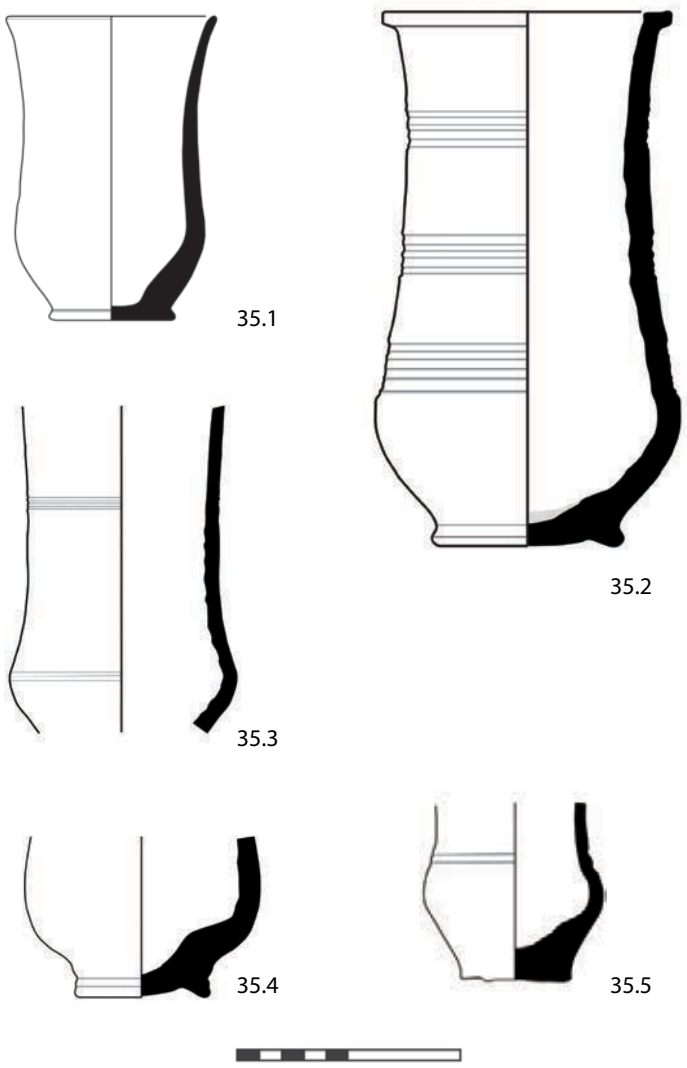


FIG. 5.7. Family 35 Types.

Family 35: Cylindrical beakers

These vessels have a vertical to slightly concave profile and their exterior surfaces frequently exhibit concentric impressed bands or incisions; these are present in isolation, in pairs, and even sometimes in sets numbering as high as nine. When present, these decorative elements tend to be placed in the same positions: beneath the rim, near to the midpoint of the body, at the curve of the lower body, and in a manner that shows regular, standardized spacing, most likely in association with specific volumetric measures.[193] On the whole, vessels of this family demonstrate a good degree of differentiation in size: rim diameters range from 85–320mm (Avg. 189mm: n=112) and bases from 35–125mm (Avg. 61mm; n=45). The differences between the five constituent types of this family lie in the shape of the rim, plain or squared (Types 35.1–35.2), and the base, finished ring base or flat disc base (Types 35.4–35.5). One type is also reserved for decorated body sherds belonging to this family (Type 35.3).

[193] Calderbank 2021b: 47–9.

Family 40: Goblets .

These vessels have shaped feet and tall profiles and occur in three different types. Base Types 40.1–2 both have flaring feet, but while Type 40.1 has a straight steep-sided profile, Type 40.2 has a more rounded profile. Type 40.3 shares a similar flared base, but is taller and more pedestalled than the other two types; where preservation allows, some Type 40.3 vessels demonstrate tall, elaborate necks.

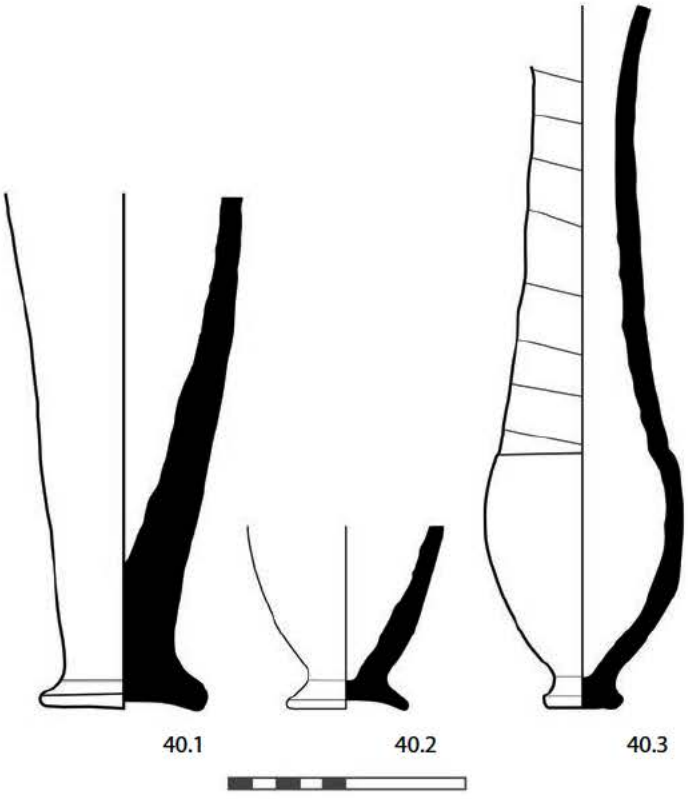
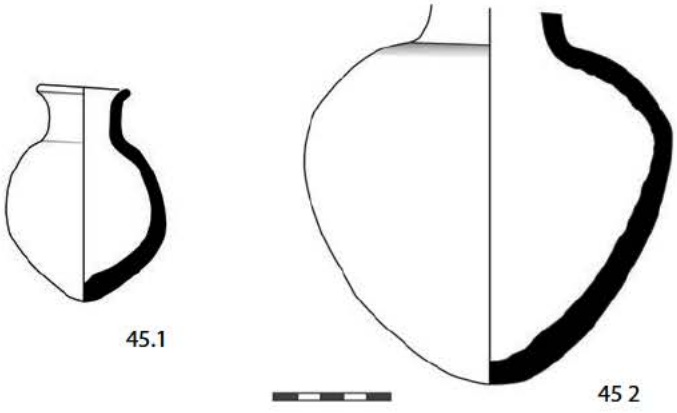


FIG. 5.8. Family 40 Types.

Family 45: Bottles

These vessels invariably have tightly restricted necks and openings, and, apart from Type 45.3, demonstrate round bases. The most common type, Type 45.1, has a squat, globular profile, while Type 45.2 has its highest point at the shoulder. Type 45.3 has a button base, a globular profile,



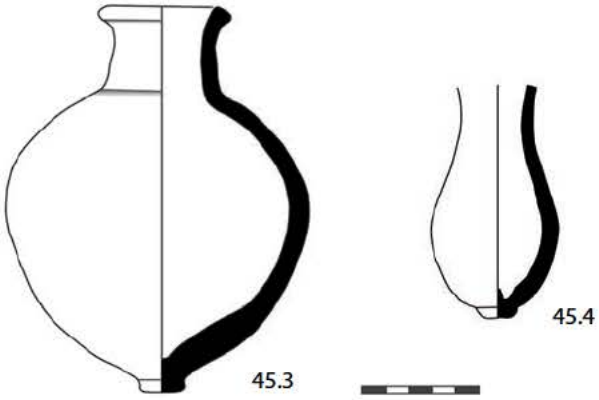
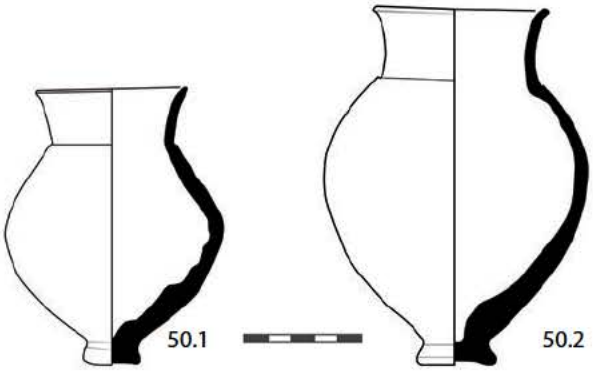


FIG. 5.9. Family 45 Types.

and a slightly thickened rim, while Type 45.4 has a button base and sinuous body. There is a clear preference for special surface treatments, such as slipping or extensive burnishing, amongst vessels of this family. These practices are exceedingly rare in the rest of the assemblage.

Family 50: Cups

These are extremely common components of the Tell Khaiber assemblage, with 156 vessels preserved at least up to the base of the neck. Six of the seven cup types are identifiable by their rounded body shapes and short, well-defined necks. These necks are vertical to slightly concave in profile and invariably end in rounded, slightly everted rims (Type 60.1). The widest point of a cup tends to fall around the vessel's midpoint, but frequently falls slightly lower and, less commonly, higher, near to the shoulder. All cups show a high level of uniformity in morphological dimensions; rim diameters always fall between 48 and 85 mm (Avg. 74 mm; n=71), while two-thirds of cup volumes fall between 0.2 and 0.4 L (Range 0.06–0.88 L; Avg. 0.33 L; n=157). The main differences between the constituent types of this family are determined by subtle differences in the shape of the foot. These feet fall into two main categories: stable (50.1–3) and unstable (50.4–6). Type 50.1 has a flat pedestal foot; Type 50.2 has an angled pedestal foot; Type 50.3 has an indented pedestal foot; Type 50.4 had a rounded nipple foot; Type 50.5 has a rounded button foot; and Type 50.6 has a rounded base that is barely perceptible. Type 50.7 has a flat pedestal foot *and* an atypical steep-vertical-sided body.



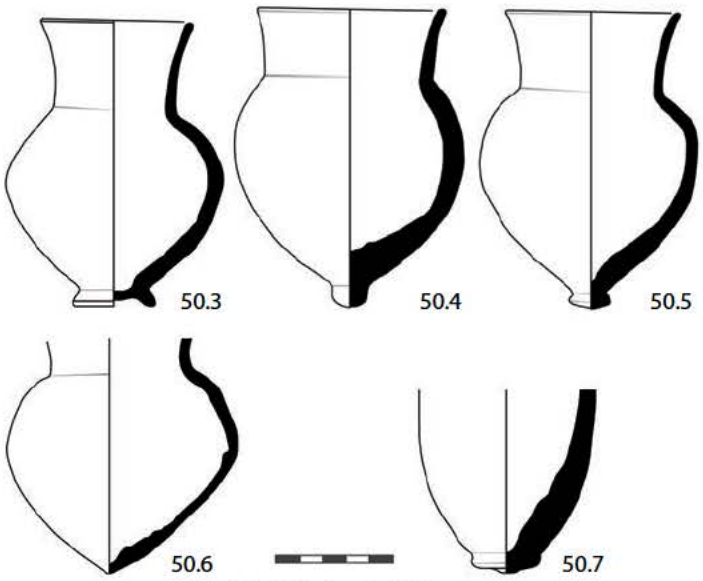


FIG. 5.10. Family 50 Types.

Family 55: Jugs

Like cups, jugs are identifiable by their rounded body shapes and well-defined necks. Indeed, these vessels share the majority of their morphological features with stable footed cups (Types 50.1–3). The main difference, however, is in the overall size of jugs compared to cups; rim diameters (Avg. 94 mm; n=11), base diameters (Avg. 58.2 mm; n=388), and volumes (Avg. 1.2 L; Range 0.4–3.17 L; n=25) are considerably larger in comparison. Type 55.1 has a flat, pedestal disc base; Type 55.2 has an angled pedestal base; and Type 55.3 has a flat pedestal disc base and tall neck.

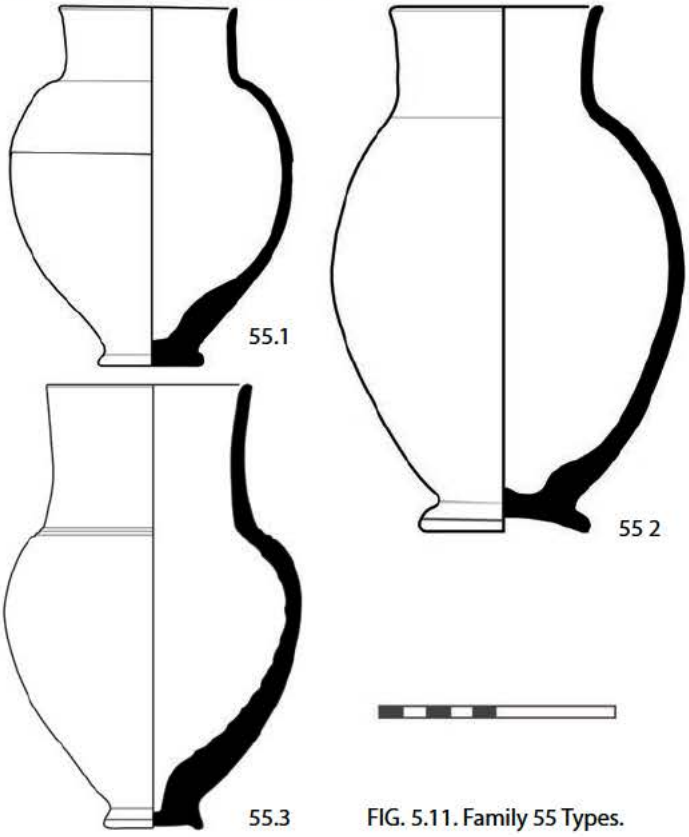


FIG. 5.11. Family 55 Types.

Family 60: Rim sherds not attributable to one specific family

These are rim sherds that cannot be reliably attributed to one vessel family. Rather, they are ambiguous types that might be associated with several different vessel families. Type 60.1 has a plain rounded rim, associated with cups and jugs; Type 60.2 has a plain rounded rim and a tall neck, associated with cups and jugs; Type 60.3 has a thickened rim and a wavy-sided neck, perhaps associated with jugs or jars; and Type 60.4 has a thickened rim and a sharply defined narrow shoulder, perhaps linked with large cylindrical shaped beakers.

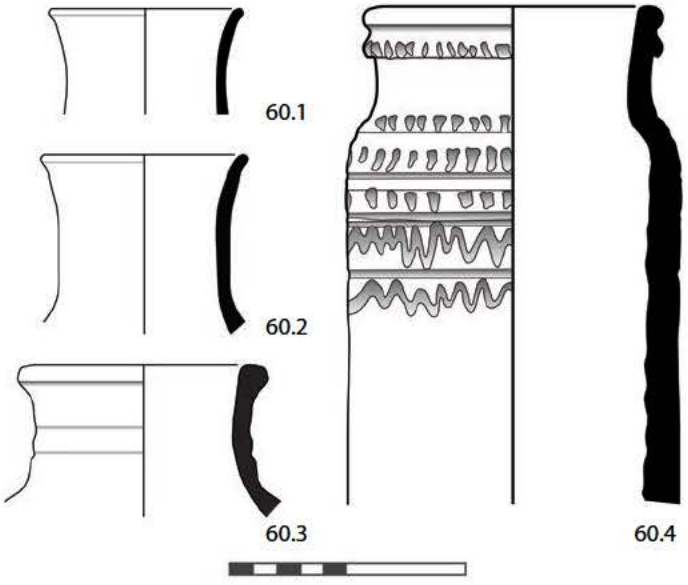
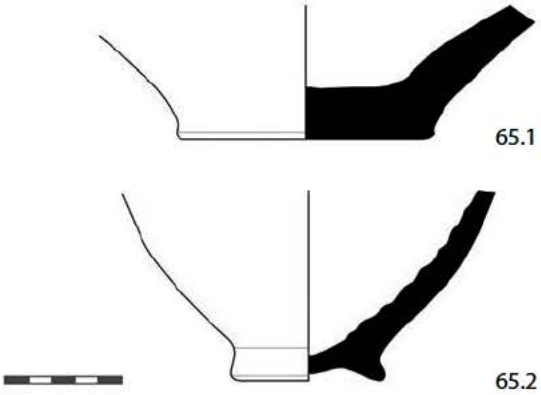


FIG. 5.12. Family 60 Types.

Family 65: Base sherds not attributable to one specific vessel family

Rather, they are ambiguous types that might be associated with several different vessel families. Type 65.1 has a flat, pedestal disc base; Type 65.2 has a finished ring base; Type 65.3 has a rough, flat base; and Type 65.4 has a tall pedestal base.



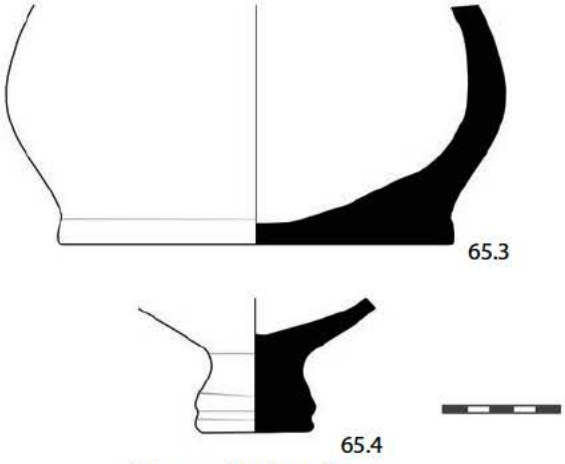


FIG. 5.13. Family 65 Types.

Family 70: Jars

These vessels have globular, sometimes baggy body shapes and short, well-defined necks. A rounded base shape (Type 70.7) appears to have been by far the most frequent amongst jars and is the only shape that has been found associated with complete jar profiles. Nevertheless, the high frequency of ambiguous base types (e.g. Types 65.2–3) in the assemblage might also mark these as potential jar bases. Jars are very common in the Tell Khaiber assemblage and show a good deal of uniformity in size and shape. Although rim diameters vary across the entire assemblage (80–350 mm; Avg. 155.6 mm; n=1475), most rim measurements conform to a tight cluster between 140–180 mm. Vessel volumes also show consistency, falling into two corresponding sizes: two smaller vessels have an average capacity of 9.6 L (Range 9.3–9.9 L) and four larger vessels yield an average capacity of 19.2 L (Range 17.1–20.1 L). This family

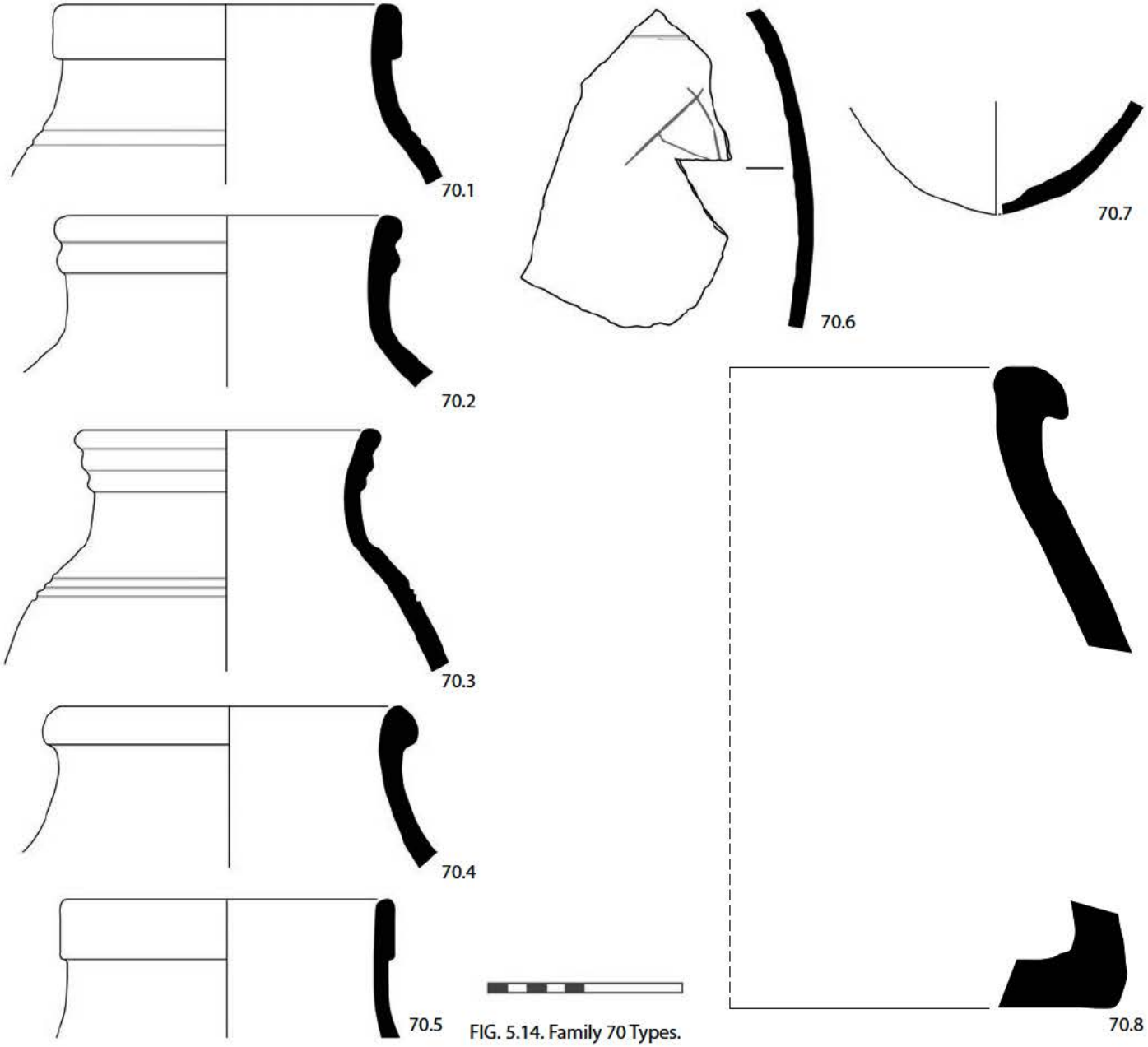


FIG. 5.14. Family 70 Types.

is composed of eight different types, the differences between are determined by subtle differences in the shape of the rim band: Type 70.1 has thickened, squared rim band; Type 70.2 has a thickened rim band with a single groove; Type 70.3 has a thickened rim band with multiple grooves; Type 70.4 has a round, thickened rim band; Type 70.5 has a narrow thickened rim band; Type 70.6 is reserved for infrequent incised or decorated jar rims or body sherds, sometimes with incised lines or crescents running around the circumference, and sometimes with incised linear potmarks placed in isolation on the body; Type 70.7 has a rounded base; and Type 70.8 has a rough, flat base, associated with a unique coarse-ware jar.

Family 75: Small, hole-mouth vessels

These vessels have squat, rounded body shapes, which flare outwards from directly below the rim, usually with little to no perceptible neck. When bases are preserved, they are flat, rough, and usually string-cut. Rim diameters are generally quite restricted (Avg. 102 mm; Range 60–210 mm; n=42). The point of difference between the different types in this family lies in the shape or orientation of the rim: Type 75.1 has an inverted rounded rim; Type 75.2 has an everted and squared rim; Type 75.3 has an everted rounded rim; and Type 75.4 has a lifted cylindrical neck and a squared rim.

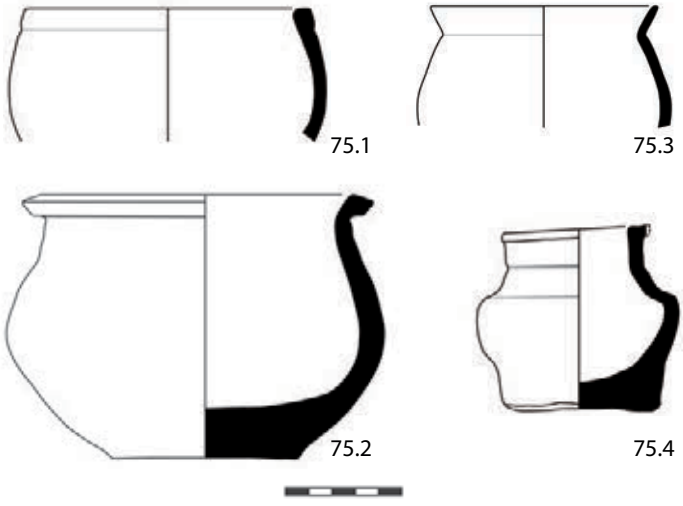


FIG. 5.15. Family 75 Types.

Family 80: Large, hole-mouth vessels

Vessels of Family 80 are very similar in shape to those of Family 75, but are larger in size, and are almost always produced of different fabrics (usually Fabric G). Vessels of this family always have an inverted rim orientation with no perceptible neck, and, when preserved, exhibit a sharply curved or carinated lower body. This curve or carination leads to a rounded base, similar to jar base Type 70.7. A number of vessels of this family carry one or more small, simple lugs, which are applied irregularly around the circumference at the rim. Family 80 have comparatively large rim diameters (Avg. 203.4 mm; Range 110–340; n=131) when compared to Family 75. The three volumes measured also show some consistency in size (Avg. 13.8 L; Range 9.9–16.5 L; n=3). There are three constituent types in this family: Type 80.1 has an inverted round rim; Type 80.2 has a squared rim; and Type 80.3 is made up of body sherds that bear the distinctive carinated shape of this vessel family.

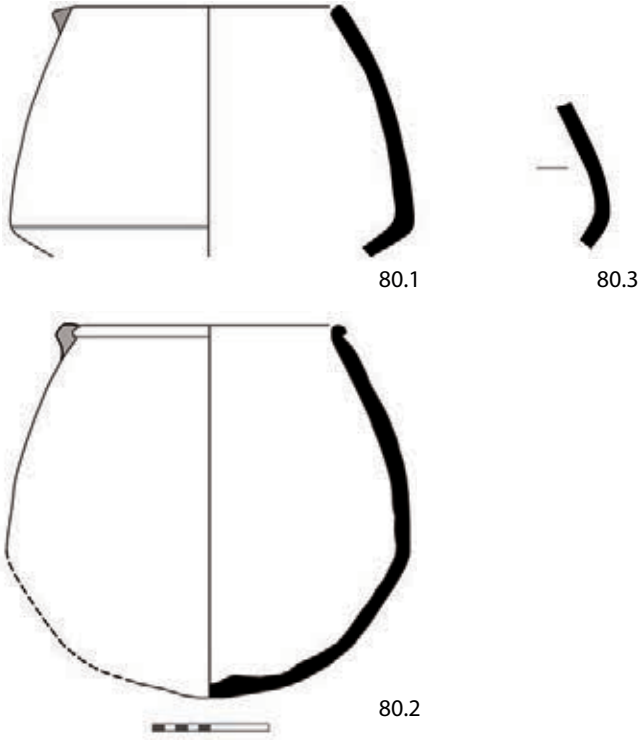
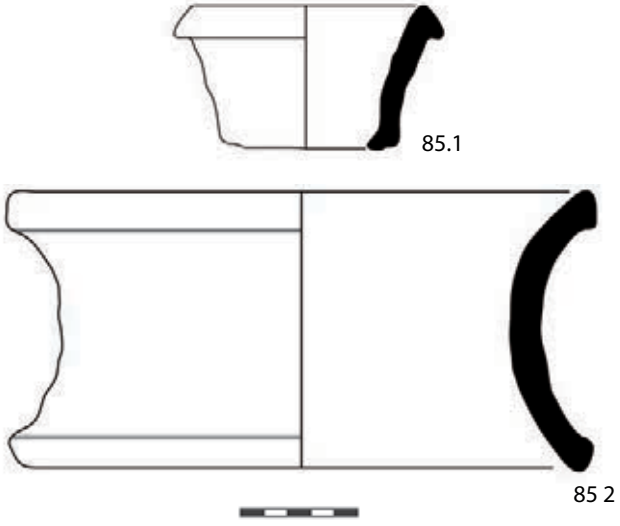


FIG. 5.16. Family 80 Types.

Family 85: Cylindrical pot stands

Vessels in this family are always squat and cylindrical in shape and generally demonstrate concave profiles, with the narrowest part of the vessel around the midpoint. Rim diameters tend to be slightly larger than base diameters, as is observed in the rim-to-base ratio for this family (Avg. 1.24; Range 0.9–1.62; n=67). Rims tend to be more neatly shaped and finished, while bases are commonly left untreated and are often folded roughly on the interior. Separations between Types 85.1 and 85.2 are not



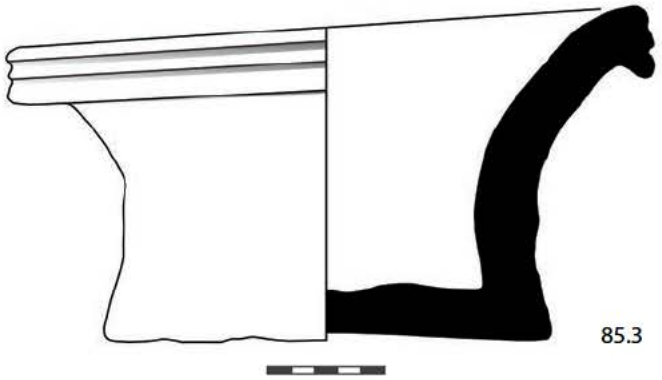


FIG. 5.17. Family 85 Types.

based on the shape of the rim or base. Indeed, rim and base shapes within both types show a good deal of diversity; they are sometimes simple and rounded, but are often thickened and shaped, sometimes with multiple grooves, similar to rims of jar Type 70.2–3. Instead, the separation between Types 85.1 and 85.2 is made based on size: examples of Type 85.1 have rim and base diameters of less than 150mm; those of Type 85.2 have rim and base diameters of >=150mm. Type 85.3 vessels, on the other hand, have a flat closed base.

Family 90: Miscellaneous vessels

This family is made up of vessels that do not fit neatly into any of the other vessel categories presented above. Each individual type is represented by just a single example, or a small group of examples, that share specific shape or functional similarities:

Type 90.1: Lids and stoppers
Type 90.2: Sieves and strainers
Type 90.3: Small, conical cups
Type 90.4: Miniatures
Type 90.5: Perforated cylinder
Type 90.6: Cylindrical, perforated base
Type 90.7: Flasks
Type 90.8: Supported trays and basins
Type 90.9: Tripod

Family 95: Repurposed vessels

These are vessels that have been modified or manipulated so as to depart from their original form, presumably in order to be re-used for tasks that they were not initially designed to fulfil. Each type is represented either by an individual example, or a small group of examples that demonstrate specific patterns of deliberate manipulation or wear.

Type 95.1: Lids and stoppers
Type 95.2: Grinding implements
Type 95.3: Open vessels
Type 95.4: Supports

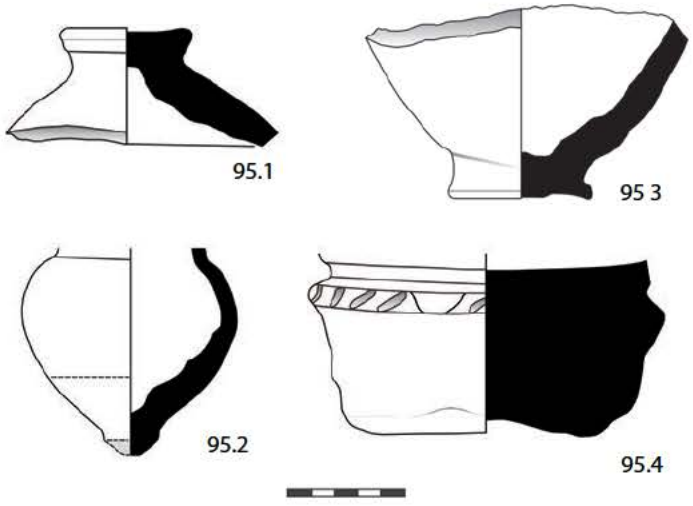
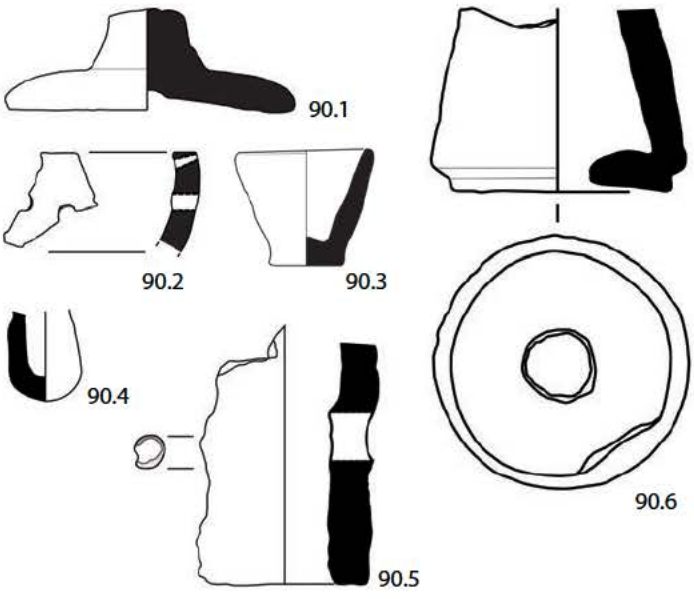


FIG. 5.19. Family 95 Types.



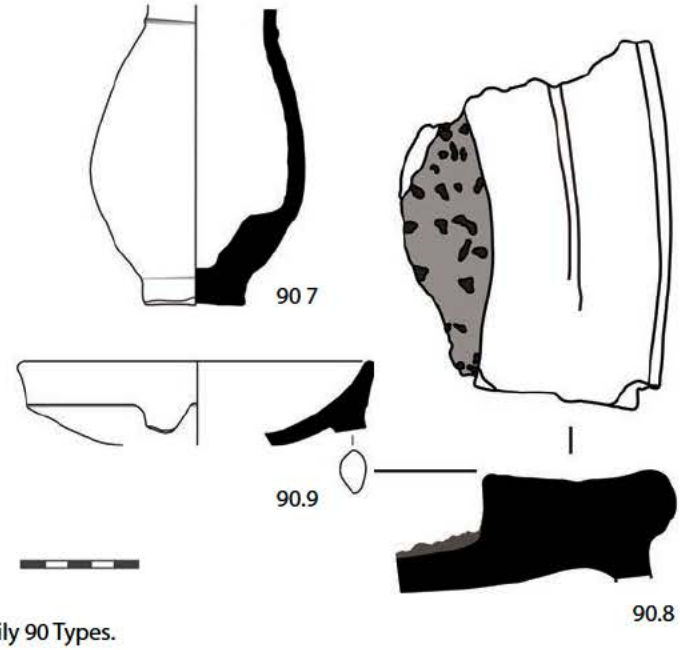


FIG. 5.18. Family 90 Types.

CHRONOLOGICAL DEVELOPMENT

For the data given in this section, the numbers of sherds of each identified pottery type have been combined by architectural phase, rather than separated by context or by room/area. Overall, a general chronological divide is drawn in the Tell Khaiber pottery assemblage between primary use and occupation of the Fortified Building (Levels 1–2)and secondary use of the building. It is this divide that will guide the following chronological analysis. Primary use consists of several discrete phases based on architectural redevelopment in each Level (e.g. Level 1, Phase 1; Level 2, Phases 2.1–2.3).[194] Secondary use, however, consists of what appear to be disconnected pockets of reuse,[195] presumably while the Fortified Building progressively fell into disrepair. This secondary use of the building is far less coherent, but can be identified in various mixed deposits: mixed tower room deposits (=MT), mixed surface scraped deposits (=MSu), mixed burials (=MB), and mixed soundings (=MSo). The Eastern Houses (EH) are also included in this analysis.

In order to tease out chronological indicators, Table 5.1 presents relevant data relating to the changing shapes through time, as taken from the data presented in the typological figures.[196] It omits those types that offer no significant chronological distribution, thus bringing to the fore those types that show notable temporal variability. The types presented in this table can be roughly divided into two groups:

Type fossils. Those types that are restricted to one or two phases or do not occur before or after a given phase. These are the most useful for defining chronological differences, but are fairly rare in the Tell Khaiber assemblage.

Fluctuating types. Those types that occur in several contiguous periods, with a maximum frequency in one. Fluctuating types can only be effectively isolated in relation to the wider type distributions. Accordingly, the maximum relative frequency of each type is highlighted in Table 5.1.

Primary occupation: Levels 1–2

The pottery from Phases 1–2.3 in the Fortified Building provides a general picture of stylistic consistency. Only one uncommon type fossil is attested, which adds internal consistency to the sequence: sherds of small, hole-mouth vessel Type 75.4 are entirely restricted to Level 2 (Phases 2.1–3). The two complete examples of this type are found at the onset of Phase 2.2 at opposite sides of the building, lying on respective surfaces in Room 314 (p1167-6) and Room 152 (p8083-22). Otherwise, we must turn to more subtle relative changes in chronologically fluctuating types.

Larger vessels such as pithoi and jars demonstrate the least change throughout the primary occupational sequence. Multiple grooved-rim jars (Type 70.3) are the most common throughout these Phases, and particularly so in Phase 2.3 (11.1%); Type 70.2 is also common (11.2–6.6%), while Type 70.1 shows consistently low frequency (1.2–2.1%). Throughout the primary sequence, there is a noticeable increase in base Type 65.1 (4.3–7.3%), attendant with a decrease in the frequency of finished base Type 65.2 (7–0.7%). Type 65.2 may, in Phase 1, have been associated with jars (Family 70), as is the case with Late Old Babylonian examples, for example at Tell ed-Der.[197] The diminishing occurrence of this type in Level 2 might therefore suggest that, after Phase 1, there was a general change in the style of jar base, moving from stable Type 65.2 to rough, unfinished Type 65.1 or, more likely, rounded Type 70.7.

Tablewares show more stylistic variation. While carinated bowl Type 5.1 remains the most common bowl form throughout Tell Khaiber's primary occupation, the frequency of bowls with a rounded body shape (Type 5.2) increases after Phase 1, particularly in Phase 2.1 (8.7%). Conversely, although bowl Types 10.1–2 are typical diagnostic features throughout the primary sequence, the frequency drops from a combined 7.4% in Phase 1 to 3% in Phase 2.3. Furthermore, while flat bowl bases (Type 15.1) decrease slightly (5.9–4%), platformed bowl bases (Type 15.2) start to appear in small numbers in Phases 2.2–3. Cups also provide fine-grained differences. Although almost all cups from Phases 1–2.3 show the same general body shape, foot shapes shifted in their relative frequency. While cups with unstable feet are common in all phases, the frequency of Type 50.4 reaches a peak of 3.4% in Phase 2.2, while Type 50.5 decreases slightly between Phase 1 and 2.3 (7.5–4.8%). Stable footed Types (50.1–3) remain infrequent throughout these phases of primary occupation (combined 5.9–4.6%).

The tower rooms demonstrate assemblages that map very well in terms of relative percentages onto Phases 1–2.3. This strongly suggests contemporaneity of the tower deposits with primary occupation across the rest of the building, and suggests a gradual accumulation of discarded material in these small rooms.

Despite an episode of major architectural renovation between Levels 1 and 2, as well as substantial accumulation

[194] The evidence available for each phase varies significantly. We have relatively little data for Level 1, Phase 1 (n=187), since it consists largely of incidental or deliberate packing material in preparation for Level 2. We do, however, have an abundance of varied material for the different phases of Level 2 (n=4688), which can be broadly associated with *in situ* depositions or incidental patterns of discard during the Fortified Building's primary period of occupation. We also have a substantial number of sherds (n=2759) from the varied mixed deposits that are more difficult to determine stratigraphically.

[195] Floors of the building were found immediately underlying the surface at the top of the mound. It is therefore unclear how much of this secondary use, and indeed even primary use, might have been lost by the differential erosion of the mound.

[196] Vessel fabrics are not taken into account in this chronological discussion, as they were determined far more by associated vessel shapes than by any temporal factors (Calderbank 2021a: 46–8).

[197] Armstrong and Gasche 2014: pls. 125–6

	Phase 1		Phase 2.1		Phase 2.2		Phase 2.3		Stratigraphically Uncertain									
									MSu		MT		MB		MSo		EH	
Family	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
5.1	17	9.1	146	10.0	303	11.6	66	10.9	52	4.2	113	8.8	3	6.1	9	5.1	24	5.7
5.2	3	1.6	127	8.7	122	4.7	7	1 2	11	0.9	77	6.0	1	2.0	-	-	23	5.5
5.3	-	-	-	-	1	0.0	2	0 3	-	-	-	-	1	2.0	4	2.3	-	-
5.4	-	-	1	0.1	3	0.1	-	-	11	0.9	3	0.2	-	-	-	-	2	0.5
5.5	-	-	-	-	-	-	-	-	12	1.0	-	-	-	-	-	-	-	-
10.1	10	5.3	14	1.0	36	1.4	11	1.8	13	1.0	22	1.7	1	2.0	3	1.7	2	0.5
10.2	4	2.1	24	1.6	27	1.0	7	1 2	5	0.4	19	1.5	-	-	1	0.6	1	0.2
15.1	11	5.9	105	7.2	125	4.8	24	4.0	49	3.9	69	5.4	-	-	17	9.7	13	3.1
15.2	-	-	-	-	8	0.3	4	0 7	25	2.0	6	0.5	-	-	5	2.8		
25.1	8	4.3	34	2.3	66	2.5	14	2 3	54	4.3	15	1.2	5	10.2	6	3.4	11	2.6
25.3	1	0.5	4	0.3	6	0.2	6	1.0	14	1.1	2	0.2	-	-	2	1.1		
40.1	-	-	-	-	-	-	-	-	17	1.4	-	-	-	-	-	-	-	-
40.2	-	-	-	-	-	-	-	-	29	2.3	1	0.1	-	-	4	2.3	1	0.2
40.3	-	-	-	-	-	-	-	-	4	0.3	-	-	-	-	-	-	-	-
45.2	-	-	-	-	1	0.0	2	0 3	-	-	2	0.2	-	-	-	-	-	-
45.4	-	-	-	-	-	-	-	-	1	0.1	-	-	-	-	-	-	-	-
50.1	7	3.7	47	3.2	54	2.1	18	3.0	62	5.0	46	3.6	1	2.0	2	1.1	16	3.8
50.2	2	1.1	11	0.8	24	0.9	8	1 3	30	2.4	25	1.9	2	4.1	14	8.0	33	7.9
50.3	2	1.1	3	0.2	23	0.9	2	0 3	15	1.2	14	1.1	3	6.1	15	8.5	13	3.1
50.4	1	0.5	26	1.8	89	3.4	9	1 5	16	1.3	16	1.2	-	-	-	-	9	2.1
50.5	14	7.5	105	7.2	167	6.4	29	4.8	86	6.9	120	9.3	2	4.1	1	0.6	14	3.3
50.6	1	0.5	-	-	5	0.2	-	-	4	0.3	2	0.2	-	-	-	-	1	0.2
50.7	-	-	-	-	-	-	-	-	5	0.4	-	-	-	-	-	-	-	-
55.3	-	-	-	-	1	0.0	-	-	3	0.2	-	-	-	-	4	2.3	-	-
65.1	8	4.3	86	5.9	141	5.4	44	7 3	134	10 7	70	5.4	1	2.0	4	2.3	7	1.7
65.2	13	7.0	19	1.3	32	1.2	4	0 7	29	2.3	36	2.8	-	-	-	-	2	0.5
70.1	-	-	17	1.2	41	1.6	9	1 5	26	2.1	12	0.9	1	2.0	3	1.7	5	1.2
70.2	21	11.2	79	5.4	206	7.9	40	6.6	80	6.4	71	5.5	4	8.2	34	19.3	49	11.7
70.3	14	7.5	123	8.4	241	9.2	67	11.1	124	9.9	127	9.9	3	6.1	6	3.4	31	7.4
75.4	-	-	1	0.1	2	0.1	1	0.2	-	-	-	-	-	-	-	-	-	-

TABLE 5.1. Vessel types that show meaningful temporal patterns.
The highest relative percentage of each type is shown in red.

of occupation debris (Phases 2.1–3), only subtle changes to the distinctive pottery styles can be identified. Likewise, there is no hint of those shapes typical of the Kassite period (see below) in the primary occupation deposits. The total period of primary occupation in the Fortified Building is therefore unlikely to have been extensive, covering a period starting sometime during the middle of the Sealand Period and ending at some point near to the final years of the Dynasty, between approximately 1600 and 1475 BCE. Accordingly, it is possible to define a coherent and homogenous Sealand period assemblage at Tell Khaiber, the most chronologically diagnostic shapes being as follows: carinated and rounded bowls (Types 5.1–2), bowls with grooves beneath the rim (Types 10.1–2), cups with unstable nipple and button feet (Types 50.4–5), and jars with grooved rim bands (Type 70.2–3).

Comparative vessels can be identified from sites in the alluvial plains: a carinated bowl from Uruk,[198] grooved bowls from the house of Ur-Utu at Tell ed-Der,[199] unstable footed cups from Isin,[200] Babylon,[201] Ur and from Umm Faisit, a small mound in the immediate vicinity of Ur.[202] These, however, are isolated vessels identified on stylistic grounds. While they do provide intriguing hints as to the potential of previously unrecognized Sealand period occupation at these major sites, they do not represent stratified comparative

[198] van Ess 2014: pl. 2.51–53.

[199] Gasche 1989: pls. 25.46 and 28.2.

[200] Armstrong and Gasche 2014: pl. 90.17.

[201] Sternitzke 2016: tbl. 110.7c.

[202] Woolley and Mallowan 1976: pl. 106.58a–b.

Family	Number of Sealand types	Phase 1 (% of total)	Phase 2.1 (% of total)	Phase 2,2 (% of total)	Phase 2.3 (% of total)
5	3	10.7	19.1	16.5	13.2
10	4	7.5	2.8	2.6	3.3
15	2	5.9	7.2	5.1	4.6
20	2	-	0.4	0.5	0.3
25	5	7	4.6	6.5	6
30	3	-	0.3	0.4	0.7
35	5	1.1	1.9	2.5	2
45	3	0 5	0.2	0.2	0.3
50	6	15.5	13 5	14.1	11.7
55	3	5 3	3.9	3.7	3.3
60	3	10.7	15.9	13.4	15.2
65	4	11.2	7.5	6.9	8.4
70	8	20.3	16	20.5	21.5
75	4	-	0.6	0.7	1.3
80	3	1.6	2.1	3	3.1
85	3	2 7	3.6	3.1	3.3
Total	63				

TABLE 5.2. Number of different Sealand period types associated with each vessel family, along with relative percentages of families within each primary occupation phase. Families and types associated with later periods, as well as miscellaneous families (90–95), are omitted.

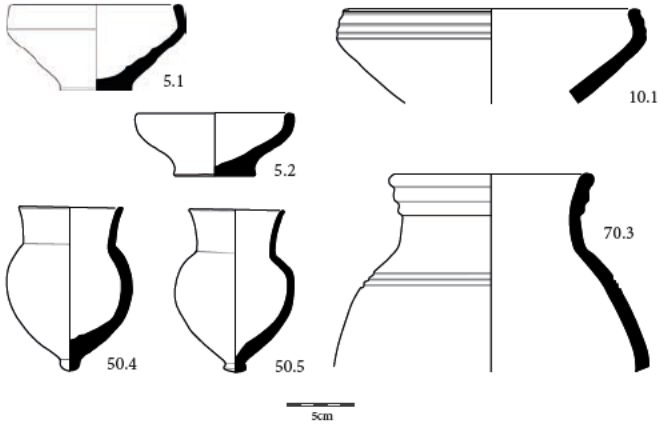


FIG. 5.20. Typical Sealand period vessel types: 5.1 (p3088-138); 5 2 (p1094-25); 10.1 (p1096-307); 50.4 (p1085-17); 50.5 (p3054-397); 70 3 (p6036-123).

assemblages. The only comparative assemblages of vessels can be found in the Gulf, at Failaka Island, Period 3b (Tells F3 and F6)[203] and Qala'at al-Bahrain, Period IIIa.[204] At these Gulf sites, all of the typical Sealand types identified at Tell Khaiber (Fig. 5.20) have been recovered together in extensive contemporary deposits.

[203] Højlund 1987, 2016.

[204] Højlund 1987: 157–62; 2019: 43–9, 161–2; Højlund and Andersen 1994: 179–81; 1997: 50–62.

Secondary use

It is only in the various Mixed deposits of the Fortified Building and its immediate surroundings that more pronounced ceramic differences can be determined. Although most of these deposits, too, are composed of typical Sealand period shapes, the Mixed deposits bring about significant changes in fluctuating types, while also marking the introduction of several distinct type fossils.

In the surface scraped material, for instance, stable-footed cups (Types 50.1–3) increase dramatically in frequency, composing 8.6% compared with 3.9–4.6% in the whole of Level 2. Similarly, Types 50.2–3 constitute 16.5% of the assemblage produced from the exploratory soundings directly outside of the Fortified Building, as well as in the disturbed deposits of the Baked Brick Tomb to the east. In the same surface-scraped material and external soundings, there are also examples of flaring goblet feet (Type 40.2), a type not present in any of the primary occupational phases at Tell Khaiber. This type is introduced in the same deposits that yielded an increased occurrence of wavy-sided bowls (Type 5.4), platformed bowl bases (Type 15.2), and an increased occurrence of Type 70.1 jar rims. These types in combination (Fig. 5.21) appear to be representative of restricted secondary re-use of the Fortified Building at a time most likely to align with the Early Kassite period (*c.*1450–1300 BCE). If so, this would be among the earliest Kassite deposits in southern Babylonia. The best comparative material can be found at Tell Yelkhi, Levels II–I and the early phases at Khani Masi (*c.*1500–1300 BCE).[205]

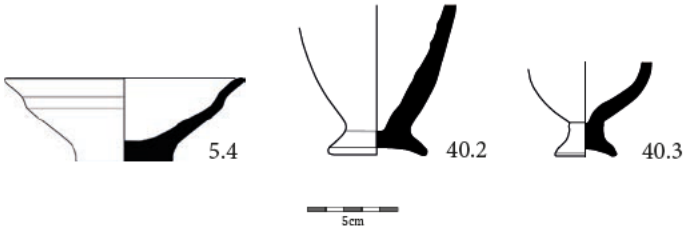


FIG. 5.21. Examples of Early Kassite vessel types: 5.4 (p6088-14); 40.2 (p6088-12); 40.3 (p6088-1).

It was probably during this period of secondary activity in and around the perimeter of the Fortified Building that the intrusive burials occurred, often cut into primary occupational levels. This association is stratigraphic rather than stylistic, since the double-pithoi[206] and single jars[207] in which the bodies were interred allow for little chronological refinement; furthermore, the pots deposited as grave goods in Grave 6, including a Type 50.4 cup (p3079-9), as well as

[205] Valtz 2002–2003: pl. 142.21–3, pl. 148–9, and pl. 151.1–13; Glatz et al. in prep.

[206] Grave 6: pithoi p3075-1 and p3075-2; Grave 10: p6092-1 and p6093-1.

[207] Grave 3; fragmentary unrecorded jar; Grave 7: jar p1097-1 capped by bowl p1098-1; Grave 8: jar p3091-3 capped by bowl p3091-1; Grave 11: fragmentary unrecorded jar capped by bowl p8029-3; Grave 13: fragmentary unrecorded jar: Grave 14: jar p6141-1.

a Type 55.1 jug (p3091-2) found with Grave 8, are similar to those found in the primary occupational sequence. One exception is a deep, curved bowl (Type 5.3) used to cap an infant burial jar in Grave 11, with a Type 50.5 cup found alongside (p8029-4); the former bowl is unique in the assemblage of the Fortified Building and finds only a few comparative sherds in the external soundings, while the latter cup exhibits a unique wavy neck. Given that the burials are dispersed across different areas of the Fortified Building and respect the original wall lines, this suggests two stratigraphic possibilities: 1) that they were intramural burials dug from now eroded floor levels while the building was still in use, or 2) that they were post-occupational interments at a point when the building was abandoned, but its walls were relatively intact and its various rooms were accessible. Either way, these burials must only slightly post-date the final secure primary occupational deposits of Phase 2.3.

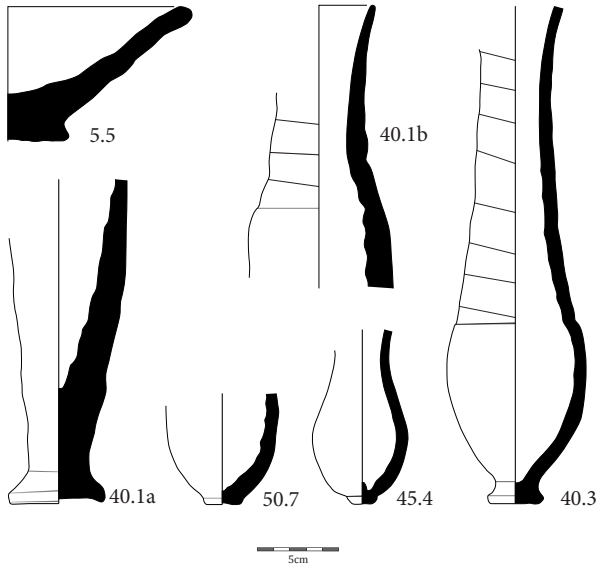


FIG. 5.22. Examples of Late Kassite vessel types: 5.5 (p6175-22); 40.1a (p6183-18); 40.1b (p6183-20); 50.7 (p6178-25); 45.4 (p6175-40); 40.3 (p6178-34).

Several other significant type fossils are limited to just a few contexts in the surface scrape,[208] located exclusively north of the main entrance to the Fortified Building and along the line of where the main northeast wall, now severely eroded, should have been. The type fossils found here include: ripple-sided bowls (Type 5.5), tall steep-sided goblets (Type 40.1), goblets with flaring feet and tall necks (Type 40.3), button-footed bottles with sinuous bodies (Type 45.4), and flat-footed cups with steep sides (Type 50.7) (Fig. 5.22). These shapes are typical of the better-known Late Kassite period (*c.*1300–1100 BCE) assemblages at other sites in the region, for example at Uruk,[209] Isin,[210] Nippur,[211] and Khani Masi,[212] but are also identical to the shapes recovered from soundings at Tell Khaiber 2.[213] That this material was found within a later cut that destroyed this part of the building suggests not only that the building's occupation categorically did not continue into the Late Kassite period, but that its architectural integrity was, by this point, in a pronounced state of disrepair.

Eastern houses

Since the Eastern Houses are stratigraphically disconnected from the Fortified Building, any chronological associations must be made based on pottery styles rather than direct stratigraphic association. Most shapes encountered in Houses 1–3 are typical of the broader Sealand period assemblage in the Fortified Building's primary occupation. Like the Mixed surface-scraped material and soundings, however, the presence of bowl Type 5.4, goblet Type 40.2, and the high percentage of stable footed cups (14.8%) compared with unstable footed cups (5.6%) are significant chronological indicators. Likewise, the shape of a small sample of stable-footed cups (Fig. 5.23), which demonstrate elongated profiles and funnel necks, are subtly different from the remainder of the cup assemblage and find better comparisons at Early Kassite Tell Yelkhi, Level II,[214] as well as in Kassite deposits

FIG. 5.23. Tall, funnel-necked cups: a) p4006-12; b) p4084-1.

at Uruk[215] and Babylon.[216] Together, this ceramic evidence suggests that the Eastern Houses' assemblage falls in line with the latest phases of primary use of the Fortified Building and may also overlap with the onset of its secondary re-use.

[208] Contexts 1078, 6175, 6178, 6183.

[209] van Ess 2014.

[210] Kaniuth 2017.

[211] Armstrong 1993; 2017.

[212] Glatz et al. 2019: 454, fig. 9; Glatz et al. in prep.

[213] Campbell et al. 2017b.

[214] Valtz 2002–2003: pl. 149.10–19.

[215] van Ess 2014: pl. 10.2–3.

[216] Sternitzke, 2016: tbls. 105–6.

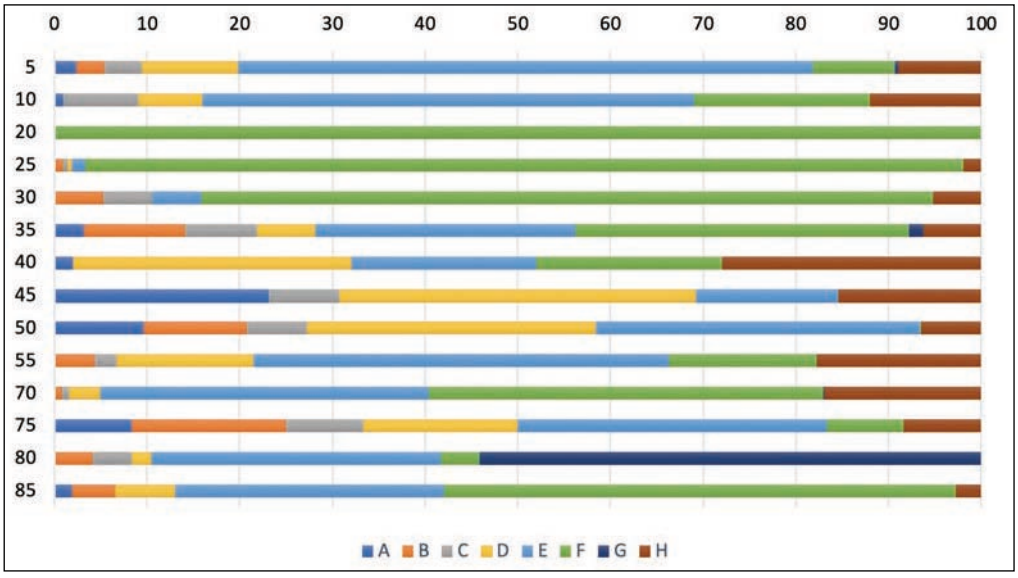


FIG. 5.24. Relative percentages of fabric types according to vessel family. Families composed of anomalous shape types are not included.

The final pottery evidence from the Eastern Houses was recovered from an intrusive double-pithos burial in House 1 (Grave 5), an interment which probably post-dated the use of this residential space, while continuing to respect house's wall lines. The burial pithoi (p4038-1), as with those found inside the Fortified Building, are themselves chronologically undiagnostic. Inside the Grave, however, was a particularly finely made jug (Type 55.1; p4041-1), which exhibits strong parallels with an Early Kassite jug from Area WC-1, Level III at Nippur.[217] This provides a relative termination point for the use, or indeed re-use, of these houses somewhere between approximately 1450 and 1300 BCE.

TECHNOLOGICAL OVERVIEW

Clay preparation

Tell Khaiber's pots were almost invariably manufactured of locally collected alluvial clays. The following constituent inclusions were identified through both macroscopic and microscopic analysis of the assemblage:

Organics. Plant parts which, depending on the nature of the firing atmosphere, either remain present in the clay matrix as a white skeleton, or are attested by a void where they burnt away. Organics may have derived from farm waste, such as chopped straw, reeds, or manure during the treatment and preparation of the clay body.[218]

Calcite. Small, white, rounded particles. These are present naturally in calcareous clays and are quite rare in the Tell Khaiber assemblage.

Fine Sand. Small mineral inclusions of an even size and in a range of different colours (red, brown, orange, black etc.). These inclusions are generally rounded in shape and occur naturally in alluvial and riverine clays.

Coarse Sand. Appearance as with fine sand, but occur in larger sizes, often with angular to sub-angular edges. They sometimes also contain larger translucent particles.

'Grog'. Large particles of clay or crushed pottery, usually of a slightly different colour (grey or pale brown) or texture to the surrounding clay body. When encountered at Tell Khaiber, this 'grog' tends to be composed either of added clay, or of incidental lumps of poorly worked clay, rather than crushed sherd material.[219]

When the above inclusions regularly occurred in specific combinations and/or concentrations, they constituted a fabric type. Eight fabric types were recognized in the Tell Khaiber assemblage, which can be summarized as follows:

Fabric A: well filtered, very fine sand;
Fabric B: medium-coarse sand;
Fabric C: fine-medium calcite;
Fabric D: fine sand, with some fine organics or voids;
Fabric E: coarsely chopped, well preserved organic 'skeletons';
Fabric F: dense, coarsely chopped organics or voids;
Fabric G: very coarse sand and/or grog(?);
Fabric H: soft fabric with fine sand, organics or voids, and often containing poorly mixed agglomerations of clay.

Each of these resulting fabrics correspond to decisions made by Sealand potters about whether to introduce specific inclusions into the clay matrix, or whether to remove naturally occurring inclusions. Rather than carrying any significant chronological information, these decisions appear to have been determined primarily by the vessel type being produced. In many cases, these clays were

[217] Armstrong 1993: pl. 82a.

[218] van As and Jacobs 1992: 541.

219 After Herbert and Smith 2010.

used as they were found, with fine natural sand present in the matrix (Fabrics C and D). The natural composition of these riverine clays does, however, mean that they had little inherent plasticity or strength.[220] The predominant additive was therefore organic material, either in the form of fine chaff (Fabrics D and H) or rough straw or reeds (Fabrics E, F, and H).

The size and concentration of these organic inclusions appear to have been determined mainly by the size of the intended vessel. Large vessels, such as pithoi (Family 25) and jars (Family 70) almost always demonstrate high concentrations of rough straw or large voids where this temper once was (Fabrics E and F). These organics were probably added in the form of agricultural waste, perhaps following the year's harvest. Smaller vessels, such as bowls (Family 5), bottles (Family 45), and cups (Family 50), generally exhibit sparser, finer chaff and/or reed inclusions (Fabric D and E), maybe added in the form of dung or manure.

Each vessel category at Tell Khaiber appears to be formed of reasonably well-worked and levigated clays, visible in the even cross-sections of most sherds. The clearest exception to this rule is Fabric H, which contains undissolved clay inclusions that probably occurred naturally in the raw clay body. They are thus preserved in vessels when the clay was inadequately filtered or manually worked.

Almost all sherds in the assemblage contain naturally occurring non-plastics, such as fine grains of sand and calcite, albeit in differing concentrations. In some instances, such as Fabric A, the infrequency and relative fineness of these particles (<0.1 mm) suggests that the potters were careful to filter out most of the naturally occurring minerals. This process is quite rare in the assemblage and is for the most part limited to smaller vessels, such as bowls and cups; Fabric A, however, does not correspond to a discernible fine ware tradition. The presence of calcite (Fabric C) is also quite rare and restricted to the same vessel types. It is unclear if this represents an alternative pattern of raw clay sourcing for these vessels types, or whether the identification of calcite in these vessels is in fact a product of differential firing practices; calcite particles remain largely unchanged at low temperatures (*c.*650–750°C), but melt and fuse with the clay matrix over *c.*1000°C.[221]

Only one vessel family (Family 80) contains extensive non-plastic inclusions (Fabric G), the high concentration and angular shape of which mark them as deliberate additions. These angular mineral inclusions, which help to mitigate the stress of repeated heating and cooling, were undoubtedly added in association with the intended function of these vessels as cooking wares.

Forming and finishing techniques

Forming techniques were identified by visual analysis of surface forming signatures alongside X-ray analysis of a sample of 31 vessels.[222] The majority of Tell Khaiber's shapes were produced, at least in part, using the rotative kinetic energy (henceforth RKE) of the wheel, coupled with manual pressures. All of Tell Khaiber's main vessel families, other than cooking pots (Family 80) and infrequent trays and basins (Family 20), show clear evidence for the use of RKE at some point during the forming process, either in primary forming or finishing. No vessels exhibit definitive signatures for wheel-throwing.[223] Indeed, many of the signatures that have traditionally been interpreted as the result of wheel-throwing only, in fact, demonstrate that the wheel was used at some point in the various stages of forming and/or finishing.[224]

Instead, most of Tell Khaiber's vessels involve the use of wheel-coiling.[225] This technique was employed either in building the entire vessel roughout, as with bowls (Families 5–10) and small vessel stands (Type 85.1), or for building sections of composite vessels, where separate wheel-coiled segments were joined together or were combined with sections produced by other forming techniques. Bottles (Family 45) and common cups and jugs (Families 50–55), for instance, were usually constructed of a wheel-coiled lower body, joined to one or two wheel-coiled upper sections that made up the shoulder, neck and rim; the feet of many cups, stable and unstable, were the last features to be added, once the rest of the vessel had reached a leather hard consistency and was upturned on the wheel. For some wider, stable feet, this coil of clay was wrapped around a tenon of chaffier clay, which was incorporated by the potters to help stop the solid mass of wet clay at the base from cracking during subsequent drying and firing.[226]

Tell Khaiber's jars (Family 70) consisted of a coiled upper body and neck, with these separate coils being joined and shaped using RKE. Once the upper profile of a jar had been built, the thickened rim band, typical for these vessels, was formed from an extra coil of clay, which was then finished to define the precise rim shape (Types 70.1–70.5). The lower body and base was also coiled, before being hand-pressed into a mould to join the coils and thin the walls; the result of this lower-body formation was a

[220] van As and Jacobs 1992: 535.

[221] Quinn 2013: 191–8.

[222] X-ray images take into account vessel seams or joins and inclusion and pore orientation, features that are not normally visible macroscopically. See Berg 2008 and Pierret 2019 for more information on the use of this archaeometric technique.

[223] Wheel-throwing raises the vessel walls by means of continuous and generally high-speed RKE.

[224] After Roux and Courty 1998.

[225] Wheel-coiling refers to the creation of a roughout via coil building, before discontinuously applying RKE to create the finished shape (Roux and Courty 1998: 748; Velde and Druc 1999: 164).

[226] This preventative strategy, which has been discussed extensively elsewhere (see van As and Jacobs 2014; Glatz and Casana 2016: 141–3), was occasionally also used for bowl and beaker bases too.

characteristic dimple on the interior base of jars, with regular hand-pressed concavities often running around the interior surface directly above the base.

Pithoi (Families 25–30) were built of thick coiled segments, joined together by manual drawing of coils. The regular ribs attached to the exterior surfaces of pithoi were positioned at prominent joins between large coils, a common technique used to buttress the key compression zones of large vessels. The final part in the production process was the making of base additions. For regular pithoi (Family 25), the vessel body was upturned and a ring base, shaped separately of a large coil of clay, was attached to the exterior base. For pithoi with pierced bases (Family 30), a separate coil of clay was attached to the centre of the exterior base, which was then pierced to form the protruding bung-hole shape that defines this family. Only once these pithoi were built was the vessel turned and finished on the wheel.

Cookpots (Family 80) were entirely hand-built. The high density and large size of mineral inclusions in these vessels (Fabric G) would have reduced vessel plasticity in a way that would have been incompatible with wheel-production.[227] Cookpot bases demonstrate the typical dimple base present also in jar bases, again indicating production by coiling and hand-pressing the lower body into a mould. The upper walls were built of obliquely oriented coils of clay which were drawn and beaten to join and thin.

Significant effort was not regularly expended on finishing techniques or decoration of the Tell Khaiber assemblage. Slipping and burnishing are uncommon and are generally limited to globular bottles (Family 45). Far more common is vessel scraping, using a small tool to thin the walls, as well as smoothing of vessels with wet hands or a cloth. Many vessels also exhibit concentric incised or impressed lines, bands, and also wavy bands; these are usually limited to pithoi with base holes (Family 30), cylindrical beakers (Family 35), jars (Family 70), and occasionally cups and jugs (Families 50–55). These latter decorative techniques must have been accomplished using RKE, with either finger or tool held against the vessel surface while turned on the wheel.

Firing

Original firing temperature was determined largely on the basis of colour,[228] established by visual analysis.[229] The lowest temperatures were reserved for cooking vessels (Family 80); these were often fired below 700°C, and often in a reducing atmosphere, resulting in a dark brown finish. Other lower fired sherds (*c.*700–800°C) took on a brown/red/pink hue, while orange/buff/yellow wares were fired at regular temperatures of approximately 800–950°C. Sherds fired at high temperatures (*c.*950–1000°C) were frequently green to olive green in colour, becoming darker as the temperature rose. Some of the especially high-fired wares (*c.*>1000°C) demonstrate a distinct grey-black core, and were on the borderline of becoming vitrified, warped, and unusable; such sherds, termed wasters, were the result of failed firings. Vessels yielding colours consistent with each of these temperature categories other than the very highest failed firings are common at Tell Khaiber.

Judging by the general consistency of colour between the surfaces and the core, most Tell Khaiber vessels were almost certainly kiln fired under well controlled, completely oxidising conditions.[230] In most vessels, the core tends to be a shade darker than the surface; this is the inadvertent effect of forming and finishing techniques, which can leave a light self-slip, a thin coating of clay, the same colour as or a shade lighter than the clay body. In some larger vessels with thicker walls, irregularities occur between the colour of the core when compared to the colour of the surface; this, however, may be attributed to the period of firing perhaps being insufficient to fire thick-walled vessels evenly. Only cooking wares, with dark, clearly defined cores seem to have been routinely and deliberately fired under incompletely oxidising conditions. Heavily warped second millennium shapes, or indeed waster sherds, are absent from the entire Tell Khaiber assemblage, indicating that vessel firings did not occur in the direct vicinity of the site's excavated areas.

THE FORTIFIED BUILDING: FUNCTIONAL INSIGHTS

Tell Khaiber's pottery assemblage is constituted of a restricted set of utilitarian types.[231] These can be grouped broadly into several functional sub-assemblages:

- Processing (Family 20, Types 90.2, 90.4, and 90.6)
- Cooking (Family 80, Types 75.1–3, and 90.9)
- Brewing (Families 25 and 30, Type 85.3)
- Bulk storage (Families 25 and 70, Types 85.2 and 90.1)
- Special storage (Family 45, Types 75.4 and 90.1)
- Measuring (Family 35, Type 90.3)
- Serving and eating (Families 5 and 10)
- Serving and drinking (Families 50–55, Types 85.1 and 90.7)
- Ritual and cult (any)

Statistical analysis of these different sub-assemblages, supported by contextual and GIS find-spot data, partially

[227] Rye 1981: 61.

[228] Estimates of firing temperature are made based upon results of firing tests conducted on Middle Assyrian ceramics from Tell Sheikh Hamad (Schneider 2006: 395) and Tell Sabi Abyad (Duistermaat 2008: 45, tbl. II.2), in the Khabur region of modern Syria. Due to similarities in geological conditions, these results were considered to also be representative for Tell Khaiber's clays.

[229] Since the same person (the author) recorded the Tell Khaiber pottery each season, visual examination was considered accurate enough not to warrant the use of a Munsell Colour Chart.

[230] Rye 1981: 25.

[231] The precise intended functions and actual uses of these are discussed in Calderbank 2021b.

supports the impression given by the Tell Khaiber archive which points to the Fortified Building having operated mainly as an administrative hub governing local agricultural production. This does not mean that it was itself the site of major grain storage or processing activities, at least not after the Level 2 rebuild. The statistical representation of storage jars and pithoi in the bulk sherd data (about 34% of the total) aligns fairly well with the textual evidence, demonstrating that a significant proportion of storage vessels were brought into the building periodically.[232] But we cannot know whether these were for grain/flour storage. There are large numbers of grinder fragments, but the occupants of the building would have needed to have grain milled for their own consumption. The Level 2 expansion and rebuild did away with the presumed grain storage facility and introduced very restricted access arrangements. This suggests that the Fortified Building was an administrative unit rather than a processing one. Furthermore, cylindrical beakers, or so-called grain measures,[233] are fairly rare (about 3%) and, where present, indicate more reliable contextual associations with beer production and consumption (in Rooms 154, 156, and 142) than with the measuring of agricultural products such as grain or milled flour.

Dominant amongst the bulk assemblage at Tell Khaiber are drinking vessels (about 28% of the total).[234] This is to be expected for a busy working environment, in which residents and workers would have required regular replenishment. However, the large collections of cups found together in certain areas (Rooms 142 and 314) and also deposited in several towers (302, 304, and 616) suggest specifically designated commensal areas that played host to performative events. These areas do not appear to have formed arenas for overt hierarchical display, at least not in a way that drew upon the use of conspicuous fine table wares. As we have seen throughout this chapter, no discernible fine-ware tradition has been identified at Tell Khaiber;[235] instead, on arrival at the building, the assemblage of utilitarian vessels appears to have been distributed impartially in accordance with the everyday tasks for which they were most needed.

The relative percentages of functional categories remain broadly consistent throughout the site's occupational history (Phases 1–2.3), indicating a concomitant functional consistency in the use of space at the site.[236]

Overarching interpretations of the Fortified Building must, however, be treated cautiously; the restricted areas of vertical exposure at the site make it problematic to assert unequivocal functional interpretations that are, to some extent, based on an absence of evidence. Nevertheless, it does allow us to piece together a picture, albeit fragmented, of the Fortified Building as a carefully managed space occupied by a tightly integrated community of labourers and possibly residents too, at least some of whom fell under institutional control.

Off the central corridor, east from the main entranceway, two Rooms 152 and 156 can be firmly associated with brewing activities. From the evidence available, brewing activities were apparently restricted to the northeastern corner of the building and were likely to have fallen under institutional control.[237] The beer brewed here was perhaps overseen by Tell Khaiber's brewer, Mannu-balu-ilišu, and the products might have served to meet the demand of the people in the nearby rooms (Rooms 99–109), if not to supply all of those living and working throughout the Fortified Building.

The pottery assemblage in Room 101, farther along the corridor from Room 156, contains all the necessary equipment needed for rudimentary domestic occupation: cookpots, a grinding basin, bowls, and cups. Since the other rooms along the southeast side of the building (Rooms 99–109) are identical in architectural plan, and most have a *tannur* placed in exactly the same position, this supports the view that these rooms were a series of lodgings for individuals or, judging by the presence of communal bowls, perhaps small groups that did not have to support a full range of household activities.

In Room 142, in the middle of the building, just off the central corridor, the combination of drinking cups and jugs, along with various measuring vessels and small bottles, represents our best evidence for (perhaps rather elaborate) communal drinking. It is evidently here that many guests to the building were entertained, perhaps while awaiting entry to the building's southern unit.

The southern unit opens onto a large central courtyard (Area 315) in which was found an *ad hoc* mix of cooking and processing implements, along with dispersed cups, suggestive of individualised and more informal drinking, and a high incidence of bulk storage vessels for goods that were perhaps waiting to be managed and moved on. Positioned off the courtyard on all sides are rooms that seemingly had a range of functions: Rooms 600 and 601 appear to have been used

[232] Jars can be associated with vessel names *kalparu* and *kaptukkû*, and pithoi with *dannitu* (Calderbank 2021a: 63). 200 *kalparu/kaptukku* were received at Tell Khaiber in the month of *Araḫsamnu* (October–November: 3064:65), while 90 *kalparu/kaptukkû* vessels and 10 *dannitu* were received in the month of *Ṭebetu* (December–January: 1096.55). These vessels account for *c.*55% (n=300 of 549) of the total number of textually attested vessels imported to the site.

[233] Mallowan 1946: 148–50.

[234] Drinking cups and jugs can be associated with vessel names *kukkubu*, *laḫannu*, and *lurmu* (Calderbank 2021a: 64). These vessels account for *c.*35% (n=190 of 549) of the total number of textually attested vessels imported to the site.

[235] Despite the production of tablet clays demonstrating that the skill and knowledge to produce vessels with fine matrices was culturally and technologically understood (see Robson, this volume).

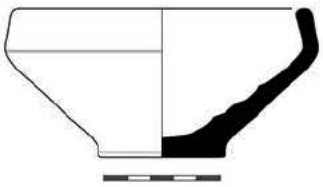
[236] It is only in the later, mixed deposits that a range of other, more ritually oriented depositions—burials and pits containing vessel caches assumed increased significance (Calderbank 2021a: 75–6).

[237] Institutional control of the brewing craft is also indicated in the CUSAS 9 archive (Boivin 2018: 156-66).

primarily for bulk storage; the rooms of the administrative suite yielded storage jars containing bitumen and a number of spatially dispersed bowls, a curious sub-assemblage that, alongside the tablet archive, may have come together to fulfil the administrative tasks required. The number and concentration of cups, bowls, and special storage vessels in Room 314 suggests that this room was associated with eating and drinking activities, perhaps the partaking of dishes that were produced by the cooks (*nuhatimmu*)[238] in Room 316, across the courtyard, where numerous cooking, processing, and measuring vessels were found.

The building's tower rooms are typically dense with ceramic debris, with all except one (tower 124) demonstrating very high concentrations of drinking cups and jugs. The extreme density in which these ceramics were found precludes any sort of practical use for the tower rooms. Instead, these restricted spaces were probably used as convenient areas for the periodic discard of often functionally related materials, perhaps following commensal events.

[238] Perhaps as many as three different *nuhatimmu* are listed in the Tell Khaiber archive. See p.80, Table 4.16.



Phase	Count
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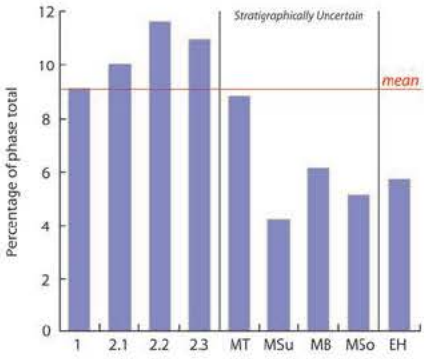
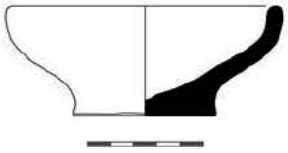
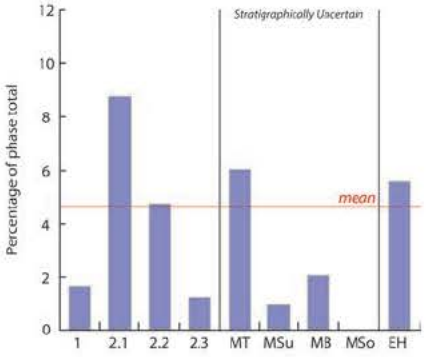
2.1	146
2.2	303
2.3	66
MT	113
MSu	52
MB	3
MSo	9
EH	24



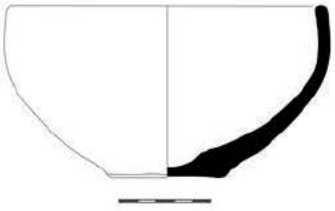
5.1



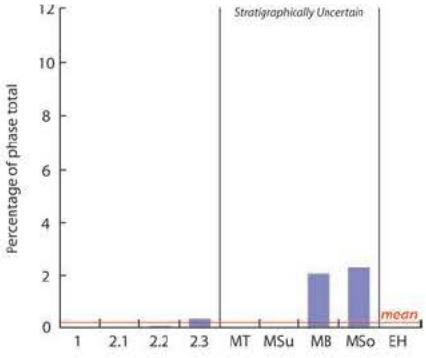
Phase	Count
1	3
2.1	127
2.2	122
2.3	7
MT	77
MSu	11
MB	1
MSo	-
EH	23



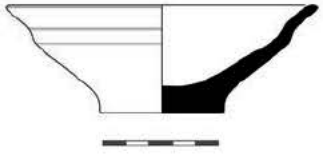
5.2



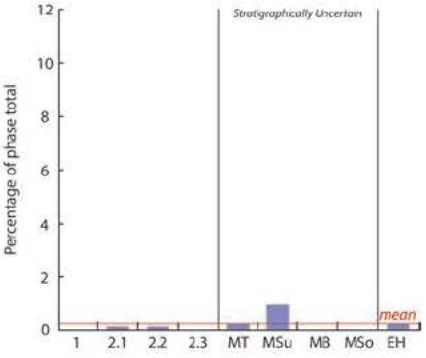
Phase	Count
1	-
2.1	-
2.2	1
2.3	2
MT	-
MSu	-
MB	1
MSo	4
EH	-



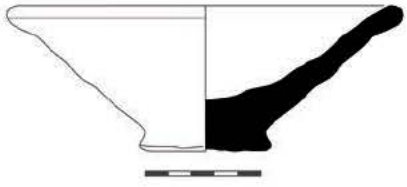
5.3



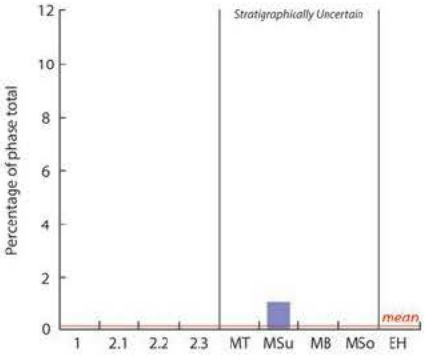
Phase	Count
1	-
2.1	1
2.2	3
2.3	-
MT	3
MSu	11
MB	-
MSo	-
EH	2



5.4

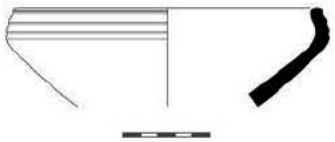


Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	12
MB	-
MSo	-
EH	-

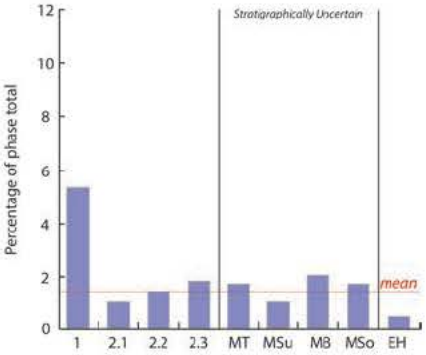


5.5

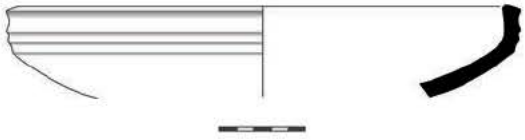
FIG. 5.25. Family 5 counts and relative percentages of phase totals for each type.



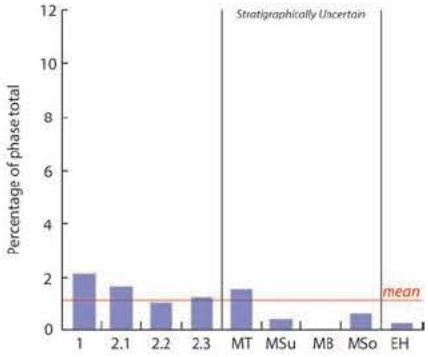
Phase	Count
1	10
2.1	14
2.2	36
2.3	11
MT	22
MSu	13
MB	1
MSo	3
EH	2



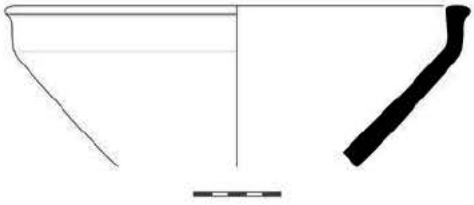
10.1



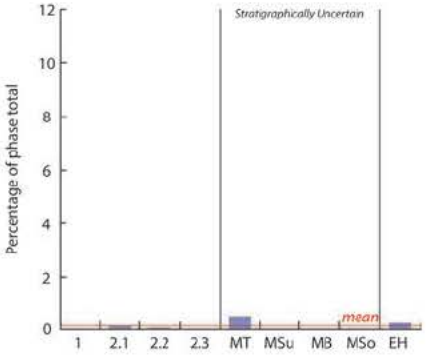
Phase	Count
1	4
2.1	24
2.2	27
2.3	7
MT	19
MSu	5
MB	-
MSo	1
EH	1



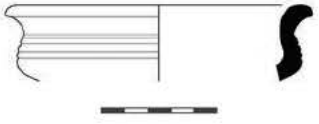
10.2



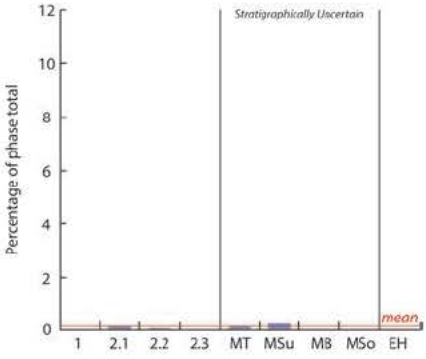
Phase	Count
1	-
2.1	1
2.2	1
2.3	-
MT	6
MSu	-
MB	-
MSo	-
EH	1



10.3



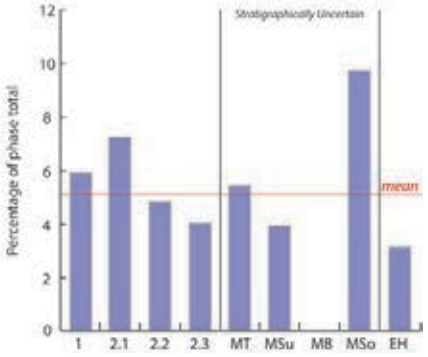
Phase	Count
1	-
2.1	1
2.2	1
2.3	-
MT	1
MSu	3
MB	-
MSo	-
EH	-



10.4

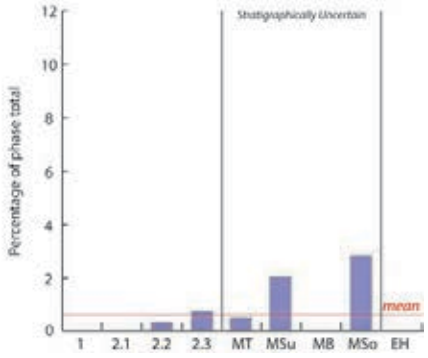
FIG. 5.26. Family 10 counts and relative percentages of phase totals for each type.

Phase	Count
1	11
2.1	105
2.2	125
2.3	24
MT	69
MSu	49
MB	-
MSo	17
EH	13



15.1

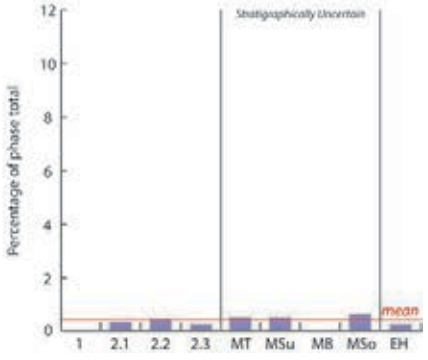
Phase	Count
1	-
2.1	-
2.2	8
2.3	4
MT	6
MSu	25
MB	-
MSo	5
EH	-



15.2

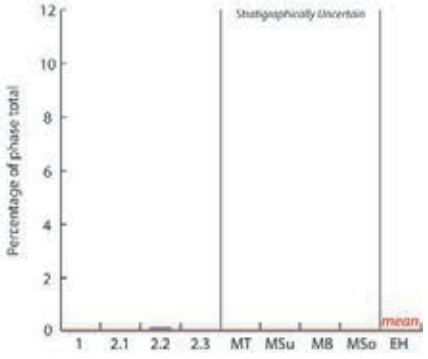
FIG. 5.27. Family 15 counts and relative percentages of phase totals for each type.

Phase	Count
1	-
2.1	5
2.2	11
2.3	1
MT	6
MSu	6
MB	-
MSo	1
EH	1



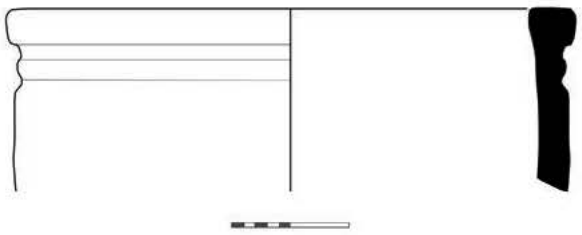
20.1

Phase	Count
1	-
2.1	-
2.2	2
2.3	-
MT	-
MSu	-
MB	-
MSo	-
EH	-

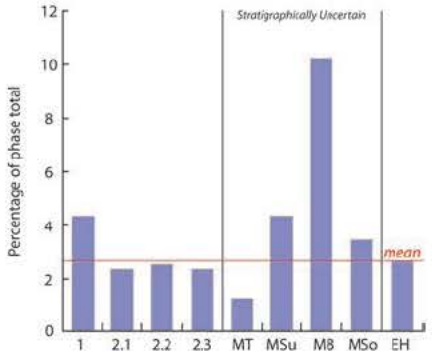


20.2

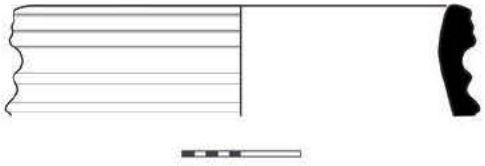
FIG. 5.28. Family 20 counts and relative percentages of phase totals for each type.



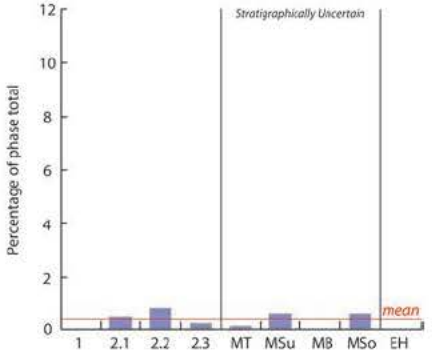
Phase	Count
1	8
2.1	34
2.2	66
2.3	14
MT	15
MSu	54
MB	5
MSo	6
EH	11



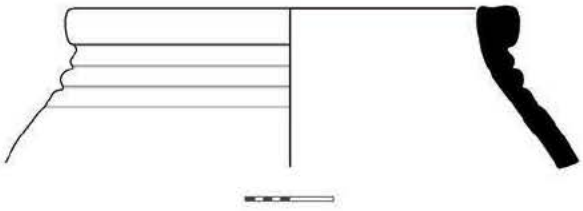
25.1



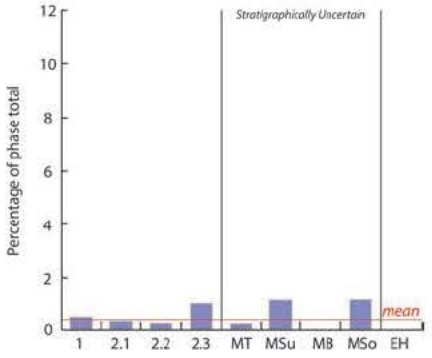
Phase	Count
1	-
2.1	7
2.2	22
2.3	1
MT	1
MSu	7
MB	-
MSo	1
EH	-



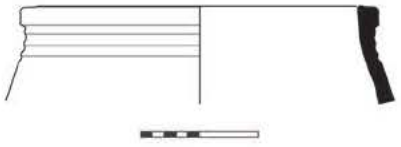
25.2



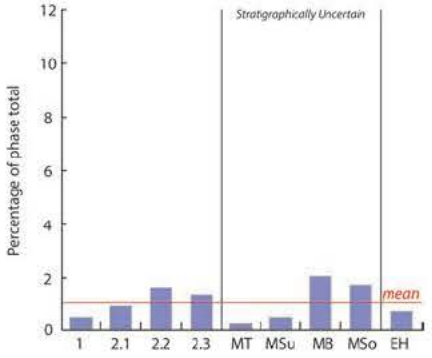
Phase	Count
1	1
2.1	4
2.2	6
2.3	6
MT	2
MSu	14
MB	-
MSo	2
EH	-



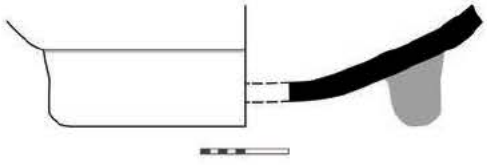
25.3



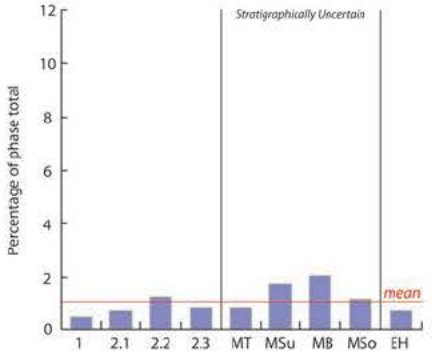
Phase	Count
1	1
2.1	13
2.2	41
2.3	8
MT	2
MSu	6
MB	1
MSo	3
EH	3



25.4

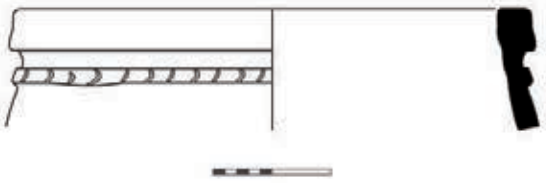


Phase	Count
1	1
2.1	10
2.2	31
2.3	5
MT	10
MSu	21
MB	1
MSo	2
EH	3

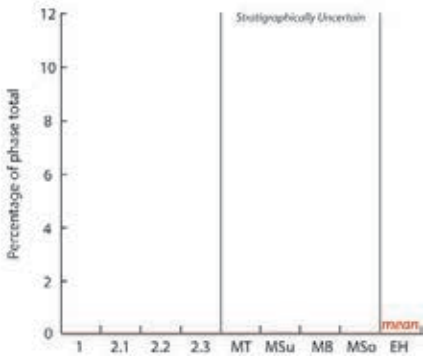


25.5

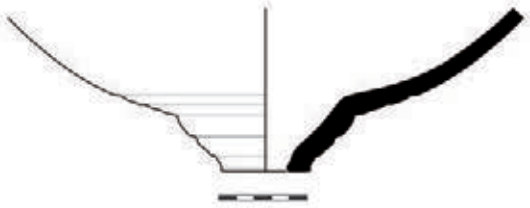
FIG. 5.29. Family 25 counts and relative percentages of phase totals for each type.



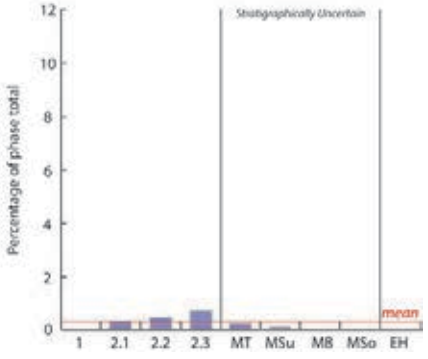
Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	2
MB	-
MSo	-
EH	-



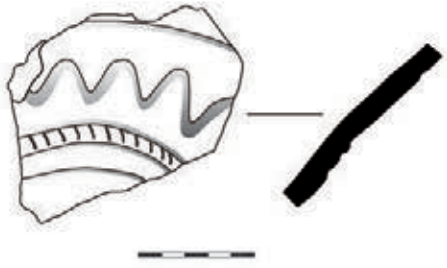
30.1



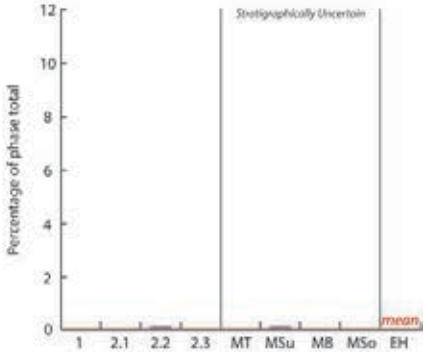
Phase	Count
1	-
2.1	4
2.2	11
2.3	4
MT	1
MSu	2
MB	-
MSo	-
EH	-



30.2



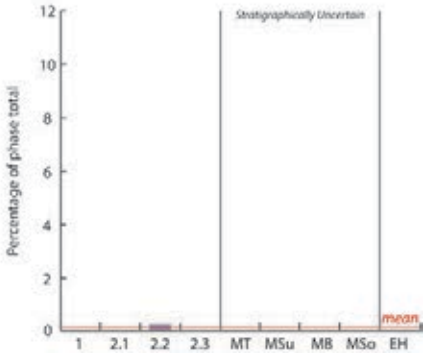
Phase	Count
1	-
2.1	-
2.2	2
2.3	-
MT	-
MSu	1
MB	-
MSo	-
EH	-



30.3

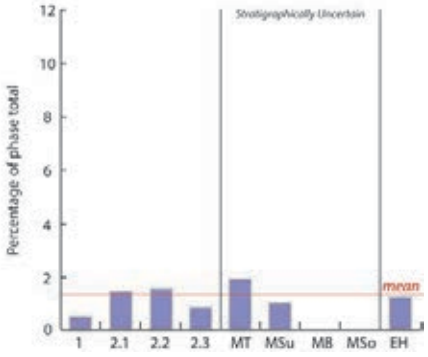
FIG. 5.30. Family 30 counts and relative percentages of phase totals for each type.

Phase	Count
1	-
2.1	-
2.2	5
2.3	-
MT	-
MSu	-
MB	-
MSo	-
EH	-

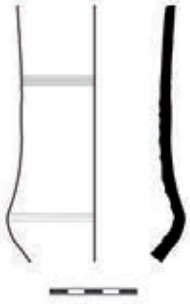


35.1

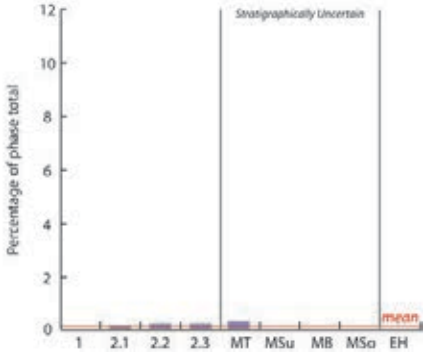
Phase	Count
1	1
2.1	21
2.2	38
2.3	5
MT	24
MSu	12
MB	-
MSo	-
EH	5



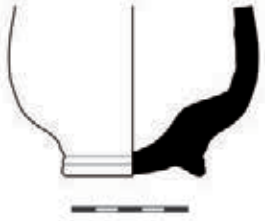
35.2



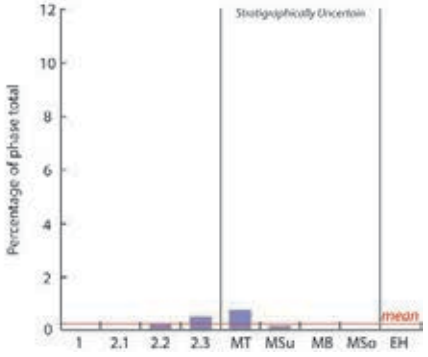
Phase	Count
1	-
2.1	2
2.2	4
2.3	1
MT	4
MSu	-
MB	-
MSo	-
EH	-



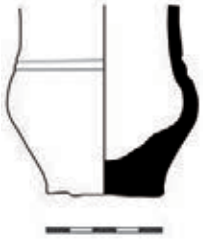
35.3



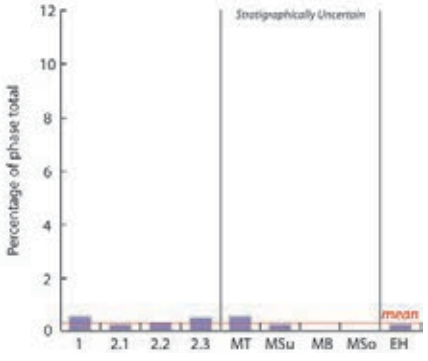
Phase	Count
1	-
2.1	-
2.2	6
2.3	3
MT	9
MSu	1
MB	-
MSo	-
EH	-



35.4



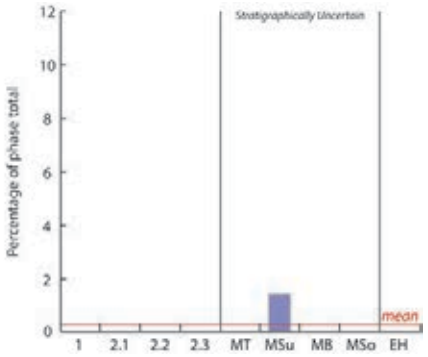
Phase	Count
1	1
2.1	3
2.2	9
2.3	3
MT	7
MSu	2
MB	-
MSo	-
EH	1



35.5

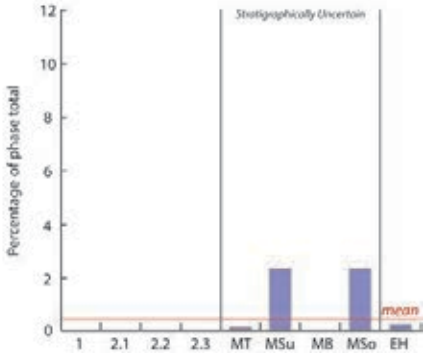
FIG. 5.31. Family 35 counts and relative percentages of phase totals for each type.

Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	17
MB	-
MSo	-
EH	-



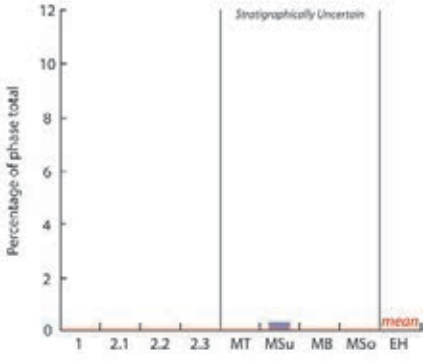
40.1

Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	1
MSu	29
MB	-
MSo	4
EH	1



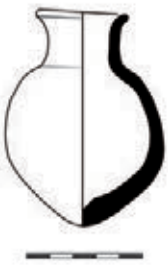
40.2

Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	4
MB	-
MSo	-
EH	-

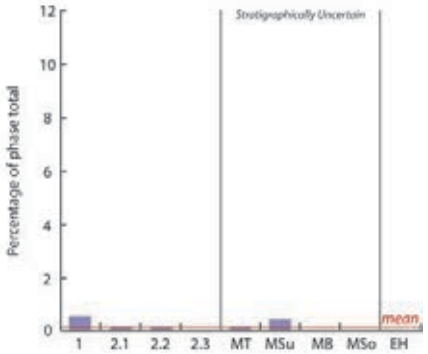


40.3

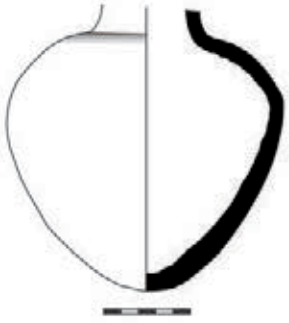
FIG. 5.32. Family 40 counts and relative percentages of phase totals for each type.



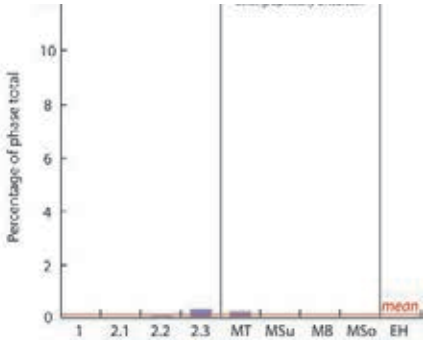
Phase	Count
1	1
2.1	2
2.2	2
2.3	-
MT	1
MSu	5
MB	-
MSo	-
EH	-



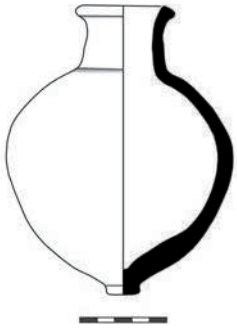
45.1



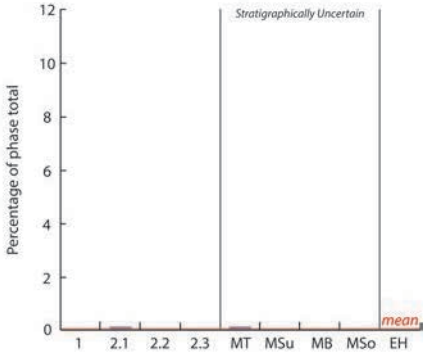
Phase	Count
1	-
2.1	-
2.2	1
2.3	2
MT	2
MSu	-
MB	-
MSo	-
EH	-



45.2

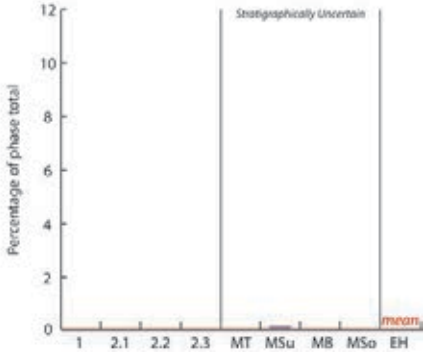


Phase	Count
1	-
2.1	1
2.2	-
2.3	-
MT	1
MSu	-
MB	-
MSo	-
EH	-



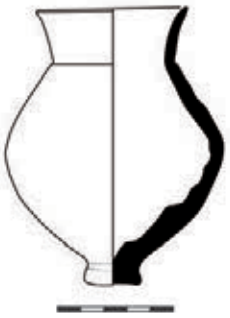
45.3

Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	1
MB	-
MSo	-
EH	-

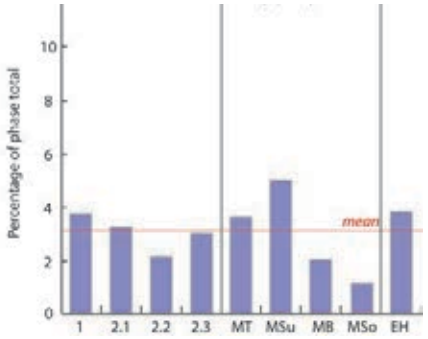


45.4

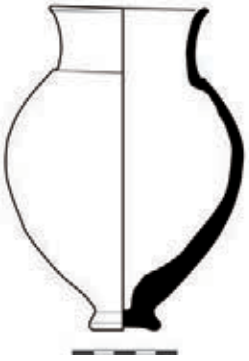
FIG. 5.33. Family 45 counts and relative percentages of phase totals for each type.



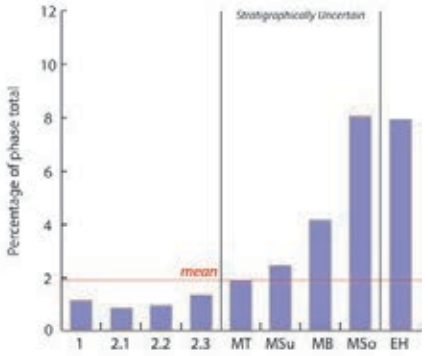
Phase	Count
1	7
2.1	47
2.2	54
2.3	18
MT	46
MSu	62
MB	1
MSo	2
EH	16



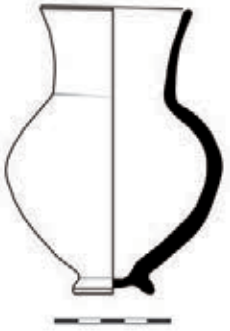
50.1



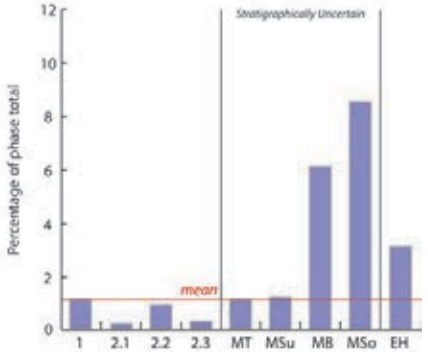
Phase	Count
1	2
2.1	11
2.2	24
2.3	8
MT	25
MSu	30
MB	2
MSo	14
EH	33



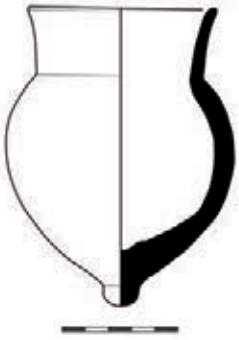
50.2



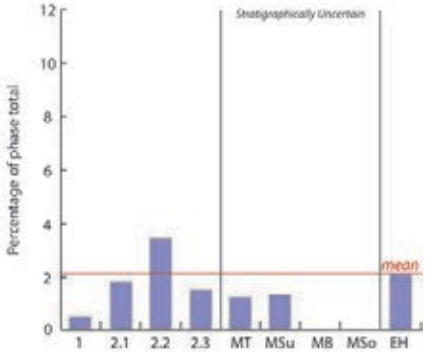
Phase	Count
1	2
2.1	3
2.2	23
2.3	2
MT	14
MSu	15
MB	3
MSo	15
EH	13



50.3

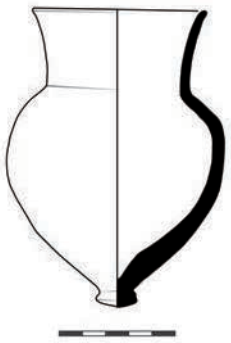


Phase	Count
1	1
2.1	26
2.2	89
2.3	9
MT	16
MSu	16
MB	-
MSo	-
EH	9

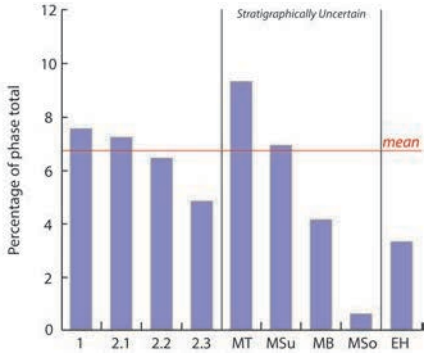


50.4

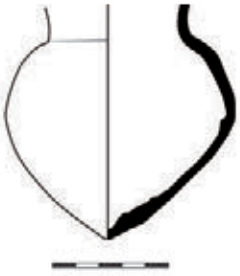
FIG. 5.34. Family 50 counts and relative percentages of phase totals for each type.



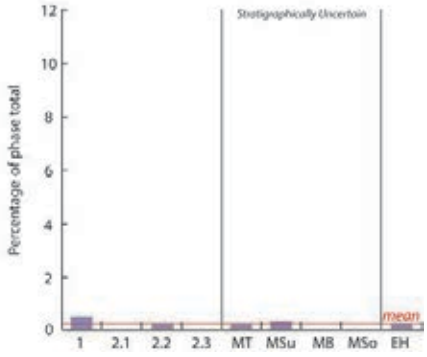
Phase	Count
1	14
2.1	105
2.2	167
2.3	29
MT	120
MSu	86
MB	2
MSo	1
EH	14



50.5

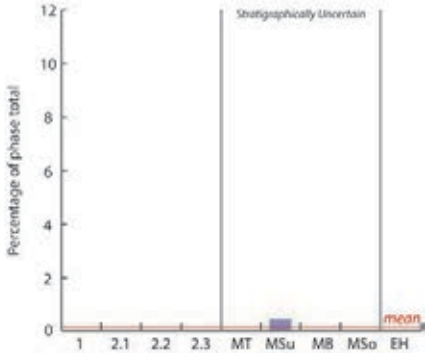


Phase	Count
1	1
2.1	-
2.2	5
2.3	-
MT	2
MSu	4
MB	-
MSo	-
EH	1



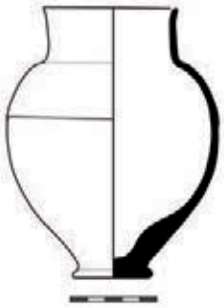
50.6

Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	5
MB	-
MSo	-
EH	-

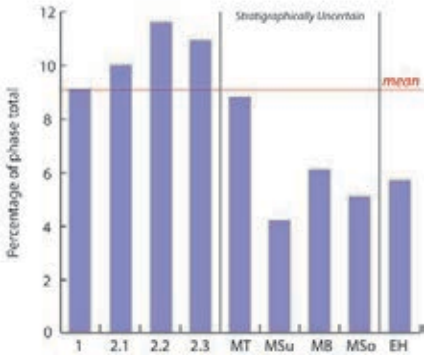


50.7

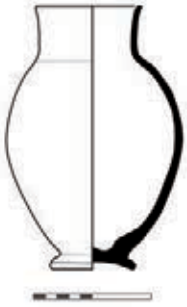
FIG. 5.35. Family 50 (cont'd) counts and relative percentages of phase totals for each type.



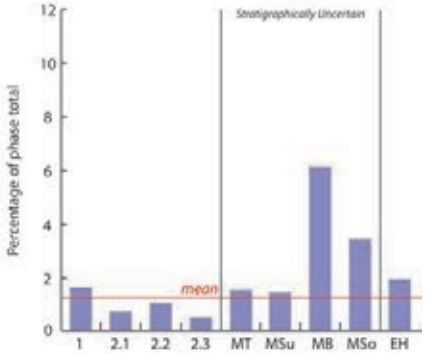
Phase	Count
1	17
2.1	146
2.2	303
2.3	66
MT	113
MSu	52
MB	3
MSo	9
EH	24



55.1

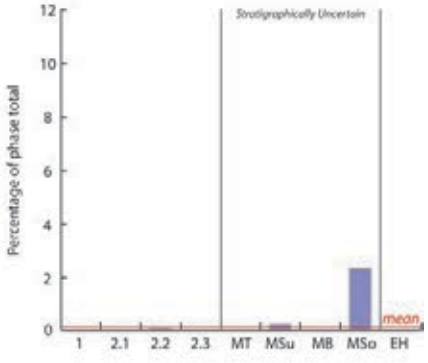


Phase	Count
1	3
2.1	10
2.2	25
2.3	3
MT	19
MSu	17
MB	3
MSo	6
EH	8



55.2

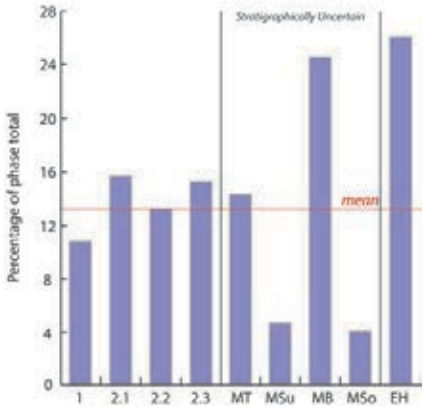
Phase	Count
1	-
2.1	-
2.2	1
2.3	-
MT	-
MSu	3
MB	-
MSo	4
EH	-



55.3

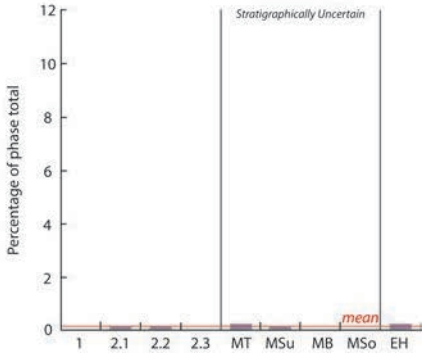
FIG. 5.36. Family 55 counts and relative percentages of phase totals for each type.

Phase	Count
1	20
2.1	228
2.2	345
2.3	92
MT	183
MSu	57
MB	12
MSo	7
EH	109

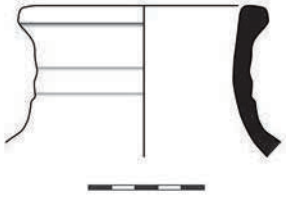


60.1

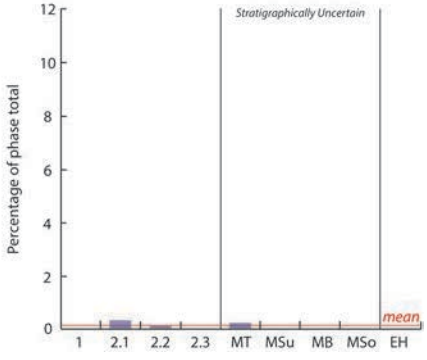
Phase	Count
1	-
2.1	1
2.2	3
2.3	-
MT	1
MSu	3
MB	-
MSo	-
EH	1



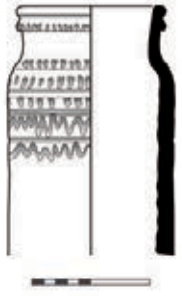
60.2



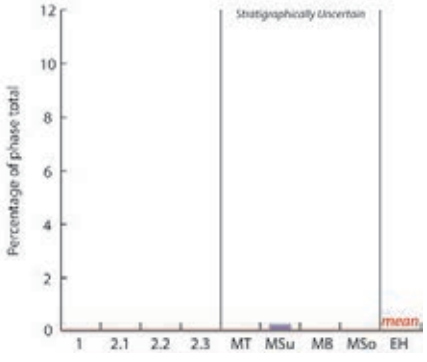
Phase	Count
1	-
2.1	4
2.2	2
2.3	-
MT	2
MSu	-
MB	-
MSo	-
EH	-



60.3

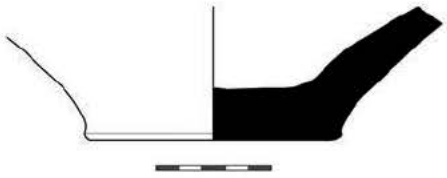


Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	2
MB	-
MSo	-
EH	-

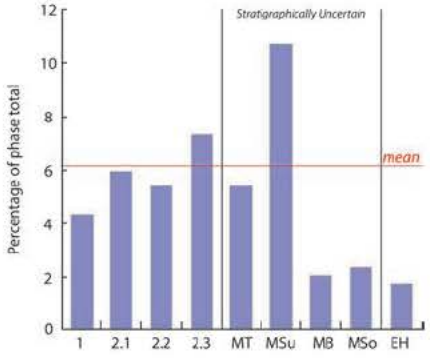


60.4

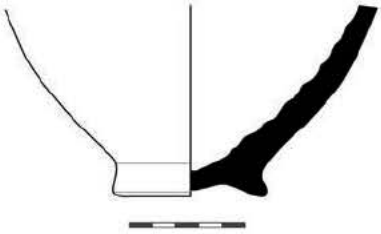
FIG. 5.37. Family 60 counts and relative percentages of phase totals for each type.



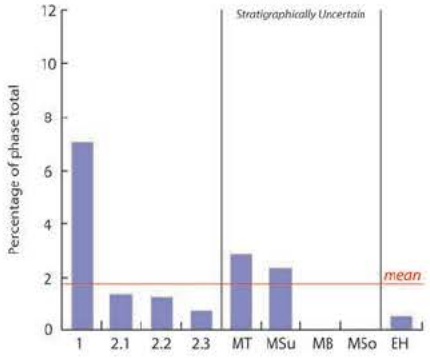
Phase	Count
1	8
2.1	86
2.2	141
2.3	44
MT	70
MSu	134
MB	1
MSo	4
EH	7



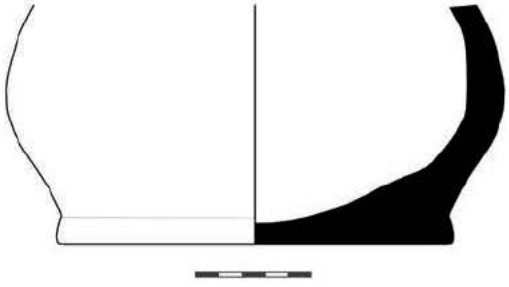
65.1



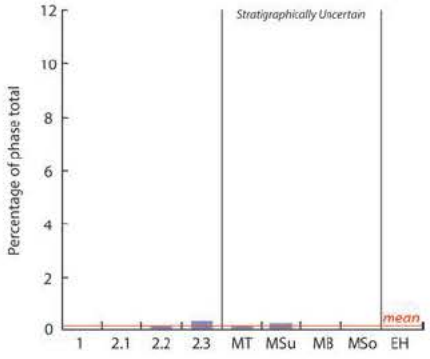
Phase	Count
1	13
2.1	19
2.2	32
2.3	4
MT	36
MSu	29
MB	-
MSo	-
EH	2



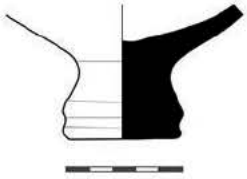
65.2



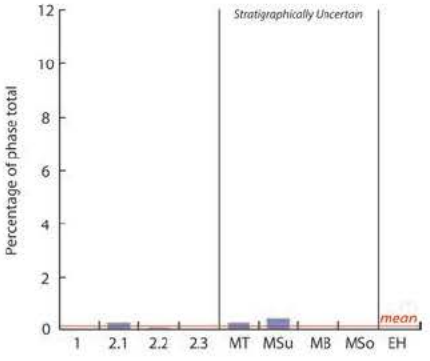
Phase	Count
1	-
2.1	-
2.2	3
2.3	2
MT	1
MSu	3
MB	-
MSo	-
EH	-



65.3

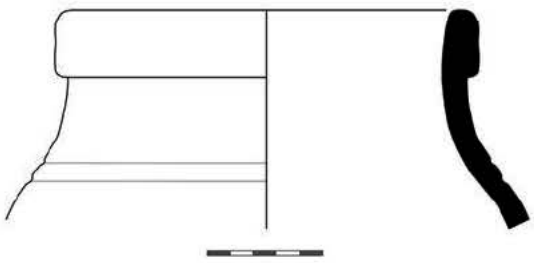


Phase	Count
1	-
2.1	3
2.2	1
2.3	-
MT	5
MSu	3
MB	-
MSo	-
EH	-

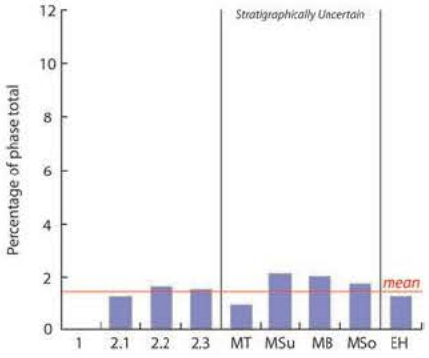


65.4

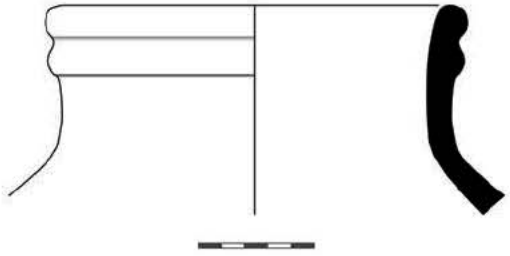
FIG. 5.38. Family 65 counts and relative percentages of phase totals for each type.



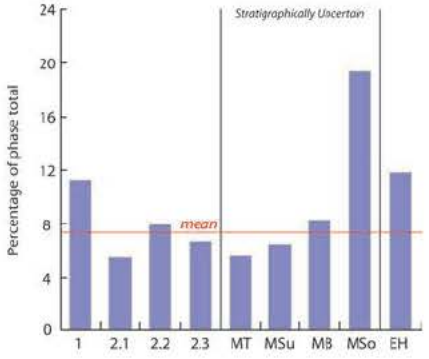
Phase	Count
1	-
2.1	17
2.2	41
2.3	9
MT	12
MSu	26
MB	1
MSo	3
EH	5



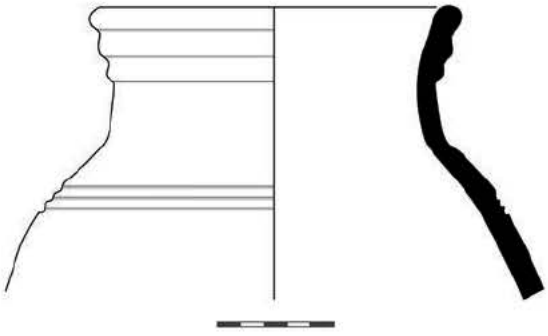
70.1



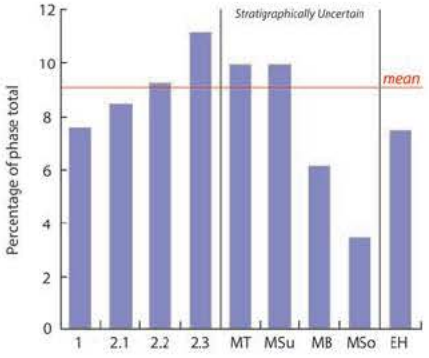
Phase	Count
1	21
2.1	79
2.2	206
2.3	40
MT	71
MSu	80
MB	4
MSo	34
EH	49



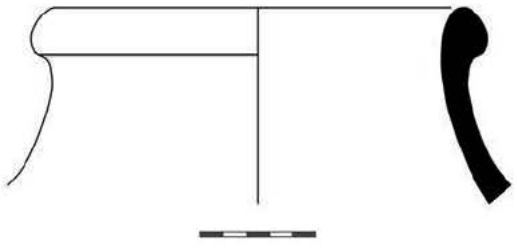
70.2



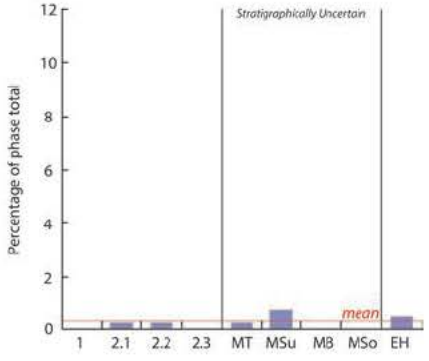
Phase	Count
1	14
2.1	123
2.2	241
2.3	67
MT	127
MSu	124
MB	3
MSo	6
EH	31



70.3

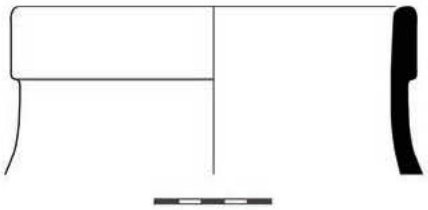


Phase	Count
1	-
2.1	3
2.2	6
2.3	-
MT	2
MSu	9
MB	-
MSo	-
EH	2

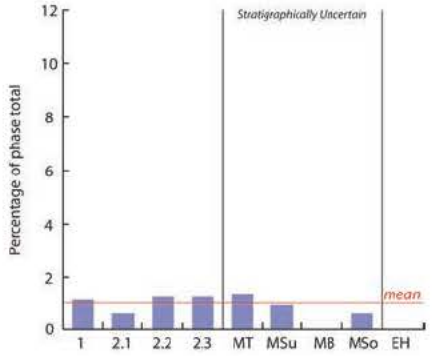


70.4

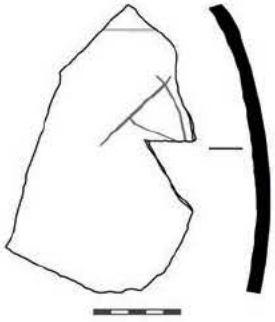
FIG. 5.39. Family 70 counts and relative percentages of phase totals for each type.



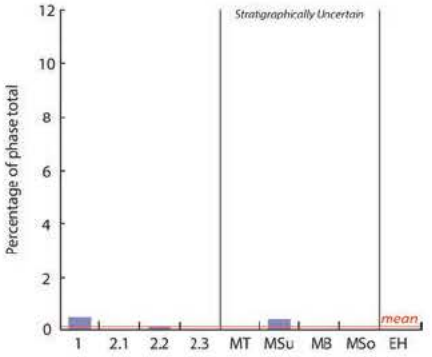
Phase	Count
1	2
2.1	9
2.2	32
2.3	7
MT	17
MSu	11
MB	-
MSo	1
EH	-



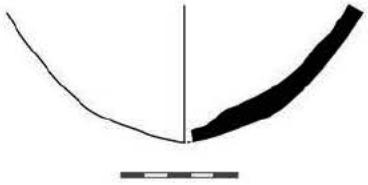
70.5



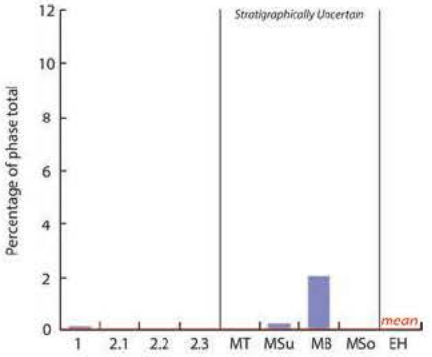
Phase	Count
1	1
2.1	-
2.2	3
2.3	-
MT	-
MSu	5
MB	-
MSo	-
EH	-



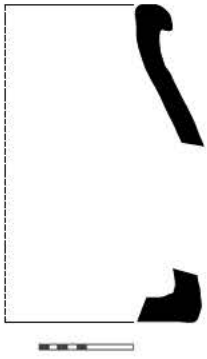
70.6



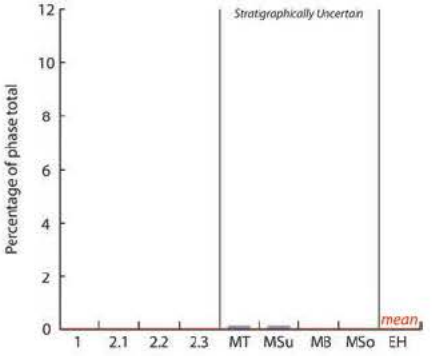
Phase	Count
1	1
2.1	-
2.2	-
2.3	-
MT	-
MSu	2
MB	1
MSo	-
EH	-



70.7



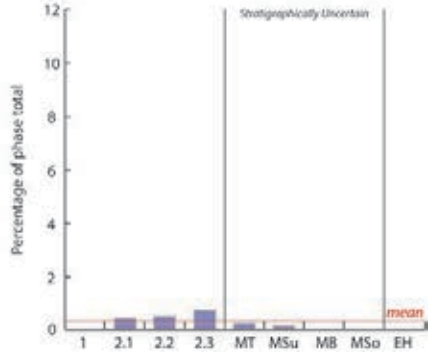
Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	1
MSu	1
MB	-
MSo	-
EH	-



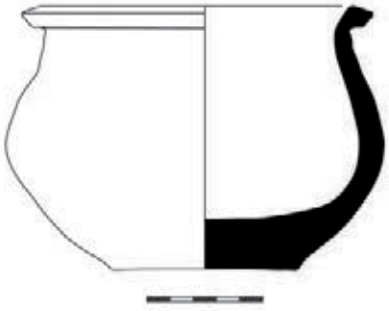
70.8

FIG. 5.40. Family 70 (cont'd) counts and relative percentages of phase totals for each type.

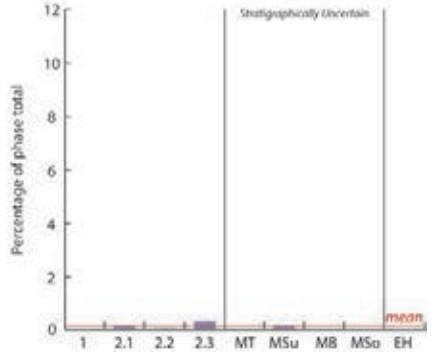
Phase	Count
1	-
2.1	6
2.2	14
2.3	4
MT	3
MSu	1
MB	-
MSo	-
EH	-



75.1

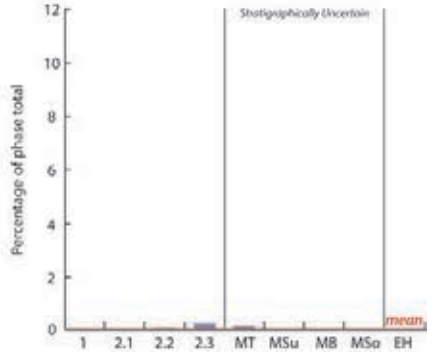


Phase	Count
1	-
2.1	2
2.2	1
2.3	2
MT	-
MSu	1
MB	-
MSo	-
EH	-



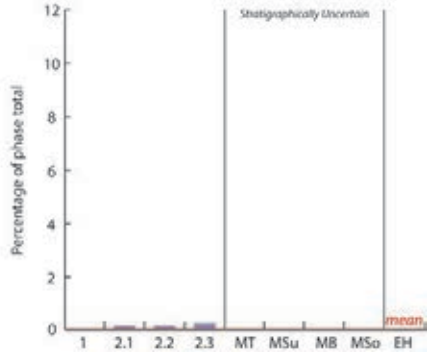
75.2

Phase	Count
1	-
2.1	-
2.2	1
2.3	1
MT	1
MSu	-
MB	-
MSo	-
EH	-



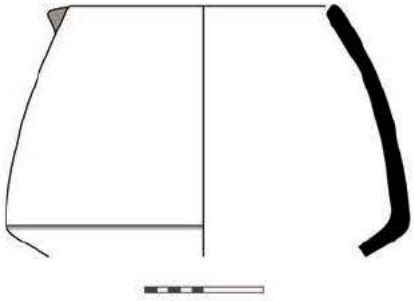
75.3

Phase	Count
1	-
2.1	1
2.2	2
2.3	1
MT	-
MSu	-
MB	-
MSo	-
EH	-

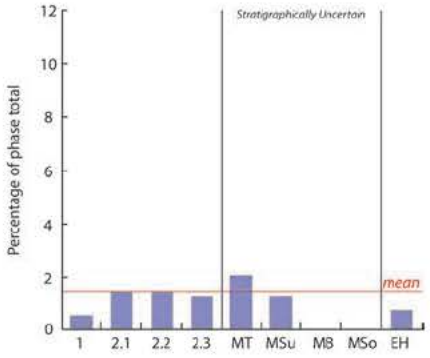


75.4

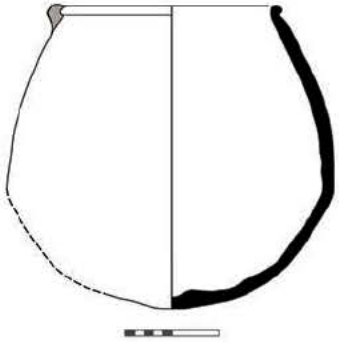
FIG. 5.41. Family 75 counts and relative percentages of phase totals for each type.



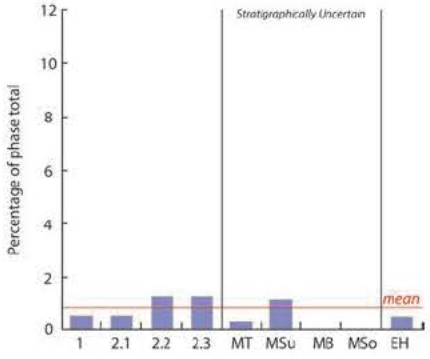
Phase	Count
1	1
2.1	21
2.2	37
2.3	7
MT	26
MSu	15
MB	-
MSo	-
EH	3



80.1

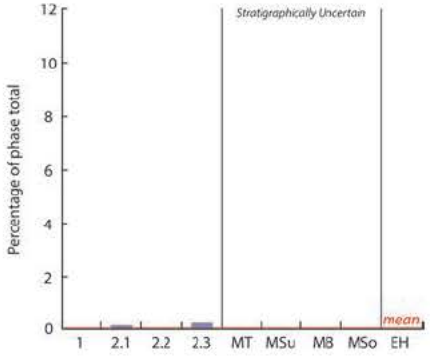


Phase	Count
1	1
2.1	8
2.2	32
2.3	7
MT	4
MSu	14
MB	-
MSo	-
EH	2



80.2

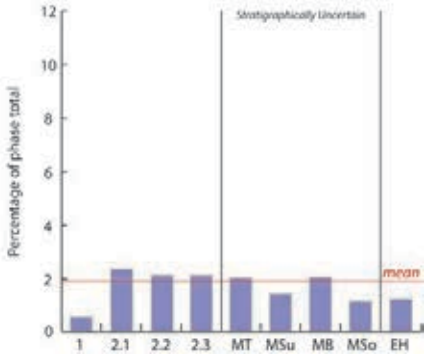
Phase	Count
1	-
2.1	1
2.2	-
2.3	1
MT	-
MSu	-
MB	-
MSo	-
EH	-



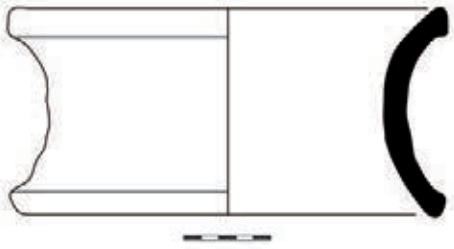
80.3

FIG. 5.42. Family 80 counts and relative percentages of phase totals for each type.

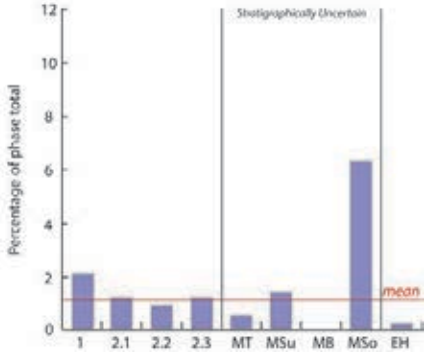
Phase	Count
1	1
2.1	34
2.2	55
2.3	13
MT	26
MSu	18
MB	1
MSo	2
EH	5



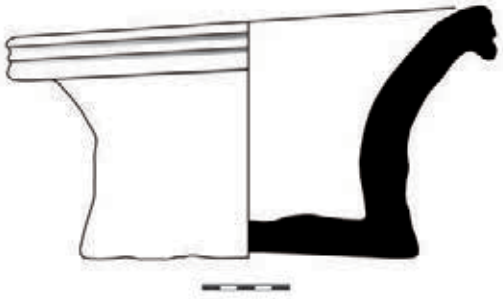
85.1



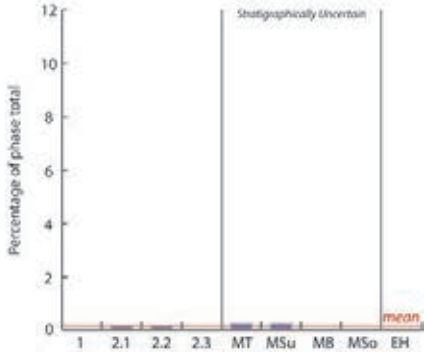
Phase	Count
1	4
2.1	17
2.2	23
2.3	7
MT	6
MSu	17
MB	-
MSo	11
EH	1



85.2



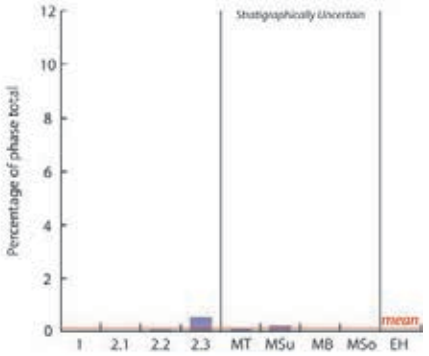
Phase	Count
1	-
2.1	2
2.2	3
2.3	-
MT	2
MSu	3
MB	-
MSo	-
EH	-



85.3

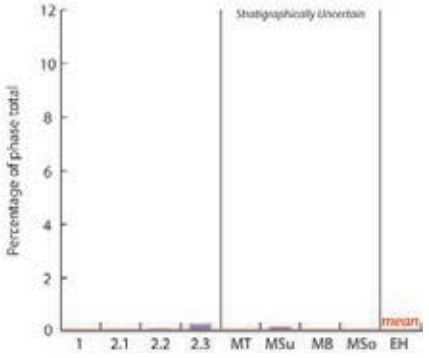
FIG. 5.43. Family 85 counts and relative percentages of phase totals for each type.

Phase	Count
1	-
2.1	-
2.2	1
2.3	3
MT	1
MSu	2
MB	-
MSo	-
EH	-



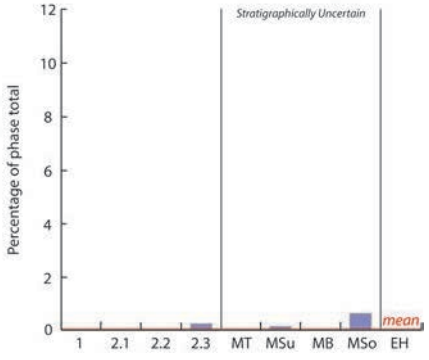
90.1

Phase	Count
1	-
2.1	-
2.2	1
2.3	1
MT	-
MSu	1
MB	-
MSo	-
EH	-



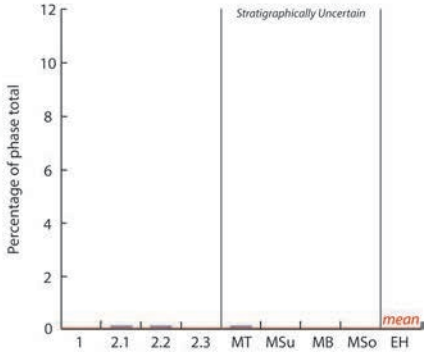
90.2

Phase	Count
1	-
2.1	-
2.2	-
2.3	1
MT	-
MSu	1
MB	-
MSo	1
EH	-



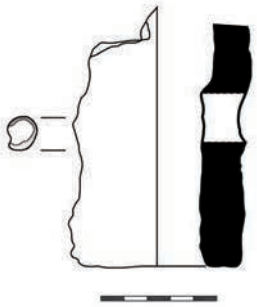
90.3

Phase	Count
1	-
2.1	1
2.2	2
2.3	-
MT	1
MSu	-
MB	-
MSo	-
EH	-

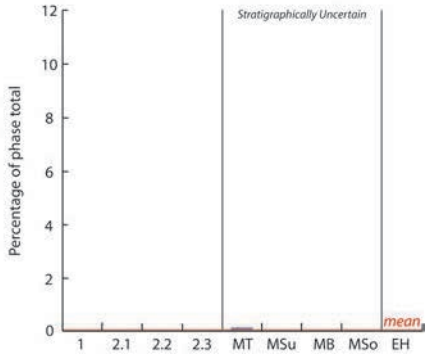


90.4

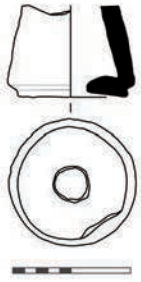
FIG. 5.44. Family 90 counts and relative percentages of phase totals for each type.



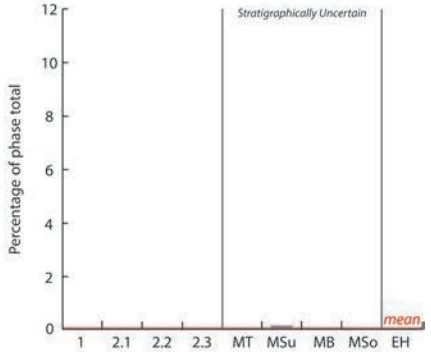
Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	1
MSu	-
MB	-
MSo	-
EH	-



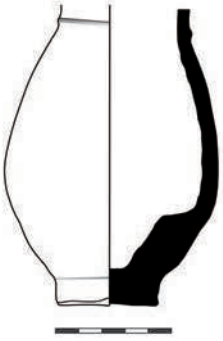
90.5



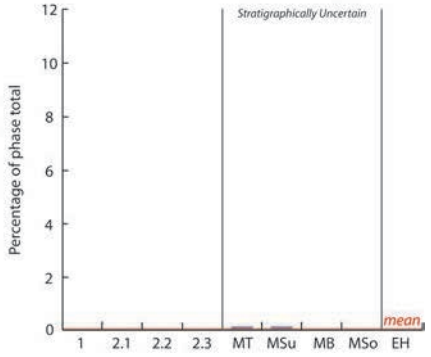
Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	-
MSu	1
MB	-
MSo	-
EH	-



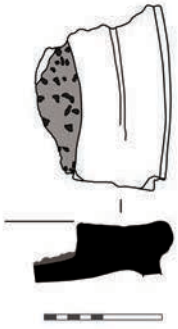
90.6



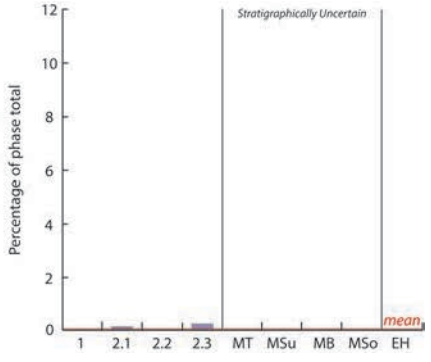
Phase	Count
1	-
2.1	-
2.2	-
2.3	-
MT	1
MSu	1
MB	-
MSo	-
EH	-



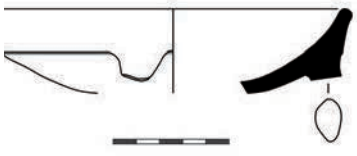
90.7



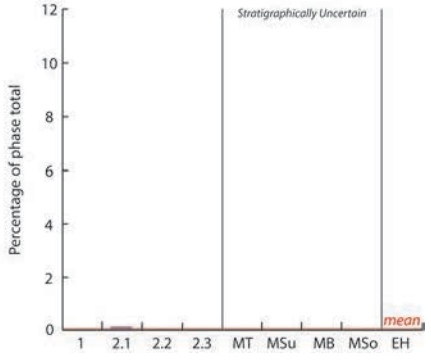
Phase	Count
1	-
2.1	1
2.2	-
2.3	1
MT	-
MSu	-
MB	-
MSo	-
EH	-



90.8



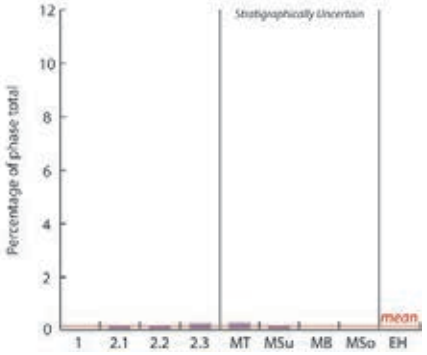
Phase	Count
1	-
2.1	1
2.2	-
2.3	-
MT	-
MSu	-
MB	-
MSo	-
EH	-



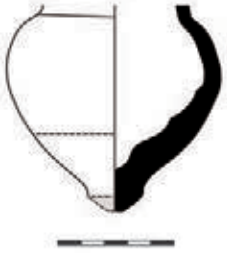
90.9

FIG. 5.45. Family 90 (cont'd) counts and relative percentages of phase totals for each type.

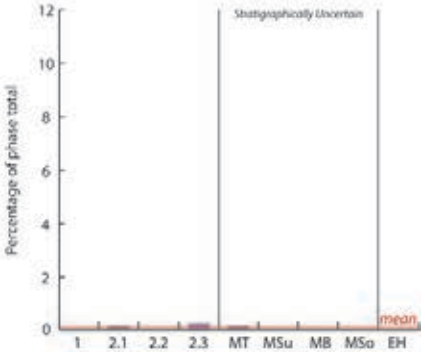
Phase	Count
1	-
2.1	1
2.2	2
2.3	1
MT	3
MSu	1
MB	-
MSo	-
EH	-



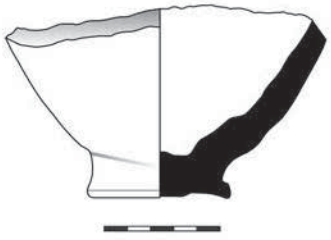
95.1



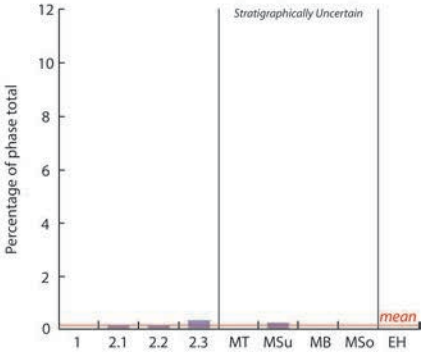
Phase	Count
1	-
2.1	1
2.2	-
2.3	1
MT	1
MSu	-
MB	-
MSo	-
EH	-



95.2

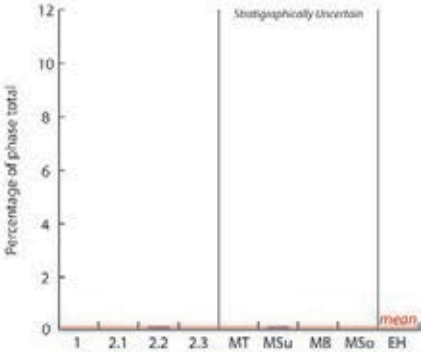


Phase	Count
1	-
2.1	1
2.2	2
2.3	2
MT	-
MSu	2
MB	-
MSo	-
EH	-



95.3

Phase	Count
1	-
2.1	-
2.2	2
2.3	-
MT	-
MSu	1
MB	-
MSo	-
EH	-



95.4

FIG. 5.46. Family 95 counts and relative percentages of phase totals for each type.

JANE MOON

6. The Material Culture

INTRODUCTION

Mesopotamian artefacts are most familiar from museum collections, which emphasise what makes a pleasing display. Excavated assemblages are rather different: the artefacts are often fragmentary or in poor condition, usually repetitive, and only a tiny proportion are visually spectacular. This is especially the case for the second millennium BCE, which lacks painted pottery and coloured stone bowls, and for which no royal tombs have been discovered. However, the everyday items that we retrieve provide a view of life that written records cannot, in that they document the everyday activities that nobody needed to write about. By examining them carefully we can augment our picture of what went on in the Fortified Building and its immediate environs all those years ago. Given that so much of what we reconstruct of Mesopotamian history and society at this time is derived from unprovenanced tablets and museum-grade objects, the combination from Tell Khaiber of tablets, architecture, pottery and other artefacts all with context is exciting.

Every item encountered that was recognized as a possible artefact was numbered, described, and almost always photographed. The records are held in a database, linked to the Tell Khaiber GIS. As the building went out of use rather than being destroyed in a single event, the artefacts were mostly recovered from fill levels, rather than being found where they were last in use. For this reason, and because not all of the building was excavated, distribution plots would be misleading. Findspots are mentioned in the text where considered noteworthy. Artefacts were cleaned, stabilized, and repaired if feasible. Cleaning and preserving the tablets was the first priority for our professional conservator, and for other items the goal was stabilization. For this reason metalwork was not stripped of all its corrosion, as it was deemed safer to leave a protective layer.

At the end of each excavation season, a selection was made, by our SBAH staff, of artefacts for the Iraq Museum, including all tablets and metal, complete pots, and any other items of significance. These received an additional number, were entered into the Arabic catalogue, and formally handed over to the Iraq Museum. All else, such as broken vessels, small fragments of clay items, stone tools etc., was stored locally for comparison or further examination, until the conclusion of excavations, at which point it was discarded on the site dump along with the potsherds.

From the archive we know the professions of many of the people in the area, and while we do not know who actually resided or worked in the building, some of the finds are compatible with evidence for their equipment, such as cutting, scraping and smoothing tools for the bowyers, carpenters, leatherworkers and reed-workers. A few weapons substantiate the presence of the soldiers. There is nothing that can be matched convincingly with the profession of farmer, the one most frequently mentioned, but then it is unlikely that farming tools would be brought inside what is essentially an administrative building. The most numerous artefacts are stone tools for pounding and rubbing, many specifically for the grinding of grain. We cannot say whether the stones are testimony to an organized industry of flour production for redistribution, or simply the accumulated residue of kitchen equipment for domestic supply in the building.

As noted in Chapter 3 no shrines were identified, and the material culture reinforces the impression that organized religion was not a priority at Tell Khaiber, as attention to the supernatural is suggested only by a few clay plaques and a couple of eye-stones. The texts mention priests, but they have not left any identifiable physical traces. Leisure, if any, did not include much feasting from durable, high-status vessels, as these were lacking too. Possible gaming pieces and crude models perhaps indicate the unchanging preoccupations of children, or bored soldiers. Evidence for personal ornament is also meagre, and on the whole, most of what has been left to us in the Fortified Building is evidence of hard work.

REPRESENTATIONAL ITEMS

It is always affecting to gaze at ancient images, however indistinct, and to feel a sense of connection with those depicted, or those who created the representations. So although artefacts with images, human or otherwise, are rare at Tell Khaiber, we begin with them by way of introduction to the material world of the people whose lives and work we examine.

Clay plaques

Clay plaques are the most easily recognized Old Babylonian artefact type from our investigations. Twelve were identified, including fragments, all made from lightly baked clay and produced from a mould. The realisation is fairly crude, the mould sometimes worn, and the clay not especially fine or well prepared, and in this they are typical of the similar plaques attested from at least the Ur III to the Neo-Babylonian periods, all over Mesopotamia. There is an extensive repertoire of themes, including animals, double figures, gods and goddesses, musicians, demon masks and erotic scenes[239] but all those from Tell Khaiber depict a single human figure, all but one of them female.

Of those not too worn to decipher, the female figures comprise two examples of a naked woman offering her breasts (see below), and four of a woman wearing a flounced robe and headdress, with clasped hands. All of the latter came from the same mould, but all were found in different places. Three came from the southern unit: one from tower 310 (Fig. 6.1), one from courtyard 315 (Fig. 6.2), and a complete one from adjacent Room 314 (Fig. 6.4). The fourth, also complete, was found in the northern unit, in Room 101 (Fig. 6.5). It would be wonderful to be able to make something of their distribution, but they have of course been found in their place of final discard, not necessarily the place they were last used. While they were all turned out of the same mould, they are not made in quite the same way, in that the backs are treated differently. While two are carefully smoothed and mounded at the back (Figs. 6.1, 6.4), the other two are flattened off.

The only plaque showing a male figure depicts a worshipper, shown sideways on and wearing a fringed cloak and cap (Fig. 6.7). He holds up his right hand to his face in a gesture of obeisance, while the other supports his right elbow. He was found in surface material above tower 122 and immediate environs. This and the clothed female are in relief on a rectangular background, but the others, including the fragments, have been cut away around the figure, making the whole into an elongated oval.

The worshipper and the clothed female have close parallels at Old Babylonian Ur,[240] and, while there are many plaques with a single naked female facing front with her hands in front of her, she is generally slim, with a defined waist, hair in coils on her shoulders, and her hands clasped. Our more

FIG. 6.1. 3002:01

FIG. 6.2. 3176:03

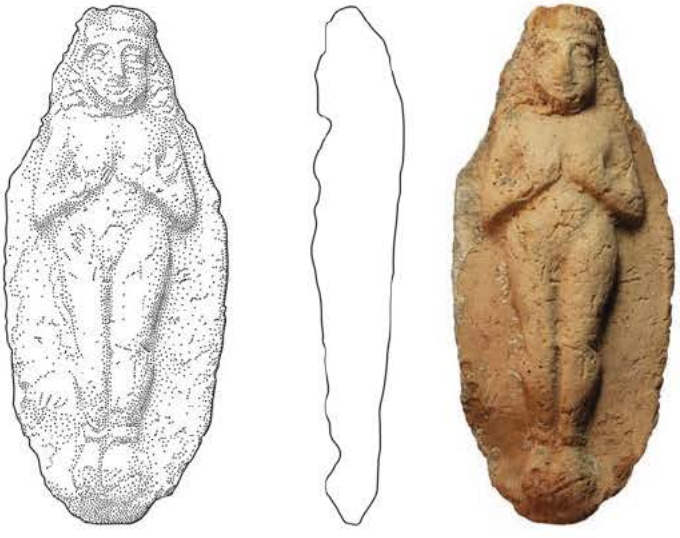


FIG. 6.3. 3009:07

[239] Moorey 2005.

[240] Woolley and Mallowan 1976: pls. 78 & 79, also pl. 71, 68.

FIG. 6.4. 1139:04

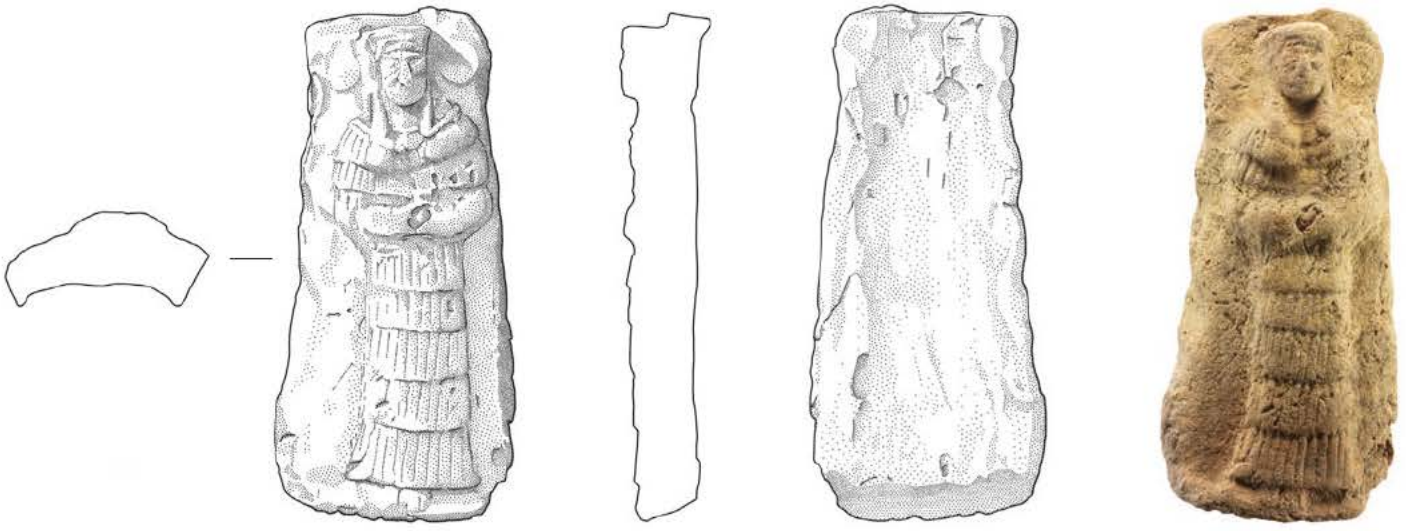


FIG. 6.5. 1079:81

FIG. 6.6. 3186:06

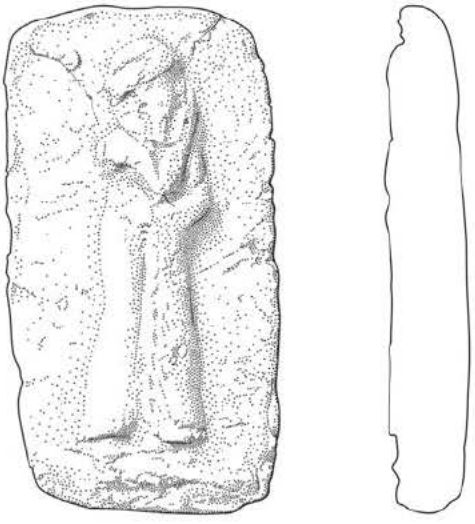


FIG. 6 7. 1010:04

5 cm
(Scale: 75%)

generously built lady, with flowing, plaited hairstyle and hands cupping her breasts (Fig. 6.3), is not so ubiquitous. However, there is a similar one published in a report about Larsa, though found nearby, and therefore not really provenanced.[241] A fragment of the more typical, modestly proportioned type was found in courtyard 315 (Fig. 6.6).

Figurines and Models

Rough clay models and figurines are encountered on most ancient Mesopotamian sites, and Tell Khaiber produced its share. They are not very durable, and break up easily, so are probably underrepresented. Most were of sun-dried clay, though a few seem to have been deliberately baked. Thirty-three of the sixty-eight pieces of figurines were of animals, and eleven seemed to belong to humans; the rest of the fragments could have been from either. All of the humans, and most of the animals, are crudely modelled, and could easily be the work of children.

The humans are particularly schematic, consisting of a long cylinder for the body, with the neck and arms pulled out of the top of the same piece (for example Fig. 6.8). In no case did a head survive, and on two pieces the neck seemed complete without it (Figs. 6.9, 6.10). Perhaps heads were added separately, possibly in a different material. The bases had a thumb-dimple underneath. Arms, where they survive, stick out of the body at right angles. One figure had a small drill-hole through the body, perhaps to fasten another element to (Fig. 6.10 again).

The majority of animal figurines, mostly represented only by pieces, are similarly pinched into shape, with the identity of the animal not even clear (e.g. Figs. 6.12, 6.14), although one partial torso had clear indication of its male sex (Fig. 6.13). Two battered beasts look nearest to horse (Figs. 6.11, 6.15), and a further detached head is obviously of a horse (Fig. 6.16). There is a possible sheep (Fig. 6.17) and a creature with marks on its back perhaps intended to represent bristles, which may be a pig, or perhaps a porcupine (Fig. 6.18). A rather fine bovid (Fig. 6.19) is from an early third millennium level away from the Fortified Building; the style of these basic animal figurines changes little over millennia.

One damaged animal figurine (Fig. 6.20) is exceptional: it is carefully modelled, in baked clay, and carries a cuneiform inscription referring to Gula on its left flank (see p.120). The mention of Gula, the goddess of healing, whose associated animal is a dog, suggest the figurine may depict a dog, although the feet are more like those of a lion.

FIG. 6.8. 3085:23

FIG. 6.9. 5017:17

FIG. 6.10. 5017:01

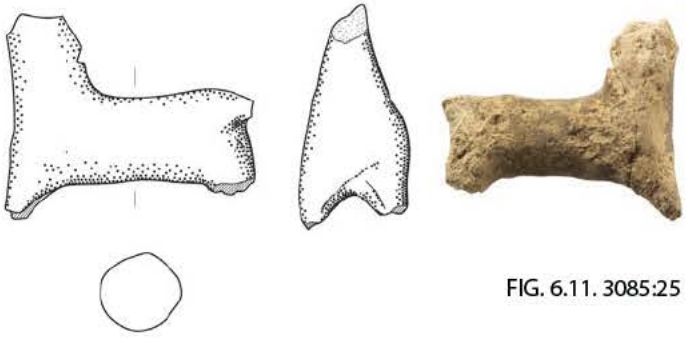


FIG. 6.11. 3085:25

FIG. 6.12. 3054:60

FIG. 6.13. 3085:47

[241] Huot 2003: fig. 18 & fig. 30, 18 (findspot given as 'Région de Larsa').

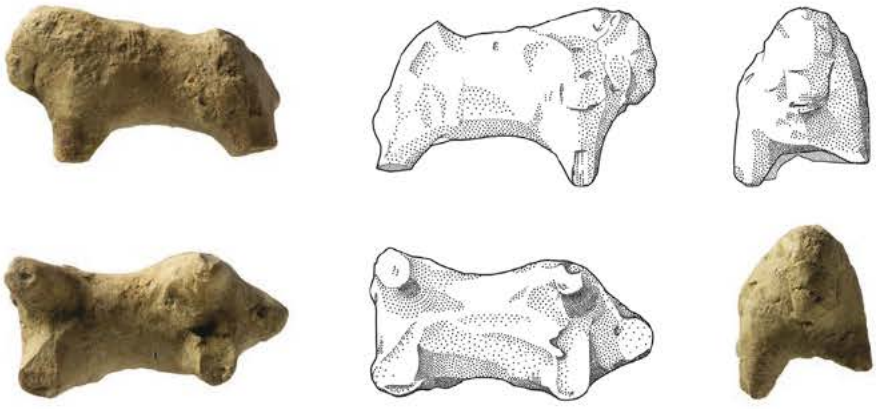


FIG. 6.14. 1077:14

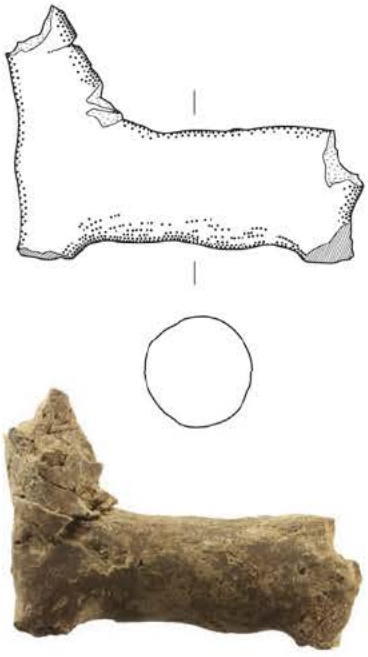


FIG. 6.15. 3085:46

FIG. 6.16. 3054:13

FIG. 6.17. 5008:05

FIG. 6.18. 1094:10

FIG. 6.19. 9002:06

FIG. 6.20. 1005:18

5 cm
(Scale: 75%)

Models of inanimate objects numbered thirty, of which thirteen were of boats. Although fragmentary, some are very recognizable as the flat-bottomed, pointy-ended boats that are still in use in the marsh areas of Iraq today (Fig. 6.21). Others represent more rounded vessels, the kind made by stretching hide over a ribbed frame of reed or wood (Fig. 6.23, which has traces of red paint inside and out).

Six wheels were found, presumably from miniature vehicles (e.g. Fig. 6.24), occasionally with the hub modelled (Fig. 6.25, and also Fig. 6.26, though from colour of clay the latter may be derived from the early third millennium levels).

Other models include miniature vessels, of which Room 101 produced a tiny dish Fig. 6.27) and part of a tiny trough (Fig. 6.28), also a bag-shaped 'cooking pot' (Fig. 6.29), while another similar was found inside a normal jar in tower 304 (3054:50).

There is something endearing about the figurines and models: their informality, their possible association with children, their snapshot of time spent 'doodling' in the sun, or the shade, according to season. A personal favourite is the model bed (Fig. 6.30) found in pieces strewn around Room 304. It has a frame supported on four stumpy legs, with the stringing clearly depicted. It even has a realistic sag. Bed models are well known from second millennium contexts, sometimes apparently showing elaborate textiles or decoration,[242] and occasionally the occupants.[243] Ours, however, was unoccupied and unadorned. There were possible fragments of three more: 3168:12 from courtyard 315; 5001:02 from Area 802, the cut or ditch outside the Fortified Building on the southeastern side; and a leg, 1142:05, from Room 314.

Finds of models and figurines were concentrated in a small number of findspots. In the northern unit Room 101 had miniature pots, boat models and animals, and there were human and animal figurines in Rooms 140 and 141. The inscribed animal came from near to the surface just outside the Fortified Building, possibly associated with tower 124.

In the southern unit there were a few fragments from courtyard 315 and adjacent Room 314, but the largest grouping was found in tower 304: twenty-two items in all, including animals, humans, wheels and the wonderful bed. Tower 302 produced the boat model with paint.

[242] Woolley and Mallowan 1976: pl. 88.

[243] BM 115719, unprovenanced. https://www.britishmuseum.org/collection/object/W_1923-0106-1. Accessed 31/03/2023.

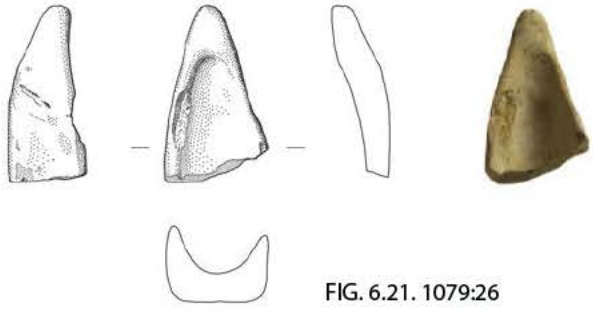


FIG. 6.21. 1079:26

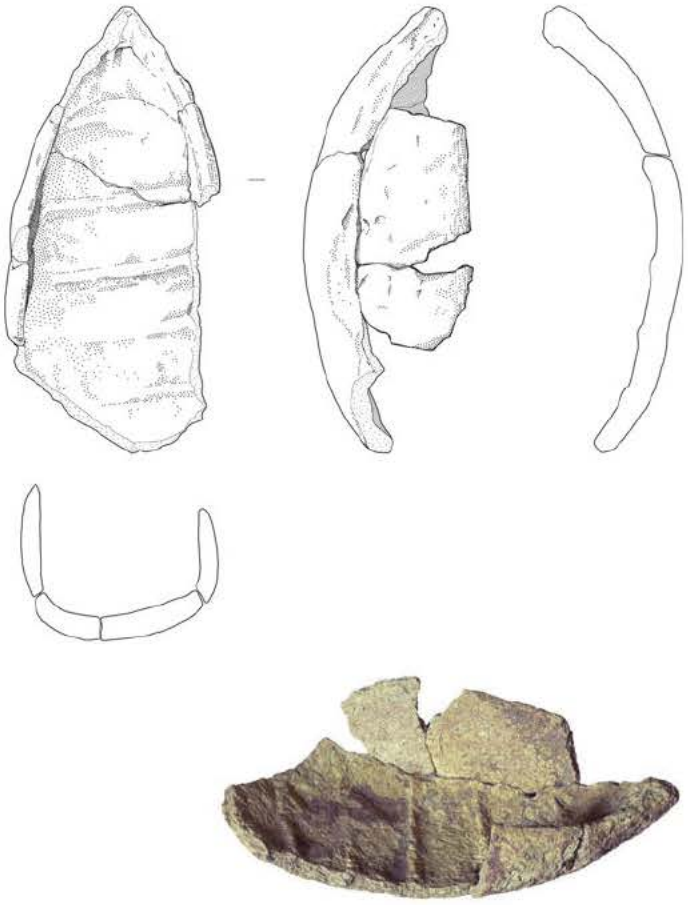


FIG. 6.22. 3025:09

FIG. 6.23. 3025:09

5 cm
(Scale: 50%)

FIG. 6.24. 3054:08

FIG. 6.25. 6041:15

FIG. 6.26. 3176:02

FIG. 6.27. 1077:08

FIG. 6.28. 1079:84

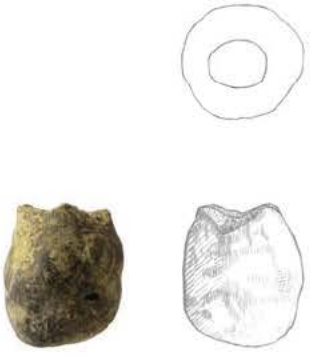


FIG. 6.29. 1073:23

FIG. 6.30. 3088:01

5 cm
(Scale: 50%)

Cylinder Seals

Despite the mention of a seal-cutter in the Tell Khaiber archive (see Table 4.15, p.80), sealing was obviously not a common practice, for only four seals were found, and one of those (Fig. 6.31) seems to be derived from the earlier occupation of the mound. It is a crude and broken limestone example, with a geometric pattern. Of those contemporary with the excavated occupation, two were made of clay, and one of a dark stone (Fig. 6.32). The latter is a surface find, broken and extremely worn, but a standard presentation scene can just be made out: a human figure leads another towards a seated (presumable) deity.

The better preserved of the two clay seals comes from occupation debris in Room 302 (Fig. 6.33). It is roughly shaped, slightly waisted, and also shows a worshipper scene, as it has a seated figure facing towards an approaching walking one with one hand raised. The realisation is very crude, with the figures essentially stick-men, but the filler motifs of horned animals and a long-tailed bird that stride with such elan at right angles across the scene have an irresistible charm. The other clay seal is a surface find, and too worn to make much of. It is also waisted, and may show a frieze of figures (6136:05).

Several pieces of unbaked clay were found that were of the right size and shape to be sealings, and these were carefully, indeed eagerly, examined. But while some have string impressions on the back, none definitely had the impression of a seal (see p.200). The tablets tell us that a great deal of administration went on at Tell Khaiber, but we may safely conclude that this did not involve the sending out or taking in of sealed packages in any quantity. Quite probably the very local nature of the organization meant that knowing who had sent what was possible without the use of sealing.

PERSONAL ORNAMENTS

Small items of adornment, particularly beads, are usually very common in Near Eastern excavations, especially where sieving is carried out as part of the recovery process. At Khaiber, however, they were not very frequent, which suggests that most of the people operating in the Fortified Building were not routinely dressed to impress. In fact, of the 120 beads found, forty-eight came from a single necklace found in the pectoral area of the skeleton in Grave 5 (see p.47), and fifteen clay ones were found as a group on the floor of kitchen 316. Apart from stone and clay, there were beads of glass and faience, and ornaments of various kinds made of shell. There is little virtue in enumerating parallels, as the types are so common and widespread across time and space, but examples of almost all of our assemblage can be seen in that of Old Babylonian Haradum.[244]

[244] Kepinski-Lecompte 1992: 433.

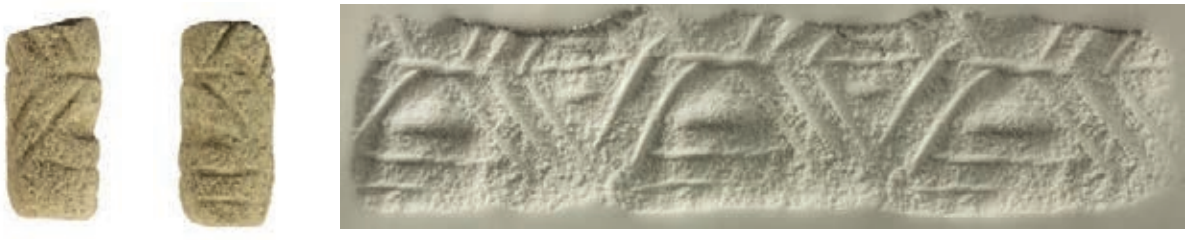


FIG. 6.31. 9007:02

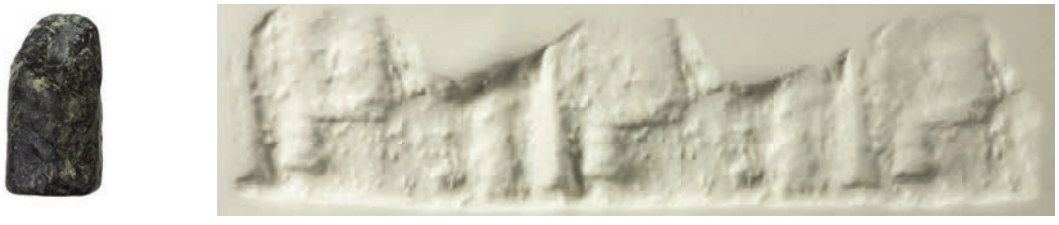


FIG. 6.32. 0:24

FIG. 6.33. 3025:22

2 cm
(Scale: 100%)

Stone beads and ornaments

While scribal students at Tell Khaiber were required to write out the names of semiprecious stones, their physical presence is limited. Of the ones we found, none were examined by a petrologist, so the identifications are essentially by eye, using the popular common terms for the type of stone.[245] A stone pendant of greenish stone (Fig. 6.34) came from a surface deposit in the north corner of the southern unit, other items all being beads, apart from the possible tools (p.185).

Turquoise beads numbered nine, all (apart from two surface finds) from Grave 5, and were cylindrical, biconical, or somewhere in-between (such as Figs. 6.35, 6.36). They were not especially well shaped. By contrast, those of translucent agate, perhaps the most spectacular ornaments found, were carefully shaped and polished. A relatively large round one came from debris in Room 309 (Fig. 6.37), the rest being square-ended or tapered cylinders, drilled from either end to make a longitudinal perforation (Figs. 6.38–41), and all part of the Grave 5 necklace.

Of the twenty-four lapis lazuli beads found, twenty-one were from Grave 5, two were found loose in nearby contexts, and just one was found in the Fortified Building, in a courtyard deposit. As with the turquoise beads, those from the grave were mostly more-or-less biconical or cylindrical, but poorly shaped, and they were of poor quality mottled lapis (Figs. 6.42, 6.43). One of the surface finds was of a rich, more even blue, and relatively carefully shaped and polished (Fig. 6.44).

Carnelian was the only semiprecious stone for which there were more examples from other contexts than from Grave 5. The latter contained only three such beads, all carefully made tapering cylinders (like Fig. 6.45), and similar in nature to the agate ones in that two were translucent and banded (Figs. 6.46, 6.47). Those found in other contexts were mainly pierced discs or hemispheres (e.g. Figs. 6.48, 6.49).

Ten more beads were made of stones we were not readily able to identify in the field.

Glass and Faience Ornaments[246]

Five cylindrical or subcylindrical faience beads included one with a fluted form (Fig. 6.50). Grave 5 contained a single long, blue glass bead of an unusual shape (Fig. 6.51), and Grave 8, an infant pot burial, had at least five fragmentary beads of glass, now black or white in colour (Fig. 6.52). Two more were found in other contexts: a strange ridged cylinder in Room 300 (Fig. 6.53) and part of a brown cylindrical one under the reed-covered floor of Room 142 (Fig. 6.54). Two others were surface or stray finds.

Our most spectacular glass finds were two eye-stones. Both of these were composite, one of a brown, glass-like substance,

FIG. 6.34. 1078:04

FIG. 6 35. 4041:05

FIG. 6.36. 4041:22

FIG. 6.37. 1096:36

FIG. 6.38. 4041:30

FIG. 6 39. 4041:36

FIG. 6.40. 4040:32

FIG. 6.41. 4041:33

FIG. 6.42. 4041:19

FIG. 6.43. 4041:27

FIG. 6.44. 4001:03

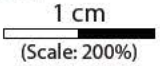
FIG. 6.45. 4041:16

FIG. 6.46. 4041:12

FIG. 6.47. 4041:13

FIG. 6.48. 1068:06

FIG. 6.49. 3187:10



[245] Stones commonly used for beads in the second millennium are usefully summarized and described in Ann Andersson's study of the beads from Failaka (Andersson 2016).

[246] An analysis of the glass from Tell Khaiber has been undertaken by Stuart Campbell and will be presented separately.

with the white part made of paste or faience (Fig. 6.55), and a second very fragmentary one was white with a deep ultramarine centre (1068:11). Both were found in debris in Room 101. Eye-stones have been the subject of a study by Tim Clayden, who concludes that 'they were decorative items and served neither as apotropaic objects nor as eye-inlays' (for statues).[247] Eye-stones are usually made from some form of chalcedony, such as agate or onyx, some being pierced, and some inscribed. Ones made of faience are known from the middle of the second millennium onwards, and there is a close parallel for our more complete one from Haradum, which shows evidence of piercing and is also not inscribed.[248] They have a long currency (Ur III to Achaemenid periods), but are most common in the Kassite period, and most at home in Babylonia.

Clay Beads

Of the baked clay beads, six were long and cylindrical (Fig. 6.56), sometimes tapered at the ends (Fig. 6.57) and three were round, disc-shaped or biconical (Fig. 6.58). The long ones were usually made by wrapping a strip of clay around a thin rod, which was removed after the clay dried. A different type, more a pendant than a bead, (Fig. 6.59) came from the fill of Grave 4 in tower 302. There was one example each of a cylindrical and a biconical round bead in clay that did not seem to have been baked, although it is often hard to distinguish between sun-dried and lightly baked clay (3047:13 and 4052:02). A cache of fifteen roughly made unbaked clay beads was found in kitchen 316 (Fig. 6.60).

Metal Ornaments[249]

Some of the copper items discovered were most likely ornaments, especially the small rings made from rods bent round into a circle, which would have made perfectly feasible earrings, but could of course have had some other use. There were five of these, one each from towers 124 and 304 (Figs. 6.62, 6.64), one with a possible extra piece of decoration (Fig. 6.63), found in Grave 10, a pot burial in poor condition, and another two from surface contexts. A copper circlet found in a disused *tannur* in Area 800, to the southwest of the Fortified Building, may have been an anklet (Fig. 6.65). Several other fragments of rods, bars or strips of copper may as easily be parts of ornaments as of tools or components, but there is no way to determine which. An iron anklet (1144:01) was found with an infant skeleton in Grave 12, but this was close to the surface of the mound and may not be ancient.

FIG. 6.50. 3009:11

FIG. 6.51. 4041:46

FIG. 6.52. 3092:01

FIG. 6.53. 3065:03

FIG. 6.54. 5050:04

FIG. 6.55. 1073:17

FIG. 6.56. 1096:20

FIG. 6.57. 3001:07

FIG. 6.59. 3034:01

FIG. 6 58. 1157:07

FIG. 6.60. 8021:02

FIG. 6.61. 4041:10 & 11

FIG. 6.62. 1094:19

FIG. 6.63. 6170:01

FIG. 6.64. 3054:57

[247] Clayden 2009: 36.

[248] Kepinski-Lecomte 1992: m472 on p.383, and fig. 167.

[249] The detailed composition of metal items found at Tell Khaiber has been studied by Alathea Fernyhough and Stuart Campbell, and will be presented separately in a full study of the metal artefacts. This includes several examples of the presence of iron, and instances of some admixture of tin with copper. For the present purposes the term *copper* is therefore provisional.

Grave 5 contained two thick pins (Fig. 6.61), found in the pectoral area, so presumably for securing clothing, or perhaps connected with the fastening of the necklace, and of an unusual silver/copper amalgam. Pins made of bone we have assumed to be tools (see below), but of course could have served a similar purpose to these metal ones.

Shell Ornaments

Three shell rings, none of them complete, are probable ornaments, perhaps for clothing, as they are surely not strong enough to fulfil any other function (Figs. 6.67–9). Most of the shell ornaments we found, however, are natural shells that have been modified but retain most of their original characteristics. Unmodified natural shells occur regularly throughout the deposits at Tell Khaiber. While we have not been able to subject them to expert study or identification, they appear to be generally of indigenous species from the surrounding marshes and waterways. A few, however, had come from much further away, and these we assume to be ornaments. There were at least fourteen examples of *Conus* shells (e.g. Fig. 6.70), which come from the Gulf. Two were the attractive brown-and-white chequered *Conus ebraeus* (Fig. 6.71, from tower 302, also 8017:02, from kitchen 316). Some have a hole through the tip, which if not natural is surely a modification to make them into beads.

Other gastropods were apparently drilled in the same way for beads (e.g. Figs. 6.72, 6.73). There are two further examples of beads of different shapes made out of shell: a tiny ring (Fig. 6.66), and a long tube (Fig. 6.73). An additional four items were modified in a way that suggests they were meant to be sewn on to something rather than strung: a cockle with a drilled hole at the apex (Fig. 6.74) and a gastropod with a piece removed from the side (Fig. 6.75), both from tower 304. A cowrie (Fig. 6.77) from an ephemeral (probable) infant burial, Grave 14, had been treated in the same way, as had a brown-and-white striped gastropod, *Engina mendicaria*, found in courtyard 315 (Fig. 6.78), another visitor from the Red Sea.

FIG. 6.67.
1137:03

FIG. 6.68.
7007:01

FIG. 6.69.
1068:12

FIG. 6.70. 2:06

FIG. 6.71.
3025:38

FIG. 6.72.
1068:31

FIG. 6.73.
6025:02

FIG. 6.74. 3054:72

FIG. 6.75.
3085:56

FIG. 6.76.
1112:03

FIG. 6.65.
2009:02

5 cm
(Scale: 50%)

FIG. 6.66.
2014:03

1 cm
(Scale: 200%)

FIG. 6.77. 6142:01

FIG. 6.78.
3158:08

2 cm
(Scale: 100%)

TOOLS AND IMPLEMENTS

Metal tools and implements

Metal finds were not abundant in the excavated material from Tell Khaiber, and metal was certainly a valuable commodity to the ancient residents. Altogether we found only forty-two recognizable artefacts apparently made from copper, and three of silver/copper amalgam (and the iron anklet mentioned above). Two of the more spectacular items, a bowl and a socketed adze, both damaged, were found together just below the extant mound surface in Room 99, tucked against the outside wall. The fact that both were broken, and that they were found together, suggests they may have been collected with the intention of retrieving them for repair or for re-use of the metal. The adze (Fig. 6.79) weighed 680 g, so represents a substantial investment. Adzes of this shape were in fashion from at least a millennium earlier. A fairly similar one was found embedded in the masonry of a Kurigalzu-period room by the ziggurat at Ur, and as its shape seemed out of step with the find spot, it was interpreted by the excavators as an already ancient artefact used as a dedication.[250] It is possible that ours too is a third-millennium survival, but there are few published, well-stratified, second millennium parallels for adzes, so it is equally possible that the chronological range of the shape is not yet fully understood. Two adzes found at Khafajah Mound C, a principally Old Babylonian settlement, are very similar, although the relevant records are lost and the actual context and date uncertain.[251] Thin-bladed adzes were also present in the hoard of agricultural implements from Tell Sifr, near Larsa which, although excavated by Loftus back in 1854, are reasonably certain to have a date range of 18th to 17th century BCE as a cache of tablets from the reigns of Rim-Sin, Hammurabi and Samsu-Iluna was found close by.[252]

The bowl (Fig. 6.81) was partly collapsed and distorted from depositional conditions, but was probably already damaged in antiquity. It is the only recognizable metal vessel recovered. Again, the shallow form with short sides has a long currency, from the fourth millennium onwards,[253] although usually with slightly waisted sides ('Knickschalen'), ours being the variant with vertical sides and slightly thickened rim.[254] Second millennium examples are hard to pin down.

The finding of two spearheads (Figs. 6.82, 6.83) and two, possibly three, arrowheads (Figs. 6.84–6), fits with the mentions of soldiers and palace auxiliary troops in the tablets, and with the defensive nature of the Fortified Building. Their findspots are surely place of discard, not use, unlike the substantial clusters of spearheads found

FIG. 6.79. 6185:01

FIG. 6.80. 4006:01

FIG. 6.81. 6185:02

5 cm
(Scale: 40%)

[250] U.6927, Woolley and Mallowan 1965: 104–5 and pl. 36.

[251] Holland 1990: pl. 63 d–e, and 232.

[252] Moorey 1971: 62, and pl. XXII 4–5.

[253] Müller-Karpe 1993: Form 10.

[254] Distinguished by Helwing (forthcoming) as Form G-J1b.

at Khafajah Mound C, which include parallels for our two slightly differing spear blade forms.[255] Both have other mid-second millennium parallels,[256] but are also found over a long period of time. Both of ours were found close to the mound surface, but were associated respectively with Room 301 in the administrative suite, and with House 1. Similarly, the arrowheads (Figs. 6.84–6) are all different shapes, none confined to the mid-second millennium, and again scattered in context. One (Fig. 6.84) was found outside the houses, and one each in Rooms 315 and 316 in the administrative suite.

Other useful implements included four awls, (Fig. 6.87, associated with House 2, Fig. 6.88 with Room 158, Fig. 6.89 with Room 148, and 0:04 unstratified). A rather hefty, once hafted item that also may be an awl with a broken tip, but would also do good service as a weapon, was found outside House 1 (Fig. 6.94), and a double-ended spatula (Fig. 6.95) in tower 302. Copper items were commoner in contexts associated with the houses than with the Fortified Building.[257]

Apart from the artefacts already mentioned there were two copper strips, five sheet fragments, five pieces of rod or bar (for example 4043:04), a looped rod (Fig. 6.90),[258] and a substantial flat item interpreted as a mirror (Fig. 6.80). Once again, the latter has parallels from many periods.

Apart from the artefacts that could be recognized as a form of tool, weapon or ornament, there were of course many that could not be fitted into any classification, but which show the many uses to which copper was put, sometimes perhaps for components of composite implements, such as harnesses, fishing tackle, containers, boats, vehicles, or domestic fittings. These include, the interpretations being provisional, pieces of hooks (Fig. 6.91), a fibula fragment (Fig. 6.92), a blade (Fig. 6.93), a large nail or fitting (Fig. 6.96),[259] pins (Fig. 6.97, 6.98), pieces of rod (Figs. 6.99, 6.100), or bar (Fig. 6.101) (plus many fragments that could be either), and strips (Figs. 6.101–3). Excavations of most periods produce many such fragments, which are rarely illustrated, often not even recorded, but to ignore them is to miss a dimension of the details of ancient life.

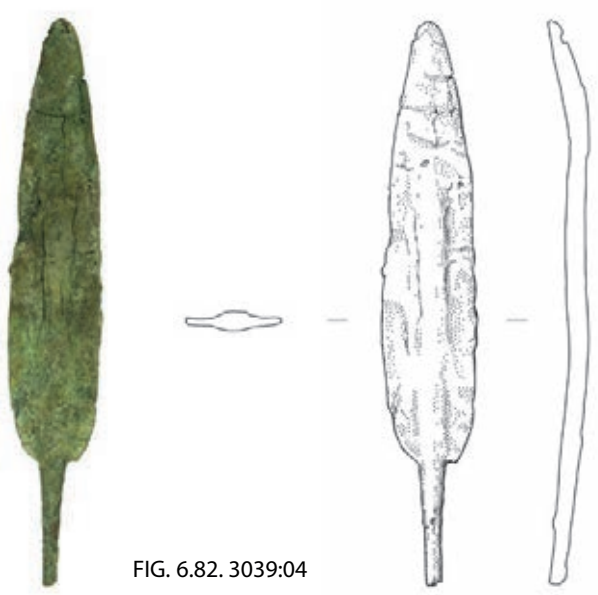


FIG. 6.82. 3039:04

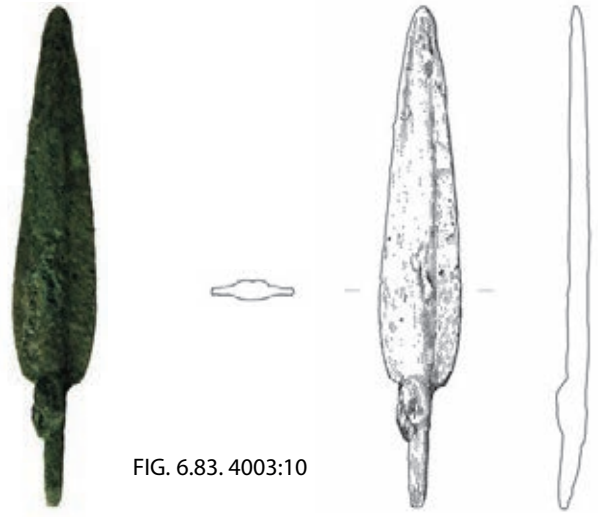


FIG. 6.83. 4003:10

5 cm
(Scale: 50%)

FIG. 6.84. 6089:03

FIG. 6.85. 3163:04

FIG. 6.86. 8020:11

2 cm
(Scale: 100%)

[255] Holland 1990: pl. 64.

[256] For example, at Haradum (Kepinski-Lecompte 1992: fig. 165 4, m 454).

[257] Twenty-seven out of 126 copper items registered altogether, four of the fifteen complete ones, one of eleven nearly complete, and two of the twelve classified as partial, came from the Eastern Houses.

[258] Several identical ones were found at Old Babylonian Haradum (Kepinski-Lecompte 1992: 429, fig. 164, 4.8).

[259] Possibly an element of the locking mechanism for a door, cf. Old Babylonian Abu Sheeja, Hussein et al. 2010: 131, fig. 17.

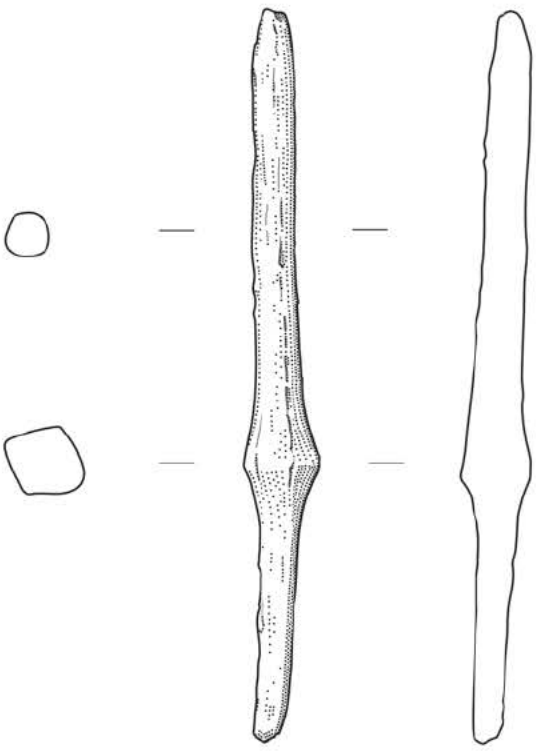


FIG. 6.87. 4034:03

FIG. 6.88. 6111:04

FIG. 6.89. 6163:01

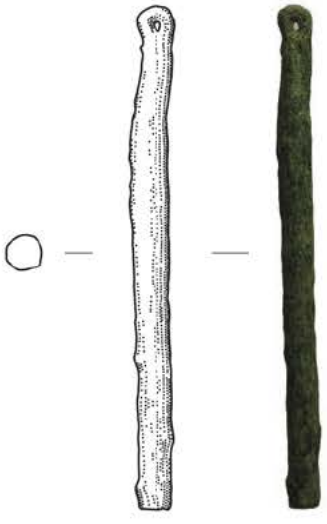


FIG. 6.90. 4003:08

FIG. 6.91. 5022:10

FIG. 6.92. 9020:13

FIG. 6.93. 6126:06

2 cm
(Scale: 100%)

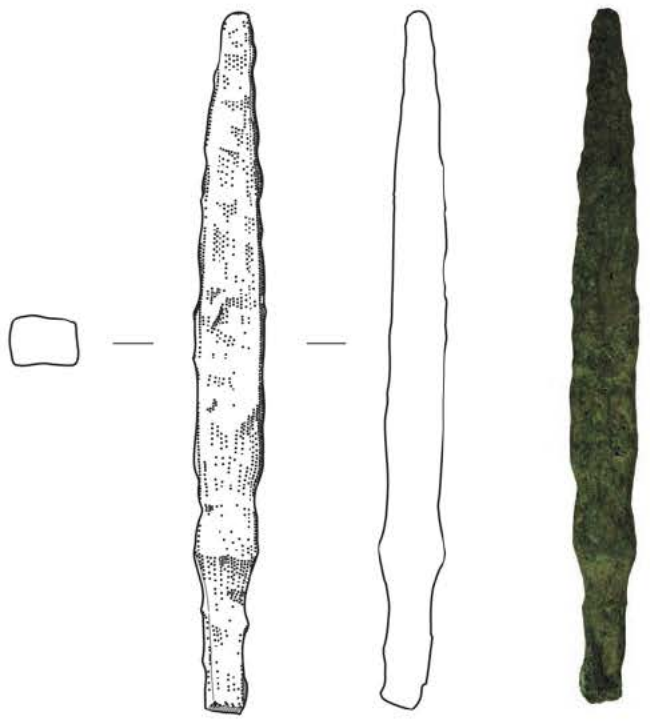


FIG. 6.94. 4022:01

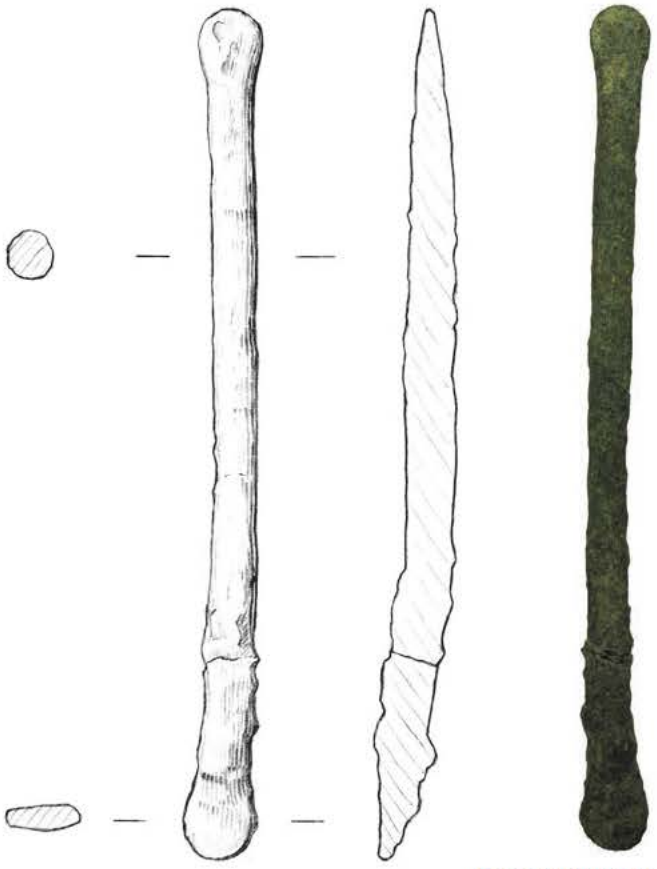


FIG. 6.95. 3025:23

FIG. 6.96. 6118:05

FIG. 6.98. 3176:08

FIG. 6.99. 1079:47

FIG. 6.100. 6166:02

FIG. 6.101. 9008:01

FIG. 6.102. 3054:54

FIG. 6.97. 3033:02

FIG. 6.103. 6162:01

2 cm
(Scale: 100%)

Stone Tools And Implements

The decorative items we recovered represent only a tiny fraction of the surviving material assemblage, most of which comprises tools and implements for work. The largest number of these were made of stone, and of course that is partly because it is durable and must have been comparatively cheap. Even so, we can see that stone implements for grinding, pounding, rubbing and generally working on something softer than themselves, represent the largest category of find.[260]

Grinding implements

The archive provides abundant evidence that the occupants of the Fortified Building were heavily involved in activities related to grain, but even without that, it is clear from the material remains alone that much energy was expended on grinding. We make the assumption that grain, to be ground into flour, was the main object of this attention. We found a large number of pieces of stone apparently dedicated to this purpose, and worn smooth by repeated rubbing (222 in all). Flour grinding needs a quern, that is a stone on which the grain is placed, and another piece of stone to be rubbed against it, to reduce the grain to flour. In other cultures, the stones are often round, and the top one is turned in a circular motion. The grindstones we found were of the other major type, whereby the quern is a long slab, and the grain is rubbed back and forth against it using a smaller slab or stone as a grinder. It follows that it is hard to distinguish the querns from the grinders, and impossible when they are in the form of small fragments. So only a very small number of the worked stones and fragments encountered can be certainly identified as querns. They include four complete ones, and five more nearly so, thus interpreted by dint of being either the wrong shape to be the upper grindstone, or probably too big. There are also occasional pieces that have been ground flat and very thin on both sides, presumably turned over at some point when the initial surface got too smooth to be useful. These would make an inconvenient shape for a top stone, so are also presumed to be querns (e.g. Fig. 6.106). As they wore down, the querns became thin in the middle, and broken ones have typically snapped in half across the width.

Three of the best-preserved querns were found, unsurprisingly, in kitchen 316. One was almost a trough, well used and worn, open on two sides, with a slight lip the rest of the way round (Fig. 6.104). It may be a reused part of an even larger one that had a lip all the way round when complete. It also had bitumen adhering underneath, suggesting it may have been stuck into place. The others were long thin slabs, some with the non-rubbed face domed or humped (e.g. Fig. 6.108). Also in the kitchen were two smaller querns (Figs. 6.107, 6.109). These are interpreted as lower stones because they too have bitumen on the humped face. Another concentration of querns was found in tower 124. These included another large and heavy one (Fig. 6.105). It was the largest we encountered, and broken in two, the second half found two seasons after the first, when it was too late to reunite them, but we estimate it was 400 mm wide and over 700 mm long. Other areas that yielded concentrations of stones most likely to be querns, or parts of them, were tower 304, Room 314 (Fig. 6.110), and Room 616, the former tower just inside the northern unit.

The commonest shape for what we interpret as the top stone is an oval or subrectangular slab with one face worn smooth and flat, and the other rounded either naturally or possibly worked to be humped for a better grip, i.e. identical

[260] It was not possible to have our stone tools examined in the field by a geomorphologist, and we are grateful to Dr Ja'afar al-Jotheri of the University of Qadisiya for his assistance in suggesting some possible identifications based only on photographs, and for pointing out likely sources for the raw materials.

FIG. 6.104. 8013:04

FIG. 6.105. 1022:05

20 cm
(Scale: 12.5%)

FIG. 6.106. 9018:03

FIG. 6.107. 8013:02

FIG. 6.108. 8013:01

FIG. 6.109. 8021:04

FIG. 6.110. 1139:24

10 cm
(Scale: 25%)

to a common type of quern described above (e.g. Figs. 6.111, 6.112). There are also irregular thick slabs that fit the hand well (e.g. Fig. 6.113), and of course any of the larger stone tools described below that show evidence of being rubbed could in theory have been used for grinding grain. There are also a mere three occurrences of long, roughly cylindrical or bar-shaped hard stones that are worn along the long edge, which would work very well with a quern, and have parallels in other ancient cultures as 'handstones', known to be used with querns.[261] The ends are pitted from pounding, which may have been part of the process (Figs. 6.114, 6.115). Perhaps there was more than one type of grinding operation, and indeed different people may have used different techniques or equipment.

In the Fortified Building grinders are most heavily represented in kitchen 316, Room 616, and Room 314, whether or not we add in pieces that could belong to either upper or lower stones. In the Eastern Houses, pieces of grinding equipment were only found in Room 400, apart from one found in topsoil outside, which had been reused as a door-socket (Fig. 6.116).

Most of the querns and grinders were made from a yellowish crystalline rock, presumably limestone, which is found at local outcrops around the Eridu basin. It splits easily, leaving a flattish abrasive surface, and is ideal for this kind of use. Slabs of this often have shells embedded in them, which add further abrasive qualities (at least thirty examples, e.g. Fig. 6.117). There were occasional pieces made from stones of different appearance (Figs. 6.118, 6.121) and another common type is a conglomerate rock containing rounded pebbles, occasionally in spectacular red and yellow colours, as well as angular inclusions (e.g. Fig. 6.120).

FIG. 6.111. 1166:03

FIG. 6.112. 6136:04

10 cm
(Scale: 25%)

Pounding, Rubbing, Polishing and Smoothing Tools

In addition to the implements interpreted as querns and grinders for grain processing, there was also a large number of other stone and flint tools of a size to fit in the hand, and which showed signs of percussion and abrasion, having been used for pounding or rubbing, or often both. Altogether 217 stones were identified as probable stone tools, or parts of them. Usually two opposite ends had been used to pound, interpreted from the pitting and chipping of the stone, and the sides in-between used to smooth or rub, interpreted from the smoothness of the surface, sometimes worn to a shine. In some cases, it is not possible to tell if this was caused simply by repeated handling.

These tools were generally of hard, close-grained stone, and thirty-five of them were made of flint. Varieties of chert, including flint, occur as nodules in the limestone of the Dammam foundation that covers most of the western desert of Iraq. From the point of view of sedimentary geology, that makes the nearest source to Tell Khaiber more than 200 km up

FIG. 6.114. 6021:01

FIG. 6.113. 1079:78

5 cm
(Scale: 50%)

[261] Zitman 2010: II, 228.

FIG. 6.115. 1094:16

FIG. 6.116. 4003:01

FIG. 6.117. 6000:03

FIG. 6.118. 6067:04

FIG. 6.120. 4010:05

FIG. 6.121. 4006:04

5 cm
(Scale: 50%)

FIG. 6.119. 6111:06

the Euphrates. Another possible source is the Plio-Pleistocene conglomerates of the Jabal Sanam, to the west of Basra and about the same distance, but this remains to be confirmed.[262]

Sometimes flint nodules have been used in unmodified form for the same actions as lumps of other stone, for example as pounders, though if the cortex is intact it is often hard to be certain, as it can have a naturally pocked surface. Some have definitely been worn down by rubbing action, and some have signs of both pounding and rubbing. The inside of a flint nodule, however, is glassy smooth, and while very hard, is not abrasive. This makes it more suited to a polishing rather than a grinding action, and some half-nodules seem to have been used in this way.

The pounding and rubbing tools come in varied shapes and forms, and while some are simply irregular, there are also recognizable types. One kind is any natural pebble of convenient size and shape (e.g. Figs. 6.122–4). The commonest recurring type, however, is represented by roughly spherical stones or lumps of flint, most often worn, or perhaps deliberately shaped, into an approximate cube. These occur in quite a range of sizes, from 3 or 4 cm (Fig. 6.125) up to 14 cm in diameter, and in white crystalline stone as well as igneous rock, such as Fig. 6.126, and Fig. 6.127 from Room 616, also Figs. 6.128 and 6.129. The stone in Fig. 6.130 is so worn it is almost a disc, while other tools of this basic type are worn into wedges (Fig. 6.131). Sometimes stones have been chosen that were wedge-shaped to start with (Fig. 6.132). Also common are cubes or spheres that have worn or been modified to become essentially hemispherical, making an especially effective tool for rubbing something to a very fine finish (Fig. 6.133).

Cubic stones were sometimes used in Mesopotamia as weights on the Dilmun Standard, equating to that used by the Indus Valley civilization: 1,350 g to the mina, usually divided into eighths of *c.*169.75 g, and hundredths of *c.*13.50 g. We therefore weighed those that were of most regular shape, but found no compelling correlation with either that weight system or for that matter with the Babylonian Ur Standard (60 shekels of *c.*8.4 g to the mina of *c.*500 g), and in any case weights for that system were not cubic. Two smaller examples, approximately 4 cm across, could at a stretch be considered to approximate to the Dilmun unit of 10 × 13.65 g: one weighed 141 g (Fig. 6.134), and one 138 g (Fig. 6.135), but this seems most likely to be coincidental.

Another definitive tool type is a block or slab with the plan of an elongated trapezoid, which fits the hand well. Again, the end has usually been used for pounding, and the sides rubbed smooth (Figs. 6.136–8). Two items were very obviously pestles (Figs. 6.139, 6.140), and there were other shapes that do not conveniently fit any repeating categories (Figs. 6.141, 6.142).

It is obvious that many of these tools have been used for more than one kind of action, and as many are incomplete, it follows that these may well have had another kind of wear on the now missing portion. Observed combinations of types

FIG. 6.122. 3009:06

FIG. 6.123. 4060:01

FIG. 6.124. 1039:09

5 cm
(Scale: 50%)

[262] Moscone 2019.

FIG. 6.125. 5045:02

FIG. 6.126. 9023:01

FIG. 6.127. 9005:01

FIG. 6.128. 8033:01

FIG. 6.129. 8021:03

FIG. 6.130. 8013:09

FIG. 6.131. 8015:04

5 cm
(Scale: 50%)

FIG. 6.132. 6007:04

of wear, in cases where they were reasonably certain, are summarized below.

Of the flint pounding/rubbing tools:

Eleven had definitely been used for pounding, of which six had also been used for rubbing, three might have been, and two were not.

Nine may have been used for pounding, of which two had definitely been used for rubbing, one might have been, four were not, and for two evidence is lacking.

Nineteen were definitely used for rubbing, (of which, as above, six had also been used for pounding), two might have been, nine had not, and for two there is no evidence.

Five may have been used for rubbing, (of which, as above, three had been used for pounding), one might have been, and for one there is no evidence.

Of the stone pounding/rubbing tools made of stone other than flint:

Sixty were definitely used for pounding, of which thirty-four were also definitely used for rubbing, ten may have been, six were not, i.e. were used just for pounding, and for ten evidence for rubbing was lacking (i.e. the piece was too broken to say).

Twenty-four were possibly used for pounding, of which fifteen were definitely used for rubbing, two may have been, four were not, and for three evidence of rubbing was lacking.

Ninety-four were definitely used for rubbing, (of which, as above, thirty-four were also definitely used for pounding), fifteen may have been used for pounding, thirty-one were used for rubbing but not for pounding, and for fifteen evidence for pounding was lacking.

Twenty-three may have been used for rubbing, (of which, as above, ten had definitely been used for pounding), two may have been used for pounding too, ten had been used for rubbing but not pounding, and for one evidence for pounding was lacking.

Many small pebbles were found that had clearly been used for shaping or polishing something delicate (Fig. 6.143–6). For some the wear is not so certain, but the shape is so obviously useful, or they fit the hand so well, that one wishes to believe they were tools (e.g. Fig. 6.147). Several of these came from the areas where the tablets were found, or adjacent areas, and would have been obviously useful in the making or finishing of a tablet, or as erasers (Figs. 6.148–53). A fine and pretty-coloured scraping tool, also tempting to interpret as a tablet-making aid, was found in the same general area (Fig. 6.154). Many of these are of particularly attractive coloured stones.

Pounding and rubbing tools being so common at Tell Khaiber, it is hardly surprising that they have found their way into in most deposits of tumble and collapse, in every area where there was excavation. Occasionally, however, a concentration worth noting occurs. In tower 302, for instance, there were five, all in a condition to be useful, so unlikely to be discarded. Another grouping occurred in


FIG. 6.133. 1051:11


FIG. 6.134. 6052:02

FIG. 6.135. 4036:08


FIG. 6.136. 6078:10


FIG. 6.137. 4022:02

FIG. 6.138. 8015:03


5 cm
(Scale: 50%)

FIG. 6.139. 3085:37

FIG. 6.140. 8083:05

FIG. 6.141. 3124:02

FIG. 6.142. 9020:23

5 cm
(Scale: 50%)

FIG. 6.143. 1005:01

FIG. 6.144. 3009:21

FIG. 6.145. 8008:07

FIG. 6.147. 9018:22

FIG. 6.148. 1096:65

FIG. 6.146. 3085:57

2 cm
(Scale: 100%)

kitchen 316 where there was lots of activity, including food-processing: thirteen in all, including several rubbed to a fine shine. In Room 616 there were no less than seventeen, of varying shapes and sizes.

Flakes and blades

While flint nodules were used in much the same way as other stones, the special attribute of flint (along with obsidian) is of course the way it can be flaked to make implements with a strong, sharp cutting edge. It has been serving mankind in this capacity from the Palaeolithic onwards, up into living memory in the Middle East.[263] At Tell Khaiber we found far more flint tools than metal ones. This may be partly to do with the poorer survival of metal, and the way it can be recycled, but nevertheless flint was surely cheaper and easier to obtain in this part of Babylonia than metal, especially during insecure times. The most common identifiable tool type comprises notched sickle-blades, of which there were forty-nine examples (e.g. Fig. 6.155). It is no surprise to find these implements in a building so closely connected with the business of collecting and distributing grain,

Other types of flint cutting tool (sixty-two examples) include blades that would have been useful to saw (Fig. 6.156), pierce (Fig. 6.157), slice (Fig. 6.158), stab (Fig. 6.159), scrape (Fig. 6.160) or hack (Fig. 6.161). There were also knives of various lengths and thicknesses (e.g. Figs. 6.162–4), and implements with notches, which would have been good for woodcarving or straightening arrow-shafts or similar (Fig. 6.165). Not all the blades or flakes had definite signs of wear or retouch, and, as with the tools made of other stone, it is not always possible to be sure which are really tools and which are natural.

We also encountered flakes and blades made from stone other than flint (thirty-four examples), most of which seem to have been produced accidentally rather than from deliberate tool manufacture. Some appear to be retouched, but in the case of stones made up of multiple grits, this may just be the effect of particles dropping away from the edge. A small number, however, are indisputably tools (Figs. 6.166, 6.167). There was a single example of a blade struck from obsidian.

FIG. 6.149. 3064:36

FIG. 6.150. 3054:02

FIG. 6.151. 1055:02

FIG. 6.152. 3039:02

FIG. 6.153. 3149:01

2 cm
(Scale: 100%)

FIG. 6.154. 3009:09

5 cm
(Scale: 50%)

[263] A specialist study of the flaked flint and obsidian by Elizabeth Healy will be presented separately. A general overview is given here.

FIG. 6.155. 4003:14

FIG. 6.156. 1096:14

FIG. 6.157. 1157:13

FIG. 6.158. 8008:10

2 cm
(Scale: 100%)

FIG. 6.159. 3122:01

FIG. 6.160. 3047:14

FIG. 6.161. 3194:01

FIG. 6.162. 4026:01

FIG. 6.163. 8083:10

FIG. 6.164. 0:08

5 cm
(Scale: 50%)

FIG. 6.165. 6091:01

FIG. 6.166. 4051:12

FIG. 6.167. 4074:03

2 cm
(Scale: 100%)

Other Stone Tools and Implements

Apart from stone tools of the grinding, pounding or cutting type, there were more delicate implements for a variety of uses. Once again, there is a graduation of certainty from ones that had definitely been modified to form a tool or artefact, through those that might have been, or might have been used just as found, to those that were not certainly used, but look as if they could have been. They include:

- A fossilized clam, possibly used to rub or scrape, Fig. 6.168. These are common on Gulf sites in the second millennium, where they have definitely been used as tools (for example, at Saar[264]);
- A small flake of crystalline stone, possibly a tiny scraping or piercing implement, Fig. 6.169;
- A waisted cylinder, perhaps a reel or spool, Fig. 6.170;
- A pierced sphere, perhaps a drill component, Fig. 6.171;
- Modified pieces of stone, possibly for shaping an arrow shaft or similar, both large (Fig. 6.172) and small (Fig. 6.173);
- Possible whetstones such as the one in Fig. 6.174, and perhaps the three-sided one in Fig. 6.175, although the latter may be more credible as a gaming piece (see below);
- A palette, Fig. 6.176;
- Stones of unknown purpose, but of a shape too regular to be natural: cubic (Fig. 6.177), spherical (Fig. 6.178), or disc-shaped (Fig. 6.179), or carved in a way that looks functional rather than decorative (Fig. 6.181);
- A possible part of a stone mortar (1073:06), from Room 101.

Every so often we encounter a worn round patch on a tool or other stone, which may possibly indicate the rest for a bow drill (Fig. 6.180).

Although stone is not a building material employed at Tell Khaiber, shaped blocks and slabs do occasionally occur. Perhaps one use might be as a location for a task that requires a clean, hard surface, such as fashioning tablets or making dough (Fig. 6.182).

FIG. 6.168. 1094:14

FIG. 6.169. 3064:17

FIG. 6.170. 3057:09

FIG. 6.171. 6070:01

FIG. 6.173. 9020:32

FIG. 6.172. 6025:05

5 cm
(Scale: 50%)

FIG. 6.174. 3176:06

FIG. 6.175. 3002:07

2 cm
(Scale: 100%)

[264] Killick and Moon 2005: fig. 5.30d.

FIG. 6.176. 8082:03

FIG. 6.177. 6116:03

FIG. 6.178. 6175:02

FIG. 6.179. 3002:05

FIG. 6.180. 0:16

2 cm
(Scale: 100%)

FIG. 6.181. 9020:25

FIG. 6.182. 4036:01

5 cm
(Scale: 50%)

Implements of Bone, Ivory and Shell

Shaped and polished bone was used to make large needles. Ten of the pieces we found were sufficiently preserved to include at least part of the hole, and so were certainly needles rather than pins, while five more were parts of what could have been either. Only one piece looked more as though it were definitely intended as a pin, but even that may be broken at the end, so we cannot be certain there was no eye (Fig. 6.186). The bone needles came from various locations, including four from the Eastern Houses, and a fragmentary one from a grave (6094:04, from Grave 10). Some were plain and functional, usually highly polished from wear (Figs. 6.183–5), while other had simple but pleasing incised decoration near the head (Figs. 6.186–9). Similar artefacts, with the same decoration, occurred over a very long time span all over Mesopotamia and beyond, for instance at Ur.[265]

Anyone acquainted with needlework will be aware of the professional satisfaction a favourite needle or thimble affords, and these simple tools offer a rare personal glimpse into everyday domestic life. Tailors are mentioned in the Tell Khaiber texts (see p.80), but the needles are too large and coarse for sewing cloth, as are the fragments that may belong to copper needles; possibly cloth was sewn by finer ones that have simply not survived, and the ones shown here were for net making or fine basket weaving. It is also possible that at least some were not for sewing at all, but for fastening or for decoration, with the 'eye' perhaps for a toggle or lanyard.

Apart from the needles, there were three other bone artefacts. Two were points, one from Room 616 (Fig. 6.190), of which just the tip remains, carefully fashioned to be very sharp, and the other from Room 403 in the Eastern Houses (Fig. 6.191). The third artefact, found in an occupation deposit of Room 142, was a caprovid metacarpal, sawn off neatly at the proximal end, and with three crosses carefully incised at the other, just by the joint. One can only guess whether it was a tool, part of a game or sport, or a divination instrument (Fig. 6.192).

Two items were definitely made of ivory rather than bone, one a burnt fragment of a possible handle or shaft (3067:11), the other a surface find and too worn to interpret (513:02).

A strange toothed artefact made from a bivalve shell and found in Room 101 seems to have been a cutting tool (Fig. 6.193).

FIG. 6.183. 5035:02

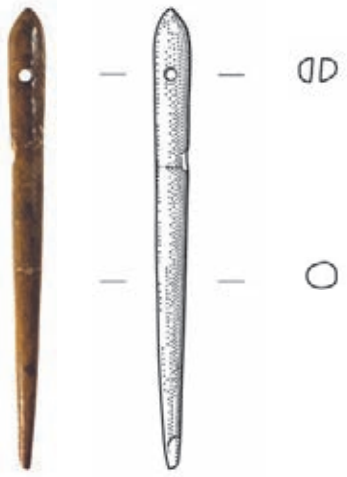


FIG. 6.184. 4006:11

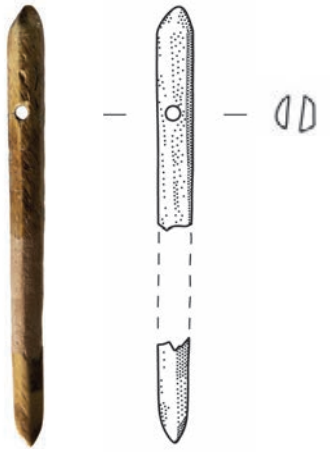


FIG. 6.185. 4051:13

FIG. 6.186. 1114:46

FIG. 6.187. 6036:15

FIG. 6.188. 1079:91

2 cm
(Scale: 100%)

[265] Woolley and Mallowan 1976: pl. 99.

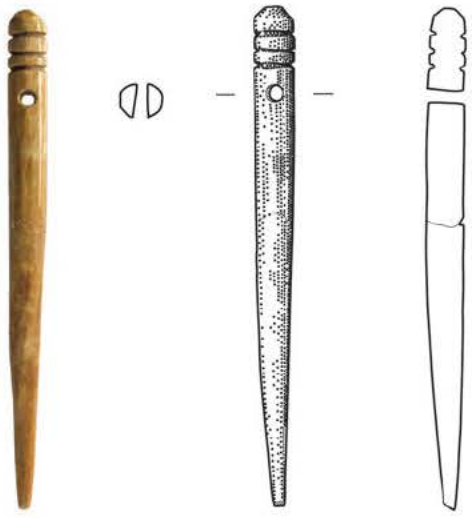


FIG. 6.189. 3085:45

FIG. 6.190. 9022:05

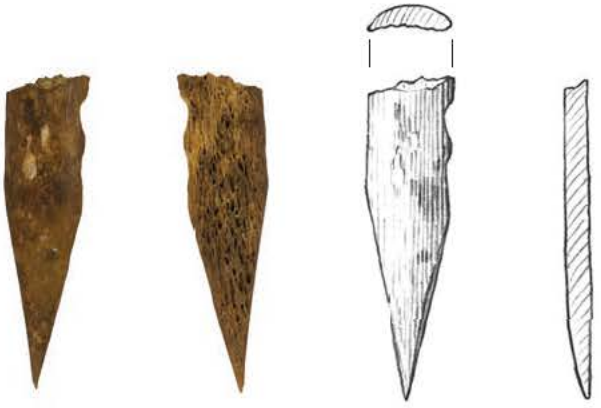


FIG. 6.191. 4051:11

FIG. 6.192. 5040:02

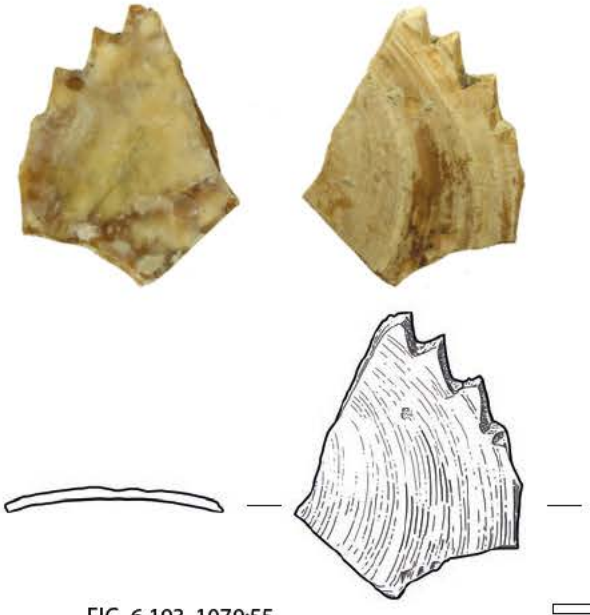


FIG. 6.193. 1079:55

2 cm
(Scale: 100%)

Spindle Whorls

Spinning is a very ancient craft, and spindle whorls have been with us for a very long time. A plain disc with a hole is sufficient to weight a spindle and help it to turn, to aid twisting and taking up the thread teased out of the bunch of wool or other material to be spun. However, more elaborate forms exist, and a common form for most periods is a perforated hemisphere or flattened dome. We found fifteen examples at Tell Khaiber, five of stone and ten of baked clay, slightly overfired, and carefully made, as they would have to be in order to spin evenly. These included one each from internal towers 614 (Fig. 6.194) and 616 (9023:06), one from the Eastern Houses (Fig. 6.196), one each from Room 309 in the administrative suite (Fig. 6.197), courtyard 315 (Fig. 6.198), and adjacent Room 314 (Fig. 6.195), and the others from surface or point collection.

The stone spindle whorls are handsome objects, beautifully made in marble-like stone (e.g. Fig. 6.199), and very durable. One found in a third millennium context (Fig. 6.200, from Area 803, 75 m southwest of the Fortified Building) demonstrates the longevity of the style, and it is possible that others were in fact survivors from that earlier occupation. We suspect that to be the case for an unusually large stone one (Fig. 6.201), if it is indeed a spindle whorl, found in the cut of Grave 11 in kitchen 316, and a fragment of another from nearby (8083:01), both having an incised petal pattern, which is also found on spindle whorls from the site of Jemdet Nasr.[266]

Clay discs

Potsherds fashioned into discs comprise one of our commonest artefact types from Tell Khaiber. Just under half (156) were simple more-or-less discs, with no perforation and no sign of any attempt to make one. Some of these were neatly made, some less so (e.g. Figs. 6.202, 6.203). A slightly larger number (186) were perforated, and again some were made carefully (Fig. 6.204), and some with little regard to regularity (Figs. 6.205, 6.206). Typically, there is wear around the hole, more pronounced on the side that was the outer vessel wall. At least fifteen further examples showed an attempted perforation (Fig. 6.207), and sometimes the disc seems to have broken in an attempt to perforate (Fig. 6.208).

The method of manufacture would appear to be: take a potsherd, usually from the lower body of a large closed vessel (i.e. without too much curvature), and roughly trim to the size required. Next place the sherd on the ground or some suitable surface, with the outer vessel wall down (this being the way it tends to sit), then drill a hole as near to the centre as possible. Sometimes there is a countersink, which may be deliberate or may just happen in the process. Where this was recorded in detail, the countersink is usually from the inside of the vessel, though sometimes both ends of the perforation

FIG. 6.194. 6068:07

FIG. 6.195. 1139:03

FIG. 6.196. 4011:07

[266] Matthews 2002: fig. 50, no. 10.

FIG. 6.197. 1096:06

FIG. 6.198. 3131:01

FIG. 6.199. 6136:01

FIG. 6.200. 9000:04

2 cm
(Scale: 100%)

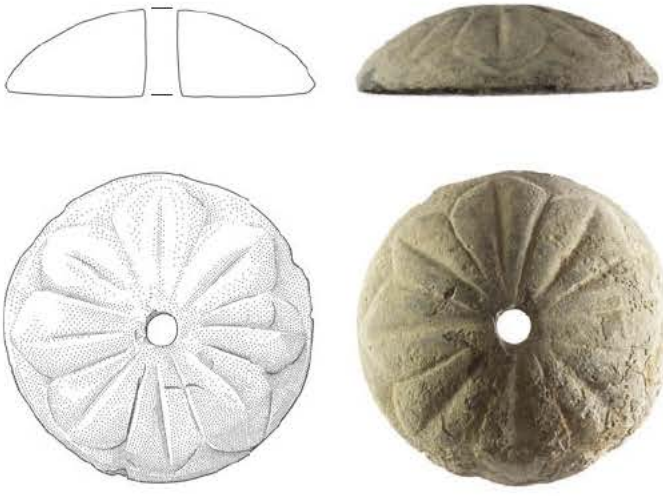


FIG. 6.201. 8029:01

5 cm
(Scale: 50%)

FIG. 6.202. 6157:01

FIG. 6.203. 3123:02

Diameter range (cm)	No. of unperforated examples	No. of perforated examples
2.0–3.0	12	0
3.1–4.0	4	0
4.1–5.0	31	12
5.1–6.0	34	59
6.1–7.0	18	57
7.1–8.0	10	39
>8.0	13	14

TABLE 6.1. Diameters of spindle whorls.

are countersunk. If the perforation is successful, then the sides were usually evened off, or sometimes not.

Most of the unperforated discs were between 3.0 and 6.0 cm in diameter with the largest measuring 11.3 × 11.5 cm, and the smallest 2.1 × 2.2 cm. The perforated examples were on average larger, most being between 5.0 and 8 cm in diameter, the smallest 3.5 cm across, the largest 10.5 cm. The most frequent diameter of the perforation was 0.7 to 1.0 cm

Discs of both varieties were found as discard in every type of context, as would be expected for something so cheap and easy to replace. Occasionally we encountered pairs, or groups. A pair of unperforated ones was found in an occupation layer of Room 101 (1079:16), and a group of four in debris between its floors (1077:03, 1077:07). A group of seven was found in courtyard 315 (3154:01), and a group of three, this time pierced, were found together in kitchen 316 (Fig. 6.209). Room 600 produced a group of no less than twenty-three perforated ones of varying sizes all found together, some with small holes, some with larger ones (mostly context 6035). One context in Room 101 (1079) produced twenty-four, of which seven were unperforated, but in two cases the perforation had been started, suggesting that discs were being manufactured there.

Common suggestions for the purpose of these artefacts include loom weights or net-sinkers. Either would explain the way they are sometimes found in groups. They are very light in weight, and as loom weights would only have been feasible for the lightest of fabrics. Not all were weighed, but a weight of between 30–40 g is typical for the average-sized ones. Nor are they very uniform, which is a disadvantage in a loom weight. The weighting of light nets to catch the small fish once abundant in canals and marshy areas seems the most satisfactory interpretation.

FIG. 6.205. 1073:20

FIG. 6.204. 1039:14

FIG. 6.206. 1005:25

FIG. 6.207. 4010:06

FIG. 6.208. 4085:07

5 cm
(Scale: 50%)

FIG. 6.209. 8083:11

STONE VESSELS

Vessels made of stone were not in common use at Tell Khaiber. We found only two near-complete vessels, and while there were parts of sixty-three more, it is hard to know whether something as enduring as a small stone vessel fragment is not derived from an earlier level. The form of at least one certainly suggested an early third millennium date (Fig. 6.210). It is probably a tab from a four-rim-tab, hole-mouthed vessel, a typical pottery form in EDI contexts,[267] and occasionally found at Tell Khaiber on the surface or redeposited. It is very carefully worked, with neat channels carved into the upper surface.

One of the near-complete vessels also has a distinctly third millennium look (Fig. 6.213), and its battered condition and very hard fabric support the suspicion that it too might have survived over a thousand years before being incorporated into what was probably a levelling deposit in Room 314. The same applies to a limestone fragment with grooved collar rim and also apparent fenestrations, to judge from one of the surviving breaks (8032:07).

Otherwise, all of the stone vessel fragments for which enough was preserved to ascertain the shape, were of open form. They vary from deep bowls to ones so shallow they are almost plates. The most nearly complete was a shallow, open bowl with a pouring lip (Fig. 6.211), which came from the very topmost-preserved part of the deposit in Room 616, so is likely to be of the same date as the building. A deep bowl with curved sides was found in the Eastern Houses (Fig. 6.212), and a third vessel, of a different shape again, this time deep with fairly straight sides and a neatly circle-incised base, came from a make-up level in Room 314 (Fig. 6.215). Both of those from the Fortified Building have a pouring lip, and in both vessels these look as though they might have been accidental chips that were ground down to conceal the damage, rather than original features, reinforcing the impression that stone vessels were neither cheap nor easy to obtain. All three vessels are made of a pale green, slightly coarse-grained stone, as were sixteen of the fragments, the same stone occasionally also used for tools at Tell Khaiber.

From the same deposit, but of a dark grey and close-grained stone, is a very small, shallow open bowl with a very thick base and slightly unusual bevelled rim (Fig. 6.214). One suspects it may have been modified late in life, or indeed created from the base of a larger vessel.

Limestone was used for a mere half-dozen pieces, and another eight fragments were of alabaster. Found together in tower 310 were a body sherd and a rim, together with a perfect cuboid (Fig. 6.217) fashioned from a similar sherd, probably from the same alabaster vessel. These were in the same context as the black triangular prism and the disc of hard banded stone (Figs. 6.175, 6.189), suggesting we had come upon the goods of a manufacturer of gaming pieces or other small artefacts of hard stone. A flat and shaped piece of alabaster, presumably a palette (Fig. 6.216), was found in surface clearance above Room 139.

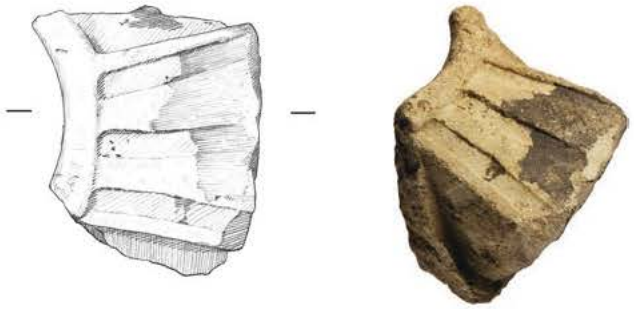


FIG. 6.210. 1105:01

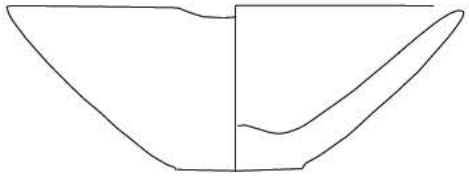


FIG. 6 211. 6064:01

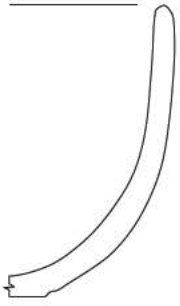
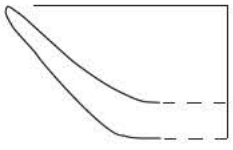


FIG. 6.212. 4043:06

5 cm
(Scale: 50%)

FIG. 6 213. 1166:33



2 cm
(Scale: 100%)

FIG. 6.214. 1166:14

[267] For instance at Abu Salabikh (Moon 1987: 69ff.)

LIDS, STOPPERS AND BUNGS

Pottery vessels, and indeed other vessels, often need something to close them. It might seem strange, therefore, that there are so few lids actually made of pottery. We found only seven, which are fully described in the pottery volume of the Tell Khaiber final reports.[268] Ones of unbaked clay also occurred, for instance a disc of unbaked clay from the inner tower 309 which had possible string and cloth impressions, as though the opening had a cloth tied over it first (Fig. 6.218), and another found in tower 304, with a groove that suggested this purpose (Fig. 6.221). A tiny unbaked clay artefact may have been to close a very small vessel (Fig. 6.220), but other uses are feasible. Sometimes a piece of clay was shaped to fit right into the neck of a vessel (Fig. 6.219 from tower 304).

Pieces of bitumen were also used as closing devices, generally smaller in diameter than clay or pottery ones. They come as discs (Fig. 6.222 from Room 31), or with handles (Fig. 6.223), or as a stopper to fit in a neck (Fig. 6.226 from Room 302). The latter are continuous in form with tiny bungs that were probably intended to repair a hole, rather than stop a vessel (Figs. 6.224, 6.225). All were from surface or overburden contexts.

[268] Calderbank 2021a: 271.

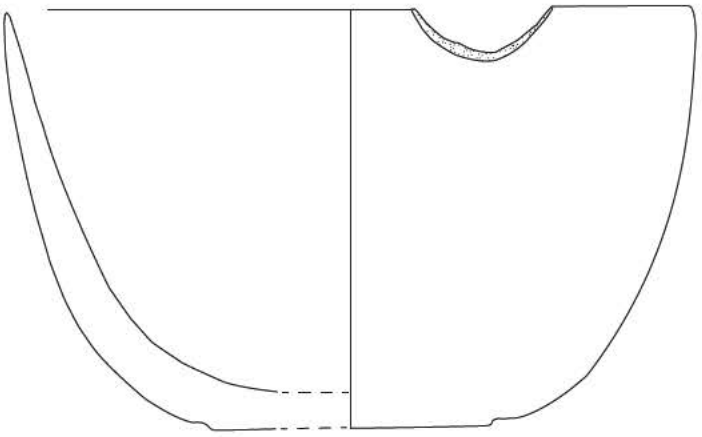


FIG. 6.215. 1166:08

FIG. 6.216. 6096:03

5 cm
(Scale: 50%)

FIG. 6.217. 3002:08, 09, 10

2 cm
(Scale: 100%)

FIG. 6.218. 1096:62

FIG. 6.219. 3087:03

FIG. 6.222. 1112:09

FIG. 6.220. 1079:23

FIG. 6.221. 3085:14

FIG. 6.223. 1055:06

FIG. 6.225. 598:01

FIG. 6.224. 6005:02

FIG. 6.226. 3025:10

2 cm
(Scale: 100%)

MOULDS

Two moulds were identified in the Tell Khaiber assemblage, each serving a very different purpose. One was a mould for casting metal (5022:29),[269] but the other came from kitchen 316 and is very similar to ones found at Mari and assumed to be for producing baked goods with a patterned surface.[270] Ours would have made a circular biscuit or flat loaf, marked to divide into quarters, with raised dots all over. It had been reused as a door-socket on the reverse side (Fig. 6.227).

VARIA

Clay Items

We recovered several clay items that are clearly meant to be something, but for which interpretation necessarily becomes guesswork. Some were effectively clay doodles, just lumps that had been handled; three clay balls and four hemispheres were probably unfinished items, perhaps tablets, although only four were found in the same rooms as tablets (e.g. Fig. 6.230). A group of smaller pellets might have been for slingshots (Fig. 6.233). Other artefacts had definable shapes, and these include: a waisted bobbin (Fig. 6.229); a possible pendular weight (Fig. 6.231); an item reminiscent of a wing nut, made from a cut-down goblet base (Fig. 6.232); a cone with a 'nose', just conceivably a very schematic figurine (Fig. 6.234)[271]; and a hollow cone, in appearance like the cap of a mushroom (Fig. 6.235). These small, puzzling artefacts remind us very forcibly that there is so very much we do not yet understand about everyday life three and a half thousand years ago.

One recurring enigmatic artefact type was clay 'fingers'. These were slightly flattened cylinders of baked clay, usually as a group of three stuck together down the long edges. Where enough was preserved, they can be seen to merge and flatten at one end into a shape suggesting adherence to something else. All seventeen incidences comprised fragments only and they remain a puzzle (Figs. 6.236–9). One suggestion, so far with no supporting evidence, is that they might have been the decorative elements to coffins (or their lids) belonging to the earlier occupation and thoroughly destroyed in the construction of the Fortified Building. The gritty red pottery fabric they are made from would support this idea.

Interpretation of a cylindrical pottery object nicknamed 'the elephant's foot' (Fig. 6.240) caused a good deal of puzzlement and is still not settled. It is roughly made, and although the main body is fired, is covered with a coating of sun-dried clay. It is sealed at both ends, and feels solid, but as it was intact we did not investigate the interior.

FIG. 6.227. 8008:05

10 cm
(Scale: 25%)

FIG. 6.228. 3064:38

FIG. 6.229. 2004:01

FIG. 6.230. 3064:111

FIG. 6.231. 6136:19

FIG. 6.232. 8008:04

5 cm
(Scale: 50%)

[269] Metalworking will be considered in the forthcoming study of the Tell Khaiber metal by Stuart Campbell and Alathea Fernyhough.

[270] Margueron 2004: 515–16.

[271] A similar one, a little larger and more convincingly human, came from an Old Babylonian grave at Ur. Woolley and Mallowan 1976: pl. 97, U.17661.

FIG. 6.233. 3193:01

FIG. 6.234. 3054:58

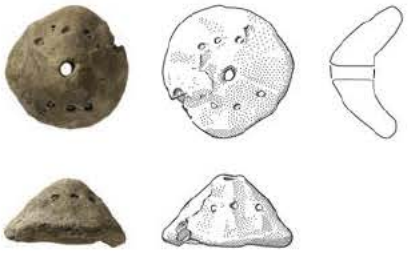


FIG. 6.235. 4067:05

FIG. 6 236. 1139:27

FIG. 6.237. 3025:08

FIG. 6.238. 6067:01

FIG. 6.239. 0:22

5 cm
(Scale: 50%)

10 cm
(Scale: 20%)

FIG. 6.240. 6089:01

Not everything was enigmatic, and one of the most pleasing artefacts was easy to interpret: it is a rattle, though whether intended for music making, ritual, or child soothing we cannot know. There was one complete one (Fig. 6.241) and one partial (3054:67), apparently identical, both from the bin in tower 304. They were made by pressing two hollow domes of clay together around the edges, from which are drawn out six small points. A crude cross is incised across both faces, with a tiny hole where the lines cross. The complete one was X-rayed (by a Nasiriyah Hospital) and shows about a dozen tiny pellets, presumably clay, inside.

Similar rattles occur all over Mesopotamia from the late third millennium onwards, and in southwestern Iran too, usually with the edge more vigorously moulded into a 'piecrust.'[272]

Impressions

Wet clay and warm bitumen will take the impression of anything they touch, preserving its shape when the medium hardens again. In the case of clay sealings, this property is famously used deliberately to record the identity associated with the seal, and study of the reverse can give a clue as to what was being sealed. However, for the most part the impressions are incidental, and bear witness in negative to long-decayed organic materials such as string or textile, of basketry or matting, or just reeds or straw. Fragments with impressions on are very common in excavations in Iraq.

Impressions on Clay

A typical form of impressed clay fragment bears the impression of reed matting on one face, being smooth on the other. These are pieces of roof clay, spread wet over the matting that covers the roof poles, and smoothed on top to help it be waterproof when it dried (e.g. Fig. 6.246). Fragments of floor clay similarly show us what was laid on the floor: at least one room in the Fortified Building, Room 142, had small reeds laid carefully over it as a covering (see p.37), shown by a closeup photo of a fragment (Fig. 6.242).

As mentioned above, we tried very hard to see some of our impressed pieces of clay as sealings, experience at both Sumerian Abu Salabikh and the Dilmun settlement of Saar having taught us that only careful sieving and much patience yields results in this respect, but still we had no success.[273] One almost looks like a circular Dilmun stamp seal impression, but not quite (Fig. 6.243), and one has a hole through it made by a reed (Fig. 6.244). Other pieces of clay bore witness to having been stuck to basketwork (Fig. 6.245), reed-work (Fig. 6.246), string-work (Fig. 6.247), matting (Fig. 248), something wound with thread (Fig. 6.249), or strands of string (Figs. 6.250), whether deliberately or not.

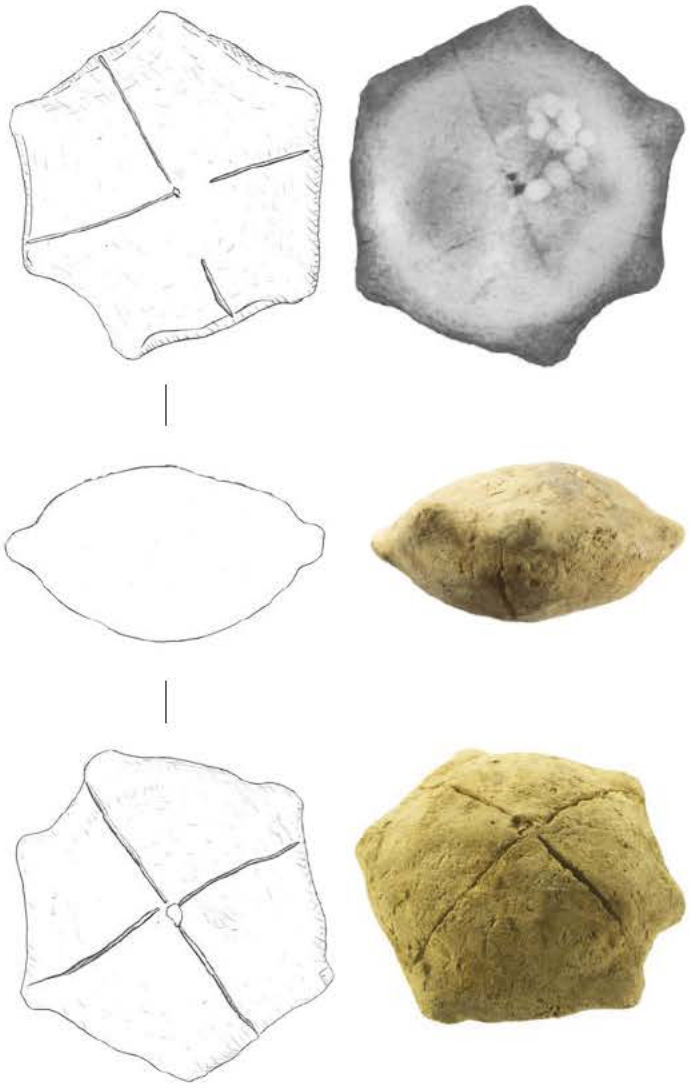


FIG. 6.241. 3087:02

FIG. 6.242. 5047:01.

5 cm
(Scale: 50%)

[272] Summarized by Tamm 2013.

[273] A. Green (ed.) 1993, Killick and Moon 2005.

FIG. 6.243. 8016:01

FIG. 6.244. 2013:03

FIG. 6.245. 6157:02

FIG. 6 246. 3064:21

FIG. 6.247. 6036:40

FIG. 6.248. 1112:10

FIG. 6.249. 8022:01

FIG. 6.250. 1051:14

5 cm
(Scale: 50%)

Impressions on Bitumen

Bitumen was a favoured flexible waterproofing material in ancient Mesopotamia. There are natural bitumen springs at Hit in Anbar Province, western Iraq, and this is the usual source for bitumen used in Mesopotamia and the Gulf, although there are Iranian sources too, and local seepages in parts of the Gulf.[274] Finds of bitumen were not especially common at Tell Khaiber, and although all fragments were noted, a total of only sixty-three instances were recorded, and some of these included several fragments found together, and probably from the same original piece broken up. None have yet been analysed.

Only a very small number of items could be interpreted as artefacts; the majority were enigmatic, in that they had clearly been used for something, but it was hard to determine what. Some were for stopping a vessel or an opening of some kind (see above) although that was not always a given, as the disc-shaped ones (see Fig. 6.222) may have been bitumen ingots.[275] At least thirty bitumen fragments or groups of fragments carried impressions of basket weave, matting, reeds, or cord. Again, we examined with extra care those that were similar in size and format to sealings, (e.g. Fig. 6.251, from the floor of Room 305), but there were certainly no seal impressions on any of them.

Some fragments had been part of the coating of something fairly flat, like reed matting, having basket-weave impression on one side, and being roughly smoothed on the other. Fragments like these are common in collapse deposits (e.g. Fig. 6.252), but are unlikely to come from roofs. If the roofs were coated in bitumen, we would have found many more fragments, even if salvage to reuse the bitumen had been attempted in antiquity. Bitumen with basket-weave impressions must also have come from river craft such as boats or coracles. Many fragments came to a point at one end, as though they had been pressed into the angles between ribs (Figs. 6.253, 6.254). The linings of baskets and coracles would be hard to tell apart when reduced to just small fragments.

FIG. 6.251. 3119:04

FIG. 6.252. 1096:15

FIG. 6.253. 3080:31

FIG. 6.254. 3057:10

[274] Van de Velde 2012 and references.

[275] As found at nearby Abu Tbeireh, although of course much older. See Romano and Kadhem 2019: 174.

ARCHITECTURAL ELEMENTS

Door-sockets

Door-sockets are found in Mesopotamia from the very earliest times, were still in use within living memory in Iraq, and perhaps still are in areas away from main roads where some building in mudbrick still occurs, although cement block has now almost entirely replaced it. Essentially, it allows a door to open and shut without needing a door-frame or hinges. The door leaf has a pole attached to it down one side, by metal hoops or some other fastening. The lower end of this pole protrudes below the door into the ground, and rotates when the door is opened or shut. As the end of the pole would quickly work loose in the ground, the hole needs to be lined with something that does not abrade easily; empty tin cans were a popular choice in recent times. Alternatively, the end of the pole can be placed on something hard, into which a hollow has been worked to stop it slipping. Very well-made door-sockets, made from imported fine stone, and sometimes with inscriptions, are known from important buildings such as temples,[276] but more mundane ones were ubiquitous.

At Tell Khaiber we identified a dozen examples of door-sockets, or at least of objects the right size with semicircular depressions in them. Generally, the wear around the edge of the depression effectively gives them away as door-sockets, but one must remember that there are other artefacts that have this feature, such as rests for bow-drills. None of our door-sockets were definitely manufactured as such, and almost all had an identifiable prior purpose. The kitchen mould (above) had a circular depression on its underside betraying its retirement occupation. The only one found *in situ* was made from the base of a very large jar (Fig. 6.255). Four more were made from reused bricks sometimes trimmed to fit (Fig. 6.256), and sometimes not (Fig. 6.257). There were stone examples too, sometimes slabs of stone (Fig. 6.258), one a reused stone vessel (Fig. 6.259) and sometimes reused querns (Fig. 6.260) or other tools (Fig. 6.261).

[276] There were several from Ur, and particularly fine ones were sometimes reused many centuries later, such as one of Šu-Suen in the Enunmah, reused in the second half of the second millennium (Woolley 1965: 52).

FIG. 6.255. 6122:01

FIG. 6.256. 6096:06

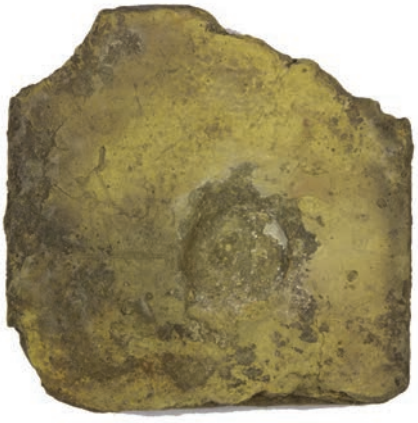


FIG. 6.257. 5008:01

FIG. 6.260. 6036:12

FIG. 6.258. 6004:01

FIG. 6.259. 9018:28

10 cm
(Scale: 20%)

FIG. 6.261. 4002:02

Wall cones

Forty clay wall cones were found, all fragmentary. The only nearly complete one was 12.8 cm long, with a maximum diameter of 2.6 cm (Fig. 6.262); the smallest one with an intact head had a diameter of 1.9 cm. Two had a band of bitumen paint around the wide end, but no traces of other colours were found. They were found in a wide variety of contexts throughout the Fortified Building, and are all presumed to come from the late fourth/early third millennium occupation that the building of it disturbed.

FIG. 6.262. 1157:11

5 cm
(Scale: 50%)

Artefact Catalogue

This is a catalogue of artefacts mentioned in the text, arranged by find number in ascending order. The condition of each artefact is described first, including its state of completeness, if discernible. Its general description follows, then that of its material, and finally the dimensions. All measurements in millimetres unless otherwise specified. These descriptions are taken from the field catalogue, and where an element of the description or a measurement is missing, it was not recorded.

0:04 Copper awl. Almost complete. End of tang may be broken off. Corroded to green. Blade apparently round in section, tapering evenly to a rounded point at the end, where flat facets can be seen. Below wide end of blade is a short tang, probably broken off. This is square in section. 50×6×6. Extant length of tang 11. Di. of tang 3.

0:08 Blade tool. Almost complete. Rectangular in plan, with a rounded end. Opposite end is broken almost squarely across. Section somewhat triangular, with broken and uneven top surface for 1/4 of its length (at broken end). Blade edge has retouching visible, and possibly some polish, noticeably on the underside. Both the rounded end and back edge still retain cortex. Overall mid/dark grey-brown flint, with band of light grey-brown near cortex. 77×29×13.

0:16 Stone tool. Pounder, perhaps reused as the rest for a bow drill or similar. Complete. Cuboid with slight irregularities. One convex face, opposite a concave one, all surfaces showing signs of wear and chipping. Rounded corners also show wear and damage. Concave face has a round recess in the centre, with signs of use or wear. Pale cream-coloured fine-grained stone. 47×46×46.

0:22 Artefact resembling three conjoined clay fingers. Fingers are square in section, the outer ones with rounded sides. The inside one is a little thinner than the other. At one end they fuse into a concave attachment for something. At the other end, they are broken off. Pink clay, fine sandy temper. 123×62×28.

0:24 Cylinder seal. Diagonal break across width, leaving about two thirds of one side and a third of the other. Heavily worn. Facetted so as to be almost square in section. Drilled longitudinal perforation. Design shows a very worn presentation scene. Figure wearing flounced robe is seated facing left; one arm is bent, the hand held out and up towards the face. The head and shoulders are missing. In front is a standing figure, also robed, one arm held up, the hand just in front of the face, assuming figure facing right, head missing. The other arm may be extended behind. A long vertical shape behind probably indicates a third figure who is being introduced by the middle figure to the seated one. Behind the last figure may be one or more filler motifs, the shapes no longer discernible. Polished very fine-grained black stone, presumably diorite. 24×13×134, di. perforation 2.

2:06 Conus shell. Broken at narrow end. 55×34×30.

513:02 Fragment of ivory. Approximately cuboid. One short end broken off, the other cut or worked to be smooth and even. Much of rest of surface is rough, possibly broken or laminated. One facet, running the length of the fragment, is smoother: either worked, or the remains of the original tusk surface. 33×12×7.

598:01 Bitumen stopper. Complete. Irregular, thick disc-shape with pronounced raised nipple off-centred on one face. Uneven and cracked surfaces all over. 39×34×24.

1005:01 Rubbing tool. Complete. Piece of flint in shape of truncated hemisphere. Domed surface chipped at one edge. Covered with fine, pale grey salt coating. Flat face is perfectly even, and polished very smooth. Surface of dome possibly worn at the very top, where it is slightly flattened. Extremely fine-grained dark grey stone. 21×20×6.

1005:18 Inscribed animal figurine. Body and front legs of standing animal on a rectangular base, of which one corner extant. Head, rear of body and back legs missing. Fine sandy grey baked clay. Partial cuneiform inscription on left side of main body, some text missing due to break at rear. Mention of Gula suggests animal is a dog. 51×31×36.

1005:25 Perforated disc, fashioned from a potsherd. Complete. Edges roughly chipped to form disc shape. Slightly concave due to curvature of vessel wall. Hole has worn/damaged patch around it on the inner vessel face only. Pink clay, buff surface, vegetable temper. Salt encrustation in patches. 57×54×12. Di. perforation 8.

1010:04 Moulded clay plaque, with relief on one side of standing male human figure. Rectangular in plan, reverse fairly flat. A few small chips, otherwise intact. Worn, or from worn mould, or both. Diagonal cracks near head, and one near, and parallel to, lower edge. Figure on obverse fills about half of field. Faces right, possibly standing on

ground line. Left arm is across waist, with hand just protruding from robe, right hand held up in front of lower face. On head, round cap with thick band around forehead. Face bearded, but features no longer visible. Wears ankle length robe, wrapped around body to show vertical edge at centre of figure. Edge has double vertical row of peck-marks, presumably depicting fringe. Pink clay, sandy temper, buff surface. 97×50×14.

1022:05 Quern. About half extant, broken across its width, where it is worn thin. Trapezoid in plan, narrow at unbroken end and widest at the break. In section, thick at the narrow unbroken end, and worn thinnest where broken off. Top surface worn very smooth, presumably from grinding. Underneath rough and unworked. Spongy white calcareous conglomerate, including shell. Almost certainly the other half of 1094:01. 320×370×90, minimum thickness 30.

1039:09 Pounder. Complete. Natural nodule, of general sub-spherical shape, slightly flattened in places. One flattened facet is heavily chipped and broken, the opposite one less so. Two edges are partially flat, possibly worn, with chip damage evident. Remaining facets are quite smooth and flat, one being lightly pitted all over, the other very smooth with possible signs of polishing. Light and mid-grey colour, with some dark grey and very light grey banding. 89×80×63.

1039:14 Perforated disc, fashioned from a potsherd. Complete. Circular disc with roughly worked edges and central hole, which has countersinking at both ends, but much more pronounced on the concave face. Vegetable impressions on both surfaces. Pale green/grey colour all over. (Overall dimensions missing) Di. perforation 7.8, countersink di. concave face 23, countersink di. convex face 17.7.

1051:11 Pounding and rubbing tool. Complete. Elongated flattened hemisphere. Pitting, presumably from pounding, all the way round the edge. Both broad faces worn to a high polish, presumably from a rubbing action. Close-grained hard pink stone. A little salt encrustation. 102×79×70.

1051:13 Perforated disc, fashioned from a potsherd. Complete. Slightly dished, following curve of vessel wall. Approximately disc shaped, with straight clipped edges, unsmoothed. Hole is approximately central, and slightly elongated by wear on one side. 72×67×16, di. perforation 11×7.

1055:02 Smoothing tool. Complete. Long, thin, rod-shaped pebble, roughly rectangular in section. One end comes to blunt point, the other turns into a short heel, with a chisel end at an oblique angle. All sides and point very smooth and apparently polished. May be natural, or may be shaping or smoothing tool. Very hard, close-grained red stone. 31×7×7.

1055:06 Bitumen stopper or bung. Large chip out of one side. Shape is that of thick disc, with protrusion in middle of one side. 36×37×29.

1068:06 Bead. Complete. Several tiny chips, possibly integral to the stone. Pierced disc, but slightly irregular, and rather roughly made. Drilling has wide countersink, quite worn. Orange translucent stone, presumably carnelian. 8×4.

1068:11 Glass fragments, or possibly faience. Perhaps a bead, eye-stone, or other rounded shape. Some fragments from outer, rounded surface, which is white, iridescent, and crazed. Under this is a layer of white, graduating into pale blue away from surface, and pieces from the centre of the object show a deep ultramarine core. 14×9×8.

1068:12 Shell ring. Just under half extant. One edge a little thinner in one place, probably following natural curve of shell. Edges of break slant very evenly, but probably follow natural laminations of shell. White shell or mother-of-pearl, shiny upper surface, dull underneath. 23×13×3, reconstructed di. 22, reconstructed di. perforation 12.

1068:31 Possible bead. Gastropod shell. Complete. Circular perforation through the centre longitudinally. Smooth, cream shell. 12×6×5, di. perforation 2×2.

1073:06 Mortar, or door-socket, of part of an installation. Part of base and side only. One deliberately flattened face, presumably the base. Very thick wall rising and flaring from that. Exterior rough and unfinished, interior possibly worked hollow, or possibly just natural. Not obviously bowl-shaped inside, but may be broken. Very hard red and black mottled stone. 92×124×59.

1073:17 Eye-stone. About half remains, broken off across perforation. Domed disc, pierced across base. Dark brown glass, with broad encircling band of white material, possibly paste, near to circumference. 31×20×8, reconstructed di. 30, di. perforation 2.

1073:20 Perforated disc, fashioned from a potsherd. Complete. Roughly knapped round. Perforated through the middle. Hole worn around the edges. Green clay, rough vegetable temper. 75×75, di. perforation 10×6.

1073:23 Miniature vessel. Nearly complete. Small, barrel-shaped pot with slightly rounded/convex base, and the rim broken off. Thick walls, with the interior space possibly made by forming the pot around a finger or other suitable shape. Irregular, slightly undulating surface to body of vessel. Light buff coloured unbaked clay with dark brown surface staining, possibly paint. 37×32×31.

1077:03 Four discs, fashioned from potsherds. All are complete, have roughly-clipped edges, and are of similar size. Variations in colour, from pale sandy to light orange-brown. All vegetable tempered. Largest 38×35×9.

1077:07 Disc, fashioned from a potsherd. Complete. Clipped round edges to form irregular disc. Reddish brown clay, sandy coloured surface, vegetable-temper. 31×30×11.

1077:08 Model bowl. Small chip from rim. Plain rim, sides curved, with perfunctory carination just below rim and another just before tiny ring-base, made by pushing a fingertip into the underneath and running it round the surface just above the dimple. Bottom of vessel very thick. Underneath smoke-blackened. Inside has a circular patch of dark discolouration in the bottom. Thick, fine, sun-dried clay. 21×56, rim di. 56, base di. 18.

1077:14 Animal figurine. Head and ends of legs missing. Long body, stumps of four individual legs, and a thick short tail. Fine brown clay, presumably sun-dried. 49×24×33.

1078:04 Pendant. Complete. One face is smooth, the other laminating, with wear or damage at one of the bottom corners. D-shaped in plan, elliptical in elevation, thicker at hole end and with a rounder curve. Chamfered, almost sharpened, at thinner end, and very slightly curved. Neat hole. Dark green close-grained stone, with lighter marbling throughout. 34×28×11, di. perforation 4.

1079:16 Two pottery discs, fashioned from potsherds. Complete. Larger is knapped into a reasonably even sub-circular shape. Smaller is almost pentagonal, with irregular sides and unsmoothed edges. Both a light sandy/buff colour, with darker, reddish-brown surface areas. Di. of larger one 39.

1079:23 Artefact. Roughly cone-shaped, with pointed part broken off. Base oval, slightly hollow underneath, body finger-pinched to form a stalk. Perhaps a lid or gaming piece. Grey, smoke-blackened unbaked clay. 32×35×31.

1079:26 Model boat. One end and a little of sides preserved. Rest broken away. Flat bottom, acutely pointed end. Fine brown unbaked clay. 44×29×18.

1079:47 Copper rod. Broken off at both ends. Length of thin rod, with slight curve. Perhaps part of a pin. 53×3×3.

1079:55 Toothed shell artefact. Complete. Bivalve shell fragment, with deliberate working on curved edge. Three individual, triangular,

pointed teeth with curved recesses between, all worked at one end of extant edge. 37×30×3.

1079:78 Grinder. Essentially complete apart from severe erosion. Sub-rectangular slab, one broad face sheared off. Worn and abraded. Intact face possibly used for rubbing or grinding, and both ends are neatly shaped, so may also have been used. One short edge has rounded corners, possibly worn. Opposite end is a little thicker, and intact broad face narrows here. Long edges are bevelled, forming a thick blunt end. Brown crystalline stone. Presumed to be a grinder, but possibly natural. 78×54×18.

1079:81 Moulded plaque with female figure in relief. Complete but slightly worn, especially face, and salt encrusted. Rectangular slab, narrower at head end, bent so as to be concave on reverse. Edges roughly fingered to be square, and reverse has been fingered to be fairly smooth. Figure occupies whole length, Female, facing forward, hands together in front of waist. Headdress with flat top, hair in two braids that end in tassels in front of the shoulders. Wearing long flounced robes. Feet just visible below. Baked red clay, cream surface, fine grit temper. Pink firing blush at lower edge and lower left edge. From same mould as 1139:04, 3002:01, and 3176:03. 90×46×18.

1079:84 Model, perhaps of a trough. One end broken off, one long side chipped. Sewage staining. Shallow, probably rectangular vessel. Thick base, very flat underneath. Sides pinched up to form short walls, thin at the top. Unbaked pale grey clay. 51×41×23.

1079:91 Bone needle. Head extant, the other end snapped off. A few scratches and chips to the surface. Cylindrical, tapering slightly towards the broken end. Surface smooth, very slightly polished in parts. Neat, circular perforation 14 mm from head, which is roughly rounded off and polished. Incised decoration occupies area between perforation and head: diagonal cross-hatching with an encircling line on either side. Cream bone with dark brown surface discolouration. 48×5×5, di. perforation 2×2.

1094:10 Animal figurine, perhaps wild pig. Ends of legs missing, and head damaged. Thickset animal, with rounded back and thick legs, probably short ones. Tale is medium-length and curly. Head probably rendered by a pinch of clay coming to a thick point, but now damaged at end and on top, so presence of ears unknown. Upper body stabbed all over with double-pointed tool. Hard pink clay, cream surface, temper of fine grit and a little vegetable matter. 46×55×33.

1094:14 Fossilized clam, or possibly a bulbous stone flake. One convex surface has pitting, possibly from pounding, The other face is sheared off. Hard grey limestone. 41×32×17.

1094:16 Handstone. Probably bar-shaped, now just one end remaining. Much of surface flaked away, and only remains on the thick long edge and the very end. One long edge a little thicker than the other, and the end is slightly tapered too. Long edge very smooth, and end is pitted, presumably from pounding. Presumed to be a handstone to go with a quern. Brown crystalline stone. 92×44×38.

1094:19 Split copper ring, perhaps an earring. Complete. Corroded to green and badly swollen and cracked. Piece of wire, tapered at both ends, curled round so the tapered ends touch. 25×23×5.

1096:06 Spindle whorl. Complete. Hemispherical with neat, regular, lateral perforation made before firing. Very fine green baked clay. Very neat and well made. 39×38×15, di. perforation 8.

1096:14 Flint blade, pointed and notched**.** Short length of thin blade, broken off across width. One long edge is straight, the other curves round to a blunt point. This edge is retouched into notches. The last notch is close to the tip, and forms a little hook right at the end. Mottled pale grey flint. Perhaps the tip of a saw blade. 24×16×3.

1096:15 Two fragments of bitumen with impressions. Largest is thin slab, semicircular in plan. One face roughly smooth, and not cracked, the other with clear impression of woven reed mat. Presumably part of waterproofing for a roof, reed boat or similar. Second piece also thin slab, irregular in plan. One face, slightly convex, has impression which includes a roundel and possible knots. The other, slightly concave, which seems to be the smoothed face, has a possible woven textile impression. Both black bitumen, tempered with fine vegetable matter. 38×40×15, and 32×26×10.

1096:20 Bead. Complete. Long tube, one end slightly thickened and splaying. Opposite end rubbed, may possibly be broken off near end. Orange clay, discoloured slightly on surface, probably lightly fired. 36×8, di. perforation 2.5.

1096:36 Bead. Complete. Sphere, slightly flattened at opposing sides. Pierced through this plane. Banded agate, white band around middle, dark bands at pierced ends. 17×16×15, di. perforation 4.

1096:62 Domed clay disc, perhaps part of a lid. Just under half extant. If shape is correct, broken across diameter. Worn piece of clay, underside slightly concave. Possible impressions of string and textile on both faces. Perhaps a bung used to close a vessel, with cloth over the mouth first. 54×33×20.

1096:65 Tool, or possibly natural pebble. Long slab, one face convex, with a long ridge along the top, one end a rounded point and the other cut or broken cleanly across. Underneath the rounded end is a smooth, apparently worn facet, making the tip ideal for a delicate smoothing or rubbing task. Black close-grained stone. 15×8×6.

1105:01 Rim tab from large stone jar. Short stretch of rim only, including one rim tab. Chips to end of tab. Rim is flat on top, rounded at the inside, and almost flush with vessel wall on outside, i.e., no neck. Body swells widely just below, and vessel wall becomes extremely thick. At rim, large square tab, slightly wider at outer side than at rim. On top of tab, three equally-spaced chiselled grooves at right angles to rim, following the flare of the tab, and continued down outer side of tab. Inside of vessel is smooth, outside even more so. Thick splash of bitumen on part of break, and up and over tab. Probably accidental rather than a mend. Neat and carefully made. Buff coloured crystalline stone. 68×58×38, reconstructed rim di. 160, extant height 42.

1112:03 Gastropod. Broken longitudinally. End ground off and drilled, making a hole that connects to remains of natural aperture at mouth. Presumably a bead or clothing ornament. Cream shell with grey surface. 14×14×8, di. perforation 5.

1112:09 Bitumen stopper. Complete. Approx. hemispherical, flattened on top. Very roughly shaped and irregular, especially at edges of flat face. On side, impression of an encircling string that has cut in deeply just above the flat face. 56×49×27.

1112:10 Mud roofing material, two fragments. Hard, burnt red clay. One is a slab, approximately square. Slightly domed on one face. Other face has longitudinal impression of a thick reed, with a narrower one parallel to it. 45×41×20. Second is a thick, regular tube, open down the length, with longitudinal impression of a thick string inside. Presumably somehow got stuck inside a thick split reed, while lying on a string. 35×16×16.

1114:46 Bone needle or pin. Tapered cylinder, slightly flattened. Pointed end broken off; no perforation, but may be broken away. Decorative incisions near the head. Neat and polished. Brown to cream coloured bone. 52×4×1.

1137:03 Shell ring. About a quarter extant. Thin ring, snapped off at both ends. One face flat, the other humped. White shell. 19×6×4.

1139:03 Spindle whorl. Complete. Black staining on edge and on flat surface. Regular hemisphere with neat, regular, lateral perforation made before firing. Very fine, green, baked clay. Neat and well made. 42×42×14, di. perforation 9.

1139:04 Moulded plaque with female figure in relief. Complete but slightly worn; diagonal break in bottom left corner, small chips

missing along bottom end. Rectangular slab, narrower at head end. Reverse convex, with finger marks. Crudely moulded. Figure occupies whole length, slightly off-centre towards right edge. Female, facing forward, hands together in front of waist. Headdress with flat top, hair in two braids that end in tassels in front of the shoulders. Wearing long flounced robes. Feet just visible below. Green/cream clay, grit and vegetable temper. From same mould as 1079:81, 3002:01 and 3176:03. 95×42×23.

1139:24 Quern. Complete. Sub-rectangular slab, slightly wider at one end. Narrow end rounded. One face worn very flat and smooth, the other a low dome, highest near one long side, with fragments of bitumen adhering. Conglomerate of cream stone, with many inclusions of multicoloured chips and pebbles. 310×150×40.

1139:27 Artefact resembling part of a hand. Three cylinders like 'fingers' side-by-side, broken off at one end. At the other they merge into a slab, which broadens slightly then is folded under, so from above the whole resembles part of a clenched fist with only three fingers. After the turn, the slab thins to a broad strip and is broken off. Baked pink clay, with fine sandy temper. 63×78×33.

1142:05 Possible model bed fragment. Long cone, broken at thick end. Hand-shaped. In two places, a group of three parallel incised lines run diagonally from thick end to the point. Hard red baked clay, fine sandy temper. 55×22.

1144:01 Child's iron anklet. Complete but very corroded. Ring-shaped. Profile unclear. Corrosion means impossible to say whether it had a fastening mechanism or was just a continuous circle. Corroded to brown and yellow. Tiny fragments of cloth adhering to corrosion 46×43×3.

1157:07 Bead. Complete. Small chips on both faces and circumference edge. Blunt biconical. Both faces convex. Single neat circular perforation, slightly off-centre. Both ends of perforation slightly worn. Orange/brown baked clay. One face discoloured to dark grey. Patch of salt encrustation. 26×26 x 13, perforation 4×4.

1157:11 Wall cone. Complete except for broken tip at narrowest end. Cylindrical, tapering to a point. Slightly bent. Circular in section. Cream/green baked clay, fine sandy temper. Patches of salt encrustation on the surface. 128×26×26.

1157:13 Flint flake. Possibly worked. Teardrop-shaped in plan. One face very smooth, the other has two longitudinal ridges and one approximately latitudinal ridge. Pointed tip appears to have snapped off. Possible retouch along one edge, although this may have been caused by use. Dark brown/grey flint. 33×21×6.

1166:03 Grinder. Complete. Approximately oval slab, one end thicker than the other. One broad face ground smooth, the other rough natural stone. Grey stone conglomerate with black and grey inclusions. Dark brown discolouration on much of smoother face and patches of dark brown discolouration on the other face. 240×168×44, one end 44 thick, the other 16 thick.

1166:08 Stone bowl. A little of rim, about a fifth of body, and some of the base, giving profile of a deep, steep-sided bowl. Plain 'pinched' rim, body drops vertically, curving in very gradually to the flat base, which is delineated on the outside by a circular groove at the bottom of the body. A semicircular piece has been removed at the rim, perhaps to aid pouring. A second piece missing from the rim, very near to it, may be accidental. Inside is ground smooth, outside even smoother. Concave face of fragment is significantly salt encrusted, particularly towards the base section. Green stone, some grey and brown surface discolouration. Ht. 109, reconstructed rim di. 180, reconstructed base di. 75, thickness of wall 10.

1166:14 Stone bowl. About a third of base and body and small piece of rim, giving complete profile of a shallow open bowl. Plain rim, bevelled off to the inside, rounded. Profile of side slightly convex, narrowing gently to thick flat base. Circular marks of grinding tool visible on inner surface. Outer surface has been scraped down vertically, but also scraped horizontally in short strokes. Cream flecks and rings on the inner face of the fragment, and multiple short, very shallow cream striations on the outer face. Dark grey close-grained stone. 40×18×6.

1166:33 Stone jar. About half of rim broken away, and rest of rim chipped. Some chips to body. Otherwise complete. Rim broad, and flat on top, giving straight into shoulder, with no actual neck. Shoulder is short, straight and sloping at one side of vessel, but slightly rounded on the other. Body then turns at sharp carination to short, vertical body, again more rounded at one side, turning again, sharply at one side but more roundly at the other, to a shallow, gently rounded base. Shaping is quite crude, with obvious facets in places. Light grey pitted stone, some light brown discolouration. Typical Jemdet Nasr shape. H. 28, max. width 42.

2004:01 Waisted bobbin. Complete. Sub-spherical, waisted in middle, with one rounded end a little smaller than the other. 'Waist' is approximately 21 wide, encircles whole object, and is approximately 6 deep. End profile is sub-circular. Very smooth and heavily worn all over. Mid-sandy brown clay, with coarse vegetable temper, individual seeds or grains visible. 42×40×38.

2009:02 Copper circlet. Thick wire, bent round into sub-circle. Broken into three pieces (joined together). About 30 mm missing to make full sub-circle, and one end shows a break. Heavily corroded to green. Probably an anklet, or possibly child's necklet, as too big for a bracelet. 58×105×92.

2013:03 Sealing or tag, shaped as a sub-circular perforated disc. Complete and undamaged. Slightly irregular ellipsoid in plan, very thin. One face slightly convex, the other slightly concave. Just off-centre, a shield-shaped hole, presumably made with a reed. Concave face is rough. Convex face has incised marks over surface, difficult to decipher, but apparently deliberate. A line extends down the centre almost from edge to edge, just to one side of the hole. A second line, at right angles, extends from one side to the top of the hole. The first line is crossed, below the hole, by at least three short ones at right angles to it. Other markings around the hole. Fingerprints around edge. Fine grey clay. Presumably a sealing or tag. 34×27×6, average di. perforation 6.

2014:03 Tiny bead, assumed to be made of shell. Complete. Rounded disc shape. Cream colour. 4×2.

3001:07 Clay bead. Complete and intact, with a little light salt encrustation. Long biconical, with longitudinal hole. Thin, spiralling indentations on surface. Probably made by rolling flat strips of clay round a stick. Fine, light brown fired clay, graduating into pale sandy colour in places. Small patches of dark brown discolouration. 37×11×11, di. of end 5, di. of hole 2.

3002:01 Moulded clay plaque, with relief on one side of female figure. Lower part, from around knee level, missing, and small hole just below waist on obverse. Originally sub-rectangular in plan, slightly flared towards foot end. Reverse slightly convex. Crudely moulded, and mould very worn. Female figure fills most of obverse, and faces front, standing, hands probably joined in front of waist. Band around forehead, perhaps part of cap. Hair in two thick plaits falling down either side of head to breast level. Possible cape around shoulders, lower body clothed in long slender flounced robe. Pink clay, greenish surface, grit and vegetable temper. From same mould as 1079:81, 1139:04 and 3176:03. 79×43×22.

3002:05 Stone disc. Complete. Very carefully worked, with flat, polished faces and smooth, rounded edges. One face has a very slightly off-centred circular recess. Hard, close-grained grey stone with white marbling. 39×39×10, di. of recess 4, depth of recess 2.

3002:07 Stone prism. Complete. Rounded ends on all edges. Possible polishing/sharpening stone, or gaming piece. Smooth, hard, close-grained black stone. 38×13×15.

3002:08 Sherd from alabaster vessel. Piece from body, forming thin cuboid, with one corner protruding. Faces are ground smooth, broken edges remain rough. Pale green alabaster, with cream striations and some brown mottling. Possibly a sherd in process of being worked into a gaming piece or similar, cf. 3002:09 & 10. 25×18×6.

3002:09 Sherd from alabaster vessel. Short piece of rim and a little of upper body only. Plain 'pinched' rim, body possibly vertical, but too little to say. Breaks are at right angles to rim, and the whole fragment is rectangular, possibly in the process of being cut down to make a gaming piece or similar, cf. 3002:08 & 10. Surfaces smooth. Pale yellow and white banded stone, the bands running parallel with the rim. 39×18×9.

3002:10 Alabaster artefact, perhaps a gaming piece. Cuboid, with all six faces worked and smooth. Off-white/pale creamy colour with pale yellow stripes running transversely. Perhaps cut down from an alabaster vessel, cf. 3002:08 & 09. 28×21×9.

3009:06 Tool. Complete. Natural pebble, sub-cuboid, narrowing at one end, and elongated at a diagonal at the other. All faces and edges worn smooth. Very tips of ends roughened and pitted, presumably from pounding. Hard crystalline stone, cream coloured at thick end, purple at narrow one. 77×45×36.

3009:07 Moulded clay plaque with relief on one side of female figure. Plaque may have breaks in top left and right corners, or this may be deliberate removal of background, as breaks correspond exactly with outline of head. Some salt encrustation, especially on reverse, and around edges of body. Crudely moulded, and worn, with some chips, including at top of head. Plaque is of long ovoid shape. Reverse is flat but uneven, as though moulding took place directly on the ground. Figure fills most of obverse. Nude female figure stands on a possible sphere, facing front, with her hands under her breasts. She has long hair, or possibly two plaits, falling to her shoulders, and round her forehead is a band with a row of vertical marks, perhaps depicting a fringe. Pink clay with rough vegetable temper. 122×53×20.

3009:09 Part of stone tool. Long stone, elliptical in section, with a transverse break. Intact end rounded. Chips around parts of edge and at the rounded tip. Both main surfaces are smoothed from working. Mid/dark grey fine-grained stone. 97×70×28.

3009:11 Bead. Complete, with some salt encrustation. Short, fluted tube. One end slightly wider than other. Ten deep ribs on outside of body. Perforated longitudinally, off-centre. Pale blue frit or faience. 5×5, di. of one end 4.35, di. of other end 5.53, di. of hole 1 78.

3009:21 Tool. Complete. Pebble, in shaped of thick rounded slab, oval at both ends. One end sliced off at diagonal. Rubbed smooth all over, including over diagonal break. Very dark grey close-grained stone. Possible polishing tool? 39×25×14.

3025:08 Three joining rods of fired clay. Each broken off at both ends, with the break on a slant. Some salt adhesions to all. Each rod is approximately oval in section, and the longest and shortest each have a rough patch down the length of each side. The middle-sized one has a rough patch down either side of the length, and all three join to form a triple bar. The slanted ends are in line, giving the joined piece a trapezoid plan. Yellowish fired clay, sandy temper. Longest 124×25×19, second rod 106 long, third rod 87 long.

3025:09 Boat model. Joining fragments form prow, most of bottom, and parts of sides nearest prow. Bottom starts to rise to stern where preserved. Inside of bottom has five transverse raised ridges, uniform in width and height, and parallel, replicating inner structure of boat. Bow is a continuation of the main body curve, and terminates in a point, with raised edges. Very ephemeral red paint underneath and on outer surface of sides. Baked buff clay, rough vegetable temper. 116×51×41.

3025:10 Bitumen stopper. Sides chipped. Slightly off-centred cone shape, with sub-circular end, and rounded point. Mostly black all over, but with some soil/salt adhering. 35×34×32.

3025:22 Cylinder seal. Complete and intact, but a little worn. Very slightly waisted cylinder, pierced longitudinally, off-centre. Sun dried or lightly baked clay, red on one side, black on the other. Design crude and sketchy, in a linear style. Design shows: stick figure of a human, standing facing right, right hand on hip, left arm raised, possibly holding something. No apparel can be made out. To the right, a seated figure, wearing a long robe and sitting on a stool. He or she faces left, left hand on hip, right arm raised towards the other figure, possibly holding something. In the field between the two figures is a long-legged bird, at right angles to the main composition, facing up. Behind the seated figure are two goats, also at right angles, facing up. One, which is smaller, follows the other. Both have solid bodies, and long, swept back horns. The seal is delicate, and difficult to roll well. The design is shallow. Style is slightly reminiscent of Dilmun compositions. 22×12.

3025:23 Copper spatula. Complete, but covered in corrosion, and broken into two pieces. Long cylinder, flattened at both ends, which are or equal size and shape. Perhaps double-ended spatula or graving tool. 113×9×7.

3025:38 Bead. Intact *Conus ebraeus* shell with hole in centre of wide end. Shell is off-white and light brown patches. 26×18×16. Di. perforation 2.5.

3033:02 Copper pin. Pointed end only. Clean, transverse break. Covered uniformly in green corrosion deposits. Tip rounded. Round in section. 30×5×4.

3034:01 Clay bead. Complete. Salt encrustation covers about half of bead surface. Teardrop shape, with off-centred transverse hole 5 mm from narrow end. Pale sandy baked clay, with dark grey to black discolouration at narrow end. 20×9×9. Di. of hole 0.9–1.3.

3039:02 Rubbing tool. Probably complete. Pebble of asymmetric pyramid shape, with very smooth surfaces and rounded corners. Pointed end worn. Part of one side has large chip, forming a deep long depression, but surface of this is very smooth, so presumably used in this form, perhaps giving better purchase to the finger. Surface of underneath especially smooth and polished. Very close-grained hard black stone, with occasional voids. Fits the hand well. 52×28×27.

3039:04 Copper spearhead. One long edge damaged. End of tang broken off. Blade is a long leaf shape, with slightly rounded point. Tang is thin, square in section, with fine tip. Longitudinal ridge from tang to tip on both faces. Blade is bent into a shallow curve, and appears to be laminating. 147×21×6.

3047:13 Clay bead. Complete. Surface abraded. Cylindrical, slightly waisted, pierced longitudinally. Brown sandy clay. 22×9.

3047:14 Flint cutting or scraping tool. Long, narrow blade, one short end snapped off. Longitudinal ridge on dorsal side, with part of cortex still visible on one side. Both long edges retouched. Mid-brown to grey colour. Cutting or scraping tool. 74×14×6.

3054:02 Pebble, probably a tool. Torpedo-shaped, pointed end only extant: jagged break just behind the blunt tip. Flattened in one long plane. Extremely smooth and worn, which may be natural, but shape is very regular. Hard, close-grained black stone. 28×14×9.

3054:08 Model wheel. Complete except for small chip from edge. Disc, unevenly finished, with narrow perforation through its thickened centre. Small size of hole militates against interpretation as spindle whorl. Mid-brown unbaked clay. 46×46×14.

3054:13 Horse figurine. Head and neck only. Arched neck, pinched on outer side into a mane, very short pinched face (more like a sheep),

two vestigial ears. Tiny circular perforation in front of neck, and part of a possibly second one, possibly deliberate. To attach harness? Fine grey-brown unbaked clay. 53×28×19.

3054:50 Miniature vessel. Part of upper body and probably rim missing. Thick, round base, from which walls rise vertically. Pinched at one side so as to appear square on one side and round on the other. Very roughly made. Walls are thick and uneven, and interior is made by a finger-depression. Highest part of wall may represent rim. Underneath is smoke-blackened. Fine grey unbaked clay. 40×35×30.

3054:54 Copper strip. One end broken off. Corroded to green, with lump near broken end. Thin strip, one end beaten very flat and rounded into a crescent-shaped end. Width increases gradually away from this end, then narrows again towards the broken end. 61×8×2.

3054:57 Copper ring. Complete. Strip bent round with ends overlapping to form a thick ring. Corroded to green. Di. 14–15, max. thickness 5.

3054:58 Clay cone. Complete. Sharply pointed cone, flat underneath, with slight finger dimple. Near top is a tiny pinch, forming, possibly, a vestigial face. On lower edge at this point are possible peck marks, conceivably indicating a garment. Fine grey unbaked clay. 23×20×18.

3054:60 Animal figurine. One side badly eroded and damaged by rodents. One side of body intact, including tail, stump of neck, part of both hind legs, and part of one foreleg. Cylinder of clay, waisted to mould body shape, flared to form hindquarters, and pinched at the end to form tail. Legs are also flattened cylinders, pinched from the body. Thick neck may possibly be fitted as a separate piece. Fine grey unbaked clay. 67×42×21.

3054:67 Pottery rattle. About two thirds of one half only. One corner, most of one side, and part of body missing. Salt encrustation on outside. Made as an inverted shallow bowl, with two surviving triangular lugs at the rim, and emplacement for a third. Presumably six originally. Presumably had a matching half. Incised cross from edge to edge over dome, the lines coming to the rim halfway between lugs. Red clay, buff slip out; cf. 3087:02. 68×62×11.

3054:72 Perforated cockle shell. Neat, circular perforation near the bottom of the shell, presumably to facilitate use as an ornament. Cream shell with light brown marbling, particularly on the inside. Some salt encrustation on the inside. 38×31×5. Di perforation 2×2.

3057:09 Stone artefact. Surface uneven with a few scratches, but apparently complete. Waisted cuboid with all edges rounded. Powdery white stone with tiny black flecks, presumably limestone. 40×31×24.

3057:10 Bitumen impressions, three fragments.

A. Largest is thin sliver, triangular in plan, smooth and flat underneath, curving up slightly at one edge, impressions on top, possibly of reed. 24×21×6.
B. Triangular in plan, flat but irregular underneath, ridged on top. Seems part of something deliberately shaped, but no impressions.
C. Triangular in plan, thicker than A, flat and smooth underneath, with impression of plaited or woven textile or reeds on top. 40×25×9.

3064:17 Stone artefact. Slice of stone, one end lunate, the other possibly shaped to a point. Roughly shaped. Rounded end probably from natural surface of original pebble. Very worn, and may just be natural. White translucent stone. 24×21×6.

3064:21 Clay fragment. Irregular shape, uneven and damaged surface, bearing what are probably reed impressions. Opposite face also damaged, but rather flatter. Very dark grey-brown colour, with salt encrusted areas. 43×32×21.

3064:36 Pebble, possible tool. Piece from blunt pointed end of a water-worn, elongated, veined pebble. Broken off behind end. Veins have worn, leaving depressed encircling bands, giving the point the appearance of a head and shoulders. May be natural, but side of 'head' in particularly appears to have signs of polish, suggesting a smoothing or rubbing tool. Close-grained, dark red stone, with bands of softer, duller red. 43×33×25.

3064:111 Clay hemisphere. Probably a tablet in the process of manufacture. Flat surface roughly smoothed, domed surface very roughly shaped. Fine gritty grey clay. 91×93×47.

3065:03 Glass bead. Complete. Waisted cylinder, perforated longitudinally. Slightly rounded at one end, cut off straight at the other. Black glass. 5×4. Di. perforation <1 mm.

3067:11 Ivory artefact, possibly shaft of pin or similar. Short length of linear object, square in section. Very fine, even, and carefully made, and highly polished. Fine black ivory, presumably burnt. 9×5×5.

3080:31 Impressed bitumen fragment. Slab, broken all round into triangular plan. One side smoothed flat, the other with impression of matting. Black bitumen. 49×38×14.

3085:14 Thick disc of unbaked clay, perhaps a lid. About half of circumference missing, and underside eroded. Badly cracked. Upper face smoothed, sloping down to sharp edge. On underside, next to edge of rim, an encircling depression, as if to fit a jar. Impressed marks on upper side, apparently wedges. Fine grey unbaked clay. 83×87×21.

3085:23 Human figurine. Head, one arm, and end of other arm, missing. Many cracks. Cylinder of clay, slightly waisted towards the lower end. Arms represented by flattened cylinders pinched out of the upper end, to stick out at right angles. Neck is a flattened strip pulled out of the top. Under the base is a thumb-dimple. Fine grey unbaked clay. 79×37×25.

3085:25 Horse figurine. Head and end of tail missing, also end of one foreleg, all of one hind leg and most of the other. One side has rodent damage to surface. Body a shaped cylinder, neck a flattened cylinder, with one edge pinched as though to represent mane. Legs represented by pinched cones. One foreleg may be intact: if so, very short. Fine grey unbaked clay, darker surface. Associated small fragment may belong. 44×17×27.

3085:37 Flint nodule used as a tool, perhaps a pestle. Complete. Shape is approximately that of a bent cone. Four gently rounded sides converge to a blunt point at one end, one side turning in a facet just short of the end. The opposite end of the object is splayed. Splayed face undulates. Broadest long face polished smooth, perhaps from use as a rubbing tool. One edge of pointed end is pitted, perhaps from pounding, and another edge polished. Facet near pointed end also has pitting. Chestnut-brown flint with some remaining white cortex in patches. 79×48×71.

3085:45 Bone needle. Complete. Cylinder, tapered to a point at one end, slightly irregular. Very tip may be broken off. Head is rounded, with three encircling incisions just below. Below that, pierced laterally. 66×5×5. Di. perforation 2.

3085:46 Animal figurine. Trunk extant except for tail. Part of neck extant, and stumps of legs. Body is a long cylinder, neck a flattened cylinder bent up from it. Legs are pinched out from the body. Fine grey unbaked clay. 61×43×23.

3085:47 Figurine of male animal. Hindquarters only, legs reduced to stumps. No tail, as body damaged at end. Genitals represented by applied cylinder of clay pierced longitudinally. Fine grey unbaked clay. 43×29×32.

3085:56 Bead. Gastropod, one end and part of one side missing. Circular perforation through the centre longitudinally. Smooth, cream shell. Some soil adhering inside. 13×6×5. Di. perforation 2×2.

3085:57 Tool. Complete. Pebble, approximately pyramid-shaped. 'Base' uneven, but worn. Sides seem worn, especially two adjacent

facets, which are worn very flat. White semi-translucent stone with yellow veining. 27×23×19.

3087:02 Pottery rattle. Intact. Two flattened hollow domes of clay pressed together at edges. Hexagonal in plan, with 6 small pointed protuberances at each corner. Over each dome, an incised cross with a perfunctory small pierced hole in the centre where the lines join. Contains multiple small objects that produce a rattling noise when the artefact is shaken. Clay has cream surface. Probably pink, with mixed grit and vegetable temper. 91×87×44.

3087:03 Clay stopper. Much of top damaged, and edges have small chips. Mushroom-shaped, with both top and underneath part rounded into hemispheres. Fine grey unbaked clay. 42×40×30.

3088:01 Model bed. Edge of one long side missing, also one corner on other side. One leg complete, and one partial; other two missing. All rather worn and eroded. Bed in the form of a charpoy, on four legs made as long cones. Tops of legs protrude above frame. Frame is rectangular slab with a raised edge. Within the frame is another rectangle, represented by a moulded raised line, and this enclosing a fishnet pattern of raised lines, presumably representing the strings of the bed. The bed sags, so is convex underneath. Baked buff clay, paler surface. Found in three parts in different places in the room, including a piece from 3085 sample 336. 113×61×92. H. 92.

3092:01 Five glass beads.

A. Complete. Tiny ring. White glass. 3×3. Di. perforation 1.25.

B–C. As A above.

D. Broken in two. Tapered tube, with longitudinal perforation. Black glass. *c.*14×6.

E. Fragmented. Probably similar to D above. White glass.

3119:04 Impressed bitumen. Disc of bitumen, bent over slightly. Convex outside has been stuck to something smooth, inside has multiple tiny round dents, possibly natural, or possibly from an impression. 34×30×13.

3122:01 Thick flint blade. Sides undulate, tapering to long point at distal end. Striking platform and bulb of percussion apparent at proximal end. One long facet of dorsal side covered in cortex. One long edge possibly retouched. A good stabbing instrument. 70×23×11.

3123:02 Disc fashioned from potsherd. Small slice off edge. Thin, flat, and carefully chipped round to form disc shape. Fine pink clay, cream surface (one side worn), sparse soft sandy temper. 45×50×8.

3124:02 Stone rubbing tool. Complete. Long slab of stone, one face flat, the other domed. One end comes to a point towards one side, the other swells and has a blunt point towards the opposite side, with some pitting. All edges and corners well rounded and smooth. The whole is extremely smooth and polished, and fits the hand well. Very close-grained, dark grey stone. 149×71×38.

3131:01 Spindle whorl. Complete, except for small chips missing round the edge. One face flat, the other a low dome. Neat central perforation. Overfired green clay, fine grit temper. 37×37×14. Di. perforation 3.5.

3149:01 Pebble, possibly used as smoother. Complete. Irregular pyramid with rounded edges. Chip on one edge. Light brown close-grained stone. 25×15×10.

3154:01 Seven discs fashioned from potsherds.

A. Complete. Approximately oval in shape. One face slightly concave and the other slightly convex. Rough, worn edges. Approximately circular indent in the centre of the concave face with substantial wear. Cream to grey clay, cream surface. Yellow/brown discolouration around edges. Red/brown discolouration on concave face and very slightly on convex face. 79×70×12.

B. Complete. Approximately square in shape. One face slightly concave. Rough, worn edges. Cream/grey clay, cream surface with vegetable temper. Slight grey/light brown discolouration on both faces. 51×49×13.

C. Complete. Approximately oval in shape. One face slightly concave. Rough, worn edges. Rough faces, possibly due to salt damage. Cream/grey clay, cream surface with vegetable temper. Some black discolouration on the concave face. 56×50×12.

D. Complete. Approximately circular. One face slightly concave. Very rough, worn edges. Cream/grey clay, cream surface with vegetable temper. Some dark grey discolouration on both faces. 57×55×18.

E. Half extant. One slightly concave face, one slightly convex face. Rough, worn edges. Cream/grey clay, cream surface with vegetable temper. Dark grey/black discolouration on both faces. 53×30×12.

F. Half extant. One end slightly pointed. One concave face, one convex face. Rough, worn edges. Cream/grey clay, cream surface with vegetable temper. Some grey discolouration on faces and edges, particularly noticeable on the concave face. 77×42×16.

G. Half extant. Rough, worn edges. Cream/grey clay, cream surface with vegetable temper. Some grey discolouration on both faces and along the edges. 79×70×12.

3158:08 Possible bead. Gastropod. *Engina mendicaria.* Rectangular perforation through the side, if deliberate then presumably to modify as an ornament. Cream with brown latitudinal stripes. 13×9×9. Perforation 2×4.

3163:04 Copper arrowhead. Complete. Leaf-shaped blade, rounded where it meets thick tang, which tapers towards distal end. Corroded to green. 65×18×11. Length of blade 30, length of tang 37.

3176:02 Model wheel. Some chipping to outer edge, also on hub. Some patches of salt encrustation. Circular perforation through the centre, encircled by shallow walls protruding at a very slight slope from edges of perforation on both faces. These presumably represent the wheel-hub. Six thin, linear indentations running from the central perforation to the outer edge, presumably representing spokes. Pink baked clay, vegetable temper. 97×100×34. Perforation 15×16.

3168:12 Model bed. Fragment only. Irregular pentagon in plan. Appears to be broken on all five sides. One face convex, the other concave. Small section along one edge appears to have vestiges of design; there is also a linear indentation on one face, and the remains of a zigzag incision at one break. Green unbaked clay, some darker surface discolouration, rough vegetable temper. 62×57×12.

3176:03 Plaque. Lower half only. Surviving fragment forms a thin rectangular slab with top right corner broken off. Lower end is pushed under, destroying lowest portion of design: presumably a mistake in manufacture: perhaps picked up before dry. Reverse is flat but not especially smooth. Edges thin. Moulded relief design on obverse shows part of a flounced robe in five surviving tiers, i.e. part of the body of a female figure. From same mould as 1079:81, 1139:04 and 3002:01. Pink to brown baked clay, sandy temper. Some small sections of black surface discolouration. 46×38×13.

3176:06 Stone slab, perhaps a whetstone. Some chipping near broken ends, and small amount of damage on one of the edges, where the stone appears to have been scraped. Rectangular in plan, ground into a fairly regular cuboid, a little wider at one end. Both short ends neatly broken off. One broad face is very slightly concave. Very smooth faces and edges. A shallow ridge runs longitudinally along each narrower face. Grey to green stone, small amount of cream to brown discolouration on the surface. 59×29×14.

3176:08 Copper implement, perhaps for graving or piercing. Corroded. Joined from fragments to form a long bar, undulating along its length. One end blunt, body tapering towards the other, which ends in a sharp point that is probably a break. 119×9×9.

3186:06 Plaque. Head end broken off, also most of portion with legs, leaving just the torso and arms of the figure. Badly eroded, with impressions of straw and discolouration on surface. Reverse very slightly convex. Edge thin and uneven. Figure moulded in high relief on obverse, almost filling width of plaque. Figure is of naked female facing front, hands held up cupping her breasts. Round her waist is a girdle or belt. A small rosette at centre just below it. Pubic triangle indicated by incised lines, below which is the lower break. Details hard to distinguish because of straw impressions. Pink baked clay, buff surface, as far as can be determined given very heavy red and black staining. Very similar, as far as preserved, to 3009:07, but not from same mould. 61×61×27.

3187:10 Carnelian bead. Some surface damage, particularly around the end with the narrower perforation. Flattened sphere. Circular perforation through the centre, wider at one end than the other. Smooth, polished surface. Orange carnelian, with small amounts of black near either end of perforation. 7 x 8 x 7. Perforation 2 x 2.

3193:01 Clay balls or pellets, twenty one examples. Rolled by hand. Uneven and irregular in shape and size. Gritty grey unbaked clay. Largest 28×25×20. Smallest 15×14×11. Two other examples 29×25×20, 21×19×17.

3194:01 Thick flint flake. Approximately rhomboid in plan. Some cortex adhering on dorsal face, which is irregular. Long, slightly curved edge opposite striking platform is retouched into five perfunctory notches. One side adjacent to striking platform is cleanly cut or broken off, leaving a platform that affords a good finger-rest and is slightly worn. A triangular chip out of this is probably recent damage. Fits the left hand well. Grey and brown flint. 52×35×15.

4001:03 Lapis lazuli bead. Complete. Some salt encrustation on all surfaces. Biconical, with four longitudinal flattened surfaces i.e. end section is square, with rounded corners. Drilled longitudinally. Uniform blue colour throughout. 27×8×8. Di. perforation 3.

4002:02 Stone door-socket. Possible damage on two edges and on base surface. Stone laminating at base and recess. Lump of stone, elongated sub-ovoid in plan to sub-rectangular in plan. Drilled socket recess forms shallow bowl shape near centre of one face. Dark and mid-grey pitted igneous stone. 234×138×70. Socket di. 110. Max. socket depth 35.

4003:01 Stone door-socket. Broken across its central depression, which has worn all the way through. Presumably originally a thick oval slab, one face flat, the other domed. Perhaps a reused quern. White stone with grey speckles. 81×73×50. Max preserved width of hole 42.

4003:08 Copper rod with one looped end. Green corrosion deposits all over. Length of rod, round in section and fairly straight, one end rounded. Non-looped end may be neatly broken off, or finished as straight end. Perforated 3 mm from rounded end. 67×6×6. Di. perforation 2.

4003:10 Copper spearhead. Complete. Corrosion deposits all over, but heaviest at join of blade and tang. Fairly narrow straight-edged blade, with rounded base at tang end, and rounded tip. Raised longitudinal ridge extends along blade from tang to tip on both blade faces. Tang is 6 mm thick and appears to have a square section, and a rounded end. 133×23×8.

4003:14 Flint sickle blade. Blade with longitudinal ridge on one face, flat for half the length, peaked for the rest. One long edge retouched into nine notches. Polish on around base of notches. Light grey-brown colour. 39×17×4.

4006:01 Copper artefact. Restored from four pieces: complete except for tiny chips. Corroded to green. Thin sub-oval disc, with tang at the wider end. Tang is flat, tapering to point. Implements with this shape are frequently interpreted as hand mirrors. 120×70×4.

4006:04 Grinder. About half extant, broken across its width. Oval slab with one very flat face and one domed. Multicoloured conglomerate, with many colour variations in the inclusions. 134×98×40.

4006:11 Bone needle. Broken in three pieces and restored. Small chip missing. Tapered cylinder, slightly flattened. Thick end finished as a point. Perforation 8 mm below head. Point at thin end made by slicing at a diagonal. Highly polished, presumably from wear. 61×5×4. Di. perforation 3.

4010:02 Copper arrowhead. Probably broken off at shaft end, so no tang. Green corrosion deposit covers entire surface. Approximately diamond-shaped in plan. Section is bi-convex in both planes. Possible longitudinal ridge, only clear on one face. 26×9×4.

4010:06 Disc. Fashioned from a potsherd. Sub-circular with roughly clipped edges. Incomplete perforation at centre, from side which is the inside of the original vessel wall, leaving a depression with a very rough edge. Reddish and sandy-brown surface. 67×62×13. Recess di. 7.3, depth 4.

4011:07 Spindle whorl. Complete. Disc with one flat face, and one slightly convex face. Edge is smoothly finished, but slightly chipped in two places. Salt encrustation on flat face. Central hole. Greenish baked clay, surface same, sandy temper. 59×58×16. Di. perforation 8.

4022:01 Copper tool, perhaps an awl, or weapon. Probably complete. Covered with green corrosion. Long bar, square in section. One end squared off, with slight swelling 18 mm from it, probably indicating that this end is a tang. On the other side of the swelling, the bar tapers very gradually to a rounded blunt point, possibly broken off at tip. This end is slightly bowed. 93×10×9.

4022:02 Stone tool. Complete except for apparent chipping or flaking to one broad face. Sub-cuboid, with all other faces and edges rounded and worn. Two opposing ends pitted, presumably from pounding. Close-grained stone, mid-brown colour all over. 69×60×37.

4026:01 Flint blade tool. Probably complete. Short blade, with both long edges, and the rounded end, retouched. Offset longitudinal on dorsal side. Light sandy colour and fairly translucent. 56×32×7.

4034:03 Copper awl. Essentially complete, but corroded to green. Blade square in section, with round tip, widened at its other end to a swelling, below which is a long tang, square in section. 98×11×9. Length of blade 65. Length of tang 22. Di. at end of tang 4.

4036:01 Stone slab, triangular corner fragment. Perhaps a whetstone or palette. One broken corner just begins to turn, so probably originally a square, of which we have half. Both faces worked smooth and flat, one especially so; sides even and perfectly vertical, also worked and smooth. Very close-grained dark grey stone. 92×84×61.

4036:08 Pounder. Complete. Stone cube with rounded corners, and slightly rounded faces. All of surface is worn smooth, with tiny pitting marks, presumably from pounding or rubbing. Fine grained, mottled dark grey with lighter, sandy to cream coloured patches. 44×42×43.

4041:05 Turquoise bead. Complete. Minute cracking of some parts of surface. Lozenge shaped in plan, with truncated ends. Long sides rounded and very slightly convex. Section rectangular, elliptical at ends. Drilled longitudinally. Light green stone, slightly marbled with paler green areas. 14×11×6.

4041:10 Silver/copper pin. Virtually complete. Corrosion and salt encrustation deposits all over surface. Pin is round in section, tapering consistently along its length to a point, which has broken off at the very tip. Wider end is intact, and has a straight, flat face. 74×70×70.

4041:11 Silver/copper pin. Complete. Pin is round in section, tapering consistently along its length to a slightly blunt, rounded point. Wider end has a straight, flat face. 75×8×7.

4041:12 Agate bead. Complete. Cylindrical, slightly tapered towards ends, which have flat faces. Longitudinal hole, drilled from both ends, as is apparent from visible misalignment at centre of bead. Pale grey to white translucent stone, with thin, orangey brown stripes at the ends. 11×5×5. Di. of end faces 3.7.

4041:13 Carnelian bead. Complete. Cylindrical, slightly tapered towards the ends, which have flat faces. Longitudinal hole. Semi-translucent stone, with two bands of pale orange to brown and two of pale grey. 11×5×5. Di. of end faces 3.5.

4041:16 Carnelian bead. Complete. Slight chip to one end Cylindrical, slightly tapered towards the ends, which have flat faces. Longitudinal hole is central and forms perfect, round tube all the way through bead. Finely polished all over, including ends. Marbled rich orange and pale orange stone. 17×8×8.

4041:19 Lapis lazuli bead. Complete. Salt encrusted with a few small chips. Truncated ovoid, with end faces flat. One flattened area along body. Mid-blue stone. Surface unpolished. 11×8×7.

4041:22 Turquoise bead. Complete. Some salt encrustation on surfaces. Cylinder, slightly tapered towards square-cut ends. Off-centred longitudinal hole. Turquoise and pale green to blue marbling. Surfaces polished. 11×5×5.

4041:27 Lapis lazuli bead. Complete. Cuboid, drilled longitudinally, slightly off-axis. Salt encrustation masks much of the deep blue colour of the stone. 9×5×4.

4041:30 Agate bead. Complete. Ends chipped, and some pitting to surface. Cylindrical, slightly tapered at ends, one of which has a straight, flat face, the other at a slight angle. Pierced longitudinally. Translucent stone, dark brown fading to lighter in places, swirled white veining near centre. 19×8.

4041:32 Agate bead. Complete. Some very slight pitting on surface and on ends. Cylindrical, very slightly flattened towards one of the squared-off ends. Pierced longitudinally. Translucent stone, dark brown at one end, veined white at the other. 19×7.

4041:33 Agate bead. Complete except for slight chipping to very ends. Gently tapered cylinder, pierced longitudinally. Translucent brown stone, with veined white patch near one end. 23×8.

4041:36 Bead. Complete. Very light pitting to surface. Very slightly tapered cylinder. Pierced longtitudinally. Translucent stone, dark brown at one end, white at the other, with opaque white band near white end. 12×7.

4041:46 Glass bead. Complete. Some slight fine pitting and discolouration to surface. Cylindrical, tapered at either end, then swelling to a raised rim around the perforation. Around the barrel of the cylinder where it is still wide, four sub-rectangular thin slabs are applied lengthways, giving the whole an approximated sub-cuboid shape. Perforated longitudinally. Blue glass. 97×46×43. Di. perforation 13. Di. of ends 3.

4043:04 Rod or bar fragment. Short length, probably of a square-sectioned bar. Breaks at both ends. Light corrosion deposits all over. 16×4×4.

4043:06 Stone bowl. About a quarter extant, giving profile from rim to just beyond edge of base. Inner surface has some large pitting marks. Plain rim, rounded, upright sides, thin, neat disc base. Edge of rim on outside is extra smoothed. Green crystalline stone.

4051:11 Bone point. Some salt encrustation on outer surface. Recent break at blunt end. One side chipped below shaped part. Sliver of split rib, outer surface of bone forming one face, the other being from the inside of the bone. One end filed to very sharp point, the sides of which have signs of polish. 43×11×4.

4051:12 Stone blade tool. Snapped off at both ends. One long side straight, widening sharply just before break at wide end. Other long side retouched into undulating shape. Hard green stone. 56×34×9.

4051:13 Bone needle. Two fragments join to make head end. Tip also extant but middle section missing. Head end trapezoidal in section, smoothed gradually towards tip so that is triangular in section. Head sharpened in facets to a blunt point. Lateral piercing 16 mm from head end. Tip made by making a long diagonal slice. Polished with wear all over, especially at tip. Brown/cream coloured bone. Missing portion infilled with epoxy resin/acrylic paint. 30×5×5 Restored length 51. Di. perforation 2.

4052:02 Clay bead. Complete. A little salt encrustation on surface. Light chipping to ends, probably ancient. Biconical, pierced longitudinally. Smooth grey unbaked clay, surface a little shiny in places. 18×17×13. Di. perforation 3–4.

4052:03 Pounding tool. Complete. Natural flint nodule, presumably used as a pounder. Very approximately cubic, with three faces having deep, irregular depressions. No visible signs of wear. White cortex, grey-brown flint showing through in places. 54×51×52.

4060:01 Pounding tool. Complete. Natural sub-spherical quartzite pebble. Natural small hole in top. Underneath has been ground or worn very flat. One end has pitting marks, presumably from pounding. A weight or rubbing and pounding tool? White and yellowish quartzite. 80×69×53. Weight 428 g.

4067:05 Hollow clay cone. Small chip from one side. Hand-fashioned object the shape of a toadstool cap. Apex has perforation. On one portion of edge, three tiny circles incised near together, parallel to edge, and three more on the opposite side. Presumably made with a quill or dry grass stalk or similar. Grey unbaked clay. 34×34×18. Di. perforation 4.

4074:03 Flake tool. Sliver of stone, now irregular hexagonal in plan. Two converging edges retouched to shape into short tang with blunt end. Opposite end retouched into perfunctory chisel-end. One adjacent side indents slightly, perhaps not retouched. Other side adjacent to end is denticulated, with at least three notches, the nearest to the end being deep and pronounced. Hard green stone. Perhaps a tool for shaving and shaping bone to make pins, or similar. 36×32×8.

4085:07 Disc fashioned from potsherd. Broken in half, apparently in attempt to make central perforation, as there is small chip or drill indentation on concave face where centre of artefact would have been. Sherd from lower body of large jar: one face slightly concave, the other slightly convex. Dense, hard pink clay, cream surface out, fine grit temper; presumably third millennium. 61×35×11. Probably original diameter 61.

5001:02 Possible bed model. Very approximately semicircular in plan. One edge extant, the rest broken off. Very rough edges with large amount of damage. Substantial sections of one face also damaged. Design of linear pattern on one face similar to 3088:1 suggests this fragment was part of a bed model. If correct, this pattern may have represented the strings of the bed, and thus this section would have been part of the bottom frame of the bed, with the extant edge forming the edge of the bed. Green baked clay with sections of brown discolouration. 81×49×17.

5008:01 Door socket. Made from an overfired baked brick. Two corners chipped off, and a third missing in a large slice from the body. Worn, circular, off-centre depression in one face. Green clay, rough vegetable temper, patches of grey discolouration all over. 269×252×77. Socket recess di. 92.

5008:05 Animal figurine, presumably a sheep. Ears broken off, and slight damage to the nose. Hand-moulded body, pinched into a thick neck, then into a pointed face and presumably two ears. Body also

pinched underneath into a short slab at either end to represent a pair of fore and hind legs Small tail appears to have been moulded separately and then attached to the body. Pink baked clay. Small amount of black surface discolouration on one side. 31×23×8.

5017:01 Human figurine. Reconstructed from fragments: back (or front) of body has large chips missing. Both arms broken off at their base, neck chipped but otherwise intact. No head: presumably made separately. Body is a thick cylinder, one end pinched out at the circumference and pushed up underneath to form a hollow circular base. Neck and arms pinched directly out of top of body. Circular perforation through body at breast level. Pale pink baked clay, grey surface. Areas of mid-brown discolouration. 70×33×30. Di. perforation 2.

5017:17 Human figurine. Base badly chipped. Some rodent teeth marks. One arm broken off. No head, but perhaps made separately. Cylinder of clay, splayed slightly and flattened at one end to form base. Flattened at other end, and neck indicated by tiny flat cone pulled out of it. One arm pinched out, held out from body, and splayed into blunt fork at end, presumably indicating hand. Chip on opposite shoulder may indicate emplacement for the other arm. Pale pink baked clay, grey surface. 38×27×18.

5022:10 Copper implement, probably a fish-hook. Corroded to green. Straight length of rod, bent over evenly at one end and broken off. Other end is beaten flat, in opposite plane to bend. Around the transition from round to flat section, is coiled string preserved in the corrosion. 78×11×5. Rod 5×5, spatulate end 10×8×2.

5022:29 Casting mould. Mould. One finished end and base partly intact, rest broken off. Thick slab of clay with convex base, somewhat eroded, with irregular outline where broken. Tapers, as extant, towards finished end, which has vertical edge. Upper surface is concave, and lined with a thin irregular sheet of metal, broken all the way round, and flowing right up to the finished end. Presumably a metal mould, broken while in use. Buff clay with dark core. Metal is corroded to green in parts, but is also blackened.

5040:02 Incised bone artefact. Metacarpal of an animal, possibly sheep/goat, or deer/antelope, sawn off at proximal end. Other end intact. Deeply and neatly incised with a short horizontal line just below the joint, below which are a line of three St Andrew's crosses one below the other, the same width as the horizontal line, taking up most of the width of the bone. Natural yellow bone, worn smooth at the long edges. 110×290×17.

5045:02 Flint tool. Complete. Approximate cube, one face uneven. All faces worn smooth, including the uneven one. All heavily pitted except one which has only a few pockmarks, is worn exceptionally smooth and polished, and is of even colour. Grey flint, paler at surface where pitted. 45×44×42.

5047:01 Piece of flooring. Sample from floor. Layer of well-homogenised clay, containing flecks of charcoal and white calcareous material. On top a layer of straw or reed laid very carefully and evenly, all in one direction. 105×115×33. Reed layer 3 thick.

5050:04 Glass bead. Broken across width: one end extant. Heavily salt encrusted. Cylindrical as extant, tapering towards preserved end. Brown glass. 5×5×5. Di. perforation 2.

6000:03 Grinder. Piece from one rounded end of slab-shaped grinder, broken across width. One face flat but very rough due to the many shell inclusions. Near the centre of this face is a patch of bitumen pressed into the surface. Underneath rough and fairly flat too. Light sandy coloured conglomerate, with very numerous shell inclusions, and pebbles. Some shells appear to be complete, including both bivalves and gastropods. 118×79×30. Bitumen patch 23×18.

6004:01 Door socket or post-pad. Badly encrusted with salt, and flaking. Block of ?sandstone, approximately the shape of a flattened cube with rounded corners. One face has shallow depression covering most of the face. Yellow stone with apparent inclusions of black grit. Conceivably baked clay, but seems too heavy. 165×154×67. Depression *c.*140 wide.

6005:02 Bitumen stopper or sealing. Sub-ovoid black lump, with smaller ovoid protrusion near the centre of one face. Opposite face is relatively flat, with possible vegetation or matting impressions over surface. Possible oblique string mark on one edge. 30×24×18. Di. of protrusion 12 to 13, *c.*6 in length.

6007:04 Stone tool. Complete. Shaped as a wedge with rounded heel. Large chip from edge of heel. Corners all very rounded and smoothed. Broad end and pointed end both rounded and pitted, presumably from pounding. Side edges polished. Dark grey fine-grained stone. Presumably for pounding and rubbing. 72×54×48.

6111:04 Copper awl. Almost complete. In two pieces, which match but are too corroded to join. One piece is a thick rod, tapering towards one end, presumably the tip, which is broken off. The other end matches against the second piece, which is straight and cylindrical. The opposite end of this piece widens to a much thicker, rougher area for the last 40 mm, this being probably the remains of a corroded tang. 151×20×11. Length of blade (reconstructed) 39.

6021:01 Stone tool. Complete. Large pebble, in the shape of an elongated sub-rectangular slab. Edges have rounded corners, and are worn smooth. Ends are chipped, presumably from pounding. Broad faces also very smooth, with possible polished areas. Dark grey, smooth stone. Perhaps a handstone, or whetstone. 145×44×30.

6025:02 Shell bead. One end broken or worn away. Thin-walled tubular white shell, with slight bend. Off-white colour with variations. Presumed to be shell, but possibly ivory. 12×4×4.

6025:05 Stone tool. Possibly complete except for chips. Wedge-shaped, with a semicircular piece out of the long end, and one face slightly humped. Smooth in places, as though had been handled. Fits the hand well. Pale sandy to cream coloured fine-grained stone with slight lamination at one end. Salt encrustation is patchy and light. 90×60×44.

6036:15 Bone needle. Head intact, and part of shaft. Broken off lower down. Rounded tip, sides straight and cylindrical for 15 mm from head, then begin to taper. Perforated just below straight part, which has incised decoration. Four encircling grooves just below head; below those, a band of contiguous lozenges; below which four more encircling grooves. 41×6. Di. at narrowest surviving end 33. Di. perforation 3.

6036:40 Impression on bitumen. Irregular rhomboid slab, with one flat face and the other irregular with a pronounced raised part at one end. All edges broken off, except possibly one, which may have been pressed against something flat. Flat face is uneven, with indentation similar to fingermark near one edge. Other side has basket weave and string impressions. The piece has been pressed up against the edge of a basket or crate. Fine black bitumen. 32×27×19.

6041:15 Model wheel. Rim slightly chipped, and some salt encrustation. Crudely modelled, with uneven hubs. Edges smoothed round to broaden rim. Pierced laterally, presumably with a reed or stick. Dark brown burnt clay. 41×38×24.

6052:02 Tool. Cube-shaped stone. Not quite a perfect cube, one edge worn down slightly. One face worn very smooth. Pale grey-to-white close-grained stone. Presumably a weight or rubbing stone. 39×43×40. Weight 141 g.

6059:09 Stone tool. Complete. Approximately cuboid, with one slightly concave face, the rest all slightly convex. Edges and corners all rounded. Four faces are smooth at the centre, presumably from rubbing. Concave face has a shallow, smooth depression, perhaps a large chip, conceivably the rest for a bow drill. Short ends and some

corners are pitted, presumably from pounding. Hard, close-grained stone, dark grey-green where worn, dark reddish-brown where not worn or damaged. 52×36×32.

6163:01 Copper Awl. Complete. Corroded to green. Blade is circular in section, ending in a rounded point. At its opposite end it widens fairly abruptly, and behind the swelling is a long tang, square in section. 102×12×12. Tang 39 long, 6–7 in diameter.

6064:01 Stone bowl. Some large chips from edge of rim. Plain rim with thin edge, at one point with shallow indentation, presumably a pouring lip. May have been a chip that has been smoothed over. Body shallow, very slightly curved, narrows gently to very neat, low, disc base. Inside of base has small raised dome. Surface very smooth. Hard, flecked green stone. H. 44, rim di. 120, base. di. 33.

6067:01 Three 'fingers' of fired clay. Both ends of artefact broken off. Resembles three adjacent fingers stuck together. Flat underneath, as though meant to lie on a flat surface, rounded on top. One broken end is that of the three pieces snapped off, but at the other they are fused and the artefact widens out just before the break, which is oval, like the break when a handle comes away from a pot. Heavy, solid, pink clay, cream surface, hard grit temper. Conceivably some form of handle, but flat, straight underside suggests not. 128×66×20. Width of a finger 17.

6067:04 Grinder. Complete. Thin oval slab, thicker at one end, and on one side. Ground smooth on one face, which is very slightly convex. Striated green and pink stone, with occasional dark red inclusions. 187×153×47.

6068:07 Spindle whorl. Small chips from edge. Hemispherical, with central hole made before firing. Underneath concave. Hard green baked clay, grit temper. 43×41×14 Di. perforation 10.

6070:01 Perforated stone sphere. About a quarter extant. Sub-spherical stone, pierced laterally. Surface ground and polished very smooth. Wide hole drilled from both ends. Very close-grained black stone, perhaps diorite. 31×40×66. Di. perforation *c.*18.

6078:10 Pounding and rubbing tool. Complete. Wedge-shaped, with blunt ends. One broad face is slightly convex, the other markedly so. Both rubbed smooth. Both ends, all corners, and perhaps the long edges, pitted from pounding. Close-grained dark grey stone. 86×71×37.

6089:01 Pottery cylinder, perhaps a portable seat. Complete. Roughly-made pottery cylinder, covered with sun-dried clay. Interior not investigated. Apparently sealed at both ends, sealing at narrower end slightly damaged. Cylinder is roughly made, flaring very slightly at either end, with thumb-dimples round the ends, giving the appearance of an elephant's foot (cf. 1079:11). About half way up are two holes pushed through to the pottery, a short distance apart. On the opposite side are the same, but the holes join each other. Pottery has red surface. Sun-dried clay is yellow with rough straw temper. 260×200×180. Rim di. 190. Base di. 180–200.

6089:03 Copper arrowhead. Broken in two across middle of blade. Oxidised, but only tang is thickly corroded. Long leaf-shape, rounded where it meets tang. 47×15×4. Length of tang 19. Length of blade 29.

6091:01 Flint blade with notch. Long blade, one end intact, and retouched to be rounded. One long edge also retouched, with pronounced notch just below intact end. For shaving down a long thin cylindrical item, such as a reed or quill? Mottled grey and pink flint. 37×12×5.

6094:04 Bone needle. Four fragments, probably all from the same artefact, although they cannot be joined.

A. Length of shaft, square in section. Broken off at both ends, and split longitudinally at one end also. Other end has notch, apparently the remains of a drilled hole. 40×6×5.

B. Length of shaft, round in section. Broken off at both ends and much abraded. 35×5×4.

C. Length of shaft, round in section and tapering towards one end. Broken off at both ends and split longitudinally too. 32×5×3.

D. Length of shaft tapering to point at one end. Other end broken off. Round in section. 33×4×3.

6096:03 Stone palette. Probably originally oval, broken diagonally across, with about half extant. Edges slightly chipped. Thin slab, both faces worked very flat and smooth, with edge thinner, and very even. White alabaster. Very fine and carefully made. 147×111×9.

6096:06 Door-socket, made from reused brick. Broken off all the way round. Roughly circular depression on one face. Baked green clay with heavy vegetable temper. 141×116×62. Di. of depression 26. Depth of depression 4.

6116:03 Stone cube, possible tool. Complete. Almost perfect cube, with a little rounding to the corners of one face. No obvious signs of wear as opposed to shaping and smoothing. Dark purple crystalline stone. Weight 126 g.

6118:05 Large copper nail. Probably complete, but tip may be damaged. Oxidized to green. Head rectangular in plan, domed on top, possibly facetted and coming to a point in the centre of the top. Head not central to shaft, but flush with it on one long side. Shaft rectangular in section. Presumably a wall fitting or similar. 51×21×17.

6122:01 Door socket. Made from base of large jar. Base only: vessel perhaps deliberately trimmed off around it. Neat, high ring-base, presumably from very large jar. Found in position by doorway. Inside slightly worn just off-centre, where door-pole has scraped. Pink clay, green surface, rough vegetable temper. 62×222.

6126:06 Thick copper blade, or possibly sheath. Thick tapering piece of sheet. Corroded to green. Narrow end square with rounded corners, bent to one side a little. Attached to top edge of wide end, which is thicker, is the stub of something possibly round in section. 90×24×8.

6136:01 Perforated domed stone disc. Large chip from edge. One face very smooth and even, the other a low dome. Central neat perforation. Close-grained striated greenish stone, with brown stripes. Seems too thin to be a spindle whorl. 48×42×10. Di. perforation 8.

6136:04 Stone grinder. Apparently complete. Thick slab with one humped face. Other face worn smooth and concave. Wider at one end. Thicker at small end. Irregular profile. Cream coloured crystalline limestone with many inclusions of small angular stones. 172×105×58.

6136:05 Cylinder seal. Patch of surface rubbed off along length at one place. One end damaged. Waisted cylinder, crudely pierced longitudinally. Design is almost entirely worn away, but might be a frieze of figures. Pinky brown clay, sun-dried. 26×15×14.

6136:19 Clay artefact, possibly weight. Complete. One face salt damaged, flaking off. Thick slab, truncated triangle in plan. Carefully shaped. Edges rounded. Face at wide end is flattened. Neat perforation made before firing near the narrow end, slightly off centre. Fine reddish brown baked clay. 99×86×25. Di. perforation 9.5. Weight 242 g.

6142:01 Cowrie shell. Top cut, or possibly broken, away, presumably to use as ornament. 26×18×9.

6157:01 Disc. Fashioned from pot sherd. Very roughly chipped round the edge to form disc shape; straight break on one side. One face concave and one convex. Thicker on one side. Pink clay, cream surface, sandy temper. 67×62×12.

6157:02 Impressed piece of clay. Slab, triangular in plan, the triangle having two long sides, with the point between them curved over to one side. The outer edge of the curve is thickened and irregular, the other straight and rounded at the edges. The end at the short side

has a vertical wall. The upper face is fairly smooth, with some smooth bumps. The opposite face has been pressed into a wide crack, so has a longitudinal ridge, on one side of which are deep impressions, probably of reedwork, radiating from the ridge to the edge. The piece seems to be intact, and is probably a deliberate caulk. Fine grey unbaked clay. 55×34×18.

6162:01 Copper strip. Corroded to green. Thick straight strip, broken off at both ends. One end tapers slightly. Ends are swollen, possibly where they turned at right angles. 45×7×3.

6166:02 Copper rod. Straight length broken off at both ends. Corroded to green. 79×7×7.

6170:01 Copper ring. Probably complete. Corroded to green. Rod with tapered ends, bent round to touch and form a ring, now slightly distorted. Small disc-shaped lump attached to outside at thickest point may be part of the artefact, or simply corrosion. 24×22×5. Inner di. 17.

6175:02 Stone artefact. Complete. Spherical stone, possibly natural, but may have been worked to create, or at least enhance, the shape. Perhaps a gaming piece. Very smooth cream stone with some speckling. 18×17×17.

6185:01 Copper socketed adze. Very end of blade broken off. Corroded to green. Small hole in side of socket. Otherwise, complete and very heavy. Long blade, splaying in plan very slightly towards broken end, and narrowing in profile. Socket is at angle of about 70 degrees to blade, and has thin rib down the back, and a more pronounced rib down the front. Near the lower edge are three raised encircling bands, the central one more pronounced. They have possible incised decoration imitating string. 169×53×80. Max. width blade 37. Di. of socket 34. Blade 17 thick. Weight 680 g.

6185:02 Copper bowl. Partly collapsed *in situ* and restored. Complete, but slightly distorted, as part of rim bent rather than broken, limiting accuracy of restoration. Corroded to green but still very heavy. Wide and shallow, with straight sides. Rim rounded on top, perhaps with slight ledge underneath. Body straight, perhaps swelling a little near the bottom, but this could be effect of collapse. Base slightly convex, perhaps with indented band around edge, but could be distortion. H. 24, di. 114. Weight 253 g.

7007:01 Shell ring. About a third extant. Thin section. Profile straight outside, convex inside. White shell. 21×6×2.

8008:04 Clay artefact. Piece of baked clay shaped like a thin triangular slab, one side now snapped off. Corner opposite break is pulled out, thickened and shaped into a thick disc, at right angles to the faces, making the whole the shape of a scapula, broken across the blade. Near the break are two possible perforations, as though a straw had been pushed into the wet clay, and possible indications of two more. Behind the disc-shaped part on one side is a thumb-sized dimple. The end fits very well between finger and thumb. Pink baked clay, cream surface, hard grit temper. 42×52×25.

8008:05 Mould, reused as a door-socket. Thick slab of baked clay, broken all the way round, now irregular in plan, one face approximately flat (perhaps formed on flattened earth), the other made to be flat and smooth. About a third of surviving smooth surface is delineated by part of a curving indented band, which runs over the break, but was probably once a circle. This encloses the remains of 10 small, thumb-sized impressions, all approximately circular. A groove the same width as the outer circle runs radially from the circumference of the circle to the break at one point, dividing the small indentations into two clusters. Surviving spacing allows for division of the circle into two halves, or into four quarters, but not more. Near to broken edge are two deep holes, 8 mm across, and 60 mm apart, which do not go quite through to the other face, and appear to be drilled into the fired clay, not poked in while it was wet. Broken edge of artefact shows traces of 4 further identical holes, with no pattern of arrangement discernible. Red baked clay, black core, cream surface, hard sandy temper. Traces of hard white substance adhering to upper surface. Perhaps part of a mould. Underside has part of a worn circular (slightly oval) indentation near one broken edge: presumably reused as a door-socket. Found standing upright. 281×232×55. Di. of large circle 250. Di. of small impressions 15–22. Di. of socket indentation on reverse *c.*130.

8008:07 Carnelian pebble, possible tool. Complete. Wedge-shaped pebble with one very flat face, possibly worn smooth. Pale orange translucent stone. Perhaps a small smoothing tool, or may be natural. 24×20×18.

8008:10 Crescentic flint tool. Presumed complete. A broad flake, approximately crescent-shaped. Three large flakes taken off one the inside edge, forming a rough saw-edge. The outside edge has very delicate retouch all the way along, forming a sharp curved blade-edge. One end is the striking platform, the other the tip of the flake, with cortex. Grey flint. 49×25×9.

8013:01 Quern. Broken slice, including part of one end, or part of edge of one long side. Rough, deep, vertical edge. Upper surface worn smooth and concave. Lower surface trimmed flat. Cream coloured limestone with many inclusions of small pebbles and angular chips. 180×310×90.

8013:02 Quern. One end missing. Long thin slab, tapering slightly to extant end, which is square off, at a slight angle. Widens towards other end. One face flat and worn very smooth, the other unevenly domed, and with bitumen adhering near the edge in several patches. Perhaps stuck into place. Yellowish crystalline limestone. 215×174×45.

8013:04 Quern. Large quern, broken in three pieces, two small fragments missing. Ancient chip off one corner. Sub-rectangular slab. Upper surface worn concave. One long edge very straight and thin: possibly a break across the width of a much larger slab. Other long edge and both short ends rounded. Upper face worn very flat and smooth, lower face flat encrusted with pebbles and quartz chips. Greyish limestone. 540×360×80.

8013:09 Rubbing tool. Complete. Flattened stone cube, very regular. Corners and edges all slightly rounded. Edges all pitted, presumably from pounding. Both faces rubbed very smooth. Very fine-grained cream-coloured stone, darker where rubbed. 59×54×39. Weight 215 g.

8015:03 Rubbing tool. Complete. Thick, approximately rectangular slab, with rounded edges and corners, one end a little wider and more splayed than the other. The two short ends pitted, presumably from pounding. One face flat and worn to a polish. The other, which is less regular, with a wide facet to one side, is rougher, with patches of polish on the highest points. Hard grey crystalline stone. Fits the hand well. 101×54×36.

8015:04 Rubbing tool. Complete. Wedge-shaped stone with all corners and edges rounded. Large chip off one side, possibly prior to use as tool. Other side and the broad face both heavily pitted, presumably from pounding. The two converging faces are rubbed very smooth. One is flat, the other slightly convex, and this one is polished to a high shine. Fits the hand very well. Close-grained grey stone. 67×60×50.

8016:01 Sealing, token, or small lid. Disc-shaped piece of clay, with chip out of edge. Roughly smoothed, edges thinner. Possible very faint impression on one side, but very worn. Grey unbaked clay. 34×32×10.

8017:02 Bead, made from small whole gastropod. Complete. Drilled through centre of broad end, which may be slightly worn. Pale pink shell, with encircling band of faint brown checks. Possibly a worn *Conus ebraeus*. 16×11×11 Di. perforation 2.

8020:11 Copper artefact. Possibly an ornament, tool, or blade. Corroded, but with metal showing through. Sheet of copper in the shape of an isosceles triangle, broken off at the narrow side. Blunt point is bent over to one side. Longitudinal ridge on either side, possibly continuing into a tang at the break. 30×12×3.

8021:02 Fifteen clay beads. Eleven complete, two nearly complete, two partial. All crudely made, of different shapes, all pierced. Fine grey unbaked clay.

Complete:

A. Tubular with rounded ends. 15×12×12. Di. perforation 3.
B. Tubular with rounded ends. 15×12×12.
C. Tubular with rounded ends. 12×14×14.
D. Almost spherical. 15×14×14.
E. Thick disc. 10×12×12.
F. Thick disc. 8×13×13.
G. Thick disc. 9×14×14.
H. Thick disc. 9×13×13.
I. Thick disc. 9×11×11.
J. Disc. 8×13×13.
K. Disc. 8×13×13.

Nearly complete (chipped):

L. Disc. 8×15×15.
M. Disc. 7×12×12.

Partial (broken in half longitudinally):

N. Tubular. 22×15.
O. Tubular. 24×14. Di. perforation 3.

8021:03 Pounder. Broken across width, but also used in this state. Slightly flattened cylinder, tapering a little at extant end. This end, and one edge of break, worn and pitted. Flattened faces show signs of rubbing. Hard dark grey stone. 76×77×75.

8021:04 Quern. One end broken away across width. Thin slab, very approximately sub-rectangular, with extant end tapering. Both faces flat, both probably ground down. One very smooth, the other less so. The less smooth one is caked in a thin layer of bitumen. Brown conglomerate with small angular grits and pebbles as inclusions. 240×190×30.

8022:01 Possible sealing. Thin slab of clay, very approximately sub-rectangular, bent into a curve. Edge finished most of the way round, so probably nearly complete. Convex surface has multiple finger marks. Concave side has impression of fine lines, possibly threads, also positive impression of twisted thread. Very fine, grey-brown unbaked clay. 35×30×5.

8029:01 Perforated stone hemisphere. Shaped as a spindle whorl, but too large and heavy. Complete. Small chips and a little wear around the rim. Surface of domed side corroded with salt. Neatly drilled hole through dome at the centre. Flat side polished very smooth. Carved rosette design on dome, radiating from central hole: eight long pointed 'petals', their points reaching just short of the outer edge. Each divided longitudinally by a line down the centre. Pattern same as 8083:01. Close-grained grey stone. A carefully made, fine piece. 80×80×23. Di. perforation 9.

8032:07 Hole-mouthed stone vessel. Small part of rim and upper body only. Rim flat on top, or possibly bevelled slightly to outside, then drops vertically to meet shoulder. No neck. Body swells to be rounded. On outside of rim are two vertical excised strips. One break seems to have a deliberate cut, as though to take out a triangular fenestration, but this is only on the inside of the break, and does not follow through to the outside. Possibly connected with re-use? Porous white limestone. 59×41×24 Rim di. possibly 200–206.

8033:01 Stone tool. Complete. Cube with rounded corners. All surfaces pitted, presumably from pounding. Grey stone. 57×57×55. Weight 300 g.

8082:03 Stone palette. Complete. Thin flat pebble, apparently deliberately shaped to be wide and rounded at one end, narrowing at the other, which is squared off, the resulting straight edge having a very slight indentation. Profile a little thicker at rounded end. Both surfaces have scratches and light pitting. Pale grey smooth stone. 80×73×60.

8083:01 Perforated stone hemisphere. Too large and heavy to be a spindle whorl. Broken along radius in two places, leaving exactly a full quarter. Domed disc, flat face carefully worked smooth and flat. Edge slightly rounded. Central drilled perforation. Dome has incised rosette design, radiating from central hole: two preserved long pointed 'petals', their points reaching just short of the outer edge. Each divided longitudinally by a line down the centre. Identical to design on 8029:01, except that lines dividing the petals continue right to the edge of the artefact. Spacing suggests there would have been eight petals originally. Close-grained crystalline white stone. 42×61×19. Di. *c.*85. Di. perforation *c.*5.

8083:05 Stone tool, perhaps a pestle. Complete. Some chips. Long, thin slab ground into a gentle curve, one end slightly splayed. Of fairly even thickness, thickening just a little towards splayed end. Narrow end is squared off, slightly rounded at the middle and at the corners, and is worn. Chips either side are unworn, so probably damage rather than shaping. Splayed end has very blunt point in the middle, is worn smooth, and one side of point has some pitting. A large chip on the concave long side, just behind splayed end, may be deliberate shaping, as the broken edges are a little worn. Convex long side is rounded, squarer towards splayed end. Both sides and both broad faces worn smooth. Fits the hand well. Close-grained, grey crystalline stone. 128×38×21.

8083:10 Flint blade. Thick, substantial blade. Cortex adhering to one side on dorsal face. Other side retouched. Distal end blunted and worn. Grey and brown streaky flint with white patches. 89×38×14.

8083:11 Three perforated discs. Fashioned from pot sherds. Complete.

A. Oval. Rough, jagged edges. One face concave, the other convex. Off-centre, oval perforation. Evidence of wear at both ends of the perforation. Cream/green clay. Some mid-brown discolouration. Vegetable temper. 93×86×12.
B. Approximately oval. Rough, jagged edges. Once face concave, the other convex. Both faces relatively smooth. Circular perforation through the centre. Wear evident at both ends of the perforation, but particularly on the convex face. Pale pink clay, cream surface. Pale pink surface discolouration towards one side of the convex face. Vegetable temper. 70×62×12.
C. Approximately oval. Rough, jagged edges. One face concave, the other convex. Circular perforation through the centre. Wear evident at both ends of the perforation, but much heavier on the concave face. Cream clay. Small amounts of brown discolouration. Vegetable temper. 58×51×13.

9000:04 Stone spindle whorl. Complete. Thick disc, with one face convex. Both faces very smooth. Circumference edge also smooth, with only minor chips. Neat circular perforation through the centre. Dark grey to black close-grained stone, with cream to light grey marbling. 33×33×6.

9002:06 Model bull. Tips of horns broken off, and nose damaged. Hand-moulded body, pinched into a thick vertical stump at the rear to make a tail, and underneath into a short slab at either end, to represent legs, but not divided into individual legs. Thick neck is pinched out of body, pulled to a point to make a nose, and tapered, curved points pulled out of the face to make horns. Brown clay, lightly baked, with some dark marks on surface, probably accidental. 52×15×38.

9005:01 Pounder. Complete. Almost spherical. Relatively smooth surface, but light pitting in many places. Very hard granite-like dark grey stone with light pink and white flecks. 66×65×63. Weight 376 g.

9007:02 Stone cylinder seal. Broken across width: about one third missing, to judge from design. Very worn. Longitudinal perforation, off-centre at damaged end. Abstract design of three parallel lines slanting from top left to lower right, and two more slanting the opposite way, forming a triangular space in-between, the apex of the triangle down, cut off by short horizontal line which divides the whole design in half. Space inside the triangle is filled by two horizontal lines, and a thick line or rough lozenge, or conceivably a rough attempt at a solid triangle, apex down. Below the line cutting off the apex, three parallel lines slant from the left edge of the line towards bottom left, and two slant from the right edge of it towards bottom right, mirroring the design above. Presumably the design was symmetrical, and the lower half is lost. In the space in-between the triangles, which has itself the shape of a small triangle, apex up, is another lozenge or thick line. Below it is a horizontal line effectively continuing that which divides the design in half, and below that part of another possible lozenge. 26×13×13. Di. perforation 4.

9008:01 Copper bar. Short straight length, rectangular in section. One end definitely broken off, the other probably so. Corroded to green. 39×8×5.

9018:03 Quern. One end only. Quern broken across its width, leaving trapezoid slab of even thickness and a jagged broken edge. Small patches of bitumen adhering on faces. One long side bows out, the other straight. Edges vertical. Both faces worn flat and smooth, so presumably a quern not a grinder. Very hard, grey conglomerate, with sparse inclusions of angular chips. 148×215×40.

9018:22 Carnelian tool. Complete. Pebble in the form of a thick slab, tapered into a nose at one end, one face flat and one domed. All surface polished smooth. Some chipping near flat face. Hard, slightly translucent orange stone. 27×16×13.

9018:28 Stone door-socket. Probably complete. Large chip from one side may be damage. Shaped as base of roughly-made vessel. May conceivably be a reused vessel. Base flat and quite neatly worked. Sides flare upwards from it, very roughly worked. Walls very thick (40 mm), roughly and unevenly flattened off at the top. Smooth hemispherical indentation inside. 60×172. Base di. 80. Hollow 98×98.

9020:13 Copper artefact, probably a brooch or clasp. Corroded to green. Top extant, and part, or possibly all, of one arm. Other arm broken off. Top consists of thick arched rod, swollen in the centre. One end of it is flattened and flanged, at which point the arm is attached as a long, straight, thin rod. The other end of this is beaten flat into a chisel-end, and possibly broken off. The arched top is not quite complete, but probably had the other arm attached in a similar way. 52×20×7. Di. of arm 3.

9020:23 Rubbing tool. Complete. One or two small chips. Neat slice from a cuboid slab, perhaps once a different tool. Both resulting faces perfectly smooth, even, and polished. One side heavily rounded, the opposite side also slightly convex. Both worn and polished. One end worn into a facet, heavily polished. Opposite end similar, slightly wider. Grey flint. 48×46×22.

9020:25 Stone artefact, perhaps a decorative stopper. Complete. 75×70×54.

9020:32 Straightening or polishing tool. Completeness unknown. Triangular fragment from wall of thick stone vessel, broken round all three sides. Underneath slightly concave, following vessel wall, upper surface slightly convex, both polished, especially the upper. Near to one edge, and exactly parallel to it, is a deep regular groove right across the sherd, highly polished inside. Broken edges slightly worn, especially the one adjacent to the groove. Presumably for shaping or finishing a thin cylindrical artefact such as an arrow shaft. Coarse-grained hard black stone. 49×42×17.

9022:05 Bone point. Strip cut from the outside of a long bone and shaped to a point at one end. Opposite end broken across width, rough but worn: tool may be complete, or at least have been used as it is. Long cut sides are straight and parallel, tapered near towards the end to form a point. Both faces worn smooth, especially the convex one, which is shiny. Brown and cream-coloured bone. 56×11×3.

9023:01 Pounder. Complete. Lump of flint, in the shape of a blunt wedge. Two sides converge to a rounded ridge. The face opposite ('base') has many chips, where the inside of the stone shows through, but the surface if worn. Ends, sloping faces and ridge all worn smooth. Ends pitted. Also a little pitting around edge of base on both ends and one side. Brown and yellow flint where exposed, dull grey cortex over rest. 77×70×59.

9023:06 Clay spindle whorl. Complete except for a large chip on the outer edge. Further chipping to flat face. Salt encrustation on domed face. Hemispherical. Neat, circular perforation. Baked brown clay, black and dark-brown to black surface discolouration. 39×39. Di. perforation 8×8.

ROBERT KILLICK & JANE MOON

7. Summary

We have presented the results of our excavations at Tell Khaiber as descriptions and analyses of the architecture, written records and material culture, as well as placing the site within the local landscape. The various contributors have taken different approaches according to their material and expertise, and we hope that this has provided a rounded picture of what the work has revealed and what it can tell us. The paragraphs below summarize the general conclusions of their work.

The excavation of the Fortified Building at Tell Khaiber has provided for the first time a securely provenanced and dated corpus of material, including pottery and tablets, belonging to the First Sealand Dynasty. Evidence for the date of the assemblage comes from the four tablets that have year names from the reign of the king Aya-Dara-Galama. There is some uncertainty about the absolute dating of his reign, and also to what exact part of it these year names belong. However, the first few years of the reign seem the best fit, so overall it can be concluded with reasonable confidence that the tablets were written between 1550 and 1500 BCE (Middle Chronology), a few generations after the fall of Babylon.

The tablet archive derives from Level 2 of the Fortified Building, that is, after the large-scale expansion that included the construction of the administrative suite where the tablets were found. How long the Level 1 building was in existence before the tablets were written it is difficult to determine, but our impression is that it was just a short time. There are two main reasons for thinking this: firstly, there was a relatively short sequence of occupation in the courtyard belonging to Level 1, and secondly, the construction horizon of Level 2 was at much the same absolute height as that of Level 1, although alternative explanations could be offered for this (such as deliberate massive levelling). On balance, however, we suggest that only a few years elapsed between the original construction of the building and the Level 2 expansion, but it remains an open question whether the Level 1 building was actually constructed during the earlier years of Aya-Dara-Galama's reign or in the latter years of his immediate predecessor, Peš-Gal-Darameš.

After the Level 2 expansion, the Fortified Building had a relatively long life, long enough for at least seven major episodes of reflooring to take place in the courtyard and six in Rooms 140–3, as well as a long sequence of replastering of the external façade and surfaces on the southeastern side. This is before we take into consideration the layers lost to erosion, for which there is plenty of evidence, as would be expected on a mound such as Tell Khaiber. But since we cannot confirm a precise duration based on these sequences, we must turn to the contents of the building, in particular to the pottery, to determine a *terminus ante quem*. Here the absence of any Kassite pottery at all in the primary occupation deposits within the building suggests that its original function did not continue much beyond the end of the Sealand Dynasty itself, i.e. around 1450 BCE. The presence of some Early Kassite pottery in secondary deposits, as well as a few intrusive graves, shows that some activity was still taking place after the Fortified Building had been abandoned and was falling into ruin. Later still, the northern end of the building was cut away, an event perhaps linked to the isolated pockets of Late Kassite pottery found here, and maybe perpetrated by the inhabitants of nearby Tell Khaiber 2, possibly during the course of recutting a canal. Our current best guess from the evidence we have at hand is that the building was constructed and inhabited around 1550 BCE, and had fallen into disuse by, at most, a hundred years later.

The Fortified Building, with its massive outer wall, prominent towers and single narrow entrance, is clearly a strong, defensive structure. It is military in nature, prioritising defence and surveillance, so in essence a fort. The general location of the building was determined by its proximity to key canal and river routes and it was presumably constructed in an area where there was a need to control and defend disputed and/or newly-acquired territory or, just possibly, to

deal with internal dissent.[276] Its precise location at the crest of the old third millennium mound maximised the elevation of the building above that of the surrounding countryside.[277]

The internal plan of the southern unit in Level 1, as far as we were able to determine, was much the same as the Level 2 rebuild, with rooms arranged around a central courtyard. The main exception is the vaulted area in the southern corner, the suggested use of which is for grain storage. Whether at this stage the stored grain was simply to provision the inmates, or whether it was being collected and redistributed, as per the Level 2 archive records, we do not know.

The Level 2 construction tripled the size of the building. The defensive elements were retained, suggesting strongly that they were still necessary. In the southern unit, the innovation of a formal reception room on the south side hints at the presence of a notable resident, while the archive from the newly-built administrative suite provides for the first time a glimpse of the tasks being carried out there by officials, principally overseeing the collection and redistribution of foodstuffs. The functional analysis of the largely unexcavated northern unit suggests that it comprised mainly accommodation, providing dormitories or barracks, reflecting an apparent need to increase the number of residents, be they soldiers, workers, administrators or others. Curiously, there is no longer any obvious space inside the building to store the grain that was being tracked and moved. This remains an unexplained anomaly. In one letter, the Tell Khaiber scribe is told to allow the entire stock of barley to be sent away and it is clear from the Schøyen tablets that grain was often stored locally before being moved on.[278] One suggestion is that it might have been stored temporarily outside the Fortified Building on a specially prepared surface. Alternatively, if the onward shipments of grain were by river or canal, perhaps it was collected and stored nearer to the waterfront, although there is no obvious evidence for this at Tell Khaiber.

Analysis of the pottery from the building shows it to be predominantly utilitarian, reflecting mundane activities connected with food and drink preparation and consumption. The assemblage as a whole is consistent with the broader interpretation of the site as a functional administrative centre, with a particular material emphasis on those vessels associated with bulk storage and communal drinking. Other uses, such as food-processing, cooking, brewing, measuring and special storage appear to have formed subsidiary roles, and were generally restricted to specific areas of the building.

Pounding and grinding tools testify to a lot of grain processing and other forms of domestic labour, and the other artefacts recovered do not provide much evidence for the enjoyment of luxuries or religious activities. Twenty palace auxiliary soldiers received rations, and one can imagine that many of the other individuals mentioned in the texts, such as the scribes, caterers, and certainly the courtyard sweeper, were also residents. The population of the northern unit has been estimated as being as many as two hundred people. If the interpretation of rooms along the eastern side as barracks is correct, then these may have accommodated a sizeable contingent of soldiers.

The presence of buildings to the east (the Eastern Houses) shows that the Fortified Building was not completely isolated. Pottery analysis suggests these houses are most likely contemporary with Level 2 of the Fortified Building and hence part of the increased presence at the site. Given their parlous state of preservation, not much can be said about the houses themselves. However, the finds from them, albeit found close to the mound surface and belonging to layers since eroded, do suggest a possibly higher living standard than that of the residents of the Fortified Building, and might support the interpretation of these houses as residences of important individuals or families connected with it.

The archive shows that the Fortified Building was situated in a rural landscape. Date-palm plantations were numerous, as attested by the eleven gardeners of such that are mentioned in the archive, and the mentions of fisherman and reed-workers indicate the presence of nearby marshes. The main activity revealed in the archive is the collection and distribution of barley and *hargallû*-grain, and perhaps also the produce of local date-palm orchards, grazing grounds and marshlands. One third of the barley was sent on annually to a Sealand palace. Two or three scribes oversaw this enterprise. They reported to more senior officials who managed larger territories and sent instructions about the movement of produce. The agricultural labour itself was carried out for the most part by a team of ten farmers.

Several places are mentioned in the Schøyen texts as being engaged in similar activities, and Tell Khaiber may have been one of them, perhaps the one called Kiribti-Ellile. Prosopographical links between the Tell Khaiber archive and the Schøyen tablets are quite striking, so it may be that the Schøyen palatial administration was itself the recipient of the grain from Tell Khaiber.[279] The location of such a palace remains unknown, but it cannot be too far from Tell Khaiber: Tell Deḥaila, just seventeen kilometres to the southwest of Tell Khaiber, is one possible candidate, or perhaps Larsa, some twenty-six kilometres to the north.[280]

[276] There is just a hint of internal rebellion during the first years of the reign of Aya-Dara-Galama (Boivin 2019: 123).

[277] Tyre marks and recent disturbances tell us that in the early twenty-first century CE the mound provided a useful observation point for an invading army.

[278] Boivin 2019: 131.

[279] As suggested by Boivin (2019: 72).

[280] Hamdani (2015) has suggested that Tell Deḥaila may have been the Sealand capital, and the designation as Old Babylonian in the Eridu Survey would not be at odds with this, given the very slight differences between Sealand and Old Babylonian assemblages. However, the diagnostic pottery on which the suggestion was based has not been presented. Current excavations at the site may resolve this question (Jankowski-Diakonoff 2020).

Up until now our understanding of southern Babylonia in the time of the Sealand kings has been very limited. We now know that at least the Ur-Larsa-Eridu triangle was controlled by a palatial administration—many of the people mentioned in the tablets have local connections to nearby cities such as Ur, Eridu, Larsa and Uruk—and that this authority had the resources first to construct a formidable piece of military architecture and then to oversee the local agricultural production and distribution.

Foreign elements in some personal names hint at more distant connections in almost every direction: Kassites to the north, Elamites to the east and Dilmunites to the south. Contact with the Gulf is further suggested by the close links between the pottery from Tell Khaiber and Failaka/Dilmun. Whether this indicates political control of this area by the Sealand kings or less formal economic ties is debatable.[281]

At the time of writing, Tell Khaiber remains the only excavated site belonging to the First Sealand Dynasty, and the Fortified Building itself is for now a unique construction without close parallels. This situation will surely change. When we first proposed this project, we were often asked whether, with all the destruction and trouble in Iraq, there was any archaeology left there at all. We always pointed out that most of Iraq's ancient sites are still waiting to be investigated. Restricted access to the south of Iraq over recent decades, as well as a general preference among archaeologists for further work at the well-known ancient cities, means that we are missing the kind of information that lies concealed in the thousands of non-urban settlements of southern Babylonia. We hope that this report demonstrates the value of research on smaller sites, and that it will not be long before Tell Khaiber is only one of several places contributing to an ever-increasing understanding of Sealand society.

[281] See Calderbank 2021a: 78–80 for a discussion of this topic.

Appendix 1: Environmental programme

Ideally, the core environmental and specialist work for excavations would be carried out locally, by qualified Iraqi experts, equal partners in the fieldwork, with access to good laboratory facilities and support. At present, however, expertise has to be sourced elsewhere and this usually means exporting samples to be worked on outside Iraq. Getting material out of Iraq for scientific analysis is hit-and-miss at best, and can be exceptionally difficult. A major problem is the tangle of bureaucracy, but there are others, including a lack of understanding of what is involved, particularly for statistical analysis, and sometimes a reluctance to let foreigners take away archaeological material, however intrinsically valueless. Given recent and not-so recent history, this is entirely understandable, but no less frustrating for that. We were eventually granted export permission for everything we asked for from Tell Khaiber, with the exception of the animal bone, and have duly submitted summary reports on all results, positive or otherwise, and returned to Iraq all samples that were not for destructive analysis or for which no return was requested. However, export is only the first step: not all of our attempts to marry up the material with appropriate researchers and funding were successful, and of course some of the tests that were run provided negative results.

Column samples were taken for thin-section analysis, carbon samples for radiocarbon dating, human and animal bone samples for DNA and other tests, glass and metal samples for XRF analysis, soil samples for OSL dating and parasite analysis, sherds for residue analysis.

For human bone samples, the comments made by Dr Andrew Chamberlain of the University of Manchester are included in this report (pp.44–50). At last update, the collagen samples were prepared and awaiting an application for isotope analysis at the NERC Isotope Geosciences Laboratory. The ZooMS protein sequencing at the University of Manchester is also unreported so far. Francesca Alhaique, curator of the Museum of Civilizations in Rome, attempted DNA analysis of some fragments of equid bone, but the DNA was too degraded. Initial analysis of pottery residues (by Elsa Perruchini of University of Glasgow) gave limited results due to contamination, but further samples contributed to a study that showed the first protoemoic evidence of soy beans from archaeological ceramics and confirmation of the early appearance of soybean products in the Middle East by the second millennium BCE.[282] The analysis of metal samples is complete, and forms the basis of a Ph.D. study by Alathea Fernyhough. This and the results of glass sampling will be presented in a future report. The thin sections from the column samples, as far as we are aware, are still awaiting processing. OSL dating of soil samples has not been completed, and the same goes for most of the carbon samples.

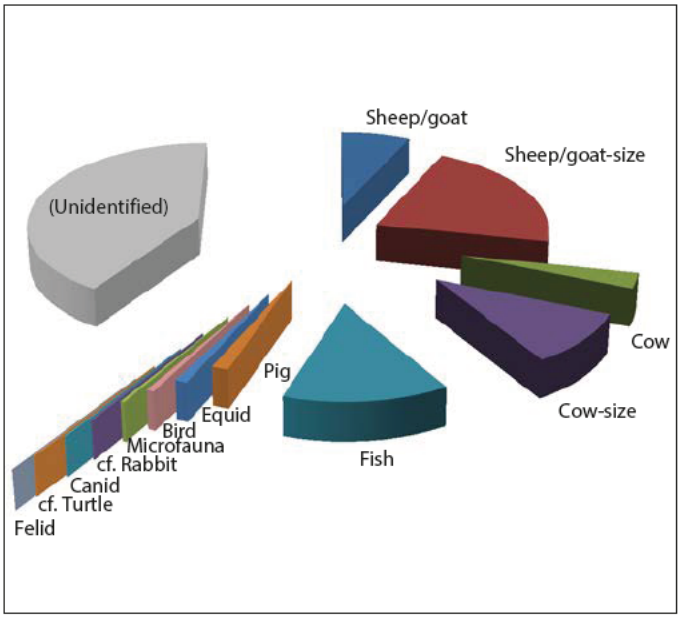
A pilot programme of sampling for botanical and zooarchaeological material was undertaken during our first full field season in 2014, by Nick Overton of the University of Manchester, and a plan for rigorous sampling developed and adhered to for the rest of the project. Rooms were subdivided into 4–6 sub-areas (spatials) in an attempt to detect variations in activity, and a carefully controlled and counted percentage of earth from each spatial water-sieved for the retrieval of bone and seed remains—2.46 tonnes in 2014 alone. Many, many man-hours (actually mostly woman-hours), were spent in sorting, counting and weighing the heavy residues of bone, burnt bone, shell, charcoal and so on. The results have not been analysed.

The botanical remains were to be studied in conjunction with those from the Stonybrook University excavations at Ur, but the young researcher responsible left that project unexpectedly, and an important portion of the Tell Khaiber seed remains could not be found subsequently. Those remaining are at the University of Oxford in the care of Dr Michael Charles, who has undertaken to organise a study of them at an unspecified time in the future.

[282] Chowdhury et al. 2021

Given the salinity of soil conditions in our part of southern Iraq, we would not have expected too much of the botanical analysis. More regrettable is the failure to facilitate a study of the animal bone material, which could have told us about diet, husbandry and hunting practices at this exceptional, special-purpose settlement. Finding someone to undertake such a study was a tremendous challenge, and we were very fortunate to engage the interest of Melina Seabrook of Harvard University, who was prepared to include the Tell Khaiber material in her study of second millennium zooarchaeological material from southern Iraq. However, by the conclusion of field work in 2017 we had still not obtained permission to export the bone. Two of us returned to Iraq in 2021 and spent a week tackling the administrative procedures required to extract our collected bone samples from the secure military area of Ur, lodge them in Nasiriyah, then remove them through several administrative districts to Baghdad, all with appropriate signed permits and official escort for each stage. They could then be formally accessed into the Iraq Museum, and a final application made for export permission. The last stage required extensive photography, but photographs were not permitted in the location in which they were held, and once in it they could not be removed from it either. The ever-patient SBAH staff found ways round all this, but when we finally got as far as the airport it transpired that the hard-won documents were not as the customs authorities required, and the whole lot was confiscated. Museum staff succeeded in retrieving it, but long after we had left. Melina paid a final visit to Ur in 2022, and we requested permission for her to take the samples with her when she left. But this time permission would only be granted for two years, nowhere near enough for the study, and only for a few bags of the material, which she was welcome to select if she could travel to Baghdad. She could not, and selection would of course make a nonsense of statistical analysis. Our knowledge, therefore, of the relationship between animals and the inhabitants of Tell Khaiber is limited to a short preliminary study made in the field by Nick Overton as part of the sampling strategy development, on material collected in 2013–14.

Just the 2013 and 2014 excavation seasons at Tell Khaiber produced a total of 14,099 specimens, 27.58% of which were identified to species or genus. These were as might be expected from a settlement of the second millennium BCE in southern Iraq. The relative frequency of identified species/genus over the entire assemblage (excluding fish, which needed to be analysed separately) indicates a dominance of *Ovis/Capra* (sheep/goat), making up just over half of the identified species, followed by *Bos* (cattle), and lower frequencies of *Sus* (pig) and *Equus* (horse, onager or donkey). *Ovis/Capra* were the commonest species identified in all areas. Obviously differences in proportion of species found in different areas up to the date of the report would generally be superseded by results from later excavation, but as excavation of the Eastern Houses was already complete in 2014, it is worth noting that the proportion of *Sus* was much lower there (less than 3%) than in any part of the Fortified Building excavated up to then. The size disparity between some of the *Sus* specimens suggested both pig and wild boar were present.



Animal bone preliminary identifications, proportions of species (NISP).

Analysis of kill-off patterns and herd demographics could have highlighted different strategies for different species, including seasonal herding patterns and movements versus year-round presence of particular species. A number of rarer species were also recovered, predominately through the wet sieving, which offer tantalising indications of wild felids, birds and even turtles/terrapins, suggesting this assemblage could also have offered insights into hunting as well as herding practices at Tell Khaiber.

Dr Terry O'Connor, of the University of York, examined a sample of exported bone fragments in 2014 (with a view, at the time, to engaging a researcher from York to study the material). His comments include the observation that there were two sizes of goat present, and that tooth eruption suggested that caprines were being kept for milk and wool. Both horse and donkey were represented, and a felid humerus was probably from a jungle cat (*Felis chaus*) or red lynx (*Caracal caracal*). Birds included two duck species and a probable stork. He concluded that:

> Although fragmentary and sometimes friable, the site should yield a good range of confident identifications, good age-at-death data for husbandry analyses, and maybe sufficient biometric material to explore the apparent size variation in the caprines. It is likely to produce a good avian fauna, which would be unusual for the region and therefore of biogeographical value as well as contributing to the archaeology of the site.

Appendix 2: Staff 2013–17

Tell Khaiber team 2014

Amjad Al-Musawi
Giulia Barella
Daniel Barrett
Daniel Calderbank
Bronwen Campbell
Stuart Campbell
Alison Dingle
Alathea Fernyhough
Ali Kadhim Ghanim
Mostafa Fadhil Hasoony
Alison Hicks
Luay Reisan Homood
Ahlam Jabbar
Robert Killick
Thomas Lyons
John MacGinnis
Jane Moon
Adrian Murphy
Aqeel Sfeeh Nasho
Nicholas Overton
Stephen Porter
Eleanor Robson
Mary Shepperson
Haider Shnaiwar
Fay Slater
Hussein Sultan
Matthew Williams
Marta Wojtowicz

Appendix 3: Notes on Excavation Methodology

Excavation was carried out by our professional staff assisted by local colleagues and workman, both trained and untrained. Where excavation was particularly complex, the finding and lifting of clay tablets within a similar clay matrix being the prime example, our staff would do most of the excavation themselves, working through the deposits with leaf trowels, centimetre by centimetre. At other times, they would first define a layer—this could be brick collapse, for example, or a horizon that was relatively easy to follow—and then one of our trained colleagues would continue, usually with small pick and trowel. We had four or five such colleagues working with us each season, well skilled in the identification and excavation of mudbrick architecture, as well as up to twenty workmen from the nearby villages, whose work mostly involved the removal of spoil.

Recording of the excavations was paperless, with a few exceptions: sections were still drawn by hand, small A6-sized notebooks were issued to excavators as a temporary aide-memoir, and preliminary details of site photographs were entered into a notebook. The digital recording system comprised two main elements: on-site digital planning of all archaeological layers and findspots using proprietary software (PenMap) and the use of a customised database for both the on-site written record and for all other data (finds catalogue and photographs, samples, conservation treatments, etc.). A third element, the site GIS, brought together much of the above.[283]

We used a single-context recording system. Each deposit was given a four-digit number, e.g. 3002.[284] To avoid accidental duplication, each archaeologist used a particular block of numbers, e.g. 3000–3999. Finds were tagged to each context, and numbered from one to infinity, so 3002:01 was the first find from context 3002, 3002:02 the second, and so on. Potsherds were collected in buckets and given only the context number. Anything found among them that needed to go into the general finds catalogue, along with full description and photograph, such as a group of sherds that made up into a complete profile, received its own find number subsequently. Diagnostic sherds were later numbered separately within each context for the purpose of pottery analysis, e.g. p3002-1, p3002-2 and so on. All shell from a context was also amalgamated, as was the bone, and an individual shell or bone only received a find number if there was a specific reason, for example a cowrie shell recognized as an import.

Each context was planned using a touchscreen computer (Toughpad) running PenMap software connected by a cable to a total station. Drawing style templates were created so that it was easy to switch line characteristics. For example, if when planning a wall, a section where the wall had been cut appeared or the wall line became uncertain, the appropriate different line style could be selected and applied. A particularly useful feature of the software was a virtual planning frame that mirrored the position of a physical one. Once this was set up, the Toughpad could be disconnected from the total station and, using the freehand tools in Penmap (but still georeferenced) a detailed drawing, for example of a skeleton or brick bench, could be produced. All the plans in Chapter 2 have been generated from the GIS, tidied up for publication in Adobe Illustrator.

The second element, the excavation database, was challenging to implement and maintain. The data entry itself was not an issue: excavators, finds manager, finds photographer, and anyone else could all enter data as required into customised forms within an Access database. The problem was how to synchronise this data across multiple computers so that all the information from up to six laptops in the excavation, plus those of the finds manager and finds

[283] There is still a short video on-line that explains the digital recording in more detail (https://tinyurl.com/24wmjy87; accessed 06/02/2023).

[284] Numbers below 1000 were used for special purposes, such as stray surface finds.

photographer, fed into a centralised database and was then redistributed as appropriate. It was solved by Loretta Nikolic writing both a customised database and the synchronization routines to go with it. However, our electricity supply in the house at Ur was constantly interrupted and, of course, we were without electricity on site, so running a network in either location was not really an option. This meant that the data had to be collected manually from each computer on USB sticks, the synchronization routine run, and then that same updated data returned to each machine. The synchronization routine itself consisted of eleven separate steps, within which were well over a hundred sub-routines that all required confirmation prior to running. It needed the utmost concentration to carry out this task, difficult after a long day on site, and disaster lay in the simplest mistakes, such as mixing up the target computers or running a routine in the wrong order. But the effort *was* worth it. After synchronization, the finds manager, for example would have all the information about the day's finds from the excavation on their laptop. This could be matched against the actual physical finds in the in-tray and cataloguing commenced with the find number, context, and brief details already in place on the database, cutting out numerous common excavation headaches such as duplicated or incorrect numbering. Again, as soon as the digital photo of a find was taken and its number entered in the finds photo database, all relevant information from the excavator's and finds manager's databases was instantly visible, and the photograph could be checked against description to ensure it matched. These are just two examples that illustrate the benefits of the system, which by-and-large worked very well.

Of course, one issue that a paperless recording system does not solve is what to do with the excavation archive. A digital archive may be less bulky than paper (and we recollect here shipping the Saar paper archive on a pallet to the National Museum of Bahrain: twenty-two boxes, with over a hundred ring binders, A2 paper plans etc.), but it still contains hundreds of digital files and photographs that need to be somewhere other than solely on the excavator's personal or institutional computer/network. It is an issue that is as yet unresolved for Tell Khaiber, and the next one that we will have to address.

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Arabic Summary

هناك بالإضافة إلى وجودِ الطاحونات اليدوية وأحجار الطحن العديدَ من الأحجار الصلبة المُستَخدمة للسحقِ والفرك، وتمَّ العثورُ على العديدِ من الأدوات الحجرية الصغيرة جدًا في نفس المنطقة مثل الألواح الطينية، لذلك ربما اِستُخدِمتْ للعملِ على الألواح الطينية. وتمَّ تمثيلُ الصوان في الغالب بِشفراتِ مِنجَلٍ مشقوقةٍ وهي شائعةٌ في جميع الفترات، وكانتْ هناك أيضًا أنواعاً أخرى من أدواتِ الصوان.

تمَّ اِستِخدامُ العظامَ بشكلٍ أساسي لِصُنع الإبر وربما الدبابيس. وتذكرُ النصوصُ الخياطين، لكن هذه الإبر كانتْ أكبرَ من أن يتُّمُ العملُ بها على القماش إذ رُبما كانتْ تُستَخدمُ لِعملِ شِباك الصيد. كما تمَّ العثورُ على لفاتِ المِغزَل وأصنافٍ مُتنوعةٍ من الطين مثل ألعاب الدُمى.

تحكي القطعُ الأثرية الموجودة في المبنى المُحصّن إجمالاً قصةَ أفراد شاركوا في العمل الشاقِ. كانتْ العناصرُ الموجودة في المنازِل الشرقية هي نفسها بشكلٍ أساسي، وربما مع التركيزِ بِشكلٍ أكبر قليلاً على وسائِلِ الرفاهِية.

الاِستِنتاجُ

يُعتبَرُ تلُّ خيبر مُهماً لأنّه أولَ مُستوطَنة تمَّ التنقيبُ عنها والذي يعودُ تأريخُها بِشكلٍ آمنٍ إلى سُلالة القطر البحري الأولى وتحديداً إلى عهد الملك آيا دارا غالاما. ومن المُرجّحِ أن تكون الألواحُ الطينية التي تمَّ العُثورُ عليها هناك مكتوبةً بين عامي 1550 و1500 قبل الميلاد، وتُخبِرُنا أن المبنى المُحصّن كان يُستَخدَمُ للتحكُّمِ في جمع الشعير وحبوب الهرجالي وتوثيقها وإرسالها إلى قصرٍ قريب. وتتوافقُ القِطعُ الأثرية التي تمَّ العُثورُ عليها مع هذا الاِستِخدام، وكذلك موقِع المُستَوطنة بالقُرب من تقاطُع قناتين رئيسيتين. كما انَّ العديدَ من الأشخاص المذكورين في النصوص لديهم صِلاتٌ بمُدنٍ في المنطقة مثل أور وإريدو ولارسا وأوروك، لكن البعضَ الآخر لديه أسماءٌ تُشيرُ إلى صِلاتٍ مع الكيشيين في الشَمالِ والعِيلاميين في الشرق والديلمونيين في الخليجِ. كما تُوجدُ هناك أيضًا صِلاتً تربطهم بِصناعةِ الفُخار بِالخليجِ.

الثَقافةُ المَادِية

تُعدُّ البقايا التي تمَّ التنقيبُ عنها في تل خيبر هي من بيئة عملٍ وليستْ قصرًا أو معبدًا، لذا فإن الثقافة المادية ليستْ مذهلةً، لكنها تعطي نظرةً ثاقبةً لِلحياة اليومية للأشخاص الذين عاشوا هناك. لا توجدْ أوجهُ تشابه من السياقات المعاصرة بالضبط في المواقع الأخرى حيث تمَّ التنقيبُ عن القليلِ جدًا والذي يعودُ تأريخه بأمان إلى فترة القطر البحري، ولكن هناك العديدُ من أوجه التشابه مع الثقافة المادية البابلية القديمة. يُرجى الإطلاعُ على الشكل 6.1-6.262 (الصفحات 163-218).

تكونُ العناصرُ التمثيلية قليلةً، وهي تشملُ اثنتي عشرةَ لوحاً طينياً، أربعةُ منها مصنوعة من نفس القالب وهي: أنثى في رداءٍ طويل وأنثى عارية وأحدُ المُصلّين الذكور. كما صُنعت تماثيلٌ بدائية من الطين للإنسان والحيوان والجماد مثل القوارب، والعجلات، والأوعية الفخارية، والسرير.

تذكرُ الألواحُ الطينية صانعَ الأختام لكننا وجدنا أربعة أختامٍ فقط. كان أحدُها من الإستِيطان السابق للتلِ. وقد كان أحدُهما مصنوعاً من الحجر وكان مُتكسِّرا جداً، كما كان هناك ختمين اثنين مصنوعين من الطين، أحدهما تالفٌ والآخر به مشهدُ لِمُصلي يتمُ تقديمُه للإلهِ مع عرض الكثير من الحيوانات أيضًا. نستنتجُ من هذا أنّ الختمَ لم يكُنْ عادةً مهمةً للإدارةِ في تلِ خيبر.

كانتْ الحلي الشخصية أيضًا قليلة جدًا لذلك نستنتجُ أيضًا أن إرتداءَ الملابس بطريقةٍ ذكيةٍ لم يكنْ مهمًا أيضًا. وكانتْ هناك خرزاتً من العقيق الأحمر والعقيق واللازورد، ولكن معظمها جاء من مَدفنٍ واحدٍ فقط وهو القبر 5. وكان هناك واحدةً أو اثنتين من الخِرز الزجاجية وبعضها من الطين وحجر العين بدون نقشٍ. وقد اِحتوى القبرُ 5 على دبوسين من مزيجٍ ملغم من النحاس والفضة، ووجدنا عددًا قليلاً من الحلقات النحاسية وأقراط الأذن. كما كانتْ الأصدافُ تُستَخدمُ أحيانًا لِصُنع الحِلي وبعضها جاء من أماكنٍ بعيدةٍ مثل صدفة البقرة (الوَدَع) التي عُثر عليها في قبر رضيع، وأصدافُ كونوس (الحلزون المخروطي) التي من المُمكنُ أن تكون قد جاءتْ من الخليج. لم يكن النحاسُ وفيرًا، ولكن كانتْ هناك بعضَ الأسلحة والأدوات بما في ذلك مِجرفة ووعاء تمَّ العُثورُ عليهما معًا وكليهما تالِف، وربما في انتظارِ إصلاحه أو إعادة تدويره. هذا وتُعزّزُ رؤوسُ الحَربة ورُؤوسُ الأسهم معرفَتنا بِوجودِ جنودٍ في تلّ خيبر. تضمنّتْ الأدواتُ المخرَز والعديدَ من العناصِر التي لا نعرفْ الغرضَ منها. كما كانتْ هناك مرآةً صغيرةً مُرتبطةً بِالمنازِلِ الشرقية.

على النقيضِ من ذلك كانتْ الأدواتُ الحجرية كثيرةً جدًا. وكانتْ الفِئةُ الأكبر هي مُعداتُ الطحن والتي من الواضح أنّ الأحجار الخشِنة كانتْ مفيدةً لها. ويتناسبُ هذا الشيء مع الغرض المعروف للمبنى المُحصّن كَمُستودَعٍ لِتوزيعِ الحُبوب، ولكن ربما كان الدقيقُ المصنوع هو في الواقع لإطعامِ السُكان وليس لإرسالهِ إلى القصرِ. كما ولا يوجد مكانٌ واضحٌ في المبنى لِتخزينِ كمياتٍ كبيرة من الحبوب. كما كان

أو مجموعة أنواع المُكونات الموجودة. لا يبدو أن نوع النسيج المُختار مُرتبطٌ بالتأريخِ، ولكن بشكلِ الوعاء المصنوع وخاصة حجمه. تحتوي الأوعية الفُخارية الكبيرة على مادةٍ عضوية خشنة. كما وتحتوي أوعيةُ الطهي على نسبةٍ عالية من المُكونات المعدنية المُتشعِّبة.

كانتْ أدنى درجةَ حرارة لإحراقِ أوعية الطهي والتي غالبًا ما يتمْ إطلاقُها تحت 700-800 درجةً مئوية في جوٍ مُنخفِضٍ يُعطي لمسةً نهائية لِسطحٍ داكِن اللون. وقد تمَّ إحراقُ أوعية فخارية أخرى على 800-950 درجةً مئوية مما يُعطي سطحًا برتقاليًا / بنياً/ لامعاً، وكانتْ تلك الأواني التي تمَّ إحراقها تحت 950-1000 درجةً مئويةً صلبةً بِسطحٍ مُخضّرٍ. وقد تشَوهتْ تلك الأوعية التي تمَّ إحراقُها على درجة حرارة أعلى وفشلتْ وأصبحتْ سلعةً من نوعٍ رديء. ومع ذلك، لم نُحدد أيّ نوعٍ من أنواع الألفية الثانية من بينها، لذلك نستنتِجُ أنهّ تمَّ صُنعُ الفُخار في تل خيبر قبل انشاء المبنى المُحصّن، ولكن بعد انشاء المبنى المحصن فإنّه قد تمَّ صنعُه في مكانٍ ما بعيدًا عن المُستوطنةِ.

إذا نظرنا إلى وظائف الأوعية الفخارية المُختلِفة ونِسبِ كل نوعٍ منها فسنجدُ أنّها تتناسبُ مع ما نعرفه من الأرشيف، أي أن المبنى المُحصّن كان بالأساسِ مركزًا إداريًا يتحكّمُ في الإنتاج الزراعي المحلي. هذا لا يعني أنه كان بالضرورةِ مكانَ تخزينٍ على الأقل ليس بعد الفترة الأولى. كما أنّ هناك العديدُ من بقايا القطع المكسُورة من أوعية التخزين الكبيرة لكننا لا نعرفْ ما إذا كانتْ هذه الأوعية مُخصّصةً للدقيقِ أو الحبوب. وتُهيمِنُ أوعيةُ الشُرب الفخارية على أدواتِ التجميع بِحوالي 28٪ من المجموع الكُلي، وتُشيرُ المجموعات الكبيرة من الأكواب التي تمَّ العُثورُ عليها معًا (الغرفتان 142 و314، وكذلك الأبراج 302 و304 و616) إلى أن هذه كانتْ مناطقاً وقعتْ فيها أحداثاً تتعلقُ بِالشُربِ. ولا تُوجدْ أدواتُ طاولةً فاخِرةً مُحدّدة مما يُشيرُ إلى أن هذه لم تكن أحداثًا تتضمّنُ تسلسُلاً هرمياً، ولم تتغيرْ النسبُ المئوية للأنواع خلالَ فترة اِستِخدام المبنى.

كانتْ هناك منطقةَ تخمير في الغرفتين 152 و156 وربما تحتَ رِعاية صانع الجعة (البيرة) Mannu-(balu-ilizu). وتحتوي الغرفة 101 على جميع المُعدات اللازمة للمِهن المنزلية الأساسية مثل: أواني الطهي ومُعدات الطحن والأوعية والأكواب، وبما أن الغرف 99-109 متطابقةً في المُخطط ومعظمها تحتوي على التنور في نفس الموضع، فمن المُحتمل أنّها كانتْ جميعها مساكنَ لمجموعاتٍ صغيرةٍ من الناس. وتحتوي الغرفة 142 على مزيجٍ من أكواب الشرب والأباريق وأوعية القياس والزجاجات الصغيرة، وربما كانتْ مكاناً للترفيهِ عن الضيوف. وقد تمَّ العثورُ على تركيزٍ خاصٍ من الأكواب والأواني وأوعية التخزين الخاصة في الغرفة 314 الواقِعة مُقابِل غرفة المَطبخ 316 مباشرةً. كما كان للأبراجِ تركيزاتً كثيفةً من قطعِ الأواني الفخارية المكسورة والتي ربما اِستُخدِمتْ للتخلُّصِ منها.

الفُخار

كان الفخار هو أكثر القطع الأثرية شيوعًا في تلِ خيبر. كان هناك 9328 قطعةً تشخيصية من تأريخ الألفية الثانية، معظمها من فترة سلالة القطر البحري وقليلٌ جدًا من الفترة الكيشية. تنتمي بعضُ التشخيصات إلى أواخرِ الألفية الرابعة إلى أوائل الألفية الثالثة قبل الميلاد، ولكن تمَّ العثور عليها منقولةً في الفتراتِ اللاحقة [2].

يُكونُ الفخار من فترة القطر البحري غيرَ مُزخرَف وله مجموعةً محدودة من الأنواع الوظيفية، ولا تُوجد مواد مُماثِلة بالضبط. كان على أرمسترونج وغاش (2014) في دراستِهم المقارنة لفخار الألفية الثانية من بلاد ما بين النهرين اِستِخدامَ سيراميك من مدينة سوسة لسد الفجوة فيما نعرفه عن الفخار من فترة القطر البحري. ومع ذلك فإنّ مادةَ سوسة لا تتناسبْ جيدًا مع فُخار بلاد ما بين النهرين، وهناك أوجهُ تشابه أفضل مع الفُخار من أماكنٍ في الخليج مثل جزيرة فيلكا وتل F3 وتل F6 والفترات الهلالية A-3B وقلعة البحرين في الفترة الهلالية (IIIA). تُعتبرُ عمليةُ تجميعَ فخار تل خيبر هي العمليةُ الوحيدةُ حتى الآن من العراق والذي يعودُ تأريخه بشكلٍ آمن إلى فترة القطر البحري. ويظهرُ أنّه كانتْ هناك علاقةً ثقافية من نوعٍ ما بين جنوب العراق والخليج في ذلك الوقت.

يتمُ تقديمُ وصفاً كاملاً للمجموعةِ بأكملها في Calderbank 2021a. هناك ثمانية عشر فئةً من الأوعية الفخارية الرئيسية تضمُّ 77 نوعًا (الصفحات 125-132). ويظهرُ في الجدولِ 5.1 (ص 134) أشكالَ الأواني الفُخارية التي توضِّحُ التغيُّرات التي تحدثُ بمُرورِ الوقتِ على أفضل وجهٍ أثناء التنقيب عن فترة الاِستِيطان في المبنى المُحصّن. ويتُمُ عرضُ النِسبَ المئوية النسبية للأشكال والمراحل في الأشكال 5,25-5,45 (الصفحات 142-162). ويوجدُ في المراحل المتعلِّقة بالاِستِخدام الثانوي للمبنى وبعد أن لم يعُد يُستَخدَم لغرضِه الأساسي نوعٌ أو نوعان مرتبطان بالفترة الكيشية، كما يعودُ تأريخُ معظم المدافن إلى هذه الفترة. تمَّ التعرُّف على عددٍ قليل من الأوعية الفُخارية ذات الطراز الكيشي كمُلتقطاتٍ سطحية فوق وحول المبنى المُحصّن. ويتطابقُ التجميعُ من المنازل الشرقية مع أحدثِ مراحل الاِستِخدام الأولي للمبنى المُحصّن، وربما يتداخَلُ مع اِستِخدامه الثانوي. وتوجدُ هناك مقارناتٌ مع فترات يلخي الكيشية المبكرة الثانية إلى الأولى (II-I) (Valtz 2002-2003: pl. 149.10-19) ومع الرواسب الكيشية في مدينة أوروك (van Ess 2014: pl. 10.2-3) وفي مدينة بابل (Sternitzke 2016: tbls. 105-6).

كانتْ قدورُ تلَّ خيبر مصنوعةً بشكلٍ ثابتٍ تقريباً من الطين الغريني المحلي. وهي تُظهِرُ مكوناتً من خمسة أنواعٍ هي: العضوية (أجزاء من النباتات)، الكالسيت والرمال الدقيقة والرمال الخشنة وجروغ (وهي جزيئاتٌ من الطين أو الفُخار المسحوق). تمَّ تحديدُ ثمانيةَ أنواعٍ مختلفةٍ من الأنسجة بناءً على نوع

[2] لمزيد من المعلومات حول المواد السابقة، راجع Calderbank و 2021b Moon

وتشملُ المهنُ الأخرى عُمالَ القصب والجلود والقِماش. وقد يكون بعضُهم ربما الحدّادين وصانعي الأقواس قد خدموا القوات التي كانتْ مُتمركِزةً في المبنى المُحصّن. كما كانتْ هناك فرقةً كبيرةً من اِحتياطيي القصر في تلِّ خيبر الذين وُزِّعتْ لهم الحبوب والدقيق.

ليس من الغريب أن يضُمَّ الأرشيفُ أيضًا العديدَ من الكَتبة الذين تمَّ تسميتهم والذين لم يتُّمْ الكشفُ عن أسمائهِم والمُتَدرّبين منهم. كما يشهدُ عُمدة المدينة واِثنين من الموظفين الرسمين على الحكم المحلي في تلِّ خيبر. وتمَ الحِفاظُ على نظافةِ المبنى المُحصّنِ وساكنيه من قبل عمال النظافة والغسيل، بينما كان دورُ رجالَ القوارب ضرورياً لتوصيلِ الحبوب وللحياةِ في الأهوار بشكل عامٍ، لكن يبدو أنه لم تكُنْ هناك حاجةً لأدراجِ ساحبي المياه المُتخصّصين والحلاقِين .

في الوقت الذي كان فيه الأرشيف نشطًا حوالي عام 1500 قبل الميلاد أو ربما أكثر أو أقل من نصف قرن، كان المبنى المُحصّن مركزًا لجمع الحبوب وتوزيعها وتخزين الشعير وحبوب الهارجالي وربما أيضًا مُنتجات بساتين النخيل المحلية ومناطِق الرعي والأهوار. يتُمُ شحنُ ثُلثَ محصول الشعير سنويًا إلى قصر سُلالة القطر البحري (أينما كان ذلك). وتمَ تنفيذُ الكثيرَ من العمل الزراعي من قِبل فريقٍ من عشرة فلاحين الذين عملوا في كل من القصر (كمُتلقِين لِحصص الإعاشة) ولمالكي الأراضي المُستأجرين (بِصفتِهم مُقاولين). كما قامتْ القوى العاملة الزراعية الرئيسية جنبًا إلى جنبٍ مع عددٍ قليل من النِساء المُعالات من القصرِ بطحن الشعير وحبوب الهارجالي والتي تمَّ إرسالُ بعضَها على الأقل إلى القصر. وقد قامَ حوالي عشرين من جنود القصر الإحتِياطيّن بِحراسةِ المكانِ.

تألّفَ المُجتمعُ ربما من بضعِ مئاتٍ من البالغين. سيطرَ الرجالُ المحلّيون على القوى العاملة الزراعية الرئيسية ومِهن الأهوار النموذجية، بينما ضمّتْ القوات الإحتِياطية في القصر أفرادًا من أصلٍ عِيلامي وكيشيّ وديلموني.

كان العملُ بأكملهِ يُدارُ محليًا من قِبل اِثنين أو ثلاثةٍ من الكَتَبةِ ويُشرِفُ عليه عددٌ قليل من كبارِ المسؤُولين الذين كانوا مسؤولين عن مناطقٍ أكبرَ بكثيرٍ. بينما كان الكتبةُ يُديرُون القوى العاملة بِأنفسهِم ويجمعُون ويُعيدُون تنظيمَ العَمالة حسب الحاجة ويخزُنون ويُعيدُون تَدوِيرَ الألواح الطينية، كما أرسل المسؤولون تعليماتً حول حركة الحبوب والدقيق والصوف وجاءوا عند الضرورة لِتسويةِ النزاعات القانونية.

هناك علاقةٌ وثيقةٌ بين أرشيفِ تلِّ خيبر ومجموعةٍ من الألواح الطينية التي تمَّ تنقيبها بِشكلٍ غيرِ قانوني الآن في مجموعة شويَن. لا أحد يعرفُ من أين تمَّ نهبُ هذه الألواح، لكن لا بُدَ أنّ الموقعَ كان قريبًا من تلِّ خيبر لأنّ بعضَ أسماء الأفراد المذكورة مُتطابِقةٌ. ومن المُفتَرض أن كلا المكانين خدما نفس القصرأينما كان. وتُعتبرُ مدينة لارسا هي أحدُ المواقِع المُحتمَلة لذلك، ولكن هناك احتمالات أخرى مثل تل الدحَيلة أو حتى موقِع أُور.

بلاد ما بين النهرين في تلك الفترة، وتحمل بعض أوجه التشابه المِعمارِية مع سكنِ نُخبة المجتمع. وتُشيرُ هذا الوحدة على الأرجحِ مع وجودِ غرفة اِستِقبال إلى وُجودِ نوعٍ من الحاكم المدني أو العسكري الذي ربما كان قد شغل هذا الجزء من المبنى مع أُسرتِه ومُوظّفيه الإدارِيين.

الأرشيف

تُعدُّ الألواحُ المِسمارِية الـ 145 من تلِّ خيبر مهمةً بِشكلٍ خاصٍ في توفير تأريخٍ آمن في المُستوطنة لسُلالةِ القطر البحري الأولى. يعودُ تـاريخُ أربعةً منها إلى سنواتٍ معينةٍ وكلها في عهد ملك القطر البحري آيا دارا غالاما. (يمكنُ العثورُ على نُسخةٍ مُتاحة الوصول على الإنترنت من الألواحِ الطينية مع الصورِ بالإضافة إلى معاجِمٍ للأسماء والكلمات في المجموعة، في https://oracc.org/urap). وتمَّ اِكتشافُ الغالبيةَ العظمى من الألواح الطينية من الرُكن الجنوبي من المستوى الثاني (2) من المبنى المُحصّن من غرفتين طويلتين تمّ تقسيمُ كلاً منهما لاحقًا إلى نصفين. وقد عُثِر على مايقرُبُ من ثمانين لوحاً طينياً معظَمها قوائمَ وحسابات وتمارين مدرسية من الغرفة 300، بينما تمَّ العثورُ على الباقي ومعظَمه من الرسائل وسجلات الدفع في الغرفة 309. وقد كانتْ في حالة سيئة جداً وتطلّبتْ صيانةً دقيقةً.

تنقسِمُ الألواحُ الطينية إلى أربعةِ أنواعٍ مُتميزةٍ وهي:
القوائمُ العددية بِعمودٍ كمي واحد متبوعةً بعمودٍ أو عمودين وصفيين ولاتحتوي على حِساباتٍ.
القوائمُ الجدولية مع عمودين كميين أو أكثر متبوعةً بِعمودٍ أو عمودين وصفيين ولا تحتوي على حساباتٍ.
الحسابات الجدولية التي تحتوي على عمودين أو أكثر من الأعمدةِ الكمية وتتضَمنُ بياناتً محسوبةً وعموداً وصفياً نهائياً أو عمودين.
القوائم غير العددية والوثائق العادية بما في ذلك المُذكّرات غير الرسمية والرسائل والخطابات التي تحتوي على أوامرٍ وسجلات الدفع.

كانتْ هناك أيضًا تمارينَ كتابية والتي تُظهِرُ أن الكتبةَ كانوا يتعلّمون الكتابة في تلِ خيبر. كما أنَّ النشاطَ الرئيسي المُسجّل في الأرشيف هو إحصاءُ كميات الحبوب والتي يتمُ تسليمُ بعضها بعد ذلك إلى قصرٍ قريب. كما يحتوي الأرشيفُ أيضًا على قدرٍ هائلٍ من المعلومات حول الوضع المهني والاجتماعي والعائلي للعديد من الأفراد وعلاقاتهم، مما يكشفُ عن مزيجٍ من المزارعين والرعاة وصيادي الأراضي الرطبة. يتناسبُ هذا النشاط مع موقعِ تلِّ خيبر على حافةِ الأهوارِ. كما يُشيرُ العددُ الكبير من مزارعي بساتين النخيل تقريبًا كما هو عدد الفلاحين الآخرين إلى الأهمية الاقتصادية لهذا المحصول للمُجتمعِ على الرغم من عدم ذكر التمور في الأرشيف. وقد كان هناك أيضا موظفين عسكريين.

الأبراج الجانبية الجنوبية الغربية والتي كانتْ جُزءًا من الواجهة الخارجية للمبنى الأصلي. كما تمَّ ملءُ البُرجَ الواقِع إلى الشمال الغربي من مدخل الوحدة الجنوبية بِالطابوق الطيني وإضافةُ بابٍ (البرج 616). كما تمَّ أيضاً إدراجُ مدخلاً للبُرجِ على الجانب الآخر (البرج 618). وقد رافَقَ تشييدُ الوحدةَ الشمالية تغييراً في وظيفةِ جزءٍ على الأقل من المبنى الأصلي. كذلك تمَّ مِلْء الأقبيةَ في الزاوية الجنوبية الشرقية وبِناءُ مجموعةَ من الغُرف فوقها. هذا وقد تمَّ اِستِردادُ الألواح الطينية من هذه الغرف ومن ثمَّ تسميتها "الجناح الإداري".

وَظيفةُ المَبنى

تشيرُ عِمارةُ المبنى المُحصّن من المستوى الثاني (2) ثلاث وظائف رئيسية للمبنى هي: الدفاع والسكن والإدارة. كانتْ دفاعاتُ المبنى عمليةً وتطلّبتْ مواردَ كبيرةً للبناء، لذلك يبدو أنها لم يتُّمُ بنائها من أجل إظهار المكانة أو القوة من خلال التصميم المعماري فحسب، بل كانتْ ردًا على تهديدٍ عسكري خطير. وقد تمَّ بناءُ المبنى المُحصّن على أرضٍ مُرتفِعة بِجدارٍ خارجي سميك وأبراجٍ ومدخلٍ واحد، وربما خندق دفاعي مُتأخر، وقد كان هذا المبنى المُحصّن بِمثابةٍ هيكل دفاعي كبير جداً في تلك الفترة.

يبدو أن معظمَ الأجزاء الداخلية لِلوحدة الشمالية كانتْ مُخصّصةً لسكنِ الموظفين. وبدلاً من النمطِ المُعتاد لِبلاد ما بين النهرين أي الغرف المرتبة حول الفناءات الخارجية فّإنّ هناك ترتيبٌ أكثر إحكاما منظمٌ حول ثلاثة ممرّاتٍ متوازية. تعملُ هذه الممرات تقريبًا كشوارعٍ، ويتمُ تنظيمُ الوحدةَ الشمالية بِأكملها كَمُستوطنةٍ صغيرة أكثر من كونها التصميمَ الداخلي لِلمبنى. ويُمكنُ تفسيرُ الحاجة الواضحة لِزيادة أماكِن السكن جزئيًا من خلالِ الوظيفة الدفاعية للمبنى. تحتاجُ القلعةُ إلى جنودٍ للدفاعِ عنها، ويذكُرُ الأرشيفُ المِسماري الموجود في المبنى فرقتين من عشرةِ قواتٍ اِحتياطية ملكية وهم يتلَقون حِصص الإعاشة. ومع ذلك تُشيرُ الطريقة التي يتمُ بها تعبئةَ المساحات السكنية في الوحدة الشمالية إلى أنّ السكنَ ربما كان لغرضٍ أكثرَ من كونه مُجردِ ثكنة عسكرية. كما وتُشيرُ ندرةُ المباني خارج المبنى المُحصّن نسبيًا إلى أنّه ربما كان معظمُ سُكانَ المُستَوطنة والمدنيين والعسكريين يقيمون داخل المبنى المُحصّن أوعلى الأقلِ يمكنهم اللجوء إليه إذا تعرضّتْ المستوطنة لِلتهديدِ. يشيرُ هذا الأمر مرةً أخرى إلى إعطاءِ أولويةٍ قوية لشؤون الدفاعِ حيث يتمُ اِستِيعابُ معظمَ وظائف المُستوطنة وجميع موظفيها تقريبًا بشكلٍ آمنٍ داخل المبنى الرئيسي، حتى لو كان ذلك يعني ظروف معيشية قاسية جداً. كما ويُشيرُ التحليلُ المكاني إلى أنّ المناطق السكنية قُبالة الممرات الشرقية والغربية مُصمّمةٌ بِدرجةٍ عاليةٍ من الخصوصية، ربما لِلتعويضِ قليلاً عن الإزدحامِ المُفرط.

وبينما يبدو أنّ الوحدةَ الشمالية مُخصّصةٌ بشكلٍ أساسي للسكنِ، فإنّ الوحدةَ الجنوبية تبدو إداريةً على الأغلب. وقد إحتوتْ على مجموعةٍ من الغُرف لأعمالِ الكتابةِ لِلتعامُلِ مع حِفظ السِّجلات والمراسلات ودمجِ ما يبدو أنّه غرفةُ اِستقبالٍ رسمية. تحتوي هذه الوحدة على تصميمِ فناء تقليدي ضمن معايير مباني

هذا وتأسّسَ المبنى المُحصّنُ على قِمةِ تلٍّ سابِقٍ يعودُ تأريخُه إلى أواخِرِ الالف الرابع إلى أوائل الألفية الثالثة قبل الميلاد. ولقد دُمِّرتْ معظمُ البقايا التي يمكن الوصول إليها في تلك الفترة. كما وجدنا أيضاً عدداً قليلاً من القطع الفخارية التي تعودُ لِتأريخِ أوروك والعبيد، ولكن لم يتبقَ منها أي شيء آخر. وعلى الرغم من أنّه كان مجردَ تلاً مُنخفِضاً إلا أنّ تلَّ خيبر قد وفّرَ بعض الإرتفاعات للمَبنى المُحصّنِ والذي كان من المُمكن أن يكون مفيدًا في حالة الفيضانات ولِجعله مرئيًا من مسافةٍ بعيدة.

وَصفُ المَبنى

غطى المبنى المُحصّنُ ما يقربُ من 4490 متراً مربعاً في أقصى مساحته مع ستة وعشرين بُرجاً خارجياً وأكثرَ من سبعين غرفةً ومساحةً داخلية. ولا يوجد في طِرازِ العِمارة أوجهَ تشابُه دقيقة، ولكن تمَّ تأريخ المبنى بواسطةِ ألواحٍ طينية في عهد آيا دارا غالاما وهو الملك الثامن أو التاسع لسلالة القطر البحري التي حكمتْ جنوبَ مدينة بابل في منتصف الألفية الثانية قبل الميلاد. ونُرجِّحُ أنها كانتْ مُحتلةً لمدة مائة عامٍ تقريبًا من 1550 إلى 1450 قبل الميلاد.

يحتوي المبنى على مستويين رئيسيين من المباني، يُمثِلُ المستوى الأول (1) البناء الأولي بينما يشهدُ المستوى الثاني (2) توسُّعاً كبيراً في المبنى وإعادةَ توظيف بعض الأغراض لِلمبنى الأصلي. كان المبنى في الأصلِ في المستوى 1 هو الوحدةُ الجنوبية فقط: وهي كتلةٌ مُستَطِيلةٌ 53 × 27,5 م مع جدارٍ خارجي مُحصّن بِعُرضِ 3.3 م ومدخلٍ ضيّقٍ واحدٍ على الجانب الشمالي الشرقي (الشكل 2.2، ص 12). وكانتْ هناك على زوايا هذه الكتلة أبراجاً بارِزةً مع غيرها مُرتَبة على فتراتٍ مُنتَظمةٍ على جميع الجوانب الخارجية الأربعة. وقد تمَّ في المستوى 2 توسيعُ المبنى إلى الشمال الشرقي وقد بلغتْ الأبعادُ الكلية 53 × 84.7 م (المستوى 2). وقد كررّتْ الوحدةُ الشمالية بعضَ معالِم المبنى الأصلي بما في ذلك جدارٍ مُحِيطي ضخمٍ بِنفسِ ترتيبِ الأبراج الخارجية مع دعّاماتٍ داخلية مُسطّحةٍ مُتطابقة.

يكونُ الترتيبُ الداخلي للوحدةِ الجنوبية في المستوى 1 معروفاً جزئيًا فقط، ويكون العنصرُ الرئيسي المُنقَّب هو صفٌ من ستةِ أقبيةٍ أُسطوانية مُتوازية في الزاويةِ الجنوبية. وقد كان الحدُّ الغربي لهذه المباني هو الجدارُ الذي يفصلها عن الفناءِ الخارجي. وتُظهِرُ الأقواسُ المبنِية في هذا الجدار أنّ الأقبيةَ كانتْ مفتوحةً على جانبِ الفناء الخارجي. وهذا يُشيرُ إلى أن هذه الفتحات كانتْ لِلتهويةِ وأنه رُبما تمَّ تخزينُ الحبوبَ في الغرف فوق الأقبيةِ.

كان الحدثُ الرئيسي للمُستوى الثاني (2) هو بناءُ الإمتداد الضخم (الوحدة الشمالية) الذي ضاعفَ حجمَ المبنى ثلاثَ مراتٍ مصحوبًا بإعادةِ تصميمِ جزءٍ من المبنى الأصلي. لم تكن الوحدة الشمالية جزءًا من المُخطّط الأصلي للمبنى، ولكن تمَّ بناؤها عندما كانتْ هناك حاجةً إلى توسيعٍ ضخمٍ للمبنى الأصلي. ومن الواضح أنّ بناءَ الوحدة الشمالية جاء بعد الوحدة الجنوبية، إذ عندما تمَّ بناءُ الوحدة الشمالية تمَّ دمجُها في

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المركزُ المُحصّنُ لِسُلالة القُطر البحري الأولى

مُلخّصُ الكِتاب باللُغةِ العربية

المُقدّمَةُ

بدأتْ خطةُ هذا المشروع في عام 2011 عندما كان هناك القليل جدًا من العمل الدولي في مجال الآثار في العراق. كان هدفنا من هذا المشروع هو المساعدةُ في إعادةِ ربط المُختصِّين في مجال الآثار العراقيين بالمُجتمعِ الآثاري الدولي. ساهم الكثيرُ من الناس في بدء هذا المشروع بما في ذلك الراحل الدكتور عبد الأمير الحمداني والراحل الدكتور أحمد الجلبي. هذا وقدّمَ البارون لورن ثيسن بورنيميزا الجزءَ الأكبر من التمويل، كما أنّ هناك قائمةٌ موجودةٌ في الصفحةِ التاسِعة تتضمّنُ العديدَ من أسماءِ المُساهمين والمُتبرِعين لهذا المشروع الذين نُدين لهم بدينٍ كبير. وقد وقع اِختيارُنا على موقعِ تلِّ خيبر جُزئيًا لأنّه كان في منطقةٍ آمنة نسبياً ولأنّه لم يتمْ العملُ عليه من قَبل وسيُوفِّرُ لنا معلوماتً جديدةً.

المَظهرُ الطبيعي

يقعُ تلُّ خيبرعلى بُعدِ ثلاثين كيلومتراً غرب مدينة الناصرية في محافظةِ ذي قار، ويبعُدُ حوالي تسعة عشر كيلومتراً شمال غرب مدينة أور وخمسة وعشرون كيلومتراً جنوب مدينة لارسا (أُنظُرالشكل 1.1) الصفحة 1 . ينطبقُ اِسمُ تلَ خيبر في الواقع على تلّين مُنفصِلَين كليهما جزءاً من نفس المظاهِر الطبيعية الأثرية يُسمى هنا خيبر وخيبر 2[1] . كان تركيزُ التنقيبَ في تل خيبر في الجنوبِ منه. تبقى القاعدةُ الرئيسية هناك مُتكونّةً من مُجمَّعٍ إداري كبير أطلقنا عليه اِسم المبنى المُحصّن. ويعودُ تأريخُ هذا المبنى إلى عهدِ سُلالة القطر البحري الأولى في منتصف الألفية الثانية قبل الميلاد.

ربما تمّ اِختيارُ تلَّ خيبر كموقعٍ للمبنى المُحصّن بِسببِ علاقته بالقنواتِ وأنظمة الأنهار. وهناك اِثنان من قاع نهر الفرات المُندثِر لهما صلة بمُستوطناتِ تل خيبر في الألفية الثانية. تمتّدُ قناةُ إريدو على نهرِ الفُرات لِمسافةٍ أقل من 20 كم إلى الغرب من الموقع عند أقرب نقطة لها خلال الألفية الثانية (الشكل 1.4، ص 3). ويبدو مع كُثرة وجود التعرُّجات النهرية أنّ هذه القناة قد حملتْ التدفُّق الرئيسي لِنهرِ الفُرات. وتمتّدُ القناة القديمة الثانية التي يُشارُ إليها هنا بِاِسم قناة (قنوات) أور للبساطةِ بالقُربِ من تلِّ خيبر وعلى الفور إلى الشَمال من تل خيبر 2. كان كلا الفرعين نشطين في الألفية الثانية قبل الميلاد، ونظرًا لأنهما كانا بالقُربِ من تقاطُع قناتين رئيسيتين فقد كان تلُّ خيبر في وضعٍ جيدٍ للتحكُّمِ في حركةِ التجارة النهرية.

[1] تلُّ خيبر2 مُتأخِرٌ قليلاً عن تأريخ الكيشيين . ظهرَ تقريرٌ مأخوذ عن تحقيقٍ صغيرٍ هناك في سومر (Campbell et al. 2017).

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