Urbanism under Turco-Mongol Rule: Excavations at Otrar, Kazakhstan

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ABSTRACT

This paper describes archaeological investigation of occupation dating to approximately the 12th-15th centuries AD at the site of Otrar in southern Kazakhstan. It primarily summarises excavation and survey carried out in the summer and autumn of 2021, which aimed to investigate the city's economic, urban and environmental state in the decades preceding the Mongol Conquest of 1219/20 and the changes which occurred over the following two centuries. Focussing on test trenches dug in the *shahristan* and industrial areas as well as investigation of the defensive walls around the raised *shahristan* and lower rabad area, evidence for urban change and continuity was characterised and dated where possible. Initial data suggests that a defensive wall was constructed around the rabad in approximately the 11th or early 12th century. Renovation and conservation work provided the opportunity to study the *shahristan* wall which likely dates to the 14th century. This wall was repeatedly replastered, but probably represents the last major refortification of the city. Excavations in the *shahristan* revealed a period of non-architectural occupation or partial abandonment before a reoccupation in the 14th century, which may approximately coincide with renovation of the walls of the *shahristan*. The preliminary work described here hints at interesting changes in investment and occupation at the city between the 11th and 15th centuries by targeting data from across the site and taking advantage of extensive previous excavation. It forms part of our effort to quantify and describe changes in urban occupation at Otrar, forming a basis to investigate their causes.

INTRODUCTION

The city of Otrar in southern Kazakhstan (42° 51'8.64"N / 68° 18'9.26"E; (Figure 1) was occupied from around the 4th-5th century AD and abandoned in the 18th century[1] (Akishev, Baipakov, and Erzakovich 1972:81, 1981, 1987; Baipakov 1990). Exploiting the waters of the nearby Syr Darya river to create a fertile hinterland which supported the urban population (Clarke, Sala, and Meseth 2005; Toonen et al. 2020), written sources indicate it was the location of major historical events from the Mongol Conquest to the death of Timur (Bregel 2003:36, 42; Juvaini (trans. J. Boyle) 1997:82–85; Rashid al-Din (trans W.M. Thackston) 2012:170–71; f488-90; Zimin' 1914). Today, the site consists of a raised mound or *shahristan* known as Otrartobe, an 18m tall mound of decayed mudbrick architecture and occupation deposits within a larger urban zone covering around 170 hectares (Akishev et al. 1972:43–50; Fodde, Sala, and Deom 2013). The site has been extensively excavated (Akishev et al. 1972, 1981, 1987; Akylbek 2013; Baipakov 2013; Baipakov and Erzakovich 1991; Campbell 2020, 2021) with ample information about various neighbourhoods, and broad chronological understanding of the character of occupation. Abandonment deposits have been found and equated to the Mongol Conquest but the stratification of the coin hoard used to date this phase was somewhat unclear (Akishev et al. 1987:18) and so the precise chronology of occupation at Otrar and the extent to which it was continuously inhabited remains obscure. The work described here

1 Dating for the abandonment is based on extensive excavation of the site's upper layers and rests on extensive coinage and ceramic evidence, while the earliest occupation has been deduced from a 'stratigraphic' trench in the northern part of the *shahristan* where ceramics of this period were discovered redeposited in later layers (Akishev, Baipakov, and Erzakovich 1972:82–83, 1981).

presents an initial attempt to further investigate the complex sequence of occupation at the site between the 12th and 14th centuries.

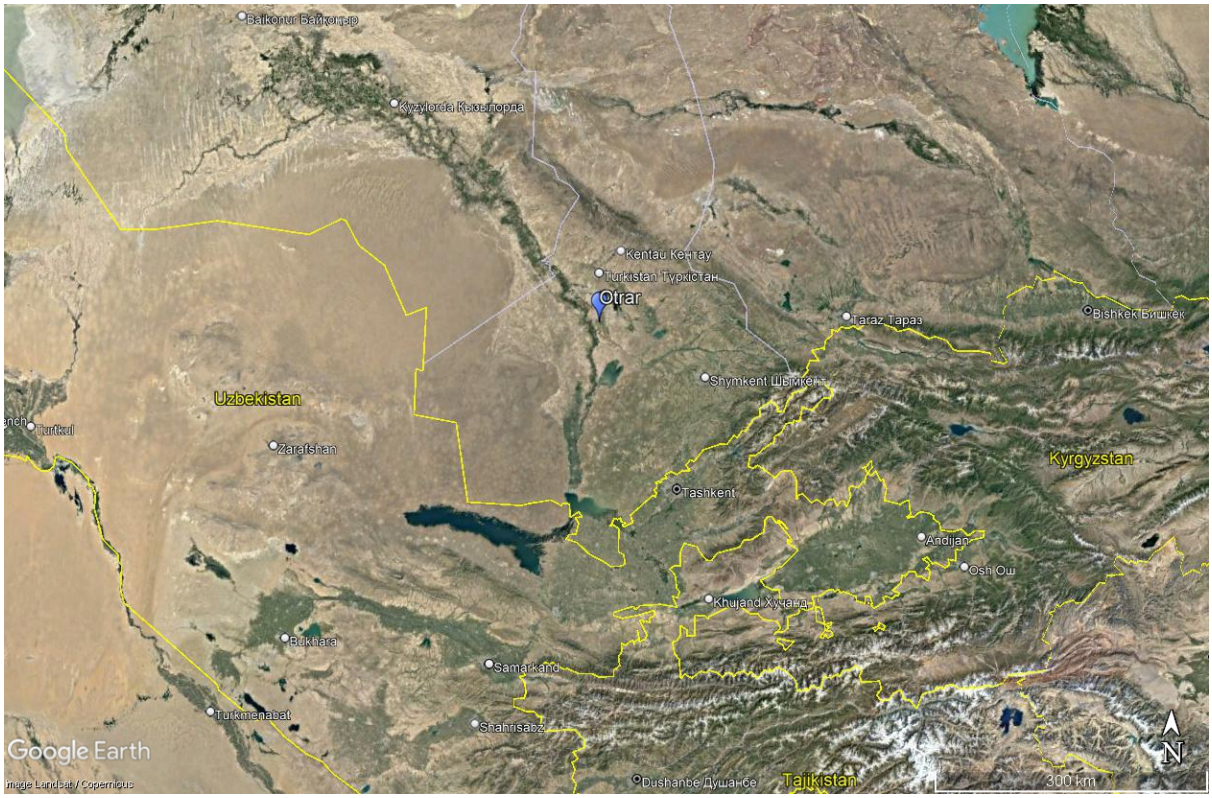

Fig. 1 *Location of Otrar*

Excavation in the 1970s and 80s was extensive enough to remove metres of later occupation and reach deposits dating to the 13th and 14th centuries, the period of the Mongol Conquest of Otrar and its aftermath (Akishev et al. 1987). However, evidence for abandonment following the Mongol disaster of 1219-20, when Chinggis Khan's armies are supposed to have levelled the city's defences and enslaved or slaughtered its inhabitants (Juvaini (trans. J. Boyle) 1997:82–85), was based on evidence from a single occupation area on this 170 hectare site (Akishev et al. 1987:15–30; Baipakov 2013:101–20). Archaeological remains seemed to corroborate the accounts in some respects, with a convincing archaeological sequence of urban abandonment and recovery, which was dated using coin and pottery evidence to the 13th century (Akishev et al. 1987:15–30). Little evidence of a Mongol attack or mass slaughter has yet been found with few recorded weapon finds, catastrophic burning layers or mass graves from the period in the oasis, contrasting with evidence for destruction during the Arab Conquests (Dawkes et al. 2019). Furthermore, recent radiocarbon dating of the abandonment sequence at Otrar suggests that desertion took place almost 100 years before the arrival of the Mongols (Campbell 2021:109–11). Additionally, few coins minted in the second half of the 12th century and first half of the 13th century have been found during extensive excavation of the site (Akishev et al. 1987:224–51). The dearth of securely dated occupation of the 12th century has perhaps led the historical narrative to drive archaeological interpretation at the site and the attribution of abandonment layers to the aftermath of the Mongol Conquest in the middle decade of the 13th century.

The work described here aimed to broaden the scope of research at Otrar, with further detailed excavation and dating work on the densely occupied *shahristan* alongside survey and test trenches in the surrounding rabad area. We also systematically collected archaeobotanical samples, especially charred grain, for radiocarbon dating and archaeobotanical analysis. This combined approach aimed to better characterise and date deposits in various parts of the site to chart how the city changed in the period of the Mongol Conquest and more broadly between the 11th and 15th centuries as Turco-Mongol groups took full control of the region.

ARCHAEOLOGICAL EXCAVATION

Excavation and recording took place at 3 main sites within Otrar's raised *shahristan* and surrounding rabad (Figure 2). The main focus of this work was on the *shahristan*, within a large trench excavated in the 2010s just within the northern wall of the city which had revealed occupation layers dating from approximately the 14th-18th centuries. The earlier phase of the occupation consisted of a neighbourhood of densely packed mudbrick houses, interspersed with narrow alleys. Within the houses, various features such as ovens, benches and washing areas were found (Jorayev 2020). In the later phases, the occupation appears to have been slightly less dense with large pits dug in open areas on the site, for storage and perhaps also the recovery of earlier building material. The sections of this large trench also show several phases of architecture built on top of each other as later houses superseded earlier ones. Some of these had been destroyed by fire with incidental burning likely the cause of this, rather than a destructive attack (Figure 3).

SHAHRISTAN

Radiocarbon dating had confirmed that the lowest phase of occupation within the trench likely dated to the first half of the 14th century (Campbell 2021:112) and excavation began from this level to investigate the situation in this part of the city in the 12th and 13th centuries. In particular we aimed to investigate whether abandonments recorded elsewhere (Akishev et al. 1987:15–30; Campbell 2021:209–11) might also occur in this part of the city, where deposits of this period had not yet been archaeologically recorded. The eventual aim of this work is to continue precise radiocarbon dating through deposits of this period and alongside stratigraphic collection of the pottery, reconsider ceramic chronologies which may not have been providing accurate dating of occupation layers at the site. An area in the centre of this previous excavation trench was selected for archaeological investigation. A small, irregularly shaped test trench (5m x 3.5m) was inserted among existing mudbrick architecture and excavated from a maximum height of 204.92m OD to a

Fig. 2 *Map of excavation areas*

Fig. 3 *Two overlying buildings which have been destroyed by fire, charred remains of the roof are visible on the floors of each of them*

maximum depth of 202.92m OD (Figure 4). Excavation followed the MoLAS single context recording system with soil samples taken from contexts considered to have a high potential for the recovery of organic remains such as oven fills, hearths, flues and pit fills. Small objects were also recovered from samples in the sequence which might not be visible during excavation such as fish bones.

Fig. 4 *Working shot of test trench on the shahristan*

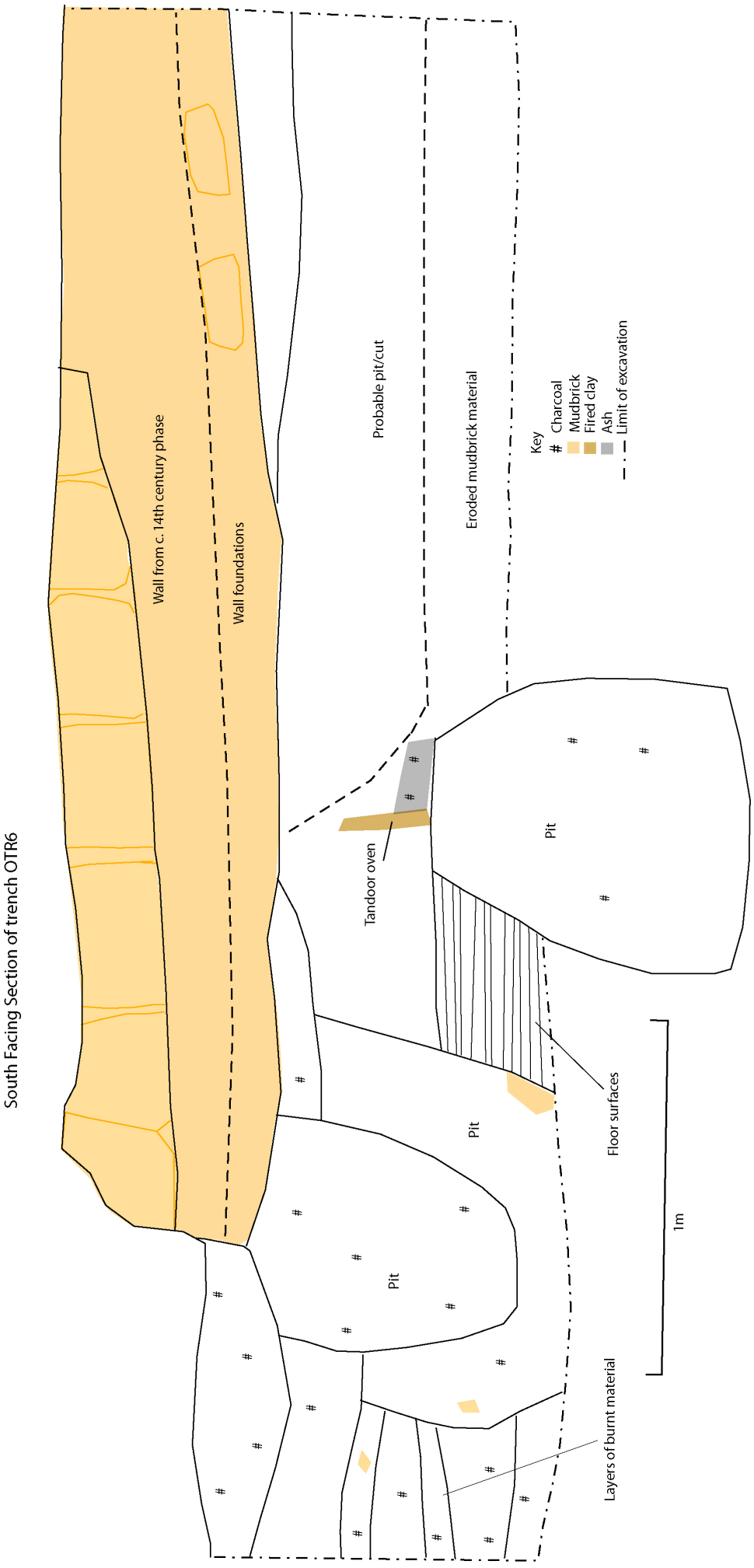

Fig. 5 *The sequence of deposits in the southern facing section of trench*

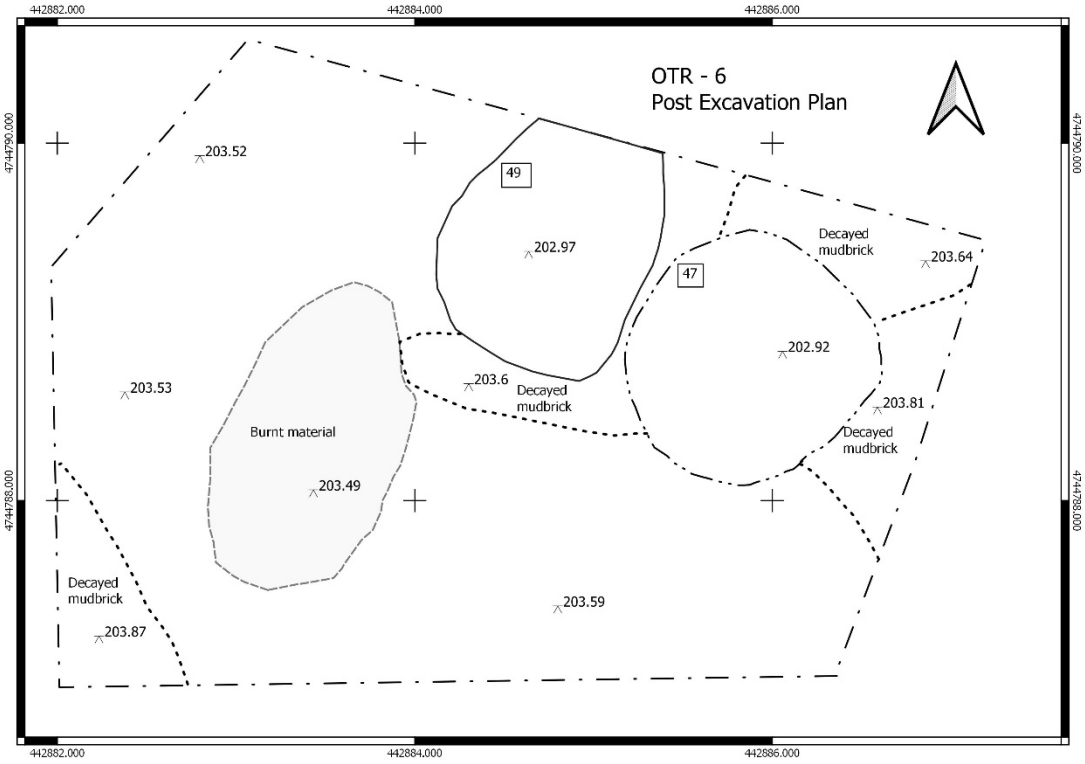

Fig. 6 *post-excavation plan showing the numerous pits cutting mixed occupation and abandonment deposits*

Fig. 7 *A large wall appears during excavation of a pit, the earliest phase encountered in the 2021 excavation*

Four main phases were discovered, including the architectural phase encountered in excavations carried out in 2018 and radiocarbon dated to the middle decades of the 14th century[2] (Campbell 2021:112). These tightly packed residential buildings represented the latest occupation layers excavated and recorded. None of the mudbrick walls appeared to have an earlier building phase below them, which differs from the layers above where buildings in the tightly packed street arrangement were generally rebuilt directly above, on the same plot (Figure 5). The same situation was noted in another residential area of the city investigated through the 1970s and 80s where excavators demonstrated changes in the street pattern and building plots after a period of abandonment (Akishev et al. 1987:18–19).

2 Three samples were dated from this building; collapsed reed roofing (563 ± 20 BP = 95.4% probability 1322-1421 AD cal. (1322-1357 49%/ 1391-1421 46.6%), and two twigs from burnt fuel in tandoor oven (588 ± 18 BP = 95.4% probability 1312-1407 AD cal. (1312-1362 73.1%/ 1387-1407 22.4%) and (604 ± 19 BP = 95.4% probability 1304-1400 (1304-1366 76.1%/ 1382-1400 19.3%). The relative positions in the sequence, based on dates from later buildings indicate that the earlier date ranges are probably the correct ones. Dating was carried out at the Oxford radiocarbon laboratory and has been calibrated using IntCal 20 (Reimer et al. 2020).

Below the buildings, were a series of deposits which suggested that this was an outdoor activity area truncated by pits and rubbish deposits. A few features were found throughout the sequence which indicate cooking and food preservation were taking place, including the remains of three tandoor ovens, none of which appeared to have been within a house. Remnants of small walls, some of which have been constructed with reused bricks are also interspersed in this phase of occupation, but were quite different in character compared to the residential neighbourhood which superseded them. Below this phase was one which appeared to represent a more sustained period of outdoor activity or urban abandonment, with several large pits interspersed with layers of dumped ash deposits and the remnants of floor surfaces. The sequence was truncated by a series of large pits and areas of eroded abandonment deposit (Figure 5; Figure 6). Compacted floor surfaces and rubbish dumping in this horizon indicate that people were present on the site, but no architectural phase is visible. Activity instead seems to be taking place among eroded deposits of mudbrick. The source of this material became clear as we excavated the pits to reveal a large, well-constructed mudbrick wall (Figure 7). Provisional observations therefore indicate that trench OTR6 contains a similar sequence of deposits to the other excavation which encountered deposits of this date (Akishev, Baipakov, and Erzakovich 1987:15–30). Further excavation and dating of these deposits would help to clarify if the dates are also similar.

RABAD WALL

A wall surrounding the lower, rabad area at Otrar was noted in a previous survey of the site (Akishev et al. 1972:48–50), but appears to have suffered considerable erosion since it was initially described in the early 1970s, and no attempts had yet been made to investigate the date or technique of its construction. We therefore decided to clean an elevation of this wall and excavate into its foundation in a northern area of the rabad where the wall had already been truncated by the construction of an access road to the village of Talapty. The surviving earthwork in this area was some 13m wide and more than 2.2m tall. Cleaning of the wall's elevation showed a significant erosion cone of degraded mudbrick surrounding an original wall structure which is approximately 6.2m wide, with its foundations likely to be wider (Figure 8). We excavated a 1m x 1m trench through the base of the truncation at the side of the road to a depth of 1.2m through the mudbrick wall, although did not manage to find the base of the wall or the natural subsoil. The minimum height of the wall is therefore 3.4m, although erosion at the top and foundations below the limit of our excavation means that it would have been somewhat taller. Thanks to this trench it was possible to confirm that the lower part of the wall is built with a different technique compared to the upper 1.45m. The lower 1.6m revealed by our excavation consisted of large pakhsa blocks, made from earthen material,

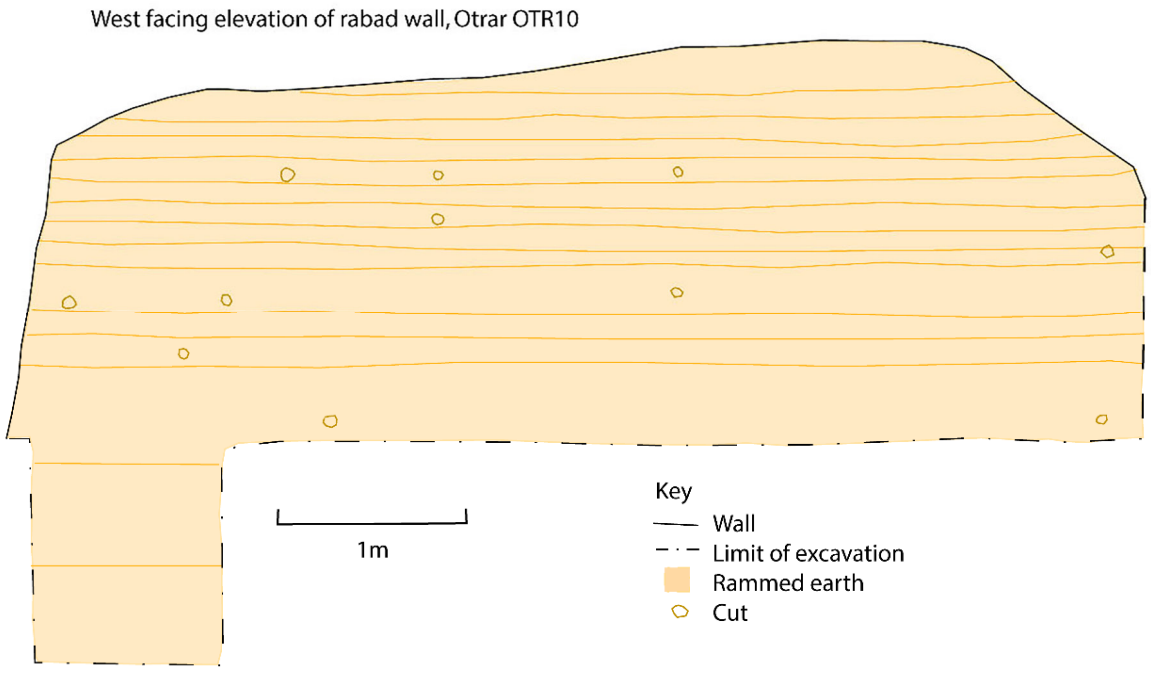

Fig. 8 *The rabad wall*

compressed into wooden shuttering of around 0.5m height. The upper 1.45m comprised layers which may have been hand placed of c. 0.15m to 0.25m in height. Within this, circular holes could be seen which may have been from scaffolding when the wall was built as the upper section would have been more than 2m above the previous ground level. Interestingly these holes are more numerous on the exterior half of the wall, so it is possible that there was some sort of other structure, bank or palisade on the interior side of the wall which helped its builders to reach its upper courses.

Dating mudbrick structures is often difficult, although it is frequently achieved through dating pottery, coins or other artefacts found within the mudbrick used in construction (Herrmann 1999:116; Pugachenkova 1958:134; Williams et al. 2018:164–65). This can be problematic due to the frequency with which earthen structures require renovation and repair (Cooke 2008:118–20; Horne 1994:128–29) and the high residuality of pottery at urban sites with a long occupation history (Wordsworth 2018:238). Pottery was recovered from the test trench, lodged within mudbrick at the core of the wall's structure, and therefore likely to be part of the original foundations or a significant rebuild (Figure 9). The pottery assemblage contained sherds of distinctive slip painted Samanid ware with a dark purple-brown or black and orange-brown painted pattern over a white slip. This can be dated stylistically to the later 10th or 11th century (Baipakov and Erzakovich 1991: 111-117; Henshaw et al. 2007) and therefore it is likely that the lower, pakhsa-block construction of the rabad wall was built in or shortly after the 11th century.

INDUSTRIAL AREAS

Initial survey at Otrar indicated a large industrial area in the eastern part of the rabad, and excavation showed the presence of multiple ceramic and brick kilns, which dated to the post- Mongol period, probably the late 13th century onwards (Qozhaev 1996). One pottery workshop has been reconstructed, and some of the large kilns preserved for visitors to view in the surrounding area. Change or continuity in the location of industrial areas can indicate changing economic circumstances in cities over time, especially if the industrial areas can be seen to be growing, shrinking or encroaching into areas which were previously administrative or residential zones. Pottery kilns also provide reliable and relatively precise dating evidence, with the potential for stylistic analysis of wasters and kiln fuel providing material for radiocarbon dating. At Otrar, the changing economic situation from the 11th to 15th century is difficult to trace as the earlier, pre-Mongol industrial area has not yet been located. One possibility is that it was in the same location, and full

Fig. 9 *Pottery recovered from test trench through the rabad wall*

Fig. 10 *The grave in trench OTR8*

excavation of the later phase of kilns might reveal an earlier phase below. To begin consideration of some of these issues, a 5 x 5m test trench was excavated in the eastern part of the rabad and samples were taken from an area with clear signs of industrial activity just north-west of the *shahristan*.

The trench dug in the eastern part of the *rabad* was selected because of a scattering of fired brick, pottery and fragments of slag and melted mud on the surface, suggesting that the ground had been subject to high heat in this area, most likely from industrial activity. A trench was excavated from a maximum height of 196.05m to 195.55m OD. Finds in the overburden and upper layers also contained material suggestive of industrial activity and the trench's major feature was an elongated brick feature at approximately 0.45m below the current ground surface (Figure 10; Figure 11). Further investigation of the feature showed it to be a brick-lined grave orientated north-south, and so excavation was stopped in this area to focus on other parts of the site. The feet, which were discovered first were at the southern end of the grave and even though the alignment is not perfect for a Muslim burial, it is possible this fits within the normal range of variations for Islamic burial in the region (Petersen 2013) and may date to the last few hundred years. It was decided not to further disturb the feature, and so it was reburied. Samples of industrial material were collected from other parts of the trench, although no kilns or in situ activity were found. Another industrial area was identified in the *rabad* and labelled OTR7 (Figure 2). It was immediately north of the *shahristan* and consists of several circular kilns from which samples were taken. The kilns' date and function were not immediately clear, but there was little evidence of pottery production so perhaps they were for firing brick.

SHAHRISTAN DEFENCES

Extensive renovation work to present the site to the public was taking place at Otrar in the Autumn of 2021, especially around the *shahristan* defences (Figure 12) and along a walkway through the centre of town. To present the city's walls, the mud erosion cone which had formed around the *shahristan*'s defensive circuit had been removed from the outside of part of the wall in the north of the city. A c. 20m long stretch of the fortification had been revealed in the north of the site which we labelled OTR9 (Figure 2). This revealed the outer face of the defensive wall which survived to c. 3.2m in height, with circular towers and an entranceway into the city (Figure 13; Figure 14). The *shahristan* defences have been extensively investigated in the southern part of the site showing a complex cross-section of substantial walls built onto each oth-

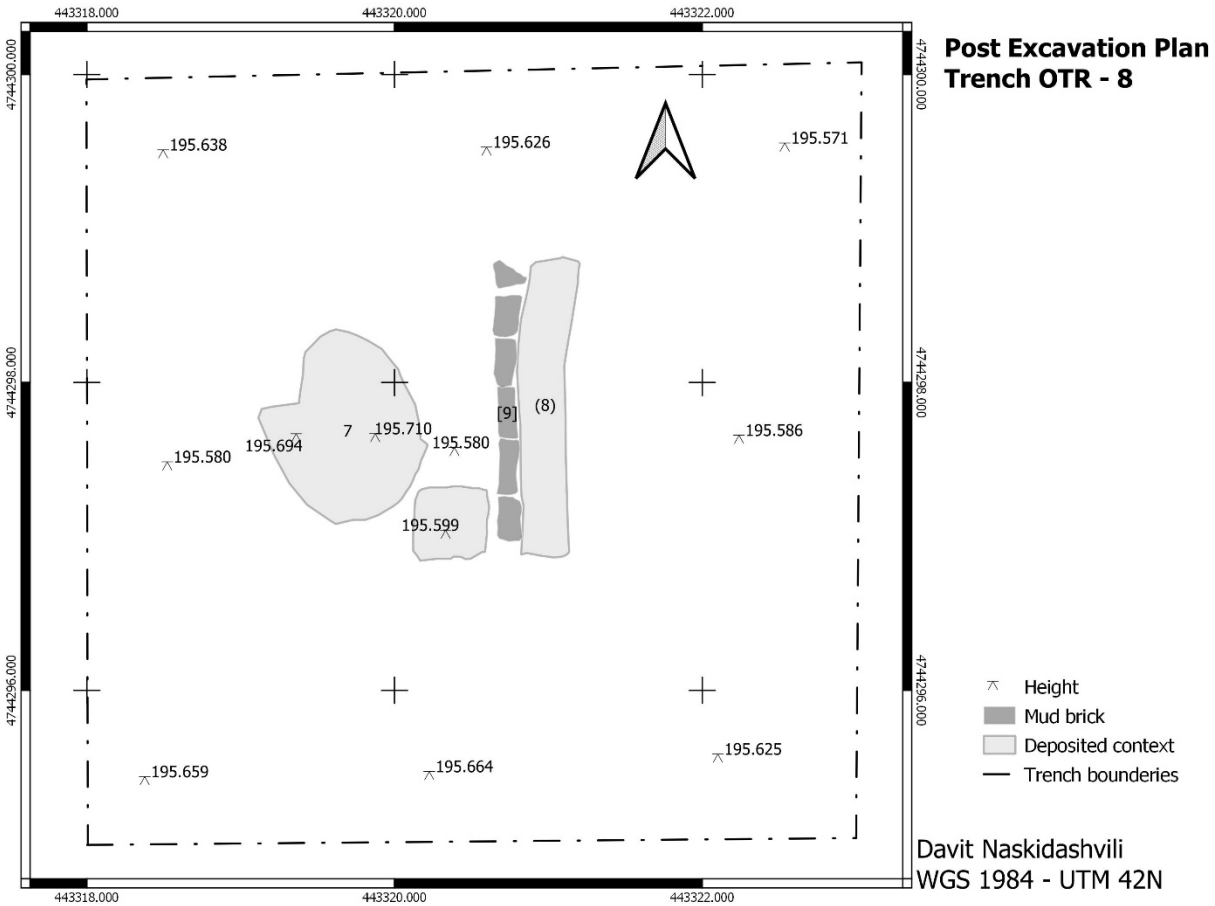

Fig. 11 *Post excavation plan of trench OTR8*

er, dating broadly from the 8th to 15th centuries (Akylbek 2013). The wall recorded here likely represents the latest alteration in this sequence, and was probably constructed on the external face of earlier, eroded walls (similar to Akylbek, 2013:26). This latest wall was constructed of mudbricks with a stretcher bonded foundation segment and more complex bonding above, which included herringbone-style, vertical and irregular courses to incorporate features such as the entrance doorway and towers. The external face was covered in a mud plaster, which had been re-laid on at least two occasions, with indications that the ground level was rising between re-plastering episodes as each episode finished slightly above the previous one. Scars on this plaster showed that structures with pitched roofs had likely been built up against the city wall at some point in its history (Figure 14). The date of these structures is unclear, but this is a common pattern of occupation at such sites, with later buildings constructed against the semi-abandoned defences of Merv (Herrmann, Kurbansakhatov, and Simpson 2001:44).

From the texture of the mud plaster on the wall's exterior, it appeared that the plaster contained organic remains including straw or chaff, which are often added to control shrinkage and aid adhesiveness (Cooke 2008:87–88). Some of the organic remains were charred and preserved within the plaster and samples were taken to assess potential for radiocarbon dating of the different replastering phases to work out when this wall was first plastered and for how long it was carefully maintained. A 1m wide trench was also excavated against the wall's foundations to investigate their depth, what it was built upon, and to find material that might provide a *terminus post quem* for its construction. The foundation of the wall was not substantial, apparently consisting of only 1-2 courses of mudbricks, which could mean that it was constructed quickly and may have been more of a cosmetic renovation of the substantial earlier phase of walls than functional one. Excavation on the southern part of the site has also shown that later phases of wall construction are built onto earlier ones (Akylbek 2013) and therefore a substantial foundation might not be necessary as this would be a thickening of the defences rather than construction of an entirely new defensive wall.

Fig. 12 *Overview of site presentation work at Otrar*

Fig. 13 *Section of shahristan walls showing eroded tower and entranceway*

Fig. 14 *External face of preserved part of shahristan defences showing tower and plastered fortification wall with sondage excavated to investigate its foundations*

DISCUSSION AND CONCLUSIONS

The *shahristan* test trench OTR6 demonstrated a pattern of occupation which seems similar to the phases described in a nearby part of the site (Akishev, Baipakov, and Erzakovich 1987:15–30), with a hiatus in the tightly packed, earthen architecture for a period. Further work is needed to ascertain the date and character of the earlier phase of mudbrick architecture, but the return of this style of occupation seems to have happened by at least the mid-14th century in this area. The deposits built up between the two architectural phases show a certain amount of non-architectural occupation in this period, with tandoor ovens, floor surfaces and dumped deposits building up. Continued excavation to the earlier level of occupation may help to clarify if the chronology is similar to earlier observations of an abandonment from around the mid- 12th century (Campbell 2021:109–11) or to the post- Mongol Conquest decades of the 13th century (Akishev et al. 1987:15–19).

Construction of the *rabad* wall probably dates to the 11th or early 12th century, although this date is preliminary and based on pottery found in construction material within the wall. It may form part of a wider trend of wall-building around this time, approximately coinciding with a major renovation of the defenses of Otrar's *shahristan* (Akylbek 2013:26). A similar trend has been noted at sites across the region, with a large wall encircling the suburbs of Bukhara dated to around the 10th century (Rante 2022:266) and a major walling of Merv and its suburbs in the 11th and 12th centuries (Brun and Annaev 2000:24–27, 2001:40–41; Lunina 1969:117). The construction of substantial defences around suburban areas does have precedents in the Otrar Oasis, for example at Kuik Mardan (Dawkes et al. 2019:137–40), and there may be a trend for fortifying *rabad* areas in periods where there is increased competition for resources such as those of rising populations or environmental stresses. It is important to note however that accurately dating these defensive walls remains difficult and further work might be able to contextualise the *rabad* wall at Otrar and similar defences in the region. Overall they remain under-examined and current attempts to see wider patterns in these structures rely on a certain level of conjecture at present.

Small-scale survey and test pitting in industrial areas in the eastern *rabad* have confirmed industrial activity, especially the presence of kilns in these areas. Excavation also revealed a grave of unknown date, and it is possible there are further graves in this area. An additional industrial area was noted in the northern area of the *rabad* not far from the *shahristan* (OTR7), which may have been making fired bricks. Further work is required at both of these sites, as well as to locate further areas of industrial activity across the city. Renovation work provided the opportunity to record and investigate a phase of the *shahristan* wall which was likely built in the late 13th or 14th century, based on dating of wall phases in the southern part of the site (Akylbek 2013:26). Further dating would help to refine the chronology of this wall phase, but multiple replastering episodes were observed which suggest it was maintained for some time. Access into the city appears to have been through a small doorway which was protected by a protruding tower and connected onto a north-south running street across the *shahristan*. Water runoff from this street appears to have eroded a gap in the city wall and it is likely that the original street surface is also considerably eroded from this process.

In this initial season to map and date changes taking place in Otrar's urban organisation between the 11th and 15th centuries, several areas of interest have been identified and further data has been gathered to better understand how the city was changing under Turco-Mongol rule. Preliminary observations suggest that the substantial defensive wall which surrounded the *rabad* was likely built sometime in the 11th or 12th centuries, and that by the end of this century the *shahristan* at Otrar may have been at least partially abandoned. It is unclear how long the *rabad* wall remained effective as a defence or boundary, and how the fortification was defended but further work aims to investigate these issues. The next step for work at Otrar is to better map the *rabad* area and its surrounding wall. This will be carried out by drone and walkover survey, complemented by geophysical survey (specifically magnetic survey) in certain areas which might provide details on the layout and character of buildings in the *rabad*. At the same time, work will continue on the *shahristan* to date occupation layers and chart changes in the most densely occupied part of the city. This further analysis and refinement of dating will form the basis of a comprehensive analysis and contextualisation of the archaeological evidence to see how Otrar reacted from the various historically attested Turk and Mongol attacks, plague and other natural disasters. It will also consider the extent to which other factors which may not appear in historical accounts such as climatic variation or environmental management may play a role in the changing nature of urban occupation at Otrar.

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