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Edited by

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In the Neo-Assyrian Border March of the Palace Herald: Geophysical Survey and Salvage Excavations at Gird-i Bazar and Qalat-i Dinka (Peshdar Plain Project 2015)

Karen RADNER, Andrei AŠANDULESEI, Jörg FASSBINDER, Tina GREENFIELD, Jean-Jacques HERR, Janoscha KREPPNER and Andrea SQUITIERI*

The Peshdar Plain (Fig. 1) is situated in the province of Sulaymaniyah, district of Raniyah (also known as Raparin district), in the Kurdish Autonomous Region of Iraq, directly at the border with Iran on the upper reaches of the Lower Zab. The regional centre is the town of Qaladze (Qalat Dizeh), in the northwest of the plain, whose impressive settlement mound (36° 11' 7" N, 45° 6' 53" E) demonstrates that the site has held this position since antiquity. The Peshdar Plain Project was inaugurated in 2015 with the goal of investigating the region in the Neo-Assyrian period and focuses on two sites: tiny Gird-i Bazar (36° 8' 18" N, 45° 8' 28" E; henceforth Bazar), a shallow mound (altitude: 539 m) of only 1.5 ha situated in the plain, and the more impressive Qalat-i Dinka (36° 8' 12" N, 45° 7' 57" E; henceforth Dinka), looming high over the Lower Zab on the imposing terminal outcrop of a crescent-shaped mountain range along the northern river bank (Fig. 3: A). This first report will briefly detail the geophysical survey (section 1) and the excavations (section 2) conducted in 2015 before introducing the bioarchaeological sampling strategy (section 3) and presenting a first assessment of the sites and more generally of the significance of our work in the regional setting of the Peshdar Plain and within the Neo-Assyrian Empire and its client states (section 4).

During a visit to the Raniyah Plain on 16 February 2015, local representatives of the Sulaymaniyah Directorate of Antiquities and Heritage informed Karen Radner that in 2013 a farmer had discovered a fragmentary cuneiform tablet while preparing a field at Dinka for the cultivation of chickpea. The autopsy of the secondarily fired tablet in Raniyah showed it to be a Neo-Assyrian legal document from the year 725 BC with an intriguing mention of a servant of the Palace Herald (Radner 2015). Prompted by this apparent clue to the Border March of the Palace Herald, Radner visited the Peshdar Plain two days later in order to see Dinka and also Bazar, following a suggestion of Jessica Giraud, director of the Sulaymaniyah Governorate Archaeological Survey (MAFGS; cf. Kopanias *et al.* 2015, 48): at both sites, the French mission had found Neo-Assyrian pottery during the surface survey in February 2013.

When it emerged that an industrialised chicken farm had been erected at Bazar a few months earlier, destroying substantial parts of the site, it was quickly decided that salvage excavations at the imperilled mound should start as soon as possible in conjunction with a wider investigation of the Peshdar Plain, including excavations at Dinka which is threatened by agriculture. The Sulaymaniyah Directorate of Antiquities and Heritage, headed by Kamal Rasheed Zewe, offered immediate administrative support and subsequently supplied invaluable personnel and logistic assistance to all aspects of the project. Funding for a first fieldwork season was readily available, as Radner had just been awarded the International Award for Research in Germany (Alexander von Humboldt Professorship), and Janoscha Kreppner quickly agreed to direct the fieldwork.

The 2015 team consisted of the following members: Hero Salih Ahmed (Sulaymaniyah Directorate of Antiquities): pottery processing and deputy supervisor, Area East; Mark Altaweel: mapping and offsite archaeology (UCL); Andrei Ašandulesei (Alexandru Ioan Cuza University of Iași, Romania): geophysics and mapping; Peter Bartl (FU Berlin): trench supervisor, Area West; Jörg Fassbinder (Bayerisches Landesamt für Denkmalpflege, Munich): geophysics; Christoph Forster (Berlin, Fa. Datalino): data base creation and photogrammetry; Tina Greenfield (University of Manitoba, Winnipeg, Canada): bioarchaeology; Jean-Jacques Herr (EPHE, Paris): head of pottery processing; Alice Hunt (University of Georgia, Athens, USA): material sciences; Barzan Baiz Ismail (head of Raparin Directorate of Antiquities, Raniyah): government representative (who went beyond the call of duty to facilitate our work – thank you!); Janoscha Kreppner (LMU Munich & FU Berlin): field

While Greenfield wrote section 3, Radner drafted the remainder of the text, drawing on reports and notes compiled by Ašandulesei and Fassbinder (section 1), Kreppner (section 2, integrating field reports of all team members) and Herr (sections 4.2 and 4.3) who also prepared Figures 1 and 5. Kreppner and Squitieri selected and prepared all other illustrations. We are much indebted to John MacGinnis, in his capacity as one of the editors of the present volume, for his offer to include a brief first account of the 2015 season in the Athens conference proceedings. We are grateful to Felix Höflmayer (Vienna) for his advice on the ¹⁴C dates. Our thanks go to all team members whose tireless work underpins this short sketch. A comprehensive joint report is in preparation.



FIGURE 1. MAP OF THE PESHDAR PLAIN WITH ITS KEY SITES (PREPARED BY JEAN-JACQUES HERR).

director; John MacGinnis (University of Cambridge): trench supervisor, Area East; Anke Marsh (UCL): geoarchaeology; Karen Radner (LMU Munich): project director and epigrapher; Andrea Squitieri (UCL & now LMU Munich): mapping, data base management and documentation; Adam Stone (University of Cambridge): trench supervisor, connecting trench; Muhamad Kahraman Walika: pottery drawing; Eleanor Barbanes Wilkinson (University of Durham): small finds and deputy supervisor, Area West; Aziz Sharif (Sulaymaniyah Directorate of Antiquities): driver; Ibrahim Manla Issa: cook; and 12 workers, mostly from the village of Nureddin. Moreover, we are very much obliged to Kamal Rasheed Zewe and especially Saber Ahmed Saber of the Sulaymaniyah Directorate of Antiquities for their invaluable assistance in matters great and small in Sulaymaniyah and in Qaladze, to our project partner Jessica Giraud (IFAO Erbil) for her dynamic support in research and logistics, to Adelheid Otto and Simone Mühl (both LMU Munich) and Dorian Fuller and David Wengrow (both UCL) for generously

letting us benefit from their equipment and finally to Stephan Kroll (LMU Munich) for sharing his knowledge and material, especially on Mannean pottery.

In this first field season, a geophysical survey was conducted at both sites and salvage excavations began at Bazar. Our research throws light on a hitherto little known frontier region of the Assyrian Empire, specifically the Border March of the Place Herald at the border to the kingdom of Mannea. Although the Japanese mission at Qalat Said Ahmadan (36° 13' 30" N, 45° 8' 48" E), a site to the north of the Peshdar Plain (Fig. 1), unearthed in 2014 remains of an Iron Age building of unclear date (Tsuneki et al. 2015, 31-8), Bazar is the first Neo-Assyrian site to be excavated in the region. The settlement beginning to be uncovered here promises not only the rare opportunity to explore a non-elite settlement of the Neo-Assyrian period at the empire's frontier but also the crucial chance to synchronize the Western Iranian pottery cultures (with the key sites Hasanlu, Godin Tepe, Nush-i Jan and Baba Jan; Fig. 2)



FIGURE 2. MAP OF THE PROVINCIAL BORDERS OF THE ASSYRIAN EMPIRE DURING THE REIGN OF SARGON II (721-705 BC), INDICATING THE PESHDAR PLAIN AND KEY SITES IN CENTRAL ASSYRIA AND WESTERN IRAN MENTIONED IN THIS PAPER (PREPARED BY ALESSIO PALMISANO AND ANDREA SQUITIERI AFTER A SKETCH OF KAREN RADNER). NOTE THAT THE EXACT EXTENT OF THE PROVINCES IN WESTERN IRAN IS NOT SECURELY ESTABLISHED: IT IS ESPECIALLY UNCLEAR WHETHER BABA JAN LIES INSIDE OR OUTSIDE THE ASSYRIAN TERRITORIES. IT IS CLEAR, HOWEVER, THAT SETTLEMENTS UNDER THE CONTROL OF MEDIAN CITY LORDS EXISTED WITHIN AND IN PARALLEL TO THESE ASSYRIAN ADMINISTRATIVE UNITS (RADNER 2013).

with the Assyrian material of the 8th and 7th century BC.

1. The geophysical survey at Gird-i Bazar and Qalat-i Dinka

After Jörg Fassbinder had first assessed the potential of the sites Bazar and Dinka in April 2015, he conducted a geophysical survey and analysis together with Andrei Ašandulesei, assisted in the field by Hero Salih Ahmed and Janoscha Kreppner from 20 to 22 August 2015.

1.1. Method

As Fassbinder's work has demonstrated before, magnetometer prospection is a successful and costeffective tool for detailed geophysical mapping of large areas in a reasonable time. In order to reach the highest possible sensitivity combined with a maximum speed of prospection, the so-called 'duo-sensor' configuration of the optical pumped cesium-magnetometer Smartmag (Fassbinder and Gorka 2009; Fassbinder 2015) was chosen for our purposes which allows to set the reference value, e.g. the virtual gradient of the Earth's magnetic field, to infinity, so that magnetic anomalies can be measured with their full intensity. Usually more than 98% percent of the magnetometer data in a 40 m grid on archaeological sites vary in the range of ± 20 nT from the corrected mean value of the geomagnetic field. The stronger anomalies can typically be ascribed to burned structures, to lightning strikes or to pieces of iron containing slag or iron rubbish and these are easily distinguishable by their different direction of magnetic dipole anomalies but also by their high intensities (> ± 50 nT). To cancel the natural micro-pulsations of the Earth's magnetic field, a band pass filter in the hardware of the magnetometer processor was used.

The magnetometer probes were mounted on a wooden frame and were carried in zigzag-mode 30 cm above the ground. The sampling frequency of the magnetometer of 10 readings per second can provide the measurement of a 40 m profile in less than 30 seconds, maintaining the spatial resolution of approximately 10-15 cm at normal to fast walking speed. Every 5 m, additionally to the magnetic data, a marker was set by manual switch. This helps to perform the correct interpolation of data during the subsequent laboratory processing work. Additionally, the linear changes in the daily variation of the geomagnetic field are removed by a reduction filter process to the mean value of all data of the grid.

At Bazar, two adjoining areas of 25 x 60 m within the fenced area of the chicken farm and 40 x 80 m outside the fence were magnetically scanned. At Dinka, areas of a total of about 3 ha were surveyed, namely 120 x 120 m on the western slope of the mound and 100 x 60 m on the eastern plateau. The sampling density was 25 x 50 cm. On the read-out field unit, the data were stored as binary files. They were subsequently downloaded to a Panasonic Toughbook and unpacked to ASCII data. The software packages Geoplot (by Geoscan, UK) and Surfer (by Golden Software, USA) were used for image processing. To create discrete field values a re-sampling program designed by Fassbinder was used, which sets the data to 25 x 25 cm. The data was visualized as a grey scale magnetogram image, which allows tracing even tiny anomalies.

The advantage of the 'duo-sensor' configuration is that the resulting image provides more information of the site, including from the deeper parts of the archaeological structures. The instrument measures the Earth's magnetic field with a sensitivity of ± 10.0 pT (Picotesla) with a sampling rate of ten measurements per second; in August 2015, the Earth's magnetic field in the Peshdar Plain varied in the range of 47.280 ± 20.0 nT (Nanotesla). On the other hand, geological features and nearby installations, such as fences, may disturb the readings but these disturbances can be removed by applying a high-pass filter to the data. Its application removes the deeper and mainly geological features and provides supplemental information on the type of the anomalies. The results are then displayed in a second grey scale magnetogram image.

1.2. The geophysical survey at Gird-i Bazar

The results of the geophysical work at Bazar were used in order to plan the excavation, which began directly afterwards. They showed no clear archaeological features in the area to the north of the fence surrounding the chicken farm (Fig. 3: E), and the northern perimeter of the ancient settlement therefore seems to roughly correspond to the modern fence. Immediately inside the fence, however, the geophysical results indicated the presence of clearly discernable rectangular building structures (Fig. 3: D). Consequently, an excavation area was set up here, in the western part of the ancient settlement (see below, section 2).

1.3. The geophysical survey at Qalat-i Dinka

In Dinka, the two areas surveyed on the western slope (c. 14,500 m²) and on the eastern plateau (c. 3,200 m²) had been chosen, firstly, because of ceramics surface finds and, secondly, because of topographical considerations. Both areas are being used for agricultural purposes. In August 2015, the fields cultivated in the surveyed areas had already been harvested but not yet been ploughed and were therefore relatively undisturbed. The strong magnetic enhancement of topsoil and archaeological layers compared to the weak magnetic susceptibility of bedrock and gravels is responsible for the clear signature of the ancient structures beneath the ground. Archaeological features therefore dominate the resulting magnetogram image whose analysis revealed clear settlement structures.

On the eastern plateau (Fig. 3: B), the magnetometer survey revealed traces of dense activity and many archaeological features, including fundaments, pits and very probably fortification installations. On the western slope (Fig. 3: C), where the secondarily burnt clay tablet had been found in 2013, a semicircular feature of c. 80 x 60 m is clearly discernible. This peculiar structure shows a high concentration of magnetic anomalies, which very probably represent the remains of burnt houses. Pits in a large rectangular layout overlie (or possibly underlie) the semicircular feature. All archaeological features are limited to the upper part of the slope, and in the lower part they are clearly enclosed by the remains of a palisade fence or fortification wall. Near the modern metal fence, where the farmers gather stones that obstruct ploughing, we found two door socket stones with a diameter of about 1 m that may have been connected to this fortification structure. Outside of it, there are no more archaeological features discernible in the geophysical results.



Figure 3. Satellite image (A) of the Peshdar Plain showing Gird-i Bazar and Qalat-i Dinka, with the areas of the geophysical survey (B-E) and the three off-site trenches (solid squares) indicated. QuickBird Image, 24 October 2014. Magnetograms by Jörg Fassbinder and Andrei Ašandulesei.

2. The first season of excavations at Gird-i Bazar

In the week from 23 to 31 August 2015, the wider region around Bazar was mapped with a differential GPS (model Leica Viva GS10/GS15, courtesy Adelheid Otto), resulting in the creation of five benchmarks at Bazar and one more at Dinka. The excavation grid established at Bazar consists of 25 10 x 10 m squares aligned towards north within the Universal Transverse Mercator coordinate system (WGS 84 / UTM zone 38N; EPSG 32638). Each square is assigned a number consisting of six digits corresponding to its Easting (X) and Northing (Y) UMT coordinates. This numbering system can be used in the entire Peshdar Plain without danger of duplication. Wooden stakes with orthophoto markers were prepared in the corners of the squares for the photogrammetric documentation with PhotoScan and QGIS. A positive side effect of working on the chicken farm is that there is electricity and a WiFi network (plus water from a well for the flotation machine, see section 3). We were therefore able to document the excavation digitally in the field using a server-based 3D database designed in MySqL by Christoph Forster, managed by Andrea Squitieri and accessible to all excavation staff via a web interface.

During that same time, offsite surface surveys were conducted in the plain and also on the terrace above the southern bank of the Lower Zab to record ceramic assemblages and man-made features in order to contribute to the ongoing work of our project partner Jessica Giraud's MAFGS team. Moreover, Mark Altaweel and Anke Marsh selected three spots between Bazar and Dinka (Fig. 3: A, marked with solid squares) and had offsite trenches dug there with a digger in order to sample for sediments and phytoliths. One of these (G42) yielded burnt wood above a floor c. 1 m below the present surface, and near a possible wall. This charcoal sample yielded an uncalibrated date of 2630 ± 25 years BP (with BP = AD 1950) according to ¹⁴C radiocarbon analysis at the Center for Applied Isotope Studies (CAIS) of the University of Georgia, Athens (sample number UGAMS-23561). Using the OxCal v4.2.4 radiocarbon calibration software of the Oxford Radiocarbon Accelerator Unit with the calibration curve IntCal13 (Bronk Ramsey 2009; Reimer et al. 2013), this corresponds to a calendar date between 830 and 789 calBC (95.4%; Fig. 6). This date provides merely a terminus post quem for the associated layer, as 'inbuilt age' always biases 14C dates derived from charcoal samples to be older than the fire event (Waterbolk 1983): inbuilt age may be the result of growth age (when the age of dead wood in the centre of the living tree is dated) and/or storage age (referring to the time elapsed from the death of the tree to its use e.g. as building material).

Excavations at Bazar started on 1 September 2015 and lasted for 17 working days until 27 September 2015.

Bazar is a shallow mound of c. 1.5 ha, of which a third has been destroyed by the chicken farm. In order to gain an understanding of the character and function of the ancient settlement, two large areas were excavated and linked with a connecting trench (Fig. 4: A). In the western part of the mound, square 267931 was opened under the supervision of Peter Bartl, as the geophysical results had indicated well-preserved architecture here ('Area West'). In the eastern part, squares 271927 and 271928 were opened under the supervision of John MacGinnis, as the nearby profile of the section created by the construction of the chicken farm had revealed well-preserved floors and walls in this part of the site ('Area East'). Adam Stone supervised excavation of the longitudinal connecting trench between the areas on the eastern and western sides of the mound. This trench was designed to connect and better understand these separate excavations and to investigate if similar or noticeably different structures and activities were to be found between these areas. The trench has a width of 1.5 m and runs c. 43 m across six excavation squares (270928, 270929, 269929, 269930, 268930 and 268931). It is aligned in roughly northwestern-southeastern direction, about 3-6 m distant from and more or less parallel with the modern cut through the mound. Moreover, the trench was placed in such a way that it traversed a prominent magnetic anomaly recorded in the geophysical survey.

As hoped, throughout the excavation we unearthed a well preserved, single-phase occupation level of Neo-Assyrian date whose buildings were founded directly on the bedrock. Both in the western and the eastern area, stone buildings were exposed: so far, parts of six architectural units, four in the west, two in the east, arranged in a general layout orientated along a northnorth-west axis and separated from each other by narrow corridors, presumably uncovered alleyways. Good floor contexts were uncovered throughout the excavation and these generally yielded fine ceramic assamblages (see section 4.3) but very few small finds. The occupation was maintained, with at least one later construction phase discernable in two of the exposed buildings, until the settlement was abandoned. The site was later reused as a graveyard.

Western area (Fig. 4: B)

The walls of four buildings were uncovered, preserved to a height of more than 1 m. Only one of these structures has been excavated in its entirety, measuring 5.0 x 2.6 m. Two distinct phases of occupation with separate floor levels were observed here: corroded metal fragments were recovered from the debris above the younger floor while the floor of the previous occupational phase consists of small pebbles. The floor of one of the partially excavated buildings features an installation build out of stone slabs, covered



Figure 4. Drone image (A) of the excavations at Gird-i Bazar (28 September 2015; courtesy Simone Mühl) and detail photographs of the individual excavation areas (B-F).

with debris from a fire but hitherto without usable charcoal samples. So far, only small parts of this and the other two buildings have been unearthed. At present, we assume that all four structures are single room buildings.

Eastern area (Fig. 4: D, E)

The walls of two buildings were unearthed, preserved to a height of c. 0.5 m above their floors. The first building consists of a room of 6.0×2.5 m and two

walled but presumably unroofed, exterior areas. A charcoal sample from above the floor of the first building (PPP 271927:014:008) dates to 2750±25 years BP (with BP = AD 1950) according to ${}^{14}C$ radiocarbon analysis at the Center for Applied Isotope Studies (CAIS) of the University of Georgia, Athens (sample number UGAMS-23213). Using the OxCal v4.2.4 radiocarbon calibration software of the Oxford Radiocarbon Accelerator Unit with the calibration curve IntCal13 (Bronk Ramsey 2009; Reimer et al. 2013), this corresponds to a calendar date between 937 and 829 calBC (92.2%; Fig. 7). This provides merely a terminus post quem for the associated layer (see above). There is a pit lined with stones just outside of the building, possibly a well; this needs further investigation. The second building underwent renovations at least once and we can discern two separate floors and usage levels. The full dimensions of this structure are not yet clear and the bedrock has not yet been reached in this part of the excavation.

Connecting trench (Fig. 4: C)

The results here indicate that the groups of buildings in the western and the eastern part of the settlement were separated from each other by an open space of a diameter of about 30 m. In its centre lies a kiln (square 269929) whose presence had been indicated by a magnetic anomaly in the geophysical survey. The part that has been excavated so far is c. 1.5 m long, more than 1.5 m long and preserved to a hight of 1.1 m, with the clay lining measuring 5-10 cm in width (Fig. 4: F). The complete exposure of this structure and its immediate context is one of the key objectives of the 2016 season. The best set of small finds, as well as important pottery collections (see section 4.3), comes from within the kiln, in which four registered objects were recovered: a small fired ceramic figurine of a four-legged animal (PPP 269929:020:004), a worked stone object which might be a pounding tool (PPP 269929:005:011) and two complete ceramic vessels which provide secure dating parameters for the kiln, placing it within the Neo-Assyrian period (vessels PPP 269929:005:018 and PPP 269929:005:021; Fig. 4).

The later graveyard

In this first season, the registered small finds from Bazar comprised merely 48 objects including beads, lithics, fragments of metal and metal objects, slag, ceramic sherds, complete vessels, and singular objects such as an iron alloy arrowhead and a modern Iraqi coin. But only a few small finds can be considered significant as chronological or cultural markers for the main occupation of the site, especially as about half of them were recovered from within human burials of a later date. In total, 26 graves were identified, especially in the eastern part of the settlement, and 14 have been excavated entirely (see also section 3.2). They cut from above into the buildings of the main occupation level and were therefore created at a later time. Most of the graves so far excavated did not contain grave goods.

As most previous Neo-Assyrian excavations have tended to focus on large centres in the heartland and in the provinces, unearthing palaces and elite residential architecture, Bazar is of great interest because it is certainly a non-elite settlement and possibly a production site, as perhaps indicated by the kiln. The best parallel known to us is the complex partially excavated in 1985 in Khirbet Qasrij during the Eski Mosul dam salvage project (Curtis 1989; Fig. 2). Because of the pottery, the excavators attributed a post-Assyrian date to the site but this is not certain. We interpret Bazar as a production site sustaining the Assyrian fortress (*birtu*) at Dinka (see section 4.1).

3. The bioarchaeological sampling strategy at Gird-i Bazar

Until very recently Braidwood's seminal research on the 'The Hilly Flanks' was the only extensive multidisciplinary field investigation of the ecology of the plains and foothills of the Zagros Mountains in Iraqi Kurdistan (Braidwood et al. 1983; Braidwood and Howe 1960). In the past five years, this has changed dramatically and much relevant work has begun, especially in the Shahrizor Plain (Altaweel et al. 2012; Elliott et al. 2015). For the Raparin (Raniyah) district, in particular, data on the environmental and settlement landscape is still largely lacking although archaeobotanist Hans Helbaek successfully sampled botanical remains from nearby Tell Bazmosian during the Iraqi excavations in 1956 (Helbaek 1963). Consequently, when the Peshdar Plain Project was launched in 2015 part of its research design was to fill this lacuna, in particular for the Neo-Assyrian period (9th-7th centuries BC). Our key research objective aims to determine how the Assyrians, living on the eastern edge of the empire, exploited and interacted with their local environment. In order to fully examine this question, it is necessary to investigate and analyse bioarchaeological data that will better inform on the social, economic and political behaviour of the occupants living in the Peshdar Plain during the Neo-Assyrian period. To this end, an integrated and holistic protocol for sampling and analysing ancient bioarchaeological data (animal and human bones, seeds, shells, charcoal, soils and phytoliths) was implemented.

3.1. Data

Bioarchaeological data are by definition the remains of human activities that impart information on the production, consumption, and exploitation strategies for food, movement, diet and health of peoples within sites and across landscapes (Reitz and Wing 2008). Correspondingly, such data can be related to their status and position within their social and economic structure. Furthermore, they can also inform on the taphonomy of the site and enable reconstruction of the nature of changes that transformed the recovered remains and deposits at the site (Lyman 1994). Subsequently, organic data were collected during the 2015 campaign at Bazar as the preliminary step in recreating human and animal interaction in the Peshdar Plain. Three major types of bioarchaeological data were collected: plant (carbonised seeds/charcoal and phytolith), animal (bone, teeth and shell) and human remains. Soil samples were also taken for specific studies related to the human remains.

3.2. Method: sampling procedures and protocols

Plant and animal remains

A rigorous and standardized protocol for the collection and sampling of organic remains was implemented during the inaugural campaign at Bazar. Sampling strategies for all organic material excavated focused on the recovery of remains from primary contexts/deposits that included suprafloors, floors, features, and pits with a known surface. Detailed protocols for procuring carbon, phytolith, zooarchaeological and botanical remains were directly tailored to this focus, and implemented daily in the field. When deemed necessary, $1 \times 1 \text{ m}^2$ grids were imposed for tighter spatial control of these data within primary features/floors; in this instance, samples were collected for phytoliths and botanical analyses. Samples were also taken from any charcoal concentrations for the purposes of radiocarbon dating. Additionally, 100% of the soil (post-bioarchaeological sampling) from each primary feature was dry-sieved for maximum recovery of artefacts. In addition to sampling floors and features, a minimum of 20-litre soil samples was taken from each primary (non-floor) archaeological context. Each sample was floated (essentially washed) for the maximum recovery of micro-artifacts, charcoal and palaeobotanical remains. A state of the art flotation machine was made for the project in Sulaymaniyah, using the template of the models currently used at the excavations in Bestansur (directed by Roger Matthews, University of Reading) and Gurga Çiya (directed by Robert Carter and David Wengrow, UCL) in the Shahrizor Plain. The analysis of light fraction botanical remains include carbonized remains (seeds, charcoal) and heavy fraction samples that contain the remains of micro-artefacts will allow for a better understanding of land use and food management strategies at Bazar.

Human remains

A total of 14 graves with human remains were uncovered and fully excavated during the 2015 season; they are of a much later date that the Neo-Assyrian settlement (see section 2). In total, 26 graves were identified across the excavation area. Each individual specimen was recorded on osteological sheets and detailed notes were recorded for further analysis. All of the human remains were curated for further studies in the following years on Stable Isotopes, pathologies and potentially aDNA analyses.

Soils

Soil samples were taken from above the head, below the feet, and within the pelvic region of each individual that was excavated from a grave.

Spatial distribution of remains

One of the objectives in the recovery and analysis of the bioarchaeological samples is to examine the spatial distribution of each of the discreet data sets across the excavation. A strict protocol for the gridding of floors and features (Fig. 4: B) allowed for the recovery of organic data on a much smaller and tighter scale than has ever been used on past excavations in the region. This spatial control provides the ability to determine behaviour and activity processes on a micro scale within each building. Additionally, discrete sets of activities (i.e. food processing, consumption, disposal patterns, etc.) can be determined between the different buildings across a site (Rainville 2000). A macro and micro scale of socio-economic behaviours can be assessed that are not normally understood on Neo-Assyrian sites.

3.3. Analytical themes

Diet, status, mobility

Bioarchaeological specimens were excavated from several different contexts, including floors, and suprafloors from within each of the identified buildings, graves, and areas such as alleyways that lay outside buildings/structures.

Plants and animals

Comparative zooarchaeological and palaeobotanical material was collected during this season and will provide the base for a modern reference collection for future field analyses. Each specimen was processed with the same spatial and temporal control to ensure comparability with the excavated material. These data, once identified and analysed, will allow for the construction of a comprehensive picture on a variety of behavioural issues related to socio-economic factors, such as status, diet, and food production inherent across the site (Greenfield 2014; Rosenzweig 2014). This study will provide important *comparanda* to studies on other Neo-Assyrian sites and allow us to begin construction of

a model of the ecology of the region. The analysis of the ancient plants and animals from Bazar will be the first phase in attempting to recreate the ancient landscape and ecology of the Peshdar Plain in Neo-Assyrian times.

Human remains

The examination of the human remains will highlight patterns related to the general population living at (or near) Bazar. Information on the health, age, and sex of the individuals can be determined through intensive identifications of pathologies to both teeth and bones, ageing/sexing data through metric studies, as well as other indicators related to mobility (White 1998). Each of these indicators helps to identify diet, the general population health, and overall movement of individuals across the region and further afield.

Post-field analyses

Aside from the traditional zooarchaeological and bioarchaeological specimen identifications, animal and human remains will be chosen for Stable Isotope studies as part of the larger reconstruction of the ecology of the Peshdar Plain, during the Neo-Assyrian period and later. These data, gleaned from human and animal bones and teeth, will inform on the movement of both populations across the larger landscape. In addition, soil samples taken from within the human graves and analysed by Piers D. Mitchell (University of Cambridge) for parasitological analyses will help highlight their place of origin, their diet, and their general health. The identification, analysis and integration of each of these above mentioned organic data will help to build a comprehensive picture of human interaction with plants, animals and the surrounding landscape during the first millennium BC and that of the more recent past at Bazar. Radiocarbon (AMS) dating of charcoal samples and carbonized seeds will determine the dates of occupation at Bazar and will allow for a scientifically accurate account of the timeline at the settlement. Two charcoal samples have already been analysed at the Center for Applied Isotope Studies (CAIS) of the University of Georgia, Athens (see above). Subsequent sampling of charcoal from additional occupational horizons will allow for a tight temporal sequence of the site's life history that is often difficult to gain from traditional excavation and artifact analyses.

4. Historical and archaeological significance: some first thoughts

Beyond the chance to excavate at Bazar a Neo-Assyrian non-elite settlement with a dedicated bioarchaeological sampling strategy, our research in the Peshdar Plain is also of great importance for furthering an understanding of how the Assyrian Empire organized its frontier zone with one of its principal local competitors in the central Zagros region.

4.1. The Border March of the Palace Herald

The secondarily fired clay tablet from Dinka is a Neo-Assyrian legal document recording the sale of a slave woman in the year 725 BC (Radner 2015) and mentions a subordinate of the Palace Herald among the witnesses. In parallel to similar cases from e.g. Kalhu or Aššur, this can be taken as an indication that the transaction took place in the Border March of the Palace Herald. So far, the location of this frontier region under the command of one of the highest magnates, created in the late 9th century BC for the protection of the empire (Liverani 2004), could only be roughly circumscribed as situated in the mountains to the east of Erbil. On the basis of the available references in Neo-Assyrian inscriptions and archival materials (collected in Mattila 2000, 34-7), Postgate (1995, 9) thought the plain of Rowanduz 'a distinct possibility' whereas Liverani (2004, 218) suggested a location 'probably on the upper valley of the Lower Zab'. The tablet as well as the presence of Neo-Assyrian pottery at Bazar and Dinka indicates that the Peshdar Plain, the last microregion suitable for agriculture west of the chaîne majeure of the Zagros, was part of this border march (Fig. 2).

Our understanding of the way the Assyrian border marches were organised is currently very limited. Their obvious defensive purpose would suggest a high degree of militarisation and, in contrast to the ordinary provinces, only a limited focus on productivity. However, these assumptions have not yet been put to the test, and fieldwork in the Peshdar Plain offers the opportunity to do just that. In August 2015 we observed several qanat systems in the region, of which one is still in use. It becomes increasingly clear that this method of irrigation through horizontal wells, once considered typical of Western Iran, was widely used in the Assyrian heartland (for the region of Erbil, ancient Arbail: Ur et al. 2013, 91, 107). Because of the nature of the well-dated irrigation works created by Assurnasirpal II at Kalhu there is the distinct possibility that this technology was already used in the 9th century BC (Dalley 2013, 87). It is therefore essential to establish whether or not there is a connection between the *qanat* systems in the Peshdar Plain and the region's use in the Neo-Assyrian period.

Because of its general geographical situation and the results of the geophysical survey at Dinka we may hypothesise that the complex there was of military character. Its Neo-Assyrian date is clear because of the surface ceramics finds as well as the tablet. As fragments of fired bricks with the typical Neo-Assyrian format of c. $30 \times 30 \times 8$ cm can be found on the surface of the massively disturbed top of Dinka (but also washed down on all sides), we assume that there was a building on top. Because of the excellent views this position (altitude: 579 m) offers across the plain, from the passes over the *chaîne majeure* of the Zagros far down the valley of the



FIGURE 5. A SELECTION OF STRATIFIED POTTERY FINDS FROM GIRD-I BAZAR, AS MENTIONED IN THIS PAPER (PREPARED BY JEAN-JACQUES HERR).

Zab, it is likely to have served as a signalling tower. A test trench on the western slope where the burnt settlement draws close to the palisade or fortification wall, planned for May 2016, will provide the first opportunity ever to explore an Assyrian fort (birtu). Our knowledge of these military structures, created and maintained to safeguard the empire's most sensitive locations (and not just along external borders), is hitherto limited to the descriptions provided by some letters of the Assyrian state correspondence of the second half of the 8th century BC, especially SAA 15 166 (in Eastern Babylonia) and SAA 19 60 (in the Upper Tigris region; cf. Parker 1997). The ongoing excavations of the contemporary settlement site at Bazar will provide crucial information on how such a fort operated within the context of its economic hinterland.

4.2. Historical geography and the connection with Iran

From its geographic position alone, it is clear that the Border March of the Palace Herald served to safeguard the route from the low-lying passes of the Zagros along the Lower Zab into the Assyrian heartland, where this tributary of the Tigris reaches the Aššur region. A pass with an altitude of only 923 m (36° 1' 52" N, 45° 21' 8" E) lies at a distance of just 22 km from Bazar. Thus, the Peshdar Plain was situated in direct proximity to the

kingdom of Mannea, which in the early first millennium BC occupied the territories on the other side of the *chaîne majeure* of the Zagros. Mannea emerges in the 9th century BC as one of Assyria's largest and politically most significant neighbours, alternating between rival, client and ally – its role often reflecting the empire's difficult relationship with the archrival Urartu whose southern holdings in Iran bordered onto Mannea. On the other side of the Zagros, at a distance of about 40 km as the crow flies from Bazar, lies the important Mannean site of Rabat Tepe (35° 3' 29" N, 46° 54' 56" E) where Iranian archaeologists have unearthed monumental buildings decorated with distinct multi-coloured glazed bricks and pebble mosaics (Kargar and Binandeh 2009; Afifi and Heidari 2010; Heidari 2010).

The Neo-Assyrian occupation of the Peshdar Plain supports the argument of Lanfranchi (1997, 136) who suggested on the basis of a letter of the Palace Herald's deputy to Sargon II (SAA 5 133) that the Assyrian settlements of Harrania and Anisu need to be located in the plains of Raniyah and Peshdar, respectively, on the border to Mannea and also Hubuškia, whose precise location in the Zagros range is still a matter of controversy. Further work in the Peshdar region will serve to clarify key problems in the historical geography of the early first millennium BC.



FIGURE 6. CALIBRATED RADIOCARBON DETERMINATION FOR THE CHARCOAL SAMPLE UGAMS 23561 FROM THE OFFSITE TRENCH G42.

4.3. Linking up Assyria and the Western Iranian pottery cultures

During the 2013 surface survey conducted by Jessica Giraud's MAFGS team, a good-sized pottery assemblage was discovered at Bazar that was identified as Neo-Assyrian in date. Especially the fragments of carinated bowls and neck jars have close parallels among these morphological types from Aššur and Kalhu in the Assyrian heartland (Hausleiter 2010, pl. 63, 107, 111). More of this material was unearthed in stratified contexts during the 2015 excavations. These, however, also made it clear that the ceramics at Bazar include much that links them to the Western Iranian Zagros pottery cultures. Directed by Jean-Jacques Herr who is also part of MAFGS, the pottery team focused beyond the analysis of shapes and fabrics on the reconstruction of the chaînes opératoires of the pottery production (forming, shaping, finishing). In 2015, 145 pottery collections were excavated, consisting of 125 kg of material. Sherds were collected by locus and photographed as a collection in order to quickly document the entire material. Subsequently, all diagnostic sherd (rims, bases, jar necks and significant bodysherds) was registered, measured, photographed, drawn and finally analysed in regard to the vessel's chaîne operatoire. Then, all non-diagnostic sherds from the same collection were analysed in this way in order

to document the relative ratio of each *chaîne operatoire* identified within the diagnostic material. During the 2015 field season, a preliminary typology of shapes and fabrics was established and correlated with eleven *chaînes opératoires*, categorised through macroscopic techno-petrographical analysis. Alice Hunt is currently conducting microscopical analysis on a first selection of samples at CAIS (University of Georgia, Athens).

The pottery team processed 25 complete collections, fully documenting 308 diagnostic sherds. Although these were unearthed relatively late during the excavation, priority was given to the material coming from the kiln in the connecting trench (PPP 269929:005, PPP 269929:020) and the floor levels of the buildings from the eastern and western areas (PPP 268930:005, PPP 267927:021, PPP 267931:014, PPP 267931:033). The material from all these contexts shows great homogeneity across the site in the distribution of the morphological types and in the use of the same *chaînes operatoires*.

Very little pottery material from the Mannean settlements excavated in the last 15 years by Iranian archaeologists has been published so far (Qalaichi: Mollazadeh 2008; Ziwiye: Mo'tamedi 1997; Fig. 2). But clear morphological parallels of the Bazar ceramics (Fig. 5) to pottery from other sites in Western



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Iran, in the levels traditionally assigned to the 8th and 7th century BC, emphasise our site's strong cultural orientation towards the east - rather than solely towards the Assyrian heartland whose influence at Bazar is most apparent in carinated bowls (PPP 269929:005:021; PPP 269929:005:013:011; PPP 269929:020:001:003; cf. Hausleiter 2010, pl. 53: SF 8.2, SF 9.1-2, pl. 63: SF 27.5, pl. 64: ST 3.5; Beuger 2005, pl. 33.3a-b), large conical concave neck pots and some short necked jar types (PPP 269929:005:014:042; cf. Hausleiter 2010, pl. 107: FG 5.5, FG 5 R1, pl. 111; Curtis 1989, fig. 37 no. 235). This is especially noteworthy as these Assyrian types are generally absent in the Western Iranian sites. The main Western Iranian types found at Bazar are: hemispherical bowls with incurved rim (PPP 270929:019:006:002; PPP 269929:005:006:002), some with a handle (PPP 269929:005:002:004) and others with a thicker wall and a triangular rim (PPP 269929:005:013:027); short neck pots with handle (PPP 269929:005:014:053-054); and necked jars marked by a hollow band (PPP 269929:005:014:050; PPP 267931:014:006). These types have strong parallels in Nush-i Jan (Stronach 1978, 17 fig. 6: nos. 2, 4-8), Godin Tepe (Gopnik and Rothman 2011, 358 fig. 7.56: no. 81) and Baba Jan (Goff 1985, 15 fig. 3: nos. 23-25, 16 fig. 5: nos. 22 and 27, 17 fig. 6: nos. 15-16). The surface of vessels from Bazar is frequently treated with streaky burnishing and this especially highlights the strong eastern orientation of the pottery making tradition (cf. Nush-i Jan: Stronach 1978, pl. VIIb-c; Baba Jan: Goff 1985, 15 fig. 4: nos. 3-4; Mannean cemetery of Kul Tarike: Rezvani and Roustaei 2007). But there are also conspicuous absences at Bazar, both of western and eastern materials. Bowls with hammerhead and incurved grooved triangular rim, so typical elsewhere at sites from the Assyrian imperial period, are not present at all at Bazar. Absent is also the painted Triangle Ware, characteristic of Western Iranian Iron Age sites from Hasanlu (Level III; Dyson 1999) to Baba Jan (Level III; Goff 1978).

The synchronisation of the Western Iranian pottery cultures of Hasanlu (excavations: 1956-74) and of the three sites traditionally identified as Median (Nush-i Jan: 1967-74, Baba Jan: 1966-69 and Godin Tepe: 1965-73) with Mesopotamian history and archaeology is fraught with problems (Danti 2013, 363-8). Situated at one of the key routes across the Zagros, in a frontier region of the Assyrian Empire whose responsibility it was to maintain close links with the Iranian states in the region, Bazar emerges as a key site whose material will provide much needed new data to enable the correlation of the Western Iranian pottery with the ceramics known from the Assyrian heartland. This is especially important for the contentious archaeology of Media. As Gopnik (2003, 249) stresses, 'the sites of Godin, Nush-i Jan, and Baba Jan have long stood as the main sources of information about Median material culture, but the exact chronological placement of their respective artefact

assemblages has not been securely established.' The single phase main occupation at Bazar with its well stratified pottery, so closely linked with the Assyrian heartland, seems to be ideally suited to remedy this key issue at least in part.

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