

## Merv to the Oxus: a desert survey of routes and surviving archaeology

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*The site of Merv in Turkmenistan supported a series of major urban settlements from the 5th century BCE to the 13th century CE and is now a World Heritage Site. The Institute of Archaeology has been involved in international research at Merv since 1991, including both excavation and field survey. Here the Director of the current project describes the latest field survey, which is investigating Merv's place in the famous Silk Roads that traversed Central Asia.*

A succession of cities at Merv, in the Murghab Delta of eastern Turkmenistan, together encompass an area of over 1000 hectares and date from the 5<sup>th</sup> century BCE to the Mongol sack of 1221CE.<sup>1</sup> These cities, once one of the largest urban centres in the world, straddled the fabled Silk Roads that traversed Central Asia. There has been a long tradition of archaeological research at these cities and the Institute of Archaeology, University College London, has been working with the Turkmenistan Ministry of Culture since 1991, when the former Soviet Central Asian Republic of Turkmenistan gained independence. The work has focused on both archaeological research and approaches to the conservation and management of the *Ancient Merv Archaeological Park*, which since 1999 has been a World Heritage Site.<sup>2</sup>

In 2009 we started a project to explore the wider context of the ancient cities: in particular the hinterland of the cities within the fertile Murghab Delta (in collaboration with the University of Bologna) and the Silk Roads that these cities were so intimately bound up with through much of their history. For the latter, the project aims to explore how urban centres connected through trade and how this fluctuated over time, against the background of dynamic empire systems, imperial influence on trade routes, individual "city" dominance over routes, and the structuring of rural way-stations.

The first survey project was to examine an area of the inhospitable Karakum (Black Sands) Desert, immediately to the east of the Murghab Delta.<sup>3</sup> This is a region of arid scrub, bounded by the Amu Darya (the ancient Oxus) River to the east and the Garabil plateau to the south (Fig. 1), had to be crossed to link the great cities of Merv with the Oxus River, and from there on to Bukhara and Samarkand. We know from historical accounts that the route from Merv to the city of Amul (the modern city of Chardzhou or Turkmenabat), on the Amu Darya, was one of the primary branches of the Silk Roads and the sources even

name way-stations that lie along this route, with distances given between them. However, the course of this routeway, and the settlements along it, was virtually unknown. The two primary areas were:

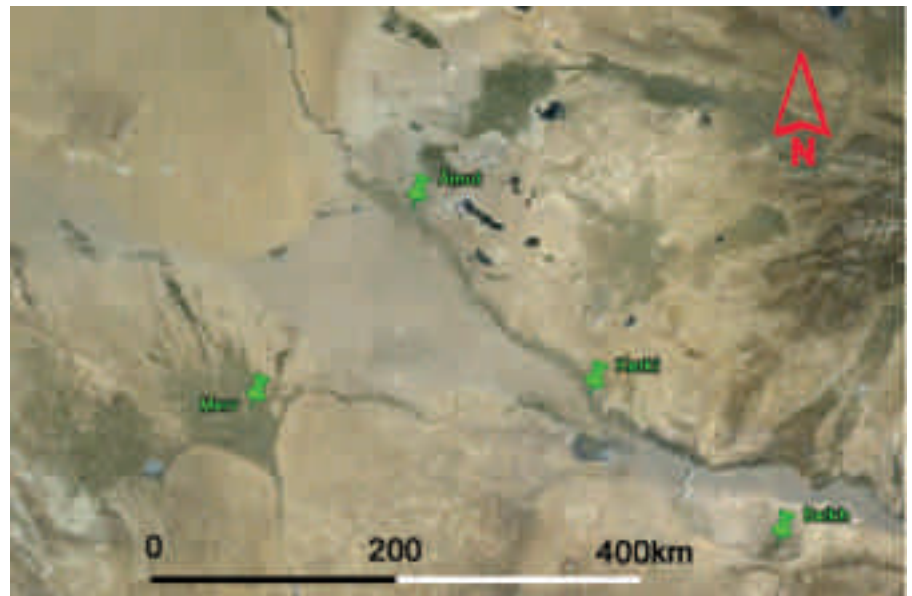
*A northern route:* The existence of a major route running north-easterly between Merv and Amul was well known, but its precise route and form were not. So our initial project sought to identify the way-

stations, settlements and stopping points in the desert east of Merv, to establish the course of the route and understand its structure.

*Possible southern route(s):* the town of Kerki (probably ancient Zamm) played an important role throughout the Sasanian and Islamic periods as a major crossing point of the Oxus. There are historical accounts of water sources across this region and several indications of palaeochannels on the satellite imagery, suggesting the possibility of previously inhabitable territories and routes.

### Desk-based research

Before going into the field, and to make the best use of our time there, we first analysed satellite imagery, combined with information from historic and modern cartographic sources. Possible sites were identified on high resolution (*Quickbird*) satellite imagery, as were "ruins" and other



**Figure 1** Satellite image of the region showing the fertile Murghab delta, the location of cities of Merv, and Amul, on banks of the Amu Darya River (Oxus), some 200 km away. Note the intervening desert landscape. (Background © Google Earth™ mapping service)



**Figure 2** Gaigysyz Joraev and the desert survey vehicle, showing the scrub character of the desert area, just as the plants brought on by the brief spring rains are already beginning to dry out. In the foreground the low mounds show the lines of a heavily eroded caravanserai



**Figure 3** The remains of a double-courtyard caravanserai (KRS01) recorded during the desert survey. The spring rains have just brought out a wonderful carpet of wild flowers, which are resplendent for about 2–3 weeks

features from Soviet maps of the area. These data were combined in a Geographical Information System (GIS), which would later form the basis for digitally mapping sites and their characteristics. Geographic and hydrological features – such as seasonal lakes (*takyrs*), wells, palaeochannels, topographic anomalies, and modern settlements – were also added as layers in the GIS. This combination of data enabled us to examine the landscape and locate areas of possible occupation, which were then targeted as part of the field survey. There are also descriptions of trade routes and postal networks from a number of historical sources, providing a backdrop to the survey data.

#### Field survey

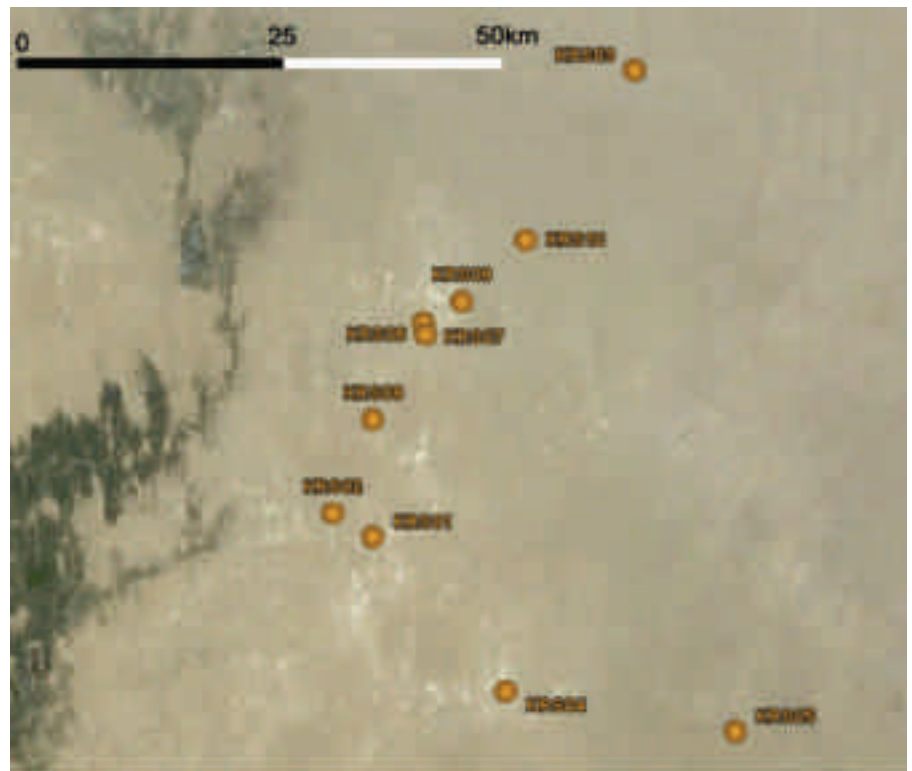
In May 2009, a transect of the desert landscape, approximately 50km north-south and 20km east-west, was targeted for ground survey. The field survey aimed to investigate the satellite “signatures”, to see if the anomalies observed there could be linked to archaeological sites, to explore the “ruins” noted on the cartographic sources, to locate previously unknown sites, and to gain a better understanding of the topographic variation across the study area.

The area was traversed using a four wheel drive vehicle (Fig. 2), with the team supported by Global Positioning System (GPS) navigation, handheld computers and a satellite telephone for emergency contact. For each site encountered, samples of surface cultural material were collected; sketch plans, basic dimensions and photographs recorded; and GPS coordinates obtained. Although the conditions were difficult, the late spring rains briefly bring the desert to life

(Fig. 3). The results of the field survey were combined with the desk-based research in the GIS.

#### The northern route

Thirteen sites, ranging from small surface scatters to large fortified structures, were recorded across the northern study area (Fig. 4). Cultural material, primarily ceramics, was recovered from all of these and most of the sites’ surface material could be dated between the 8<sup>th</sup> and 16<sup>th</sup> centuries CE. Many of these were located using the Soviet maps (the prospect of identifying sites from satellite imagery was more disappointing – see below). The structural remains included a number of caravanserai and fortified settlements, some of which had substantial extant architecture (Figs 5 and 6). Traversing tracks between these remains, smaller sites were located on less prominent mounds, probably from eroded earthen structures. Ceramics from these sites were diverse in



**Figure 4** Sites located during the field survey sample area along the northern route. (Background © Google Earth™ mapping service)

- KRS01 Double-courtyard caravanserai, 10<sup>th</sup>–12<sup>th</sup> century
- KRS02-1 Single-courtyard square caravanserai, 9<sup>th</sup>–11<sup>th</sup> century
- KRS02-2 Single-courtyard roughly square caravanserai, 8<sup>th</sup>–10<sup>th</sup> century
- KRS03 Large fortified tepe – well preserved tower, 8<sup>th</sup>–12<sup>th</sup> century
- KRS04 Pottery scatter on large takyr, 12<sup>th</sup>–13<sup>th</sup> century
- KRS05 Pottery scatter in natural basin, 12<sup>th</sup>–14<sup>th</sup> century
- KRS06 Köshk and enclosed complex, well preserved, large 9<sup>th</sup>–12<sup>th</sup> century
- KRS07 Small roughly circular walled structure, 10<sup>th</sup>–12<sup>th</sup> century
- KRS08 Pottery and brick from modern excavate d mound, 14<sup>th</sup>–16<sup>th</sup> century
- KRS09 Section of standing wall – tower?, 11<sup>th</sup>–12<sup>th</sup> century
- KRS10 Very eroded mound – no clear morphology, 9<sup>th</sup>–10<sup>th</sup> century
- KRS11 Very eroded structure – some walls, 11<sup>th</sup>–14<sup>th</sup> century
- KRS12 Large tepe and satellite – small settlement?, 12<sup>th</sup>–13<sup>th</sup> century

date and type, with some sites yielding large numbers of fine glazed wares whilst others had a higher proportion of unglazed sherds from large vessels.

Preliminary analysis of the results would suggest that travellers were chiefly following a route running northeast-southwest, on a course some distance to the north of the modern road from Merv to Chardzhou. The substantial architectural remains discovered also support the assertion that the major eastwards axis of trade of Merv ran to Bukhara and Samarkand and *vice versa*.

Characterizing the sites of the northern route, there is not the uniformity that might be expected with desert way-stations. Instead, a wide range of forms was identified, perhaps associated with different roles and different chronological timescales, demonstrating the complexity of infrastructure that underpins this major route.

### The southern route

The majority of the sites identified during ground survey in this area took the form



**Figure 6** A large fortified tepe (KRS03), with a well preserved building

of surface ceramic scatters. The majority of these sites were located in natural depressions, currently occupied by small animal herders' structures congregating around wells (Fig. 7). The archaeological samples retrieved indicated a slightly

later period, the 14<sup>th</sup>–16<sup>th</sup> centuries CE, than the assemblages associated with the northern route, and were often found amongst modern occupation debris.

The wider spread of cultural material across the Karakum Desert in this southern area suggests that this area was indeed inhabited during the medieval period and it is probable that the natural basins – with their proximity to the water table, shelter and higher levels of vegetation – would be as advantageous in the past as they are to modern day herding communities. Unlike the strong linear pattern of the northern route, with its imposing architectural remains, the image emerging of the southern region is of a number of small interconnected outposts or watering points. Trade and travel feasibly percolated through this system, perhaps with no particularly strong axis of movement, but instead choosing a series of way-points suited to the purpose. Surveying a greater number of these sites may give a more detailed impression of the associated chronology, and elucidate the function of these remote outposts.

### General conclusions

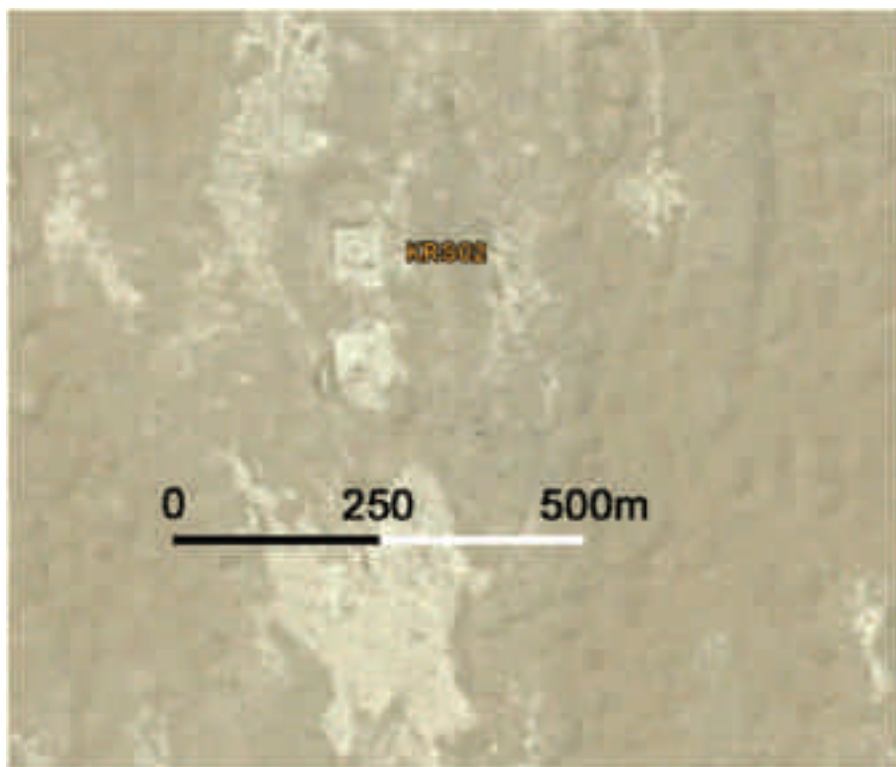
Preliminary analysis of the results would suggest that travellers were chiefly following a route running northeast-southwest, on a course north of the modern road from Merv to Chardzhou. Such a route is congruent with historical accounts of passage between Merv and the Oxus, in particular the postal network running through this region of the Islamic world. However, comparison of the two routes (northern and southern) suggests very different forms of navigation across the vast desert and the existence of numerous sites questions the existence of a single Silk Road in this region. Nevertheless, it would appear that the primary northern route attracted major



**Figure 5** Example of a caravanserai (KRS02-1), close to the modern settlement of Ravvina



**Figure 7** Example of a shepherding outpost in a natural topographic basin in the southern survey area



**Figure 8** The two caravanserais at location KRS02, clearly visible on the satellite image. (Background © Google Earth™ mapping service)

investment in building and infrastructure, certainly from the 10<sup>th</sup>–14<sup>th</sup> centuries. It is hoped that further archaeological investigation will explore the extent of state control and influence in this process, and the environmental and topographic factors which determined the structure of this complex network.

It is interesting to note that the anomalies easily identified from the satellite imagery during the desk-based study did not correspond to any medieval archaeological remains when investigated on the ground. Most proved

to be earthen structures, but these were largely nineteenth century or later in date, containing traces of modern materials, and with no indicators of earlier historic occupation: it was their sharp features which created the easily recognizable satellite signatures. However, once medieval sites had been identified in the field and their position recorded with GPS, they were clearly recognizable on the imagery (Fig. 8) (on the high-resolution images – on the lower resolution SPOT imagery they are less clear). This suggests that now that their “signature” has been

recognized, further identifications will be possible in the future, especially as the quality of the imagery improves.

### Future Research

Using the GIS platform we plan to review archaeological, historical, cartographic, topographic and hydrological data, within a developing framework of satellite and aerial imagery. Further survey work will be conducted along the route to Amul in 2010, and we hope that this research project can subsequently be extended to explore the routes to the Tedjen delta (to the west) and Sarakhs and Afghanistan (to the south). The landscape perspective that this work is enabling us to develop provides a broader picture of the dynamic economic, administrative and political organization of this pivotal area of the Central Asian Silk Roads.

### Notes

- 1 See G. Herrmann in *Archaeology International* **1997/1998**, 32–6 for a resume of the setting and development of the cities. For fuller accounts, see G. Herrmann, *Monuments of Merv: traditional buildings of the Karakum* (London: Society of Antiquaries of London, 1999); T. Williams, “The city of Sultan Kala, Merv, Turkmenistan: communities, neighbourhoods and urban planning from the eighth to the thirteenth century”, in *Cities in the pre-modern Islamic world: the urban impact of religion, state and society*; A. K. Bennison & A. Gascoigne (eds), 42–62 (London: Routledge, 2007); T. Williams, “The landscapes of Islamic Merv, Turkmenistan: Where to draw the line?”, *Internet Archaeology* **25**, [http://intarch.ac.uk/journal/issue25/merv\\_index.html](http://intarch.ac.uk/journal/issue25/merv_index.html), 2008; V. A. Zavyalov, “The fortifications of the city of Gyaour Kala, Merv”, in *After Alexander: Central Asia before Islam*, J. Cribb & G. Herrmann (eds), 313–29 (Oxford: Oxford University Press, 2007).
- 2 See T. Williams in *Archaeology International* **2002/2003**, 40–3 for an introduction to the current project and T. Williams in *Archaeology International* **2006/2007**, 53–7 for an account of the training projects at Merv.
- 3 This work was generously funded by a grant from The British Academy. Special thanks go Dr Mukhammed Mamedov who coordinated the Ministry of Culture input; Rejeb Jepbarow, Director of the Ancient Merv Archaeological Park, for his organization at the Ancient Merv Park; and to Gaigysyz Joraev, for his enthusiasm, knowledge of the landscape, driving skills and photography. All photographs taken by Gaigysyz Joraev.
- 4 As part of a field school project with UCLA. The results of the research into the Amul route will be published in more detail in the journal *Iran* next year.