

# PRELIMINARY REPORT OF THE FIRST SEASON OF THE DANISH-GERMAN JARASH NORTHWEST QUARTER PROJECT 2011

*Achim Lichtenberger and Rubina Raja*

## Introduction

Between 5 and 19 September 2011 a Danish-German team from the University of Aarhus, Denmark and Ruhr University Bochum, Germany conducted an intensive survey of the north-west quarter of the ancient city of Jarash (**Fig. 1**)<sup>1</sup>. The survey consisted of architectural documentation, geodetic measurements and geophysical survey over an area of 4.2 ha. It was the first season of a project that is intended to last for several years with the aim of exploring the north-west quarter of ancient Jarash. The project is funded by the Deutsche Forschungsgemeinschaft (DFG) and the H. P. Hjerl Hansen Mindefondet for Dansk Palæstinaforskning.

## Aims of the International Jarash North-West Quarter Project

The 2011 survey season prepared the way for a long-term archaeological project. The survey area is the highest point in ancient Gerasa and has hitherto been largely unexplored, apart from the excavation of the synagogue church by the Yale University mission (Kraeling 1938: 234-241) and two later trial trenches by V.A. Clark and J. Bowsher 1986.

The overall aim of the project is to examine continuity and change in settlement patterns and building development in this particular area from the pre-Hellenistic to early Islamic periods in order to discuss implementation, use and re-use of grid patterns and buildings over a longer period, and to link the results with broader patterns of urban development in the city and the region.

The project aims to clarify questions

associated with the settlement history of the north-west quarter. There is a particular focus on examination of the early settlement history in order to analyse the impact of Hellenisation in the Near East in general and Gerasa in particular, and to determine whether or not these processes can be traced throughout the Roman imperial period (for further literature on Gerasa see Zaid 1997; Lichtenberger 2003; Kennedy 2007; March 2009; Raja 2012).

The north-west quarter occupies a prominent position because of its location on the highest area within the ancient city and its proximity to one of the main sanctuaries, that of Artemis. However, its distance from the *wadi* raises the question of how the area was supplied with water. It has been suggested that the Graeco-Roman city originally developed from two separate settlements, *viz.* Greek Antioch and an indigenous Gerasa, with two separate main cults - of Greek Zeus Olympios and Artemis (probably the *interpretatio graeca* of a local goddess) (cf. Lichtenberger 2008). If this hypothesis holds true, the north-west quarter close to the Artemision would be a plausible location for an early settlement at Gerasa. The sondages by V.A. Clark and J. Bowsher further east yielded Early Bronze Age material that hints at an early occupation in this area (Clark and Bowsher 1986: 343). On the basis of their earlier work, we wish to carry out further investigations by means of sondages in carefully selected locations. The architectural and geophysical survey in 2011 served to document all visible structures and to select areas for excavation in future seasons.

Another important aim of the project is to

---

1. The team consisted of the authors (directors), Georg Kalaitzoglou (assistant director), Jens Christian Pinborg (architect), Rudolf Kniess (geophysics), Dana Pilz

(geophysics), Ditte Maria Damsgaard Hiort, Annette Højen Sørensen and Stefan Riedel (archaeologists).



1. Aerial photo of Jarash with survey area marked.

study the issue of water supply in ancient Gerasa. To date, no detailed study of this problem has been undertaken<sup>2</sup>. In the north-west quarter, a large cistern provides the logical starting point for such a study. This will be investigated further in the 2012 season.

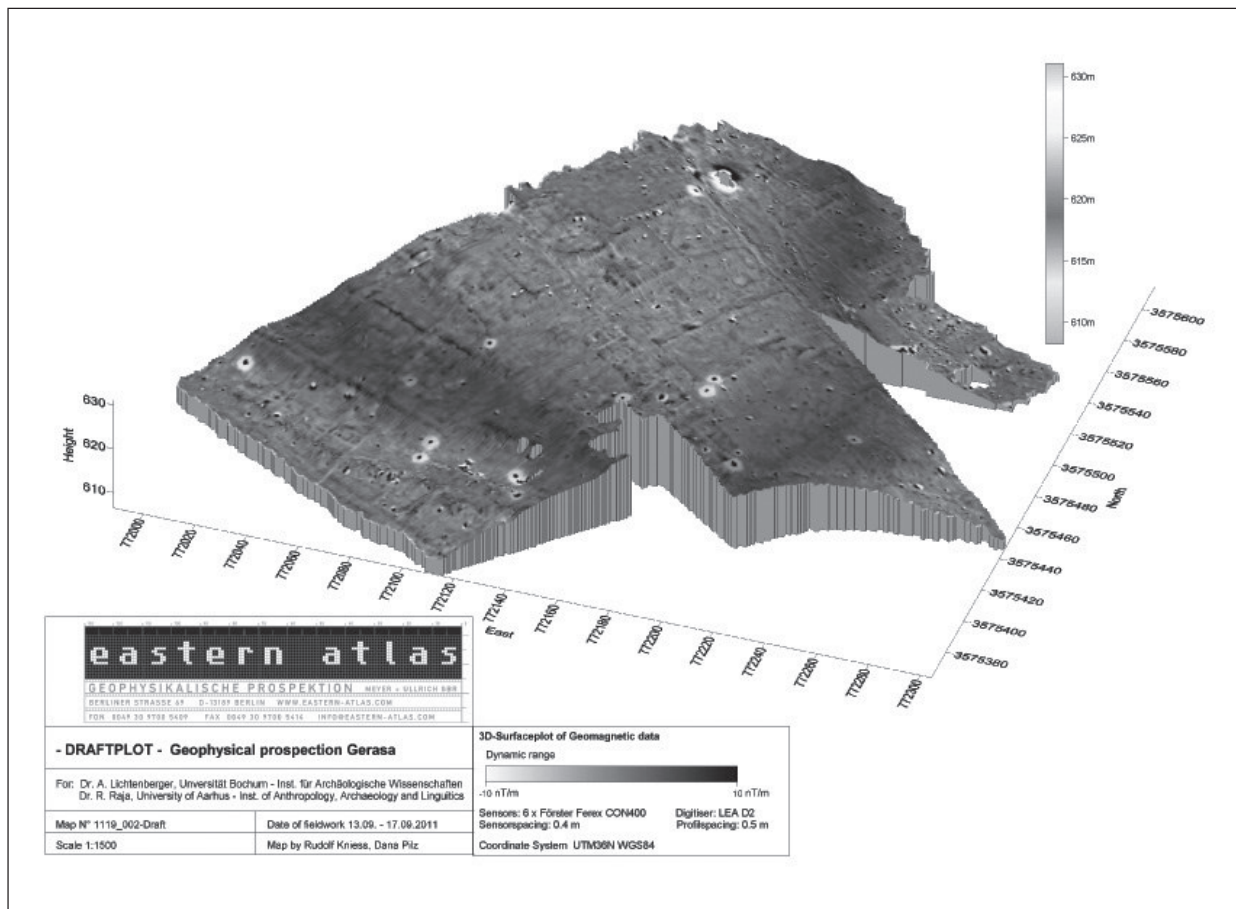
### General Topography (Fig. 2)

The north-west quarter is the highest area within the walled city, with a prominent location on the hill top and a view of the surrounding area, including the city, *wadi* and valley. The terrain slopes down to the east in the direction of the Artemision, as well as to the north and south.

The northern side consists of a relatively steep rocky slope, while the southern side descends over several artificial terraces. The western limit of the area is defined by the city walls. To the north, the area must have been limited by the North Decumanus running to the north-west gate. The entire north-west quarter is covered with walls, mostly just with one or two courses of rough limestone remaining *in situ*. Aerial photography from 1917-1918 shows that parts of the north-west quarter were used for agriculture; some later terracing may therefore have taken place (Fig. 3). This was also observed by Clark and Bowsher (1986: 343) in one trench, where

2. On the supply of water to Jarash see the preliminary study of Seigne (2004); cf. the contributions in

Ohlig (ed.) 2008.



## 2. 3D surface plot of geomagnetic data.

the uppermost metre of deposit was recent agricultural soil. Until recently, parts of the highest area within the north-west quarter were used as a football pitch.

### 2011 Survey Season

The foci of the 2011 survey season were the archaeological remains in the north-west area of the city, beginning west of the Sanctuary of Artemis and extending to the city wall further to the west (**Fig. 4**). The survey consisted of the following components: (1) architectural field survey and documentation, (2) geodetic survey and (3) geophysical survey (geomagnetics and georadar).

The area was divided into two sectors, which were investigated by two survey teams each consisting of two archaeologists. The teams recorded, described, sketched and analyzed all structures visible on the surface, as well as other important finds. They were supported by an architect who drew 25 architectural elements

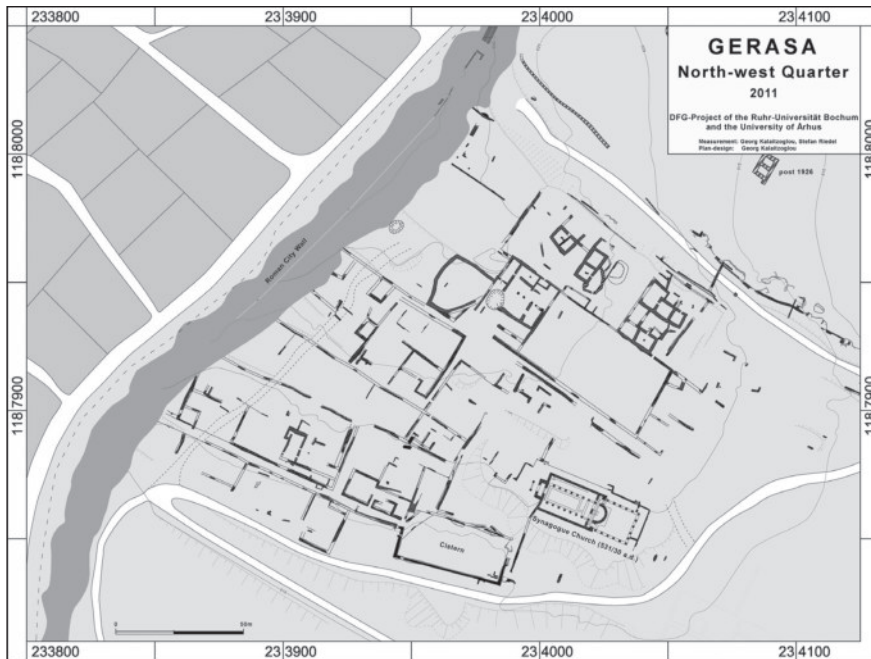
and modelled these in a 3D photo modeller program, which allowed for detailed analysis by combining several disparate elements (on the architectural decoration of Gerasa cf. Nassar 2004). Several capitals (**Fig. 5**) and fragments of capitals have been documented and, in the debris of the city wall, a fragment of a large limestone relief of the Roman period was discovered. This fragment, which has very deep relief, shows part of a clad torso and traces of an accompanying animal, probably feline or an eagle (**Fig. 6**).

During the survey season, a total of approximately 350 walls – making up varying complexes of different size and function – were identified by the survey teams. Owing to the exclusively non-invasive methods used by the survey, only those structures visible on the surface could be recorded; most of these seem to be of late Roman, Byzantine and early Islamic date (on early Islamic Jarash cf. Blanke *et al.* 2007; Damgaard and Blanke 2005; Walmsley 2007).





3. Aerial photo of Jarash, 1917 / 1918; BayHStA, BS-Palästina 1127a (courtesy of Bavarian War Archive).



4. Map of structures recorded in the north-west quarter of Gerasa.

The north-west quarter was built on at least six terraces that follow the natural topography of the hill. The terraces are organised by means of streets and in some places they connect via stairs. The structures visible on surface are mostly built from *spolia* and appear to be of late date. However, the general layout seems to date back to an earlier period. This can be seen, for example, in the case of the large cistern (see below) that cut an earlier street when it was constructed. Of the numerous structures observed, the

following are of particular interest and should be investigated further in future seasons:

- (1) The 'Ionic building';
- (2) The 'southern street' and adjoining complexes;
- (3) The cistern;
- (4) The northern domestic complexes and caves.

*The 'Ionic Building'*

This monumental complex is located centrally on the hill top within the north-west



5. Ionic capital from the 'Ionic building'.



6. Fragment of Roman relief.



7. 'Ionic building' from the south-west.

quarter (Fig. 7). It consists of a relatively large, roughly square building with several rooms. In front of the complex, an oblong terrace more than 50 metres long extends to the east in the direction of the Sanctuary of Artemis.



8. Monolithic altar.

The building itself incorporates a significant number of *spolia*, including several of the Ionic order (Fig. 5). These would originally have formed part of one or more Roman period buildings. The location and layout of this complex indicates that it could have been the residence of one of the important families in late Antiquity or the early Islamic period. Particularly notable are three adjoining 'courtyard houses' which seem to belong to the same period as the 'Ionic building'. This area and its complexes should be examined in more detail, as they may yield interesting data about social structures in the period between late Antiquity and the early Islamic era. Next season, the 'Ionic building' complex will be investigated by means of carefully placed sondages in order to clarify aspects of its history and use over a longer period.

In the adjoining area, a monumental monolithic altar decorated with stylised bulls' horns was discovered in an open pit, indicating earlier cultic activities in the area (Fig. 8).





9. 'Southern street' from the west.



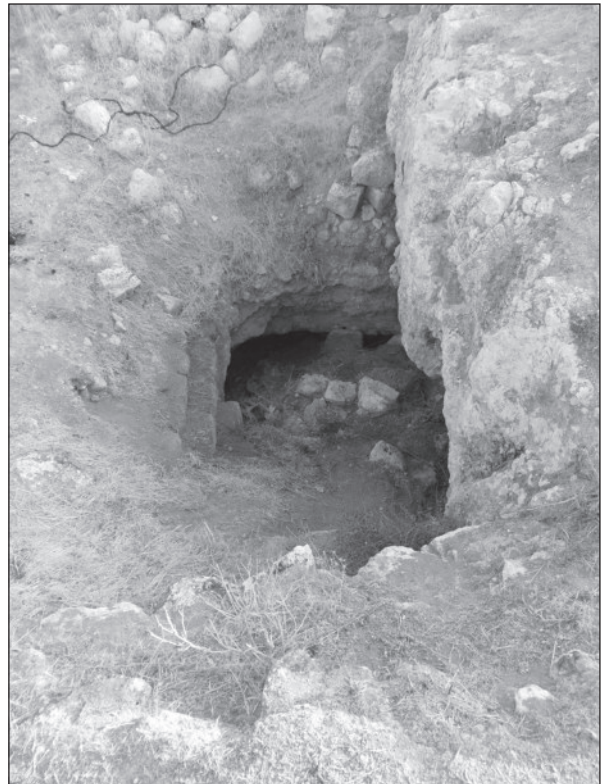
10. Cistern from the south.

#### *The 'Southern Street' and Adjoining Complexes*

In the southern part of the survey area, we identified an east-west street running from the city wall to the cistern (**Fig. 9**). Several complexes branch off on both sides of this street; these include structures used for production, a complex with a small cistern and several courtyard structures. This 'quarter' extends over more terraces laid out on the hill sloping to the south. Several side streets leading up the hill were identified between some of these complexes. Although most visible structures in this area appear to be of late Antique to early Islamic date, their overall layout conforms to the orthogonal street grid of the ancient Roman city. This area therefore needs to be investigated in more detail in order to understand its changing use and development over time.

#### *The Cistern*

A large rock-cut cistern is located in the south-eastern part of the survey area. It measures ca. 41x21 metres (**Fig. 10**). The cistern blocks



11. Repairs to cistern.

the 'southern street'; it is therefore likely that it was built after the street had lost its urban function as a line of communication between the western and eastern parts of the area.

A natural cave is located under the cistern. This cave extends east-west for a distance of at least 20 metres and becomes gradually deeper towards the west. This cave was also used as a cistern as at its ceiling there was a round stone cut opening for drawing water. At some point, the floor of the cistern seems to have collapsed on its eastern side, where the natural cave was closest to the rock surface (**Fig. 11**). The cistern was in use for quite some time, as attested by several layers of hydraulic mortar, in some places combined with large white *tesserae*.

It was possible to locate one water inlet in the form of a channel leading into the cistern. Furthermore, a possible entrance (perhaps also a well) was found *in situ*. However, it still remains to be clarified whether or not these were the only ways of supplying water to and accessing water from the cistern. The northern part of the cistern was at a higher level than the southern part, so there may have been an over-fall basin. On almost the entire southern side, a rock-cut



12. Magnetogram.

‘depression’ runs horizontally; this was probably used to fix a cover for the cistern.

Objectives in forthcoming seasons will include clarification of the date of construction, water supply to and use of water from the cistern. Furthermore, we wish to explore how the cave might have been associated with the use and/or abandonment of the cistern. As little is known about the supply of water within the ancient city of Jarash, one aim will be to examine closely whether water supply and distribution to the north-western part of the city might be explored by investigation of the cistern and its immediate surroundings, including a sondage in the cistern.

#### *The Northern Domestic Complexes and Caves*

On the north side of the survey area, the hill is ‘truncated’ by the steep, rocky hillside. In various places, this hillside was worked, both horizontally and vertically. The rock-cut facades were integrated into several buildings, some of which were connected to caves of varying sizes. In two locations, rock-cut staircases gave access to the hill top. Two notable complexes are located between the rocky hillside and the terrace of the ‘Ionic building’; it appears that these structures saw several phases of domestic use.

#### **Geodetic Survey**

Over 14 days, two surveyors carried out a geodetic survey using a total station. With the aim

of drawing up a detailed map of the north-west quarter, the area (*ca.* 3.8 hectares) was surveyed with a Sokkisha Set5 instrument. By working closely with the survey teams, it proved possible to record the visible architectural remains as well as topographic detail. The resulting map, which combines the architectural and geodetic surveys, gives a detailed impression of the structures visible in this part of the ancient city (**Fig. 4**).

#### **Geophysical Survey (Geomagnetics and Georadar)**

Geophysicists from Eastern Atlas, Berlin carried out a large-scale geometric survey of the entire study area between 14 and 19 September 2011 (see report, this volume). A six fluxgate array was used for the geomagnetic survey. Owing to the topography, positioning via DGPS was applied. The array was carried by two people because the steep topography did not permit the instrument to be wheeled across the area.

By means of the magnetogram (**Figs. 12 and 13**), anomalies were detected which could be interpreted as topographical, geological and archaeological features. A preliminary analysis tentatively suggests that some of these features correlate with architectural structures visible on the ground.

At the northern edge of the survey area, the magnetogram revealed parallel structures - possibly the western section of the Northern



13. Geomagnetic survey; interpretation of geomagnetic data.

Decumanus leading to a monumental city gate (cf. Zaid 1997: 43). On the terrace east of the ‘Ionic building’, structures oriented north-south have been detected, crossing the terrace. These may be associated with some kind of division of the terrace. South of the same terrace, several wall structures – which are not visible on surface – were detected, hinting at the presence of a domestic quarter.

Ground-penetrating radar was used in carefully selected areas in order to test the feasibility of this method on the terrain. A GSSI SIR 3000 with a 270 MHz antenna was used. It proved difficult to distinguish limestone from limestone sediment and was therefore also difficult to measure depths. However, for structures closer to the surface, more positive results may be forthcoming after the data have been processed.

### Conclusion

The two-week survey season has yielded many results, which need to be analysed further. So far, a detailed map of the north-west quarter has been prepared and compared with the geophysical results. On the basis of this analysis, areas of particular interest have been selected for testing by means of sondages in the 2012 season. The combination of architectural, geodetic and geophysical survey proved an excellent way of carrying out a non-invasive assessment of the site and has provided optimal

information for preparing future excavations. Even during the survey and subsequent analysis, several structures could be identified which seem promising for future excavation with the aim of examining the settlement history of the north-west quarter of Jarash. Furthermore, structures were also identified which may be able to answer more specific questions, viz. the development of the city’s water supply system and urban transformations at the end of classical Antiquity.

### Acknowledgements

The directors and team were supported by members of the DoA throughout the season. We would like to thank Acting Director General, Fares A.K. Hmoud, for facilitating our work at Jarash in 2011. We would also like to thank Ahmed Shami and Akram Al-‘Atoum from the Jarash Antiquities Department who supported us both scientifically and logistically. Our residence at the Archaeologists’ Camp and the support of Abdel Majjid Mjely – whom we thank – contributed towards the successful outcome of the season. We would also like to thank Jihad Haroun and Khalil Hamdan for friendly and professional advice and guidance. We would like to thank the DoA for its support and good co-operation, which we hope to continue in future. Furthermore, we would like to mention that the German Protestant Institute of Archaeology in ‘Ammān has provided



A. Lichtenberger et al.: The Danish-German Jarash Northwest Quarter Project

considerable help; in particular we would like to thank Dieter Vieweger, Jutta Häser and Nadia Shuqair. Finally, we would like to thank Louise Blanke, Thomas Lepaon, Jacques Seigne, Alan Walmsley and Thomas Weber for assisting us before, during and after the season.

Achim Lichtenberger  
Institute of Archaeological Science  
Ruhr University Bochum  
Germany  
achim.lichtenberger@rub.de

Rubina Raja  
Institute for Culture and Society  
Aarhus University  
Denmark  
rubina.raja@hum.au.dk

**Bibliography:**

- Blanke, L., Damgaard, K., Simpson, I. and Walmsley, A.  
2007 From Bathhouse to Congregational Mosque: Further Discoveries on the Urban History of Islamic Jerash. *ADAJ* 51: 177-97.
- Clark, V.A. and Bowsher, J.  
1986 Note on Soundings in the Northwestern Quarter of Jerash. Pp. 343-349 in F. Zayadine (ed.), *Jerash Archaeological Project 1981-1983*, I. Amman.
- Damgaard, K. and Blanke, L.  
2005 The Islamic Jarash Project. A Preliminary Report on the First Two Seasons of Fieldwork. *Assemblage* 8, (<http://www.assemblage.group.shef.ac.uk/>).
- Kennedy, D.  
2007 *Gerasa and the Decapolis: A 'Virtual Island' in Northwest Jordan*. London: Duckworth.
- Kraeling, C.H. (ed.)  
1938 *Gerasa. City of the Decapolis*. New Haven: American Schools of Oriental Research.
- Lichtenberger, A.  
2003 *Kulte und Kultur der Dekapolis. Untersuchungen zu numismatischen, archäologischen und epigraphischen Zeugnissen*. Wiesbaden: Harrassowitz.
- Lichtenberger, A.  
2008 Artemis and Zeus Olympios in Roman Gerasa and Seleucid Religious Policy. Pp. 133-153 in T. Kaizer (ed.), *The Variety of Local Religious Life in the Near East in the Hellenistic and Roman Periods*. Leiden – Boston: Brill.
- March, C.  
2009 *Spatial and Religious Transformations in the Late Antique Polis. A Multi-Disciplinary Analysis with a Case-Study of the City of Gerasa*. Oxford: Archaeopress.
- Nassar, M.  
2004 *The Architectural Elements and Decoration at Gerasa (Jerash) during the Roman Period (Typological and Comparative Studies)*. Berlin: Mensch & Buch Verlag.
- Ohlig, C. (ed.)  
2008 *Cura Aquarum in Jordanien. Proceedings of the 13<sup>th</sup> International Conference on the History of Water Management and Hydraulic Engineering in the Mediterranean Region Petra / Amman 31 March – 09 April 2007*. Siegburg: Deutsche Wasserhistorische Gesellschaft.
- Raja, R.  
2012 *Urban Development and Regional Identity in the Eastern Roman Provinces, 50 BC – AD 250: Aphrodisias, Ephesos, Athens, Gerasa*. Copenhagen: Museum Tusulanum Press.
- Seigne, J.  
2004 Remarques Préliminaires à une Etude de l'eau dans la Gerasa Antique. Pp. 173-185 in H.D. Bienert and J. Häser (eds.), *Men of Dikes and Canals. The Archaeology of Water in the Middle East*.
- Walmsley, A.  
2007 *Early Islamic Syria. An Archaeological Assessment*. London: Duckworth.
- Zaid, Z.  
1997 The Origin and Evolution of the Architecture and the City plan of Gerasa/Jerash from 332 B.C. to the mid-eighth Century A.D. with Reference to the other Jordanian Decapolis cities. PhD thesis Aachen University.

