



# INTRODUCTION

by Dieter Vieweger/Jutta Häser



Fig. 0.4 The Tall Zirā'a. View to the east showing the excavation at Area I and II. Photograph taken in spring 2011 (Source: BAI/GPIA).

The present volume is the first in a series of nine planned volumes of the excavations' final report carried out by D. Vieweger and J. Häser. It will provide an introduction to excavation methodology and the objectives of the 'Gadara Region Project'. Apart from that, it will focus on the Tall Survey that took place in 2001 along with the examination of its appendant archaeological finds. In 2003, there already was a preliminary presentation of the Tall Survey. In the present publication, the results of this survey shall be described in detail and made publicly

available for future scientific research. Moreover, the main concepts and techniques that form the basis of the excavations, and that the following volumes will build upon—such as chronology, stratigraphy, and the grid system—shall be discussed.

Volume 1 of the 'Gadara Region Project's' excavation report will be divided into the following four thematic blocks: 'Gadara Region Project'/Tall Zirā'a, the 2001 Survey on Tall Zirā'a, Scientific Methods and the Framework of Archaeological Work on Tall Zirā'a.

## *First Thematic Block: The 'Gadara Region Project'/Tall Zirā'a*

In the volume's first topic block, D. Vieweger and J. Häser will introduce the 'Gadara Region Project' and the Tall Zirā'a's archaeological and geographical significance. They will discuss the tall's morphology and formation (*Chaps. 1.2.1. and 1.2.2.*) as well as the natural conditions of the Wādī al-'Arab (*Chap. 1.3.1.*). Following that, a chapter will deal with the wādī's significance as a trade

route (*Chap. 1.3.2.*). Then the tall's history of research will be described, outlining the studies by G. Schumacher and N. Glueck as well as the various excavation campaigns and surveys carried out on the tall, and their respective results (*Chap. 1.4.*). The detailed results of these surveys shall be presented chronologically in the following Volumes 2–7.

### *Second Thematic Block: The 2001 Survey on Tall Zirā‘a*

The second topic block deals with the survey that was carried out in the months of September and October of 2001 on the tall and in its immediate surroundings. The different types of finds, i.e. pottery, glass, stone finds, and bones, will be described in detail. The focus will rest on the ceramic finds since as many as 22,383 pottery sherds were discovered during the survey. These will be presented by F. Kenkel in *Chap. 2.2.1*. The mere evaluation of the material gathered in the course of the survey already shows that the pottery finds alone reflect a history of settlement covering all periods from the Early Bronze Age to the Ottoman era. Two sherds, each marked with a stamp imprint representing a cross, will be discussed in a separate chapter (*Chap. 2.2.1.2*). The smaller group of glass finds, altogether consisting of 44

fragments, was examined and evaluated by D. Keller and St. Hoss (*Chap. 2.2.2*). Most of these glass fragments date from the Byzantine era while some of them date back to Hellenistic – Roman times. The few stone and bone finds collected during the survey will be presented by D. Vieweger (*Chaps. 2.2.3* and *2.2.4*).

Two Early Roman limestone vessels that can be regarded as markers for a Jewish settlement will be discussed in detail (*Chap. 2.2.3.3*) since they bear testimony to Jewish life and the Jewish communities' need for ritual purity around the beginning of the Common Era.

In a closing chapter, the survey's results, with respect to the different survey methods applied, will be evaluated by D. Vieweger (*Chap. 2.3*).

### *Third Thematic Block: Scientific Methods*

The third topic block will introduce the different scientific methods as well as the technological equipment applied during the excavation campaigns. Their overall objectives, procedures, and results will be presented.

In this block, D. Vieweger will describe—among other subjects—the tall's geophysical prospection by means of geoelectric mapping, twodimensional and threedimensional tomography. The latter allowed the measuring of more than 50 profiles in different configurations (*Chap. 3.5.1*). Within this chapter D. Biedermann discusses the methodology of crosshole examinations, drilling boreholes at a distance of several metres. Depending on the method applied, either ground radar antennae or geoelectric probe heads are lowered into these boreholes (*Chap. 3.5.2*). K. Rassmann and S. Reiter undertook a geomagnetic survey on the tall's plateau with a special attention to the area between Area I and II and north-west of it around a supposed tower (*Chap. 3.5.3*).

Photogrammetry was also applied on the tall (*Chap. 3.2*; P. Leiverkus and G. Bongartz). Surveying and mapping via photographic images are important fields of application in archaeology, especially when combining modern equipment with digital technologies. Collecting data for representing spatial structures by means of image-based three-dimensional reconstruction can be easily incorporated into the daily excavation routine. With the help of these images, the excavations on Tall Zirā‘a took a veritable quantum leap with respect to the daily documentation as well as the architectural stone-by-stone recording of the planum, since three-dimensional images can easily be exported as rectified top views, which in turn serve as the basis of computer-based mapping.

In the framework of an archaeometric program W. Auge performed chemical and mineralogical analyses on pottery, glass, and metal finds; moreover, he examined seals (cylinder seals, scarabs, signet rings), balance weights, gypsum finds, and bitumen. He was able to detect, for instance, a silver amulet as well as a bronze

figurine, covered with gold and silver, among the metal finds. It was also discovered that the majority of objects that had primarily been considered to be bronzes were in fact made from pure copper. The examination of raw glass, granulate, and of glass beads suggests that glass was processed, possibly even produced, on the tall. When scrutinizing the pottery finds the main object was to determine their provenance and, in doing so, to establish or at least to complement a 'regional fingerprint' by performing chemical and mineralogical tests and comparing the finds from the tall with the pottery finds from neighbouring settlements. The XRD Method, the ICP Method, and the RFA Method were applied for the analysis of the ceramics. The results of these analyses, however, seem to advise a cautious approach to making overoptimistic statements regarding the provenance of pottery vessels. In this volume the first results are presented by D. Vieweger and J. Häser on basis of W. Auge's researches (*Chap. 3.8*). W. Auge will prepare Volume 9 with Archaeometry as its topic.

Experimental archaeology (*Chap. 3.4*; D. Vieweger and J. Häser) was applied on multiple occasions to allow an appropriate interpretation of finds. In 2003, following the excavation campaign, the first project focussing on the history of technology was carried out, examining the traditional building of a tabun (*Chap. 3.4.1*). In the course of this research, the various work stages—origin, grinding, cleaning, mixing of the clay, origin and processing of the admixture, manual construction of the oven, processing of the oven floor and of the upper rim, preparation of the oven pit, heating of the oven, and the firing procedure—could be documented and analysed. In 2009 and 2012, two differently constructed kilns were built and used for firing pottery vessels with the purpose of better understanding the technical processes and the way the necessary tasks were organised (*Chap. 3.4.2*). In the spring of 2012, a quadruple-shelled kiln was built that could not only be used for firing ceramics but also for

melting glass. This kiln allowed the researchers to melt raw glass in casting moulds into finished goods (*Chap. 3.4.2.4.*).

The pottery finds of the excavations were identified not only by archaeometric analysis but they also underwent a colorimetric screening process (G. Bülow; J. Große Frericks; W. Auge). For this purpose, the Biblical Archaeological Institute Wuppertal (BAI) and the ‘Department of Printing and Media Technology’ of the Bergische University of Wuppertal jointly developed a colour-classifying program by optimising a typographical technique for its application in the field of archaeology, and moreover designed a specific computer software. This procedure and its results are described in *Chap. 3.3.*

*Chap. 3.1.* deals with three-dimensional reconstructions that were produced by the company ‘Archimetrix visuelle Kommunikation’ and D. Vieweger. Based on the excavations on the Tall Zirā‘a, the architects reconstructed a virtual city of the Late Bronze Age. Another project demonstrates the construction and furnishing of an Iron Age I Four Room House. Reconstructions such as these have proven very helpful during the excavations since they encouraged the archaeologists involved to scrutinise single finds in connection with further pieces of information. Discussing the virtual reconstruction works forced them to substantiate the structures depicted in the model. Apart from that, threedimensional reconstructions are very useful when presenting excavation results to the public.

In 2014, L. Olsvig-Whittaker analysed a total of 43 soil samples that had been collected on Tall Zirā‘a over

the past ten years and that cover a time span from the Late Bronze Age to the Mamluk era (*Chap. 3.7.*). This was a pilot study with the object of finding out whether more material could be obtained using methods designed for archaeobotanical sampling. There are indeed macrofossils at Tall Zirā‘a that are characteristic of Near Eastern agriculture. An especially interesting find is that of the bitter vetch, indigenous in Anatolia and northern Iraq, but not in Jordan. The pilot study’s results suggest that further and more intensive research on the subject would be very promising

Landscape Archaeology (*Chap. 3.6.*) researches spatial and functional relationships of features such as settlements, roads, installations, fields etc. with their physical, ecological and cultural environment. In *Chap. 3.6.2.* L. Olsvig-Whittaker describes the different methods of landscape archaeology, which the ‘Gadara Region Project’ used in the last years (GIS-based habitat mapping from remote sensing images, multivariate analysis of site characteristics versus landscape characteristics). The aim of this researches is to get a thorough understanding of the environmental setting in which the Tall Zirā‘a has been situated during different periods.

Within this chapter K. Soennecken and P. Leiverkus introduce the surface survey, which have been undertaken in the years 2009 to 2011 (*Chap. 3.6.1.*). The examination of all parts of this survey will be published in Volume 9.

#### *Fourth Thematic Block: Framework of Archaeological Work on Tall Zirā‘a*

The fourth topic block deals with the excavations’ general conditions, which serve as the foundation for the research presented in the following volumes. In this respect D. Vieweger and J. Häser discuss the grid system applied (*Chap. 4.1.*), the stratigraphy (*Chap. 4.2.*), the

chronological structure (*Chap. 4.3.*), and the samples taken from Area I and Area II for the radiocarbon dating (*Chap. 4.4.*). One sample was analysed from Area II and 47 from Area I.