

Tall Zar'a – Excavations on a multi-period site in Northern Jordan

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Abstract

In 2001, the 'Gadara Region Project' was initiated by Prof. Dr. Dieter Vieweger of the Biblical-Archaeological Institute (BAI) of the University of Wuppertal (Germany). This project has focused on the interdisciplinary investigation of the Wādī al-'Arab south-west of Gadara and the excavation of its most prominent site, Tall Zar'a. The project has been a joint enterprise of the BAI and the German Protestant Institute of Archaeology (GPIA) in Amman since 2004, and the Jerusalem branch of the same institute entered the project in 2006.

It is jointly directed by Prof. Dr. Dieter Vieweger and Dr. Jutta Häser.

The surveys and excavations, which have applied the latest archaeological technologies and methods, show that the Wādī al-'Arab was inhabited from the Palaeolithic period to modern times. The outstanding natural conditions with respect to soil fertility and abundance of water made this region an extraordinarily valuable settlement area for thousands of years.

Tall Zar'a offers the unique possibility of excavating a stratigraphical sequence from the Early Bronze Age to 1900 AD in northern Jordan. For the Bronze and Iron Ages, the outstanding finds show exemplarily the cultural influences and changes in a contact zone between the historical 'global players': Egypt, Syria, and Mesopotamia.

تل زرعاً: حفريات أثرية في موقع متعدد العصور في شمال الأردن

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ملخص

بدأ "مشروع منطقة جدارا" بمبادرة من الاستاذ الدكتور ديتر فيفيغر من معهد الآثار الانجيلي في جامعة فوبرتال (ألمانيا) في العام ٢٠٠١. ركز المشروع على البحث المنظم لوادي العرب، جنوب غرب جدارا (أم قيس) وأعمال الحفر في أبرز مواقعها، تل زرعاً. أصبح المشروع مشتركاً بين معهد الآثار الانجيلي والمعهد الألماني البروتستانتي للآثار في عمان منذ العام ٢٠٠٤، كما دخل فرع القدس للمعهد ذاته في المشروع منذ ٢٠٠٦ تحت الاشراف المشترك للأستاذ د. ديتر فيفيغر و د. يوتا هيزر. المسوحات والحفريات التي استخدمت أحدث التقنيات في علم الآثار، وقد دلت على أن وادي العرب قد كان مسكوناً منذ العصر الحجري القديم إلى العصر الحديث. الظروف الطبيعية المواتية وخصوبة التربة وكثرة المياه جعلت منها منطقة استيطان بشري مميزة على مدى آلاف السنين.

يوفر تل زرعاً الامكانية النادرة للحفر في تسلسل طبقات الأرض من العصر البرونزي المبكر إلى ١٩٠٠ ميلادي في شمال الأردن. اللقى الأثرية من العصر البرونزي والحديدي تشهد على التأثير الحضاري والتغيرات في منطقة التماس بين الحضارات الأهم في مصر، سوريا وبلاد الرافدين.

Introduction:

The German Protestant Institute and the German Institute of Archaeology have worked in the ancient Decapolis city of Gadara since 40 years ago. Due to excavations and surveys on the Gadara-Plateau, it became clear that no settlements existed there before a small settlement or a fortress was built in the time of Alexander the Great, although the ecological conditions are excellent. Therefore, it was an important task to look for earlier settlements in the surroundings of Gadara. Only few investigations had been undertaken there before (Schumacher. 1890; Steuernagel. 1926; Glueck. 1949; Kerestes *et. al.* 1977-78; Hanbury-Tenison. 1984; Riedl. 1999; cf. Abél. 1967. p.35-36).

It turned out that the Wādī al-‘Arab (32°35'N, 35°40'E) together with its tributaries, especially the Wādī az-Za5ar, are the most promising areas for research due to their outstanding environmental conditions.

The Wādī al-‘Arab has its source in the highland west of Irbid and drains into the Jordan. In the wadi itself, there are numerous springs, some of them thermal in the western lowlands. Annually, about 28.8 million cubic meters of water flowed through the wadi (Ahmad. 1989. 273ff.). Since 2007, the current hydrological conditions are under study by a group of researchers of the Helmholtz Institute in Halle/Leipzig (Germany).

The ruins of former water mills (Steuernagel. 1926, p.A 459.466f.; Gardiner and McQuitty. 1987), channels hacked into the rock and some short reed-grown watercourses still give an impression of the erstwhile abundance of water in this region.

The Wādī al-‘Arab connects the Jordan valley – and via the plain of Jezreel also the Mediterranean coast – with the East-Jordanian uplands. Following the wadi’s course, the tremendous ascent from the trough of the Jordan valley (about 290 m below sea level) up to Irbid (about 560 m above sea level; the surrounding chain of hills to the west near Bayt Rās reaches about 612 m above sea level) can be overcome without any inconveniently steep and narrow passages. Since nothing similar can be said about the Yarmouk valley lying to the north, the outstanding geopolitical significance of the wadi can be understood, the more so as one can continue one’s journey from the Irbid-Ramtha basin directly to Damascus, Baghdad, and Amman.

Aims of the Project

Although Iron Age pottery and evidence of residential buildings from the Islamic period have been found in strata at Gadara, the initial investigation rightly focused on the site’s ‘classical periods’. The era before and after Gadara’s prime will no doubt require further research.

The region south of Gadara offers a unique opportunity to examine, in a systematic and comprehensive way, the settlement development in a naturally confined area, that is, in relation to Gadara, and to explore more closely the pre- and post-classical periods of the Gadara region.

The links between the urban center of Gadara and the surrounding region will also provide new insights into the urban history of the city. The integrated investigation of urban centers (Tall Zar’a; Gadara) and their respective environments addresses regionally-oriented questions of landscape archaeology.

The trade route which follows the Wādī el-‘Arab, connecting the Jordan Valley (e.g. Beth Shean) in the west with the Irbid-Ramtha Valley (e.g. Ramoth in Gilead) in the east, was undoubtedly a key factor in the wadi’s geopolitical significance and the development of the region.

Tall Zar’a and the neighboring settlements, Khirbet Bond (map reference 2128.2233) and Tall Kinise (Ra’an) (map reference 2191.2271), were more or less consistently occupied over a long period of time, which is born out in the archaeological record by settlement traces from the Early Bronze Age to the Ottoman period. As a result, we can expect to gain important insights into the long-term development of settlements in a relatively confined geographical area.

The artesian spring on Tall Zar’a, as well as the extremely fertile soils and abundant water resources in its hinterland, make this a privileged settlement site in northern Palestine. Consequently, a continuous stratigraphy can be expected from the excavations on the tall which can hopefully also later

serve as a reference for the stratigraphy of the nearby ancient polis of Gadara, especially for the periods pre- and postdating the classical periods (Fig. 1).



Figure 1: View showing the position of Tall Zar'a at the confluence of the Wadi al-'Arab and the Wadi az-Za5ar.

Archaeological Work on Tall Zar'a

Topographical setting of the Tall

In 2001, the investigation started with a survey program in the Wādī al-'Arab and Wādī az-Zaar. More than 100 archaeological sites were found and registered. It turned out that the most promising site for excavation in the wadi is Tall Zar'a (Vieweger. 2003a).

Tall Zar'a (map reference 2119.2252) is a settlement hill 4.5 km as the crow flies south-west of the ancient Decapolis city of Gadara. It is situated at the confluence of the Wādī al-'Arab and its tributary, the Wādī az-Zahar. The tall rises between 25 m and 45 m above the surrounding area. Its highest point is situated at -17 m below sea level. The settlements were built on top of a natural limestone hill, which has a diameter of about 240 m at its base and 160 m on the plateau. The ancient cities or villages on top of the hill were protected by sheer rock faces on its eastern and northern sides. The southern flank offers the best opportunity to overcome the 22–25 m height difference comfortably via a 150 m long, ascending track from west to east. The tall was inhabited from the Early Bronze Age up until about 1900 A.D. The cultural layers of these habitation activities are approximately 12 m thick.

As the only notable elevation in the lower Wādī al-'Arab, Tall Zar'a dominates the latter. Not only are Gadara and its sanctuary extra muros within eyeshot, but to the west the narrow entrance to the wadi can also be overlooked as well as the potential crop fields in its western and central parts. Likewise the terraced slopes and the floor space on the mountain spur (tillable during the rainy season) are within view toward the east as well as the hillside of the wadi forming a wide semicircle from the east to the south and west (suitable for breeding small livestock).

Therefore, it is not surprising that in the Early Bronze Age the tall was already used for a hilltop settlement and served this purpose repeatedly well into the Middle Ages. Its geological, agricultural and geostrategic advantages are not to be overlooked.

The south flank of Tall Zar'a offers the best opportunity to overcome the 25 m difference in height comfortably via a 150 m long track. The terrace-like edge, which gradually leads from the southwest bottom of the tall up to the more spacious plateau in the northeast and now carries irrigation pipes, obviously worked to the advantage of the previously existing old track. Unfortunately, in recent times this track was dug to a depth of more than 50 cm for almost the entire length when irrigation pipes were laid from the well to the nearby olive orchards. As a result, it was badly churned up.

The prominent rocky ledge in the southeast, where the old track reaches the plateau, offers plenty of space for an unproblematic hairpin-turn to the west, opening the way to the center of the tall. On the tall-oriented bank of the upper stretch of the track there is a huge pile of cultural deposits, into which a hole of 4.5 m depth was dug by robbers. The lower layers yielded Iron and Bronze Age sherds. The former building at this place may have served the protection of the gate construction.

The plateau of Tall Zar'a is characteristically determined by a hollow in the central section which is an artesian spring and by a slightly sloping access route in the southeast (formerly serving the natural drainage of spring water). Cultural deposits 4 to 6 m deep have formed a broad, slightly undulating band that seems to encircle the center of the plateau. Obviously these deposits – produced by human settlement activity – could accumulate much faster and more unchecked here than in the vicinity of the well where the continuous movement of water, including flooding, had to be considered.

About one third of the plateau surface is used for agriculture. In classical times the southwest part of the plateau had no doubt a distinctive function. Littered with ashlar that had been worked and reworked many times and Roman-Byzantine potsherds, it repeatedly became an object of unsuccessful treasure seekers. The discovery of a pedestal as well as some basalt pillar fragments apparently heightened their frenzy.

The northern terrace of the tall, which is surrounded by the Wādī al-'Arab forming a wide curve, might once have served as a kind of lower city or accommodated a settlement, connected, in whatever way, to Tall Zar'a. A house built with spolia, ruins of a house in the center of the terrace and additional outlines of (probably recent) houses in the south suggest this possibility. But not too long ago the terrace was extensively leveled by bulldozers to create space for a new olive orchard. As a result the cultural layers were thoroughly disturbed and mostly destroyed to which piles of displaced stones and earth covered with predominantly Roman-Byzantine sherds bear ample witness.

The Survey on the Tall

In autumn 2001, a 5 m x 5 m excavation grid was set up across the tall in accordance with the Palestine Grid. The north-south axis was denoted by letters, the east-west axis by numbers. For the survey, units of 16 excavation squares (5 m x 5 m) were designated as survey squares measuring 20 m x 20 m. They were named by its most southwesterly-oriented excavation square (Vieweger. 2003a; 2007).

The survey area comprised the entire tall and its slopes. In all, 127 survey squares measuring 20 m x 20 m each, that is 5.08 ha, were examined. From the ceramic finds 48 different pottery wares were defined. Their evaluation showed that the pottery reflects a continuous occupation of the tall from the Early Bronze Age to the Late Medieval/Islamic periods. Hanbury-Tenison (1984. p.389) also documented all of these periods, explicitly including the Chalcolithic (Hanbury-Tenison 1984. p.392). However, material of the Chalcolithic period could not be confirmed (Vieweger. 2003a)

The survey produced a total of about 24,000 sherds, of which about 3,000 were diagnostic. All finds were evaluated according to qualitative and quantitative criteria. The chronology of the pottery finds proves a long settlement history on the tall from the Early Bronze Age to the Ottoman period. However, the sherds were not evenly distributed on the tall but reflected the different settlement activities as well as the formation and erosion of the tall.

Geochemical and mineralogical analyses of 23 unstratified sherds from the survey on the tall, and two sherds from Gadara produce the following results. There is a main group of 12 sherds which are similar, dating to the Late Bronze Age, the Iron Age, and to the Islamic period. This includes a group of three very similar Iron Age sherds. All these pottery sherds probably originate from the surroundings of Tall Zar'a. Five sherds from Tall Zar'a belong to a subgroup which can also be included in the main group. Three sherds from Tall Zar'a are similar to Gadara-sample 1. One other sherd from Tall Zar'a resembles Gadara-sample 2. Four sherds are so different in composition that they belong neither to the

main group nor to the Gadara samples. Generally, it can be said that the pottery sherds of the Bronze and Iron Ages as well as from the Islamic period come from the surroundings of Tall Zar'a. In Hellenistic and Roman-Byzantine times the pottery sherds show a strong similarity with samples from Gadara. These results have to be scrutinized with the aid of stratified samples from the excavation on Tall Zar'a.

Geophysical Investigations on the Tall

Furthermore, various geophysical methods were used in the exploration. The results demonstrate that there is a thick cultural layer of at least 6 m in height in many areas of the tall. However, in the tall's eastern part the bedrock almost reaches the surface. The geophysical investigations showed also an anomaly on the north-west slope of the tall which could be a settlement wall (Vieweger, 2007).

Test Trench on the Western Slope

A test trench was dug on the western slope of the tall by Dr. Karel Vriezen from the University of Utrecht in 2001 and 2002. Several architectonic phases could be divided which were dated by pottery to the Islamic, Byzantine, Early Iron Age, and Late Bronze Age period (Dijkstra et al. 2005; Vriezen, 2002; 2003a).

Excavations on the Tall

Area I

A first larger excavation campaign started in September 2003. It was carried out by the Biblical-Archaeological Institute of the University of Wuppertal and directed by Prof. Dieter Vieweger (Note 1). Excavation activities concentrated on the north-western slope of the tall. This Area I was chosen because a significantly high concentration of finds had been found there in the course of the previous survey and because of its exposed position due to its special topography. Thus, a defense system could be assumed, since there is no natural protection here by the topography unlike on the southeast, east, north, and northwest sides of the tall. Also the geophysical investigation gave hints to such a defensive system.

Following the already installed survey grid of 5 m x 5 m, eight squares were opened and explored to a depth of 3.3 m. Architectural remains of the Roman-Byzantine and the Iron Age period were exposed.

A second campaign was conducted in April 2004 as a joint project of the Biblical-Archaeological Institute and the German Protestant Institute of Archaeology, Amman, directed by Prof. Dieter Vieweger and Dr. Jutta Häser. Work continued in the previously excavated squares, and ten more squares were opened. During this campaign, Roman-Byzantine and Iron Age levels were excavated. In the squares directly at the slope, the upper Late Bronze Age stratum has been reached. Some meters deeper on the slope, the outer part of an Early Bronze Age fortification was brought to light.

A further, ten-day campaign was carried out as a study course for theologians in July 2004, continuing excavations in three of the eastern most squares.

During the third excavation season in spring 2005, the area was excavated to a depth of 3.90 m in most of the squares. In order to get a better impression of the architectural features, Area I was extended to a total of 625 m² and the already documented balks were excavated in detail.

In 2006, one square to the north and five squares were opened for following the Late Bronze Age city wall and to clarify the city gate.

After the 2007 spring campaign, an area of 1000 m² has been excavated up to a depth of 4-4.5 m in most of the squares. So, in the largest parts of Area I the upper level of the Late Bronze Age stratum has been exposed. Due to security reasons, the earlier strata can only be excavated when the whole Area I will be on one level at a depth of about 4.5 m (Fig. 2).

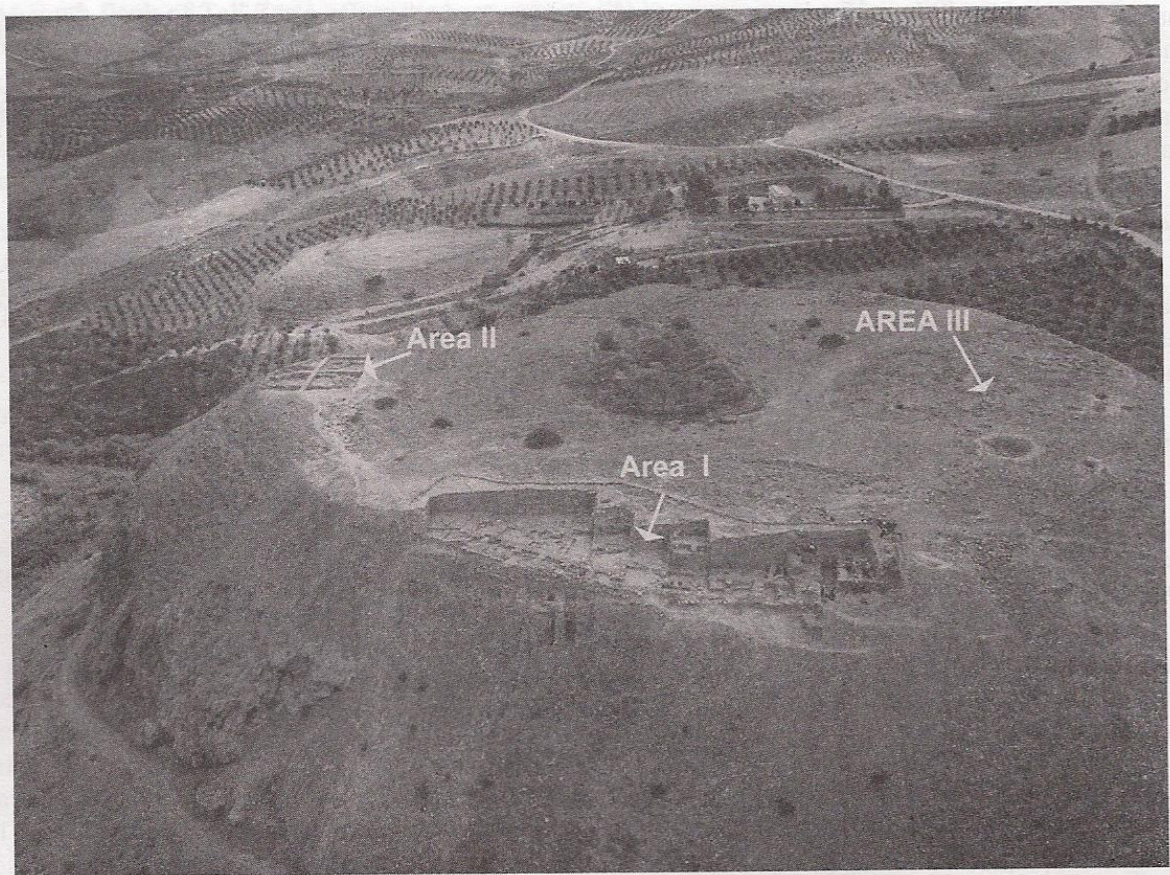


Figure 2: View on the tall from west after summer excavation in 2007.

Roman-Byzantine Stratum

In the uppermost stratum, the remains of three large houses of the Roman-Byzantine era (2nd-7th century A. D.) were uncovered (Fig. 3). One house with six, another one with four rooms were explored in 2003 and 2004. They are orientated almost exactly northward. The walls are built with undressed and some dressed stones. To the west, the houses were placed on deep foundations. Toward the western part of the slope, the buildings are eroded near the edge of the slope's steep incline.

A pebble-paved street is encircling the tall in the northwest. When the street was continued to be exposed, it turned out that it was blocked by another house which was built later than the aforementioned buildings.

The westernmost house, no. 1, consists of at least six rooms. They have an average dimension of 4 m. In one of the rooms, a threshold, a column base and, adjoining it, a narrow bench were found. The column base points to the fact that this area was roofed. The area east of the threshold might not be a room but a courtyard.

House no. 2, to the north of house no. 1, consists at least of four rooms. The northern limits have not yet been reached. A stone-lined pit was excavated in the western room.

House no. 3 is marked only by a single wall running from west to east along the eastern side of the street.

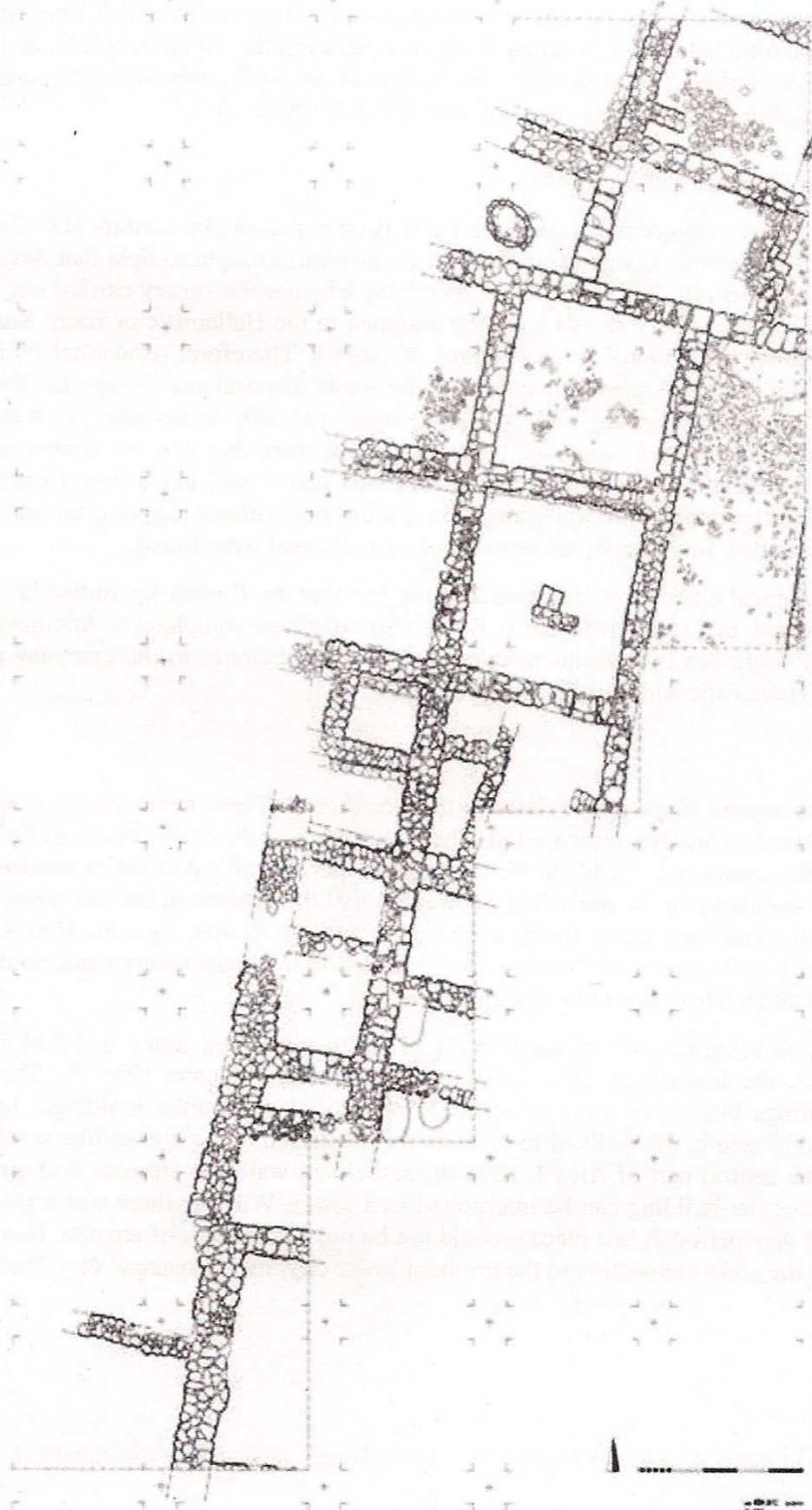


Figure 3: Plan of the Roman-Byzantine stratum of Area I (drawing by Jürgen Kröpsch).

The pottery found in the houses can be dated to the Roman-Byzantine period. In addition, fragments of glass vessels and some coins were uncovered. Those coins which have been cleaned and determined for the time being, can be dated to the time between the 1st century B.C. and the 1st century A.D., to the time of Hadrian (117-138 A.D.), the middle of the 3rd century A.D., the sons of Constantine (between 337 and 361 A.D.), and between 400 and 450 A.D. (Note 2).

Hellenistic-Early Roman Period

Archaeological remains of the Hellenistic-Early Roman period (4th century B.C.-1st century A.D.) were found in 13 of the 40 excavated squares. The excavations brought to light that Area I was used but not inhabited in this period. This result is not surprising because the survey carried out in 2001 already showed that 13 % of all pottery sherds could be assigned to the Hellenistic or Early Roman period, but only 1.98 % of them were found in the squares of Area I. Therefore, residential buildings were not expected there. The place was predominantly used for waste disposal and storage facilities. At least two large pits had been dug for disposal purposes. Three more, carefully stone-lined pits were probably used for the storage of grain. In two cases, the bases of the pits were dug into the double wall dated to the Iron Age. The Hellenistic-Early Roman inhabitants thus had a well-made base to protect their grain against rodents. Some remains of walls are recognisable but without showing an architectural design which can be explained. In addition, the remains of a small canal were found.

The chronological classification is based on the fact that the Roman-Byzantine houses as well as a small street covered the Hellenistic-Early Roman installations completely. Additionally, pottery of 'Hellenistic buff' ware has been frequently found. This ware belongs to the everyday pottery and was produced in the Hellenistic and Early Roman periods.

Iron Age II

The two subsequent strata can be dated to the Iron Age II. These strata are disturbed in many parts by large pits of the Roman-Byzantine period. The architecture of the earlier phase of the Iron Age IIA/B stratum (10th-8th century B.C.) leads to the assumption that the town's population increased in respect to the number of inhabitants in the preceding period and that the settlement had an urban character. Even though the fortifications are not as strong as those of the Late Bronze Age, the Iron Age II settlement was protected by a settlement wall. Various modifications to the houses were made so that two building phases (an early and a late one) can be distinguished.

Until now, building remains of the Iron Age II settlement were found in 37 of the 40 excavated squares and give the impression of a dense agglomerated architecture (Fig. 4). There are not only residential buildings but rather a co-existence of residential and public buildings. In the areas with agglomerated architecture, the walls of the houses are connected to the zigzag-like settlement wall. This is different in the central part of Area I. Here the settlement wall was stronger and almost straight. At least one quadrangular building can be interpreted as a tower. Whether there was a gate nearby – as in the Late Bronze Age period at this place – could not be proved because of erosion. However, due to the topography and the close connection to the northern lower city, its existence is very likely.

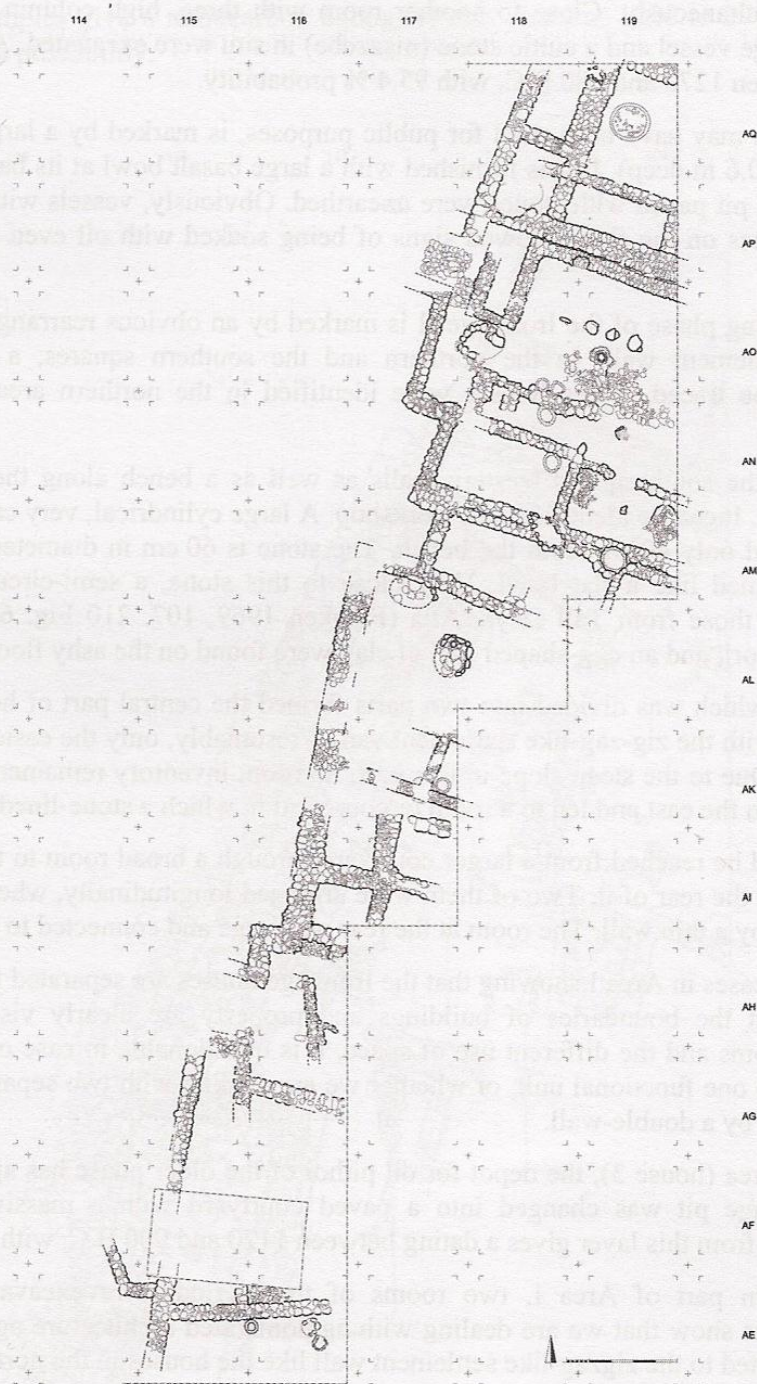


Figure 4: Plan of the earlier Iron Age II stratum of Area I (drawing by Jürgen Kröpsch).

Residential buildings of the earlier phase of the Iron Age II were investigated only in the northern part of Area I. Two double walls separated the tightly built houses.

House 1 has in its western part a broad room obviously oriented along the zigzag-like settlement wall, being the same as the outer wall on the slope.

House 2 was equipped with a workshop area comprised of four longitudinal rooms/courtyards. They yielded interesting discoveries: a furnace with a crucible (Note 3) still in situ in the south-eastern,

and a well-constructed fireplace and a working platform in the north-eastern room. In the south-western room a tabun was discovered, and the north-western part contained four bread ovens. It is possible that they were used simultaneously. Close to another room with three, high column bases made of field stones, a large storage vessel and a cultic stone (mazzebe) in situ were excavated. A radiocarbon sample gives a dating between 1270 and 980 B.C. with 95.4 % probability.

House 3, which may have been used for public purposes, is marked by a large, carefully built pit (1.5 m x 1.0 m and 0.6 m deep). It was furnished with a large basalt bowl at its base. Not far away, the remains of a storage pit paved with stones were unearthed. Obviously, vessels with oil had been stored inside since the stones on the floor showed signs of being soaked with oil even a long time after the excavation.

The later building phase of the Iron Age II is marked by an obvious rearrangement of the houses, though not the settlement wall. In the northern and the southern squares, a dense agglomerated architecture could be traced. Three houses were identified in the northern area. Each house was a separate unit.

Only parts of the southern and western walls as well as a bench along the southern wall have remained of house 1. It can be identified as a workshop. A large cylindrical, very carefully cut limestone worktable was found only 40 cm from the bench. The stone is 60 cm in diameter and 30 cm high. Its upper side was formed like a flat bowl. Very close to this stone, a semi-circular stone basin, two 'industry pots' like those from Tall Dayr 'Alla (Franken 1969, 107. 210 Fig. 62:29; Table XV Fig. 62:29), a spindle whorl, and an egg-shaped tool of clay were found on the ashy floor.

A large room which was divided into two parts formed the central part of house 2a. The western wall was identical with the zig-zag-like settlement wall. Presumably, only the eastern narrow part of the house was roofed. Due to the steep slope in this part, no room inventory remained. The entrance to the house was situated in the east and led to a room or courtyard in which a stone-lined pit was found.

House 2b could be reached from a larger courtyard through a broad room to the north. Three more rooms were lying at the rear of it. Two of them were arranged longitudinally, whereas the southern one was divided in two by a thin wall. The room at the rear was large and connected to the settlement wall.

There are two cases in Area I showing that the Iron Age houses are separated from one another by a double wall so that the boundaries of buildings and property are clearly visible. Due to various arrangements of rooms and the different use of space, it is questionable in case of house 2a-b whether the rooms belong to one functional unit, or whether we are dealing with two separate houses, although, they are not divided by a double-wall.

In the public area (house 3), the depot for oil pithoi of the older phase has apparently been closed and the large storage pit was changed into a paved courtyard with a massive working stone. A radiocarbon sample from this layer gives a dating between 1120 and 900 B.C. with 95.4 % probability.

In the southern part of Area I, two rooms of this period were excavated. Even these few architectural remains show that we are dealing with agglomerated architecture again. This house/these houses were connected to the zigzag-like settlement wall like the houses in the northern part of that area.

Iron Age I

The Iron Age I (12th-11th century B.C.) settlement shows a clear change of culture from the previous Late Bronze Age settlement (Fig. 5). A fortification of the settlement could not be proved. It is obvious that the inhabitants of the Early Iron Age did not create their own settlement pattern, but used the walls of their Late Bronze Age predecessors. The architecture in 32 of the 40 excavated squares, in which remains of this period were uncovered, is very distinctive. On the one hand, the inhabitants of the tall dug several large pits for grain storage, built walls for stables with installations, and joined simple huts to older walls. This could be interpreted as an agricultural working and storage space. On the other hand, an exceptionally large storage silo was found. Additionally, there was one large building with walls, constructed carefully with two or more rows of undressed stones in the south of Area I. One of the two entrances was paved with stones. For the other access, use was obviously made of the ascent of the Late Bronze Age which connected the lower city with the settlement on the tall. One already excavated courtyard with the surrounding rooms was built directly on the Late Bronze Age casemate wall. There was a second, separated part of this house which has to be excavated during the next season.

To confirm the assumption that this building was either used for administrative purposes or as a residential building for a high-ranking person, larger areas have yet to be uncovered.

Two charcoal samples give a radiocarbon dating for this stratum: 1220 to 970 B.C. and 1270 to 1040 B.C. with 95.4 % probability.

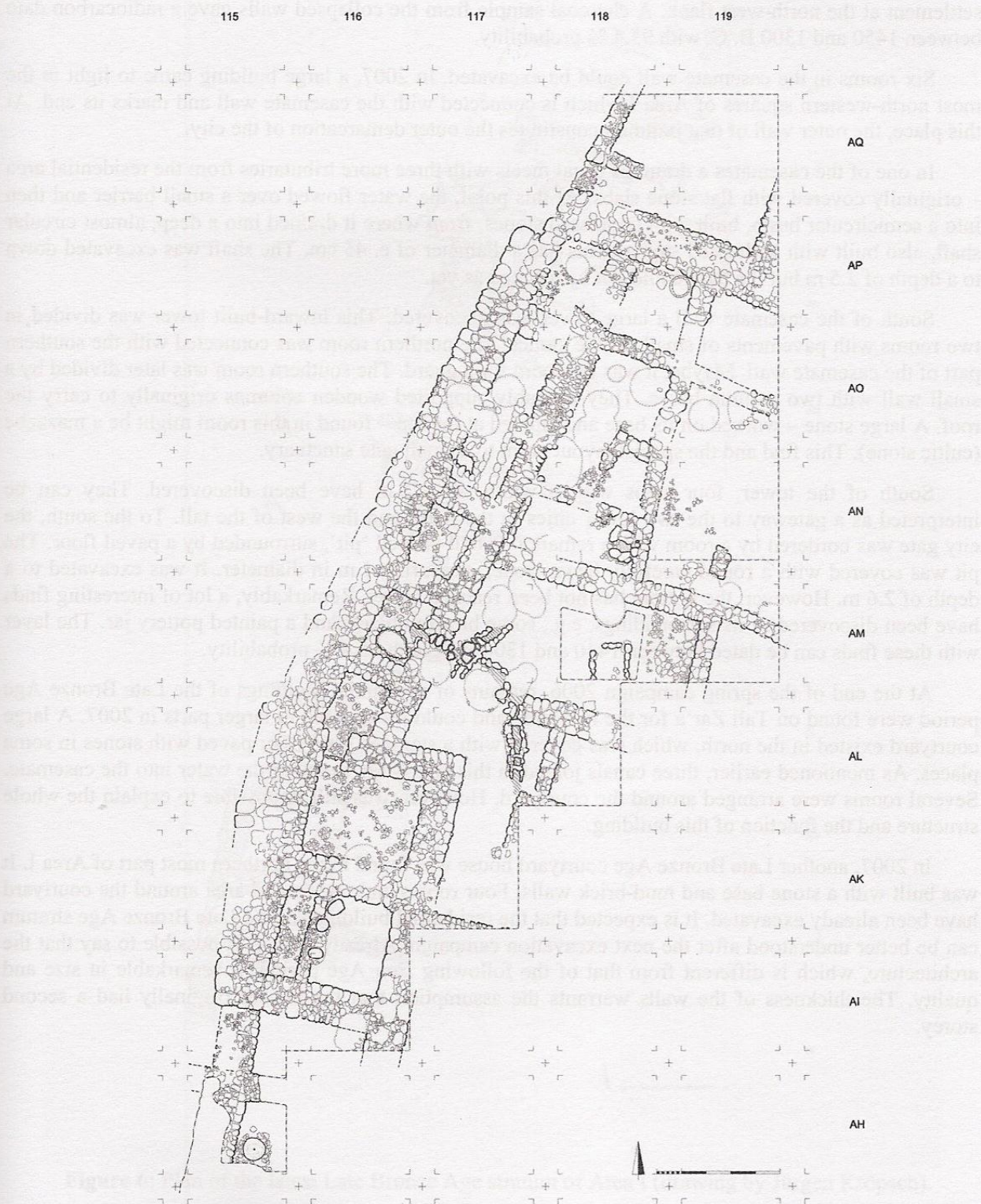


Figure 5: Plan of the Iron Age I stratum of Area I (drawing by Jürgen Kröpsch).

Late Bronze Age

In the Late Bronze Age (14th-13th century B.C.), at least two settlements existed – one subsequent to the other – on the tell. For the time being, only the latest Late Bronze Age stratum could be exposed (Fig. 6). The most remarkable building of this stratum is the massive casemate wall which fortified the settlement at the north-west flank. A charcoal sample from the collapsed walls gave a radiocarbon date between 1450 and 1300 B. C. with 95.4 % probability.

Six rooms in the casemate wall could be excavated. In 2007, a large building came to light in the most north-western squares of Area I which is connected with the casemate wall and marks its end. At this place, the outer wall of that building constitutes the outer demarcation of the city.

In one of the casemates a drainage canal meets with three more tributaries from the residential area – originally covered with flat stone slabs. At this point, the water flowed over a small barrier and then into a semicircular basin, built with undressed stones, from where it drained into a deep, almost circular shaft, also built with undressed stones. This has a diameter of c. 45 cm. The shaft was excavated down to a depth of 2.5 m but the base could not be reached as yet.

South of the casemate wall a large tower was uncovered. This inward-built tower was divided in two rooms with pavements of small pebble stones. The northern room was connected with the southern part of the casemate wall. Maybe, it was the room for a guard. The southern room was later divided by a small wall with two column bases. They probably supported wooden columns originally to carry the roof. A large stone – worked on its base and tapered at the top – found in this room might be a mazzabe (cultic stone). This find and the special layout point to a small gate sanctuary.

South of the tower, four steps with a width of 2.75 m have been discovered. They can be interpreted as a gateway to the two lower cities in the north and the west of the tell. To the south, the city gate was bordered by a room with a remarkable bell-shaped 'pit', surrounded by a paved floor. The pit was covered with a round carefully hewn stone, measuring 1 m in diameter. It was excavated to a depth of 2.6 m. However, the bottom has not been reached as yet. Remarkably, a lot of interesting finds have been discovered in its surroundings, e.g., some bronze objects and a painted pottery jar. The layer with these finds can be dated between 1440 and 1300 B.C. with 95.4 % probability.

At the end of the spring campaign 2006, remains of residential buildings of the Late Bronze Age period were found on Tall Zar'a for the first time and could be exposed in larger parts in 2007. A large courtyard existed in the north, which was covered with a stamped mud floor paved with stones in some places. As mentioned earlier, three canals joined in this courtyard, draining the water into the casemate. Several rooms were arranged around the courtyard. However, it is still impossible to explain the whole structure and the function of this building.

In 2007, another Late Bronze Age courtyard house was found in the northern most part of Area I. It was built with a stone base and mud-brick walls. Four rooms and one roofed area around the courtyard have been already excavated. It is expected that the residential buildings of the Late Bronze Age stratum can be better understood after the next excavation campaign. Already now, it is possible to say that the architecture, which is different from that of the following Iron Age period, is remarkable in size and quality. The thickness of the walls warrants the assumption that the houses originally had a second storey.

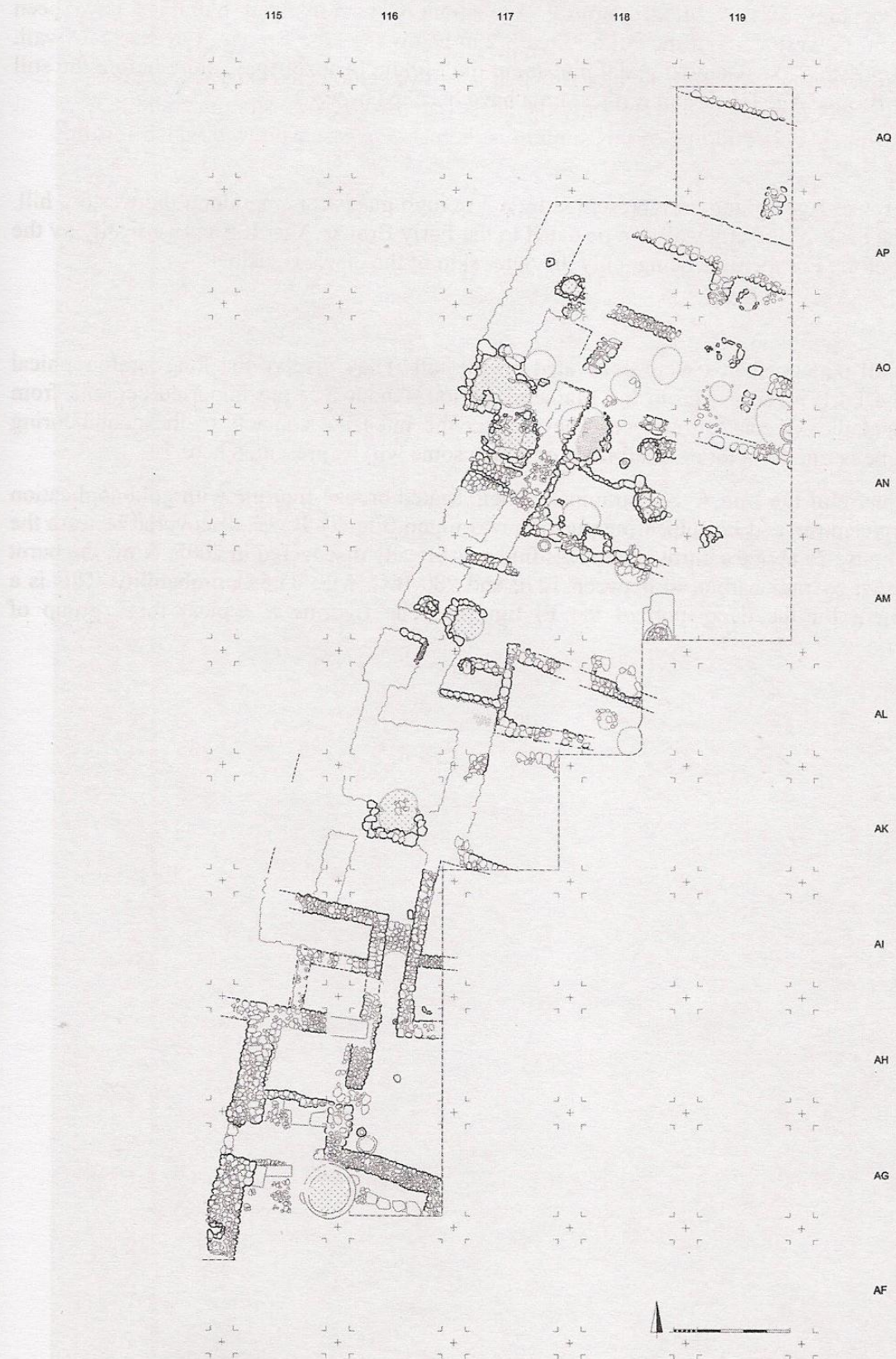


Figure 6: Plan of the latest Late Bronze Age stratum of Area I (drawing by Jürgen Kröpsch).

The Middle Bronze Age

So far, the remains of two Middle Bronze Age strata with residential buildings have been uncovered on the north-west slope of the tall of Area I, 2 m below the Late Bronze Age casemate wall. Actually, it is not possible to say anything definite about the Middle Bronze Age culture before the still unexcavated Late Bronze Age levels and further strata have been exposed.

The Early Bronze Age

The Early Bronze Age stratum is represented by a 3 m high glacis running along the western hill. This glacis and the basis of the city wall can be dated to the Early Bronze Age. It is cut vertically by the shaft mentioned before. For the time being, only the outer skin of the glacis is visible.

Finds from Area I

About 125.000 pottery sherds were excavated on the tall. They display the long stratigraphical sequence from the Early Bronze Age to the Mameluk period. About 5 % are imported ceramic from Cyprus, Egypt, and the Mycenaean Greece. They reflect the intensive contacts to the neighbouring countries. The same is true for a lot of small finds of which some will be presented here.

In the later phase of the Iron Age II stratum, a small, seated bronze figurine with gold application (7.5 cm high), depicted the god El in blessing position was found (Fig. 7). It was discovered beneath the southern wall of house 2a above a burnt layer. This find was already discovered in 2005. Now, the burnt layer could be dated by radiocarbon to between 1270 and 980 B.C. with 95.4 % probability. This is a terminus ante quem for the deposition of the El figurine. The figurine is typical for a group of Elfigurines in Syria.



Figure 7: Bronze figurine of the god El.

In the same house, another remarkable find came to light. A basalt head of a man (19 cm x 12.5 cm x 8.5 cm) was found – used as building material – in a wall of house 2a with its face upside down (Fig. 8). The execution of the face is not very accentuated, but mouth, nose, eyes and ears are clearly recognisable. There is a small edge along the forehead, so it may be assumed that the head once wore a cap or something similar.

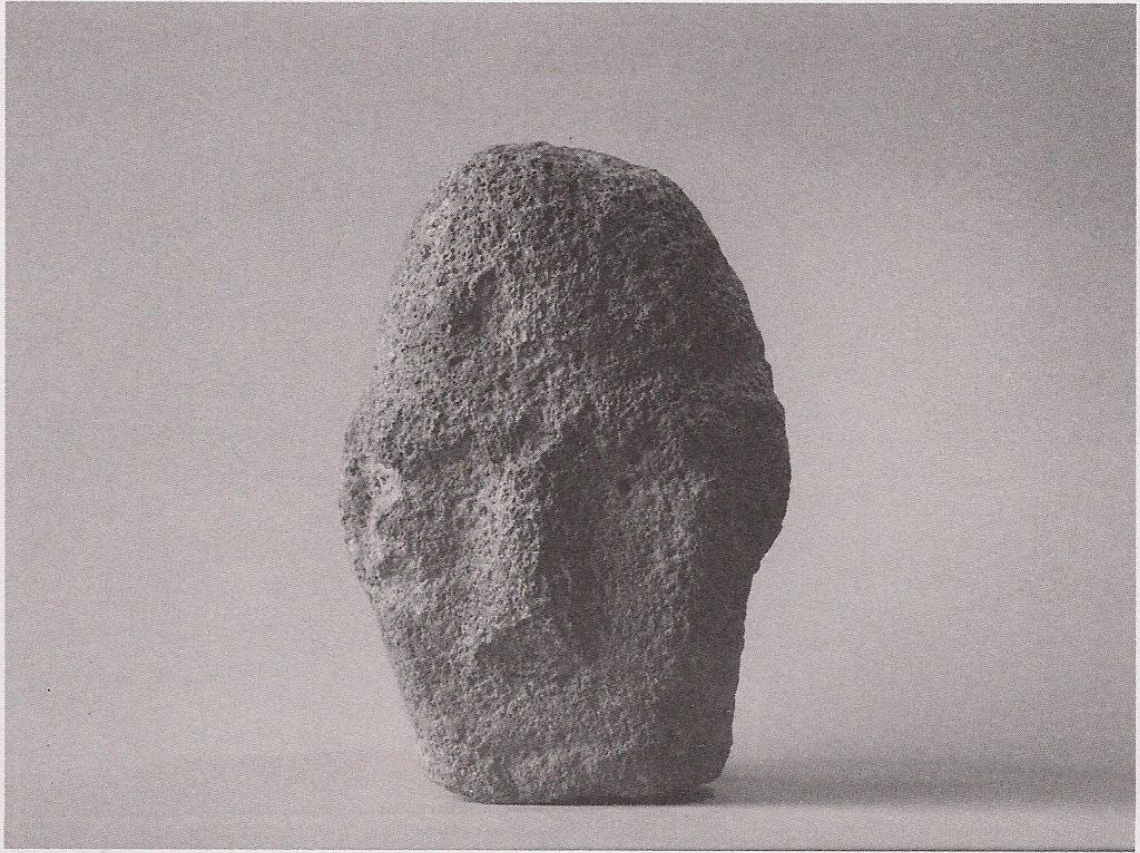


Figure 8: Basalt head of a man.

The layers of the earlier phase of the Iron Age II stratum also yielded some very interesting finds. One of them is a cylinder seal (TZ 8558) (Fig. 9) which was found in a floor between two basalt slabs which were standing on their narrow side in house 2. The seal is 2.4 cm high and has a diameter of 1.0 cm. Two stags are depicted which are confronting each other. The upper parts of their bodies are merged and the heads are turned back. A standing person holds a so-called 'bouquet tree' (Salje. 1990. Tafel XIV,271). This seal can be classified as part of the western group of the 'Common Style' of the Mitanni glyptic. It can be dated to the 14th-13th century B.C. Since it was found in an Iron Age II context, we are probably dealing with an 'heirloom'.

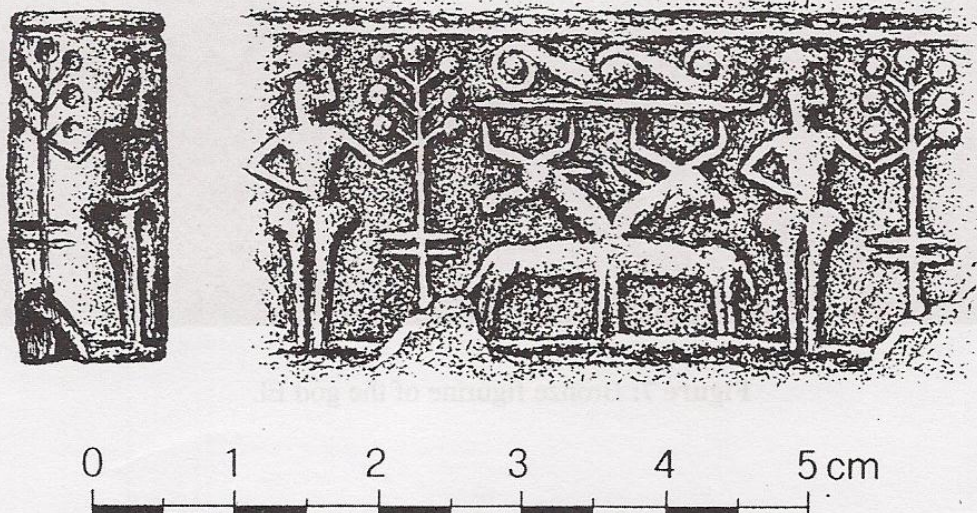


Figure 9: Cylinder seal of the 'Common Style' of the Mitanni glyptic (TZ 8558) (drawing by Ernst Brückelmann).

A seal impression (TZ 7146) (3.5 cm x 2.7 cm) was found in the same square above the burnt layer. It shows a male figure standing on a bull, lifting its left arm (Fig. 10). The figure depicts the god Ba'al or Hadad, a typical motif of this region with its strong contact to the Aramaic culture of Damascus area. The reverse bears three impressions of a perpendicular fastening. Due to its stratigraphic position, the find can also be dated to the earlier phase of Iron Age II, i.e., the 10th/9th century B.C.

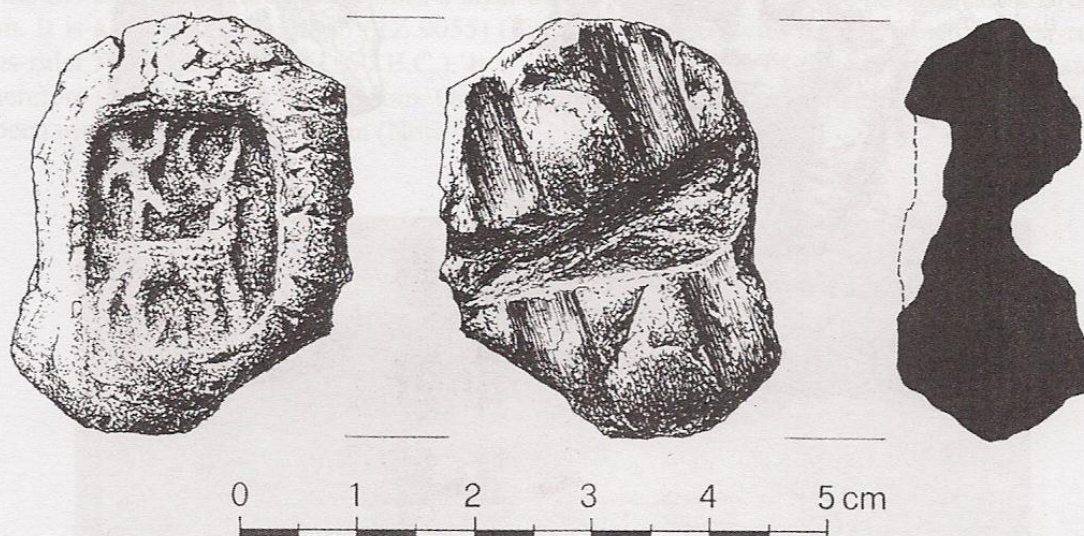


Figure 10: Seal impression with the depiction of the god Ba'al or Hadad (TZ 7146) (drawing by Ernst Brückelmann).

Another very intriguing find in this stratum is the head of a terracotta figurine (TZ 8349) (Fig. 11). It was found in a layer of hard soil – perhaps a floor – in the south-western corner room or courtyard of house 2. The figurine is a depiction of the goddess Ashtarte with a Hathor wig. A specific feature is the shape of its face. The frontal view shows the face of a woman, while the side view shows the profile of a lioness. This kind of presentation is unique in Palestine. The closest parallels are two Ashtarte figurines with Hathor wigs which, however, do not have the face of a woman but of a lioness also in front view. They were found in Tall Massad al-Jisl (Rahmani 1959, 184-185 Pl. XXIV 1-3) and in Bayt She'ān (Rowe 1940, Pl. LXVIII, 3). These figurines present a combination of the goddess Ashtarte with the Egyptian goddesses Hathor and Sekhmet.



Figure 11: Upper part of a terracotta figurine depicting the goddesses Ashtarte/Ashera, Hathor and Sekhmet (TZ 8349).

Also in the Late Bronze Age stratum, some very interesting objects were excavated. One of them is a cylinder seal (TZ 8972) (Fig. 12) which was discovered in a stone-lined pit which was filled with loose brown soil. The seal measures 3 cm in height and 1.3 cm in diameter. It is made of faience and covered with a green glaze. It shows two stags which are slightly reared up with their heads turned backwards. They are separated by a vertical line and turn their back on a plaited band. The seal belongs to the western group of the so-called 'Common Style' of the Mitanni glyptic and can be dated to the 14th-13th century B.C. (Salje 1990, 103). A very close parallel is a seal from Gezer which was also manufactured in faience and has a green glaze (Salje 1990, 219 Nr. 15, Tafel VII 124). This piece has been dated by the excavators later than the 16th century B.C.



Figure 12: Cylinder seal of the 'Common Style' of the Mitanni glyptic (TZ 8972) (photo by Ernst Brückmann).

On the floor of the massive building in the north of Area I very close to where the above described seal was found, in an area of 1.5 m x 1.5 m, 22 more cylinder seals of varying quality and image type were excavated in 2007. It would seem that the seals, together with a bronze pendant decorated with a standing figure, a scarab and dozens of stone and glass beads, fell to the ground from a higher surface (a table, cupboard or shelf) during the destruction of the house and were left scattered over the floor.

Another interesting find comes from a layer of collapsed walls in house 2 of the latest Bronze Age stratum. It is a 1.3 cm large scarab (TZ 9055) (Fig. 13) inscribed with the prenomen (A-wsr-re) of the Hyksos-ruler Apophis (c. 1590-1550 B.C.). It is certainly a product of the Second Intermediate period and therefore, it can be seen as heirloom. On account of the modest workmanship, it can be assumed to have been made by a local craftsman (Note 4).

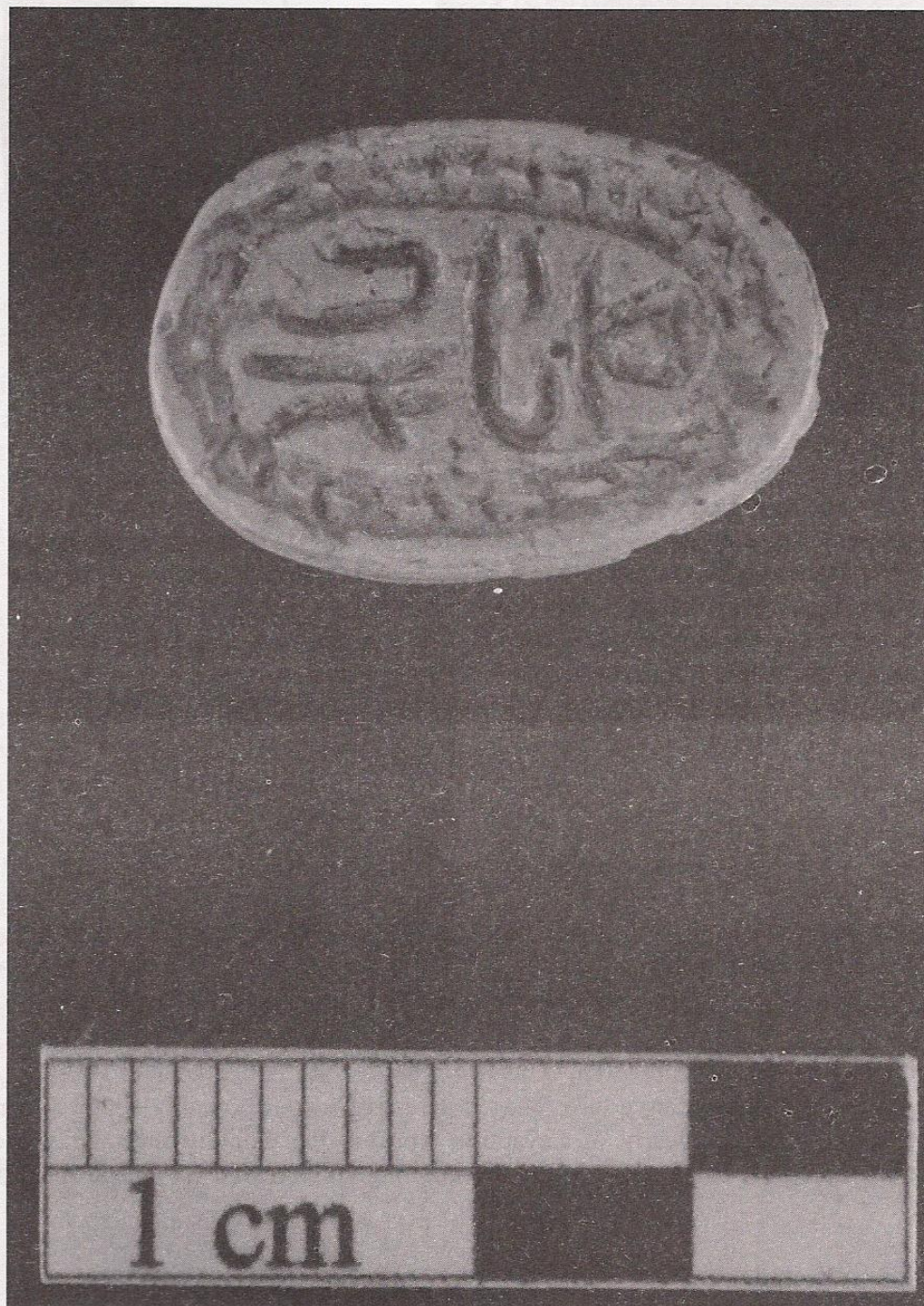


Figure 13: Scarab with the prenomen of the Hyksos ruler Apophis (TZ 9055).

The middle part of a terracotta figurine (TZ 8350) (Fig. 14) was found on a floor of house 3 together with many pottery sherds, bones, fragments of bronze objects, and a incised broken bone handle of a tool. This figurine depicts the fertility goddess Ashtarte/Ashera in upright position with her arms hanging down along the sides of her body.

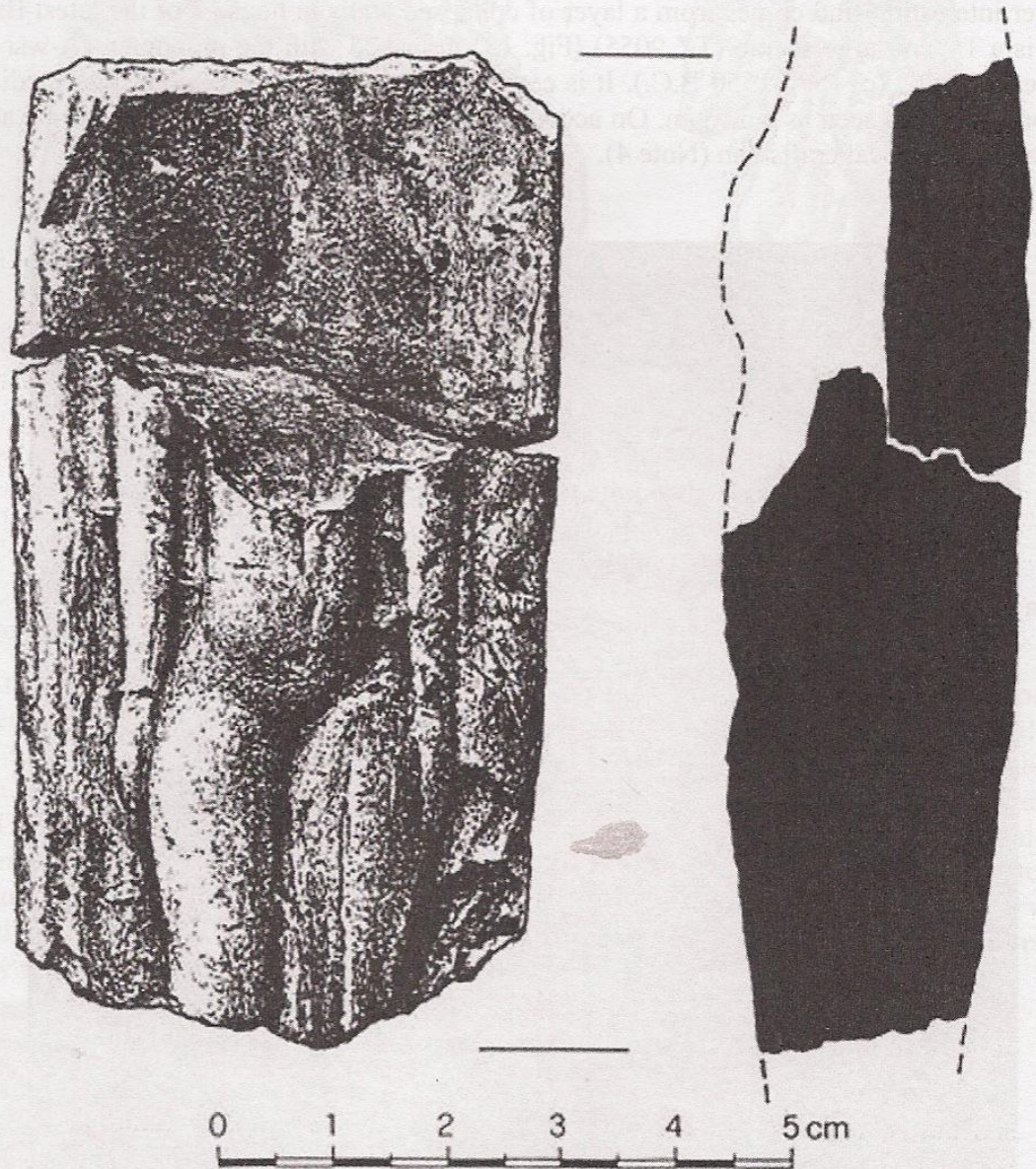


Figure 14: Part of a terracotta figurine depicting the goddess Ashtarte/Ashera (TZ 8350).

A unique find is a painted pottery jar (Fig. 15) which was detected close to the pit at the gate of the late Bronze Age stratum. The painting shows an animal scene with two lions with upraised mane, a bull, a flock of smaller animals, a fish/dolphin, a scorpion as well as coiled-up and stretched-out snakes together with a human figure holding a lyre. These interesting scenes probably depict a story, maybe a legend or myth. The vessel is clearly of Levantine type but the painting must be influenced from elsewhere. The mythological connections to the surrounding cultures and the image repertoire have to be scrutinized.

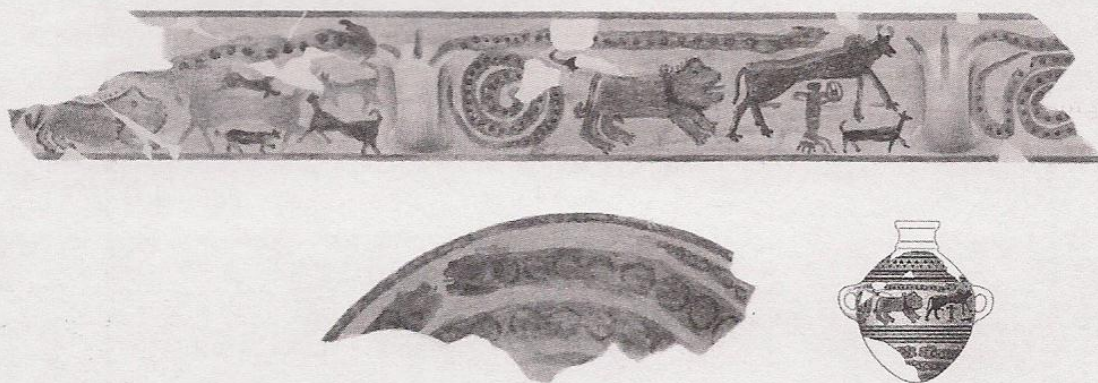


Figure 15: Pottery jar with animal scenes and a man playing a lyre (drawing by Ernst Brückelmann).

Area II

In the 2006 spring campaign, the excavation started in a new area on the northern part of the plateau of Tall Zar'a. Five squares were opened. Their surface lies about -19.5 m below sea level so that Area II marks one of the highest points on the tall's plateau, which is also protected by a sheer drop of 44 m to the north. This prominent position is one of the most outstanding locations on the tall. Based on the results of the pottery survey in 2001, intensive settlement activities can be assumed in this area in the Bronze Age.

In spring 2007, eleven more squares were opened to the north and east side of the previous excavation area. The total excavation area comprises now 400 m². To the north, the outer limit of the plateau was reached. Due to the large building structures detected the year before, the grid was changed from 5 m x 5 m to 10 m x 10 m.

Except one square to the north, which was only excavated to a depth of 0.3 m in 2006, the already opened squares remained untouched in 2007.

In 2006, a room and a large courtyard were uncovered which were constructed in various stages during the Roman-Byzantine period and used again in the Umayyad period (Fig. 16). The continuation of the large courtyard to the north could be found in the northern most squares at the edge of the steep slope. It is impossible to determine the original end of the courtyard since the walls have been eroded at their northern ends. In one stage of construction the courtyard was closed with a wall running west-east about 5 m apart from the northern slope.

The extension of the excavation area showed that there was another building with the same orientation like the courtyard. The area between the eastern wall of the courtyard and the western wall of the new large building was paved with large stones. It could have been a small street between two large buildings or another courtyard between two units of one building. The newly excavated part consists of three rooms running from almost south to north in the latest stage of construction. The northernmost room is also eroded down the slope and disturbed by later field walls in its northern part.

To the southeast, walls and domestic installations of the Islamic period were attached to the large building complex in the Islamic period. In the middle room of this building was a small pit which yielded a typical Mameluk pottery vessel. This demonstrated the use of this area also in this period.



Figure 16: Aerial photograph of Area II. Marked are the rooms and courtyards of the later Roman-Byzantine stratum (drawing by Jürgen Kröpsch).

Below the architectural remains of the northern part of the eastern courtyard as well as in the northern part of the street/courtyard, the remains of several rooms were uncovered which are characterised by a completely different orientation than the later buildings (Fig. 17). Only few walls remained of these northwest-southeast orientated buildings. This stratum can be divided in at least two different construction levels since one northwest-southeast orientated room cuts an earlier one and was built up in a slightly shifted direction. To this stratum belonged several tabuns and mortars which determine these rooms for domestic purposes. The pottery from this stratum can also be dated to the

Roman-Byzantine period. This makes clear that we deal here with two completely different building strata in one period.

The lowest level reached to date, is determined by a large wall extending from west to east (Fig. 17). In 2006, it was already uncovered in the southern part of the excavation. In 2007, it became clear that it continues about 10 m to the east. Only the upper most stone level of this foundation wall could be detected and it is impossible to date it at this stage of excavation.



Figure 17: Aerial photograph of Area II. Marked are the rooms of the earlier Roman-Byzantine stratum (drawing by Jürgen Kröpsch).

Most of the finds are represented by pottery sherds. However, also glass vessels, bronze pins, and ivory objects have been found. Two of eight coins could be dated for the time being. One of them is a bronze coin which is slanted at the edge. This feature is typical for Seleucid and Ptolemaic coins of the 2nd and 1st centuries B.C. Another coin was minted between 512-517 A.D.

Area III

The southeastern part of the tall is the highest point of the plateau (Fig. 2). Already during the survey in 2001, it was recognized that this area was littered with large fieldstones as well as cut stones which led to the conclusion of a high-density area of the Roman-Byzantine period. The pottery survey confirmed this impression and showed the use of this area also in the late Islamic period.

In 2001, the opening of a large cistern (10.5 m x 6.0 m x 5.75 m) was detected on the surface. In 2006, the cistern was mapped and described in detail. The cistern is vaulted and built with large ashlar. Division walls at its bottom indicated that it was used as storage room in later times.

In 2001 and 2003 the area was mapped and the surface photographed from a helium filled balloon. The aerial photographs showed very clearly the remains of one or more very large buildings.

In spring 2007, the clearance of the area has been started. Stones which were out of context were removed from the area to get a better idea of the outline of the buildings. In summer 2007, the walls visible on the surface were mapped and a test trench was opened. It yielded the remains of a well constructed wall with a blocked entrance, a mosaic floor and a small water basin with two outlets just aside the entrance. After these promising finds in Area III, the investigations will continue there in summer 2008.

Additional Survey Program

Beside the excavations on Tall Zar'a, six water mills were explored and surveyed in the Wādī al-'Arab. The building construction and milling technology of these mills as well as the water supply system will be studied during the next years.

Additionally, a survey was carried out in the Wādī al-'Arab with the help of a Digital Global Positioning System (GPS). It provides the basis of a digital terrain model in order to map the different archaeological features in the wadi.

In the coming years, the regional survey will be continued for further investigation of the registered sites in the Wādī al-'Arab and the trade routes leading from the Jordan Valley to the Jordanian highland.

Archaeometric Research and Experimental Archaeology

An intensive archaeometric program accompanies the surveys and excavations. It deals with the development of the production technology of pottery from the Late Bronze Age to the Islamic period. Various experiments, like the construction of a pottery kiln, were carried out under scientific conditions. The development of the experiments as well as their results are published elsewhere (Vieweger 2007).

Conclusion

The 'Gadara Region Project' with its different levels of investigation gives new insight? in the settlement history in the surroundings of Gadara.

The excavations on Tall Zar'a offer the unique possibility to investigate an almost continuous stratigraphy from the Early Bronze Age to the Islamic period in Northern Jordan. This city with its strong fortifications, its massive architecture, its high percentage (5%) of imported pottery from Cyprus and Greece as well as with its remarkable single finds leads to the assumption that it was the center of a Late Bronze Age city state. It shows also that it? was situated in a contact zone between different cultures and entities.

The archaeometric research gives insight? in the local and regional pottery production and the origin of imported pottery.

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- Note 1: The authors have published the results of the investigations continuously (Häser and Vieweger. 2005a; 2005b; 2007; forthcoming. Vieweger. 2002a; 2002b; 2003b. Vieweger and Häser. (2005) (2007)
- Note 2: The authors thank Dr. Karsten Dahmen (Münzkabinett Staatliche Museen Preußischer Kulturbesitz, Berlin) for identifying the coins of the excavations.
- Note 3: It was recovered and sent to the German Mining Museum in Bochum, where it will be analysed in order to identify the worked material and the method of production.
- Note 4: The authors thank Dr. Daphna Ben-Tor and Prof. Joachim Quack for their kind help identifying this scarab.