MACHAERUS PROJECT: PRELIMINARY REPORT OF THE 2010 HUNGARIAN-JORDANIAN EXCAVATIONS

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Introduction

After a thorough field study in 2009 at the Qal'at al-Mishnaqa in Mukāwir, known from ancient sources as Machaerus (Machairos), a new archaeological excavation started in the fortified royal palace on the hilltop, overlooking the Dead Sea in Jordan (**Fig. 1**). The joint mission of the Hungarian Academy of Arts and the Jordanian Department of Antiquities (Excavation Permit No. 2010/13, given to Dr. Győző Vörös) conducted a sixty-one day long archaeological investigation on the site from 1 April to 31 May 2010.

The architectural heritage of the Machaerus fortress represents three superimposed structures of the Hellenistic, the Herodian and the Roman eras. Our building archaeological investigations gave a comprehensive and comparative architectural analysis of the three historical periods of the fortress, based on our field work and on the scientific results of the research in the 20th century.

According to Flavius Josephus, the naturally defended fortress was erected by Alexander Janneus and destroyed by Gabinius in 57BC (JW I 8, 6). Concerning the Hellenistic layers, the Franciscan excavations of the archaeological site (led by Fr. Virgilio Corbo between 1978 and 1981; see Corbo and Loffreda 1981; Piccirillo 1981a, 1981b), were summarized by the late Fr. Michele Piccirillo as the following: "Quite nothing is still known of the Hasmonean fortress buried and reused in the later fortress" (Piccirillo 2004). Our excavations proved with stratigraphical data and architectural arguments that this statement already has to be reconsidered.

The second period of the architectural heritage is the result of the building activity of Herod the Great. We have five additional fortresses from this Herodian period that are giving excellent architectural parallels for the comparative analysis: Alexandreion, Cypros, Hyrcania, Masada and Herodion – the latest is the only non-Hasmonean legacy. As a result of the comparative archaeo-architectural analysis of these six fortresses, we can state that they are not only representing similar architectural conceptions of the Herodian fortified palaces, but the group of buildings were erected and designed by the same constructors. Our excavations proved this statement with evidences.

After the Tetrarch Herod Antipas and King Agrippa I, Machaerus became the dominium of the Roman Praefectus Judaeae in 44AD. Following the Jewish Revolt eruption in 66, Lucilius Bassus besieged the fortress in 72 (JW II 18, 6; VII 6). This event has remembrance monuments on the archaeological site: in the vicinity

1. The fortress of Machaerus overlooking the Dead Sea, view from the East.

of Machaerus there are Roman camps (campus), encircling walls (vallus) and an unfinished attack ramp (agger). The closest analogies of these monuments can be examined on the other side of the Dead Sea, most prominently at the fortress of Masada. In these structures the classical Roman siege-techniques can be examined and detected as well (Strobel 1974a, 1974b).

The objectives of the Hungarian research team in collaboration with the Jordan Department of Antiquities were the architectural and archaeological examinations as well, as the preservation and consolidation of the Machaerus fortress, and its attractive future presentation to the public.

The Architectural Survey

As the result of the earlier investigations conducted on the archaeological site, the profession could have used only a sketch drawing as a ground plan of the Machaerus. Neither the elevation documentation nor the professional architectural descriptions of the superstucture's walls have been surveyed earlier, including the necessary architectural monumental building diagnosis and analysis. Following the comprehensive architectural examinations and building archaeological research, we were able to conclude the relations of the different architectural periods and construction phases of the buildings and group of buildings of the archaeological site (Gy. Vörös, T. Dobrosi, T. Papp, B. Arnóczki). Our scientific results provided fundamentally new perspectives in comparison with the previous researches. In addition to the architectural descriptions, we could not only establish the sequence of the Hellenistic (Hasmonean), the Herodian and the Roman periods, but after we prepared the theoretical reconstruction of the archaeological monument, we identified the architectural space development of the Machaerus fortress as well. With the help of the 3D computer modelling, the architectural developments of the ancient (and unfortunately) modern constructions (Marino 1994) were illustrated not only by the theoretical architectural reconstructions, but with the presentation of their archaeological remains as well (Vörös, Forthcoming).

The Geophysical and Geological Surveys

For the better understanding of the archaeological site, we have conducted instrumental examinations during our survey. These instruments were on the one hand Ground Penetrating Radars and on the other an Eddy Current Detector, with different antennas.

Among the antennas of the radar surveys, the 40 Mhz GPR antenna, under the same conditions, can reveal soil and rock structures down to 40 meters, while the 400 Mhz GPR antenna (launching 60 electromagnetic pulses per second) can reveal structures down to 4 meters under dry soil conditions. The antennas of the Eddy Current Detector, operated (by P. Eisler) in different-strength-signals, were used primarily for the upper strata of the archaeological layers, until one meter deep from the surface. The examinations were extended to the Herodian and the freshly discovered Hasmonean cisterns as well.

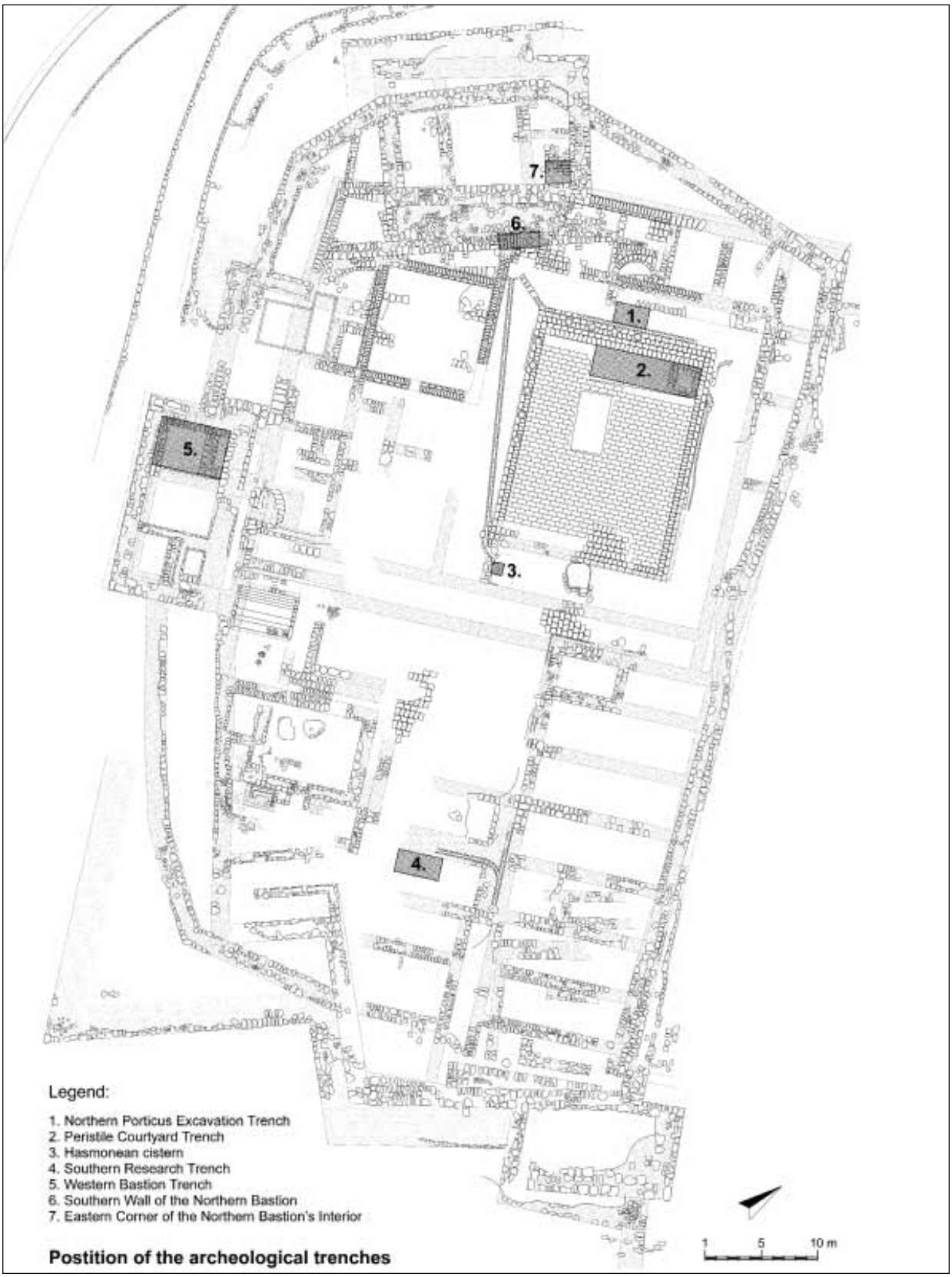
As the fruit of the geological and geophysical researches (A. Gachet, Radar Technologies International, France) we were able to prove the effect of the 31BC earthquake on the Alexander Jannaeus' Hasmonean walls, and discover the anti-seismic nature of the architecture of the Herodian cistern. On the walls of the latter, two fractures orientation have accurately determined the seismic waves direction which are perpendicular and oriented N 70°. He considered the approximate time of this earthquake to be the one at 113/114AD.

The Archaeological Excavations

Our archaeological investigations used also classical methods, i. e for the better understanding of the architectural heritage we opened seven archaeological research trenches: four in the Herodian palace; one in the western and two in the northern bastions of the Hasmonean fortification (**Fig. 2**).

1. The Northern Porticus Excavation Trench

In right angle on the NW SE symmetrical axis of the Herodian palace's peristyle courtyard (lat. peristylium or gr. tetrastoon), we have opened a 3.5 x 2 meters trench in its northern porticus (it. portico), which reached the bedrock of the hill after 1.2 meters. On all sides we have found an artificial homogenous filling from natural local stones toped by the intact Herodian floor level foundations, and with the remains of



2. The 2010 ground plan of the Machaerus fortress, marked with our excavation trenches.

an underlying Hasmonean wall in the NW and a Herodian rain drain channel in the SE sections respectively. On the SW excavation profile we found a very interesting stratigraphy adjacent by two reused column drums and one coin, *in situ* on the very characteristic 3-4 centimetres high carbon layer (**Figs. 3 and 4**).

2. The Peristyle Courtyard Trench

Parallel with the previous one and in the same deep (1.2 meters), we have opened a 9 x 3 meters trench in the peristyle courtyard of the Herodian palace (**Fig. 5**). The trench contained the whole area in the courtyard, which is not covered by the modern pavement. The NW section was adjacent with the remaining *in situ* floor level foundation, so we were able to understand the complete stratigraphy of the foundations of the original (and previous?) courtyard structure (**Fig. 6**). The other three sections were disturbed by modern building activities, but we were able to make the detailed architectural description of the little sediment basin cistern in the northern corner of the former Ionic courtyard (**Fig. 7**).

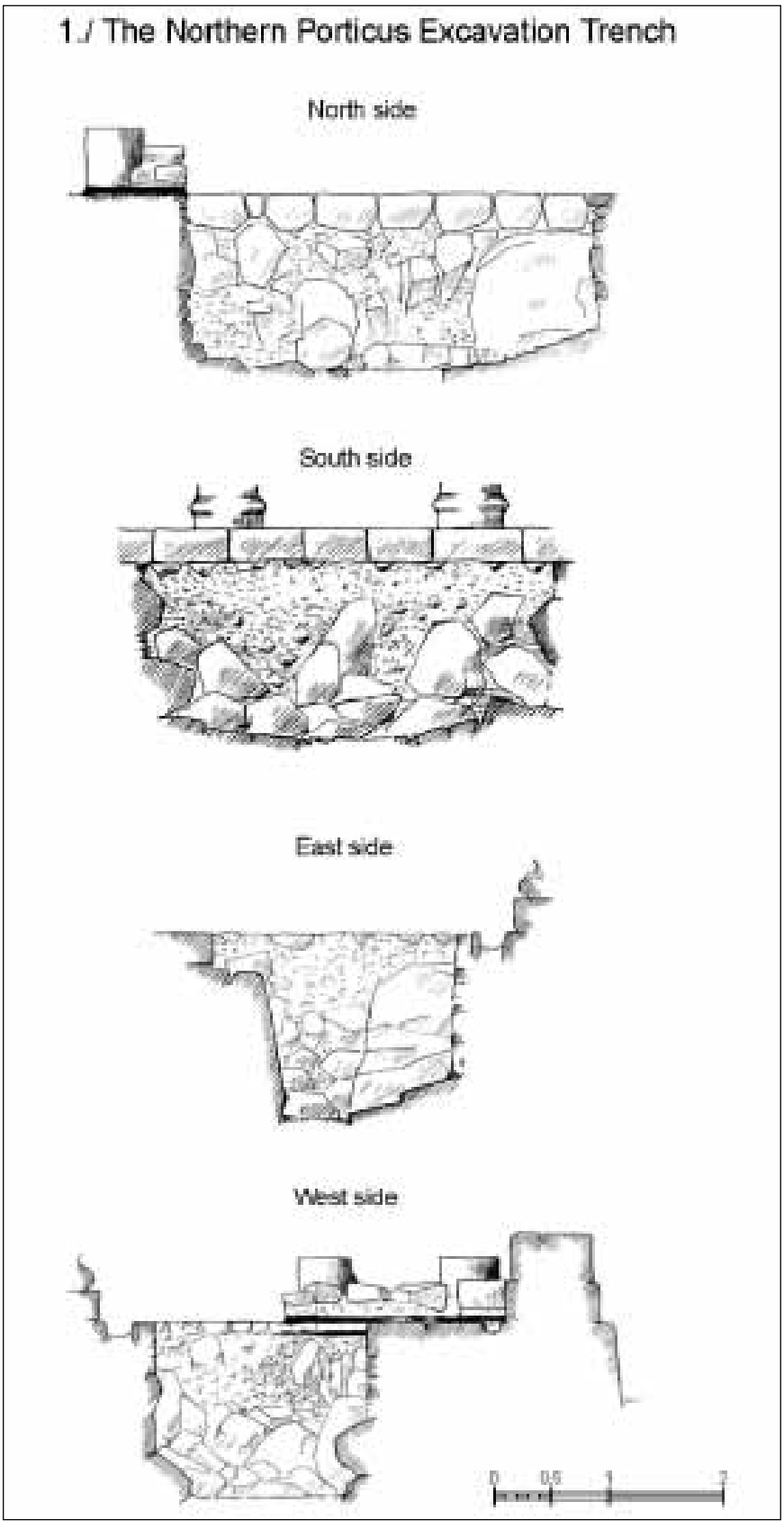
3. The Southern Porticus Excavation Trench

During our radar examinations in the southern porticus of the peristyle courtyard, we have found huge anomalies of an underlying architectural space. After opening a 2 x 2 meters trench-sondage, parallel with the previous ones, in the centre of this anomaly we found a still *in situ* limestone mouth-block of a cistern. After detailed graphic and photographic documentations (**Figs. 8 and 9**) we removed the limestone block, and were descending down on a rope to the bottom of the cistern that is 15.5 meters deep. The architectural appearance of the conical space is ending in a 4 x 4 meters square, as a stack base. At the bottom of the cistern we have found (underneath the one meter deep recent stone debris) an intact ancient debris layer, with average height of 50 centimetres (**Fig. 10**). After a three-day-long micro-archaeological cleaning of this accumulated precious ancient debris (as a time capsule), a serious amount of ancient archaeological material came to light (ceramics, glass and bone fragments), including one Hasmonean and one Roman coins.

4. The Southern Research Trench

During our architectural survey we realized the need to open a research trench to the west from the storerooms and to the east from the bath-quarter, for the better understanding of the architectural space between them. Our investigations were fruitful. We opened the 4 x 2 metres research trench parallel by the previous three trenches, and excavated it until two metres deep. We concluded that on the top of the artificial stone terrace there is a one meter high homogenous ancient soil layer, and the two are separated by a layer of cemented (water-shed?) mortar. After the thorough examinations of the

3. The Northern Porticus Excavation Trench of the peristyle courtyard, view from the NE.



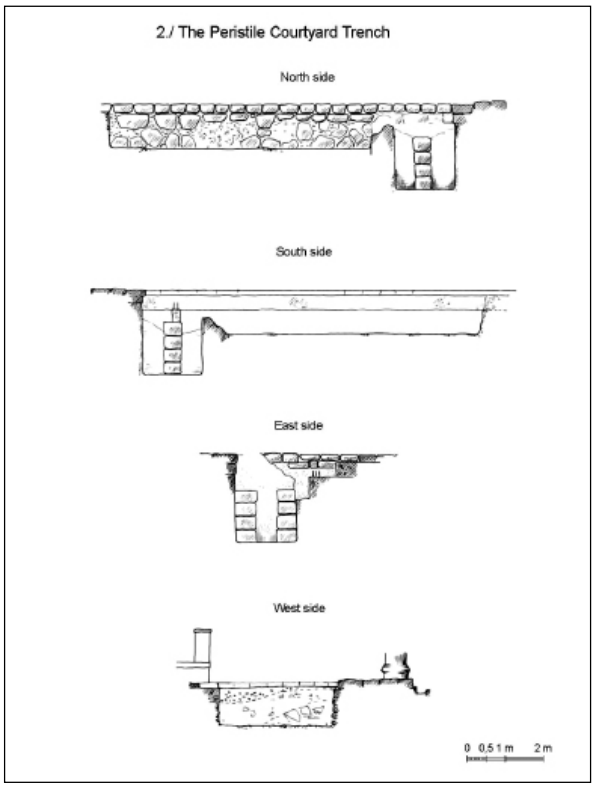
4. Section drawings of the Northern Porticus Excavation Trench's stratigraphical profiles.

5. The Peristyle Courtyard Trench of the Herodian palace, view from the NE.

section-stratigraphy of the archaeological profiles, we were able to establish that the southern courtyard of the Herodian palace was filled up with soil, and by this they were probably creating a place for a royal garden (**Figs. 11 and 12**).

5. The Western Bastion Trench

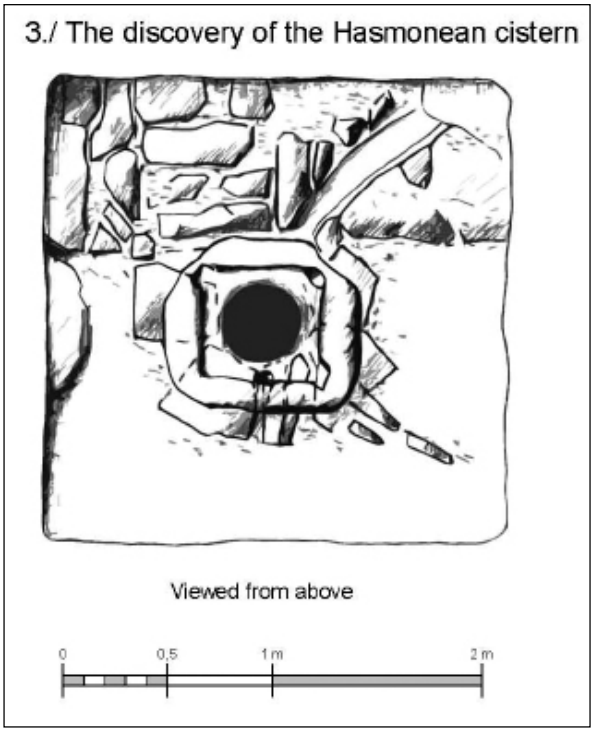
We opened a 6 x 4 metres archaeological trench in the northern section of the western bastion. The borders of the trench were the SW, NW and the NE walls of the bastion itself. For the better understanding of the stratigraphy of the archaeological debris accumulated inside the bastion, we defined the SE border of the trench on the midway of the 6 x 8 metres hall. As a surprise, we were not uncovering the archaeological stratigraphy in this section profile, but we revealed the architectural elevation of a previously unknown wall (**Fig. 13**). In the six metres deep archaeological trench we discovered collapsed wall debris that was accumulated between the intact ascending walls and above the



7. Section drawings of the Peristyle Courtyard Trench's stratigraphical profiles.

6. Detail of the NW section of the Peristyle Courtyard Trench, view from the SE.

8. The Southern Porticus Excavation Trench of the peristyle courtyard, view from above.



9. Drawing of the limestone mouth-block of the Hasmonean cistern, view from above.

well preserved bed rock and floor level foundation (**Figs. 14 and 15**). In addition to the serious volume of pottery material, eight bronze coins came to light (five of which were found in the buckets of the workmen). From the three coins found during the cleaning process *in situ*, one depicted the Hasmonean anchor, and another the Herodian double cornucopia.

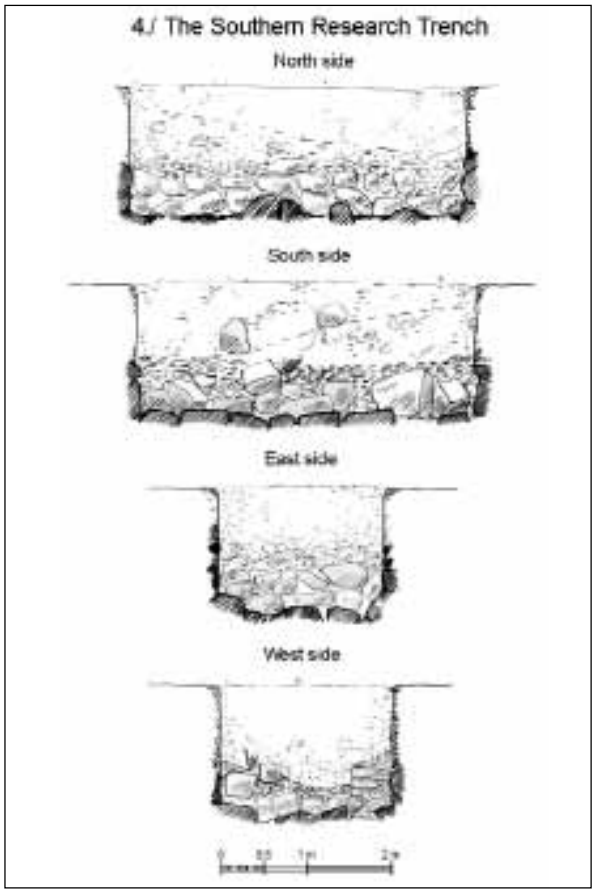
6. The Southern Wall of the Northern Bastion

While we were surveying the southern wall of the northern bastion, we have discovered a

10. The interior of the 15.5 meters deep Hasmonean cistern with the excavation profile of the ancient debris, accumulated in the bottom. View from its Eastern corner.

previously unidentified architectural structure filled with the accumulated wall debris. After the detailed graphic and photographic documentation of the physical status of the wall, we dismantled the wall ruins with great care, and uncovered an ancient staircase. The entrance start from the peristyle courtyard (so it had to be used

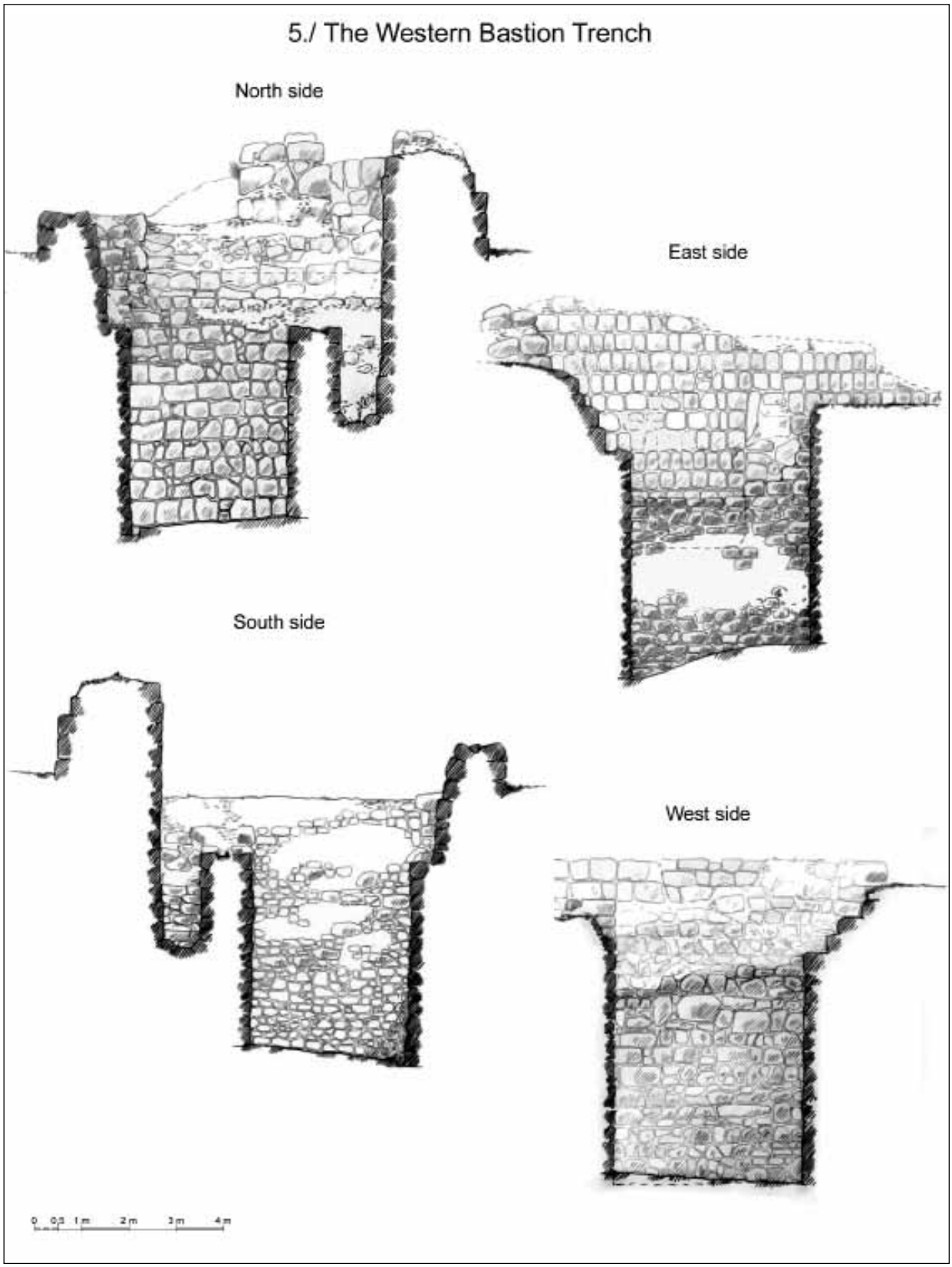
11. The Southern Research Trench with the modern column reconstructions in the background. View from the SE.



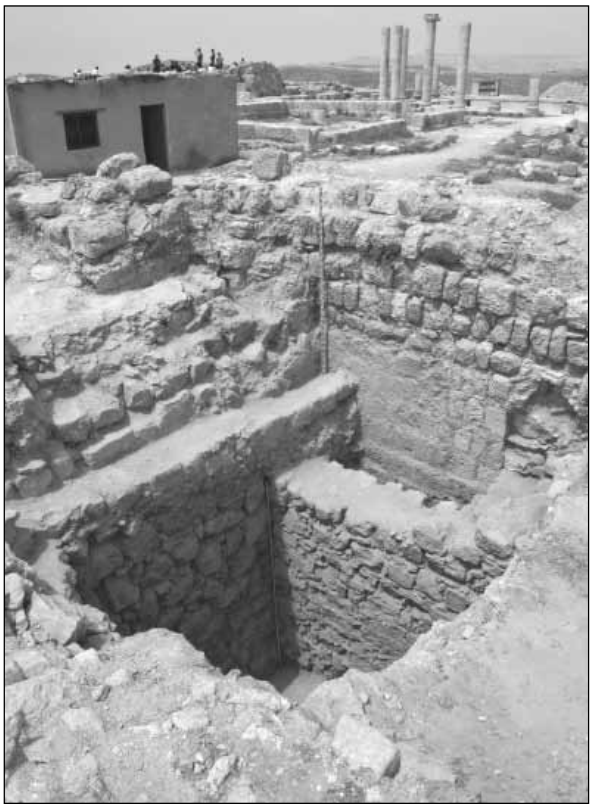
12. Section drawings of the Southern Research Trench's stratigraphical profiles.

13. The Western Bastion Trench's SE border with the newly discovered Hasmonean walls. View from the NW.

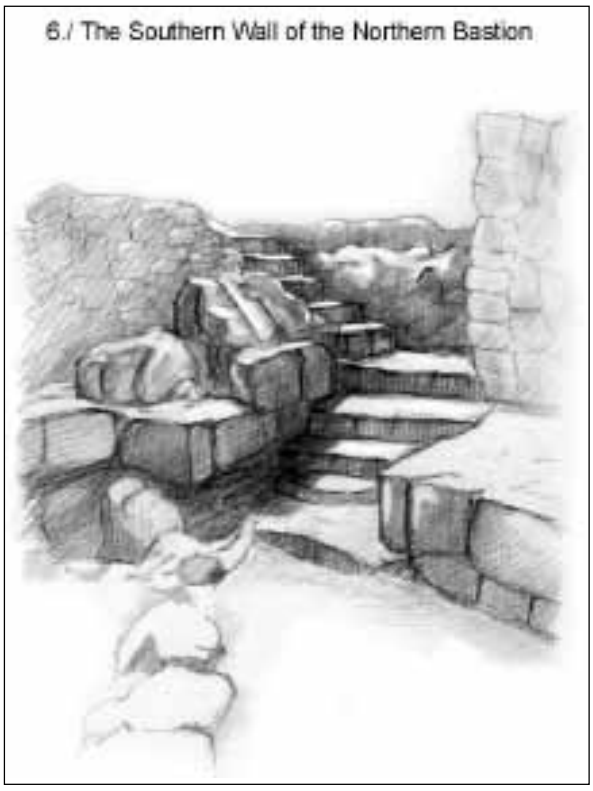
under the Herodian era as well), the staircase is leading into the bastion, after three stairs is arriving to a 1.5 x 0.8 metres breathing space, and after this in a right angle by six stairs upward to the west. The all together nine stairs are leading unambiguously to an upper floor of the bastion



14. Section drawings of the Western Bastion Trench's stratigraphical profiles.



15. The Western Bastion Trench with modern constructions and pilgrims in the background. View from the South.



17. Perspective drawing of the nine steps of the staircase in the Southern Wall of the Northern Bastion.

(**Figs. 16 and 17**).

7. The Eastern Corner of the Northern Bastion's Interior

The architectural survey of the northern Hasmonean bastion gave another unexpected result. At the eastern part of the interior we noticed further stairs. However these were not heading upwards but down from the Herodian floor level, and in their architectural character and physical appearance were similar with the ones discovered in the southern wall (e.g. the

16. The Southern Wall of the Northern Bastion, with the revealed staircase, view from the East.

stairs are 32 centimetres, Greek feet deep). We were excavating them only down to five stairs, since it was already enough to prove that a basement level had to exist under the Herodian peristyle courtyard's floor level, and the northern bastion had to consist at least 3 floors (**Fig. 18**). If we add this to the fact that the western bastion's interior is today 8.75 metres high in its ruins, than someone can assume that the description of Flavius Josephus was not very far from the architectural appearance, what we can detect and reconstruct today.

Summary

As a result of our 2009 study and the 2010 two-month-long archaeological excavations, we can state that we understand much better the architectural and material heritage of Machaerus, as ever before (Vörös, Forthcoming). After the field work we have such a scientific data base in our hands (the complete architectural description, the data of the geophysical surveys combined by the information provided by the seven excavation trenches and approximately 7000 large scale professional digital photographs by T. Papp, K. Eisler and I. Őri-Kiss), which gives the base of the scientific archaeo-architectural analytical work that will preserve the heritage of Machaerus, pregnant with the information for the future generations. After the completion of our work, we will give a recommendation to the government of Jordan for an architectural monumental reconstruction that can give a creative and new presentation for the visitors and the pilgrims of this precious Biblical site (**Fig. 19**).

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18. The Easter Corner of the Northern Bastion's Interior, with the revealed staircase, view from the SW.

19. Aerial photograph of the Machaerus fortress from the SW, © APAAME_19980517_RHB-0082.tif (Robert Bewley).

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