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Medieval Petra 2022. Excavation at the northeastern tower complex at al-Wu' Ayra (Petra – Jordan)

Abstract: The article presents the first results from the 2022 excavation season at the al-Wu' Ayra site (Petra, Jordan). The study is part of the "Medieval Petra: Archaeology of Crusader-Ayyubid Settlement in Transjordan" project, conducted by the Chair of Medieval Archaeology of the University of Florence, since 1986. The 2022 activities were focused on two excavation areas, designated as 15000 and 30000, both located within the northeast tower complex of the 12th-century Crusader castle. Area 30000 pertains to the Crusader tower itself, which underwent various functional changes, including domestic and stable uses, throughout the Ayyubid-Mamluk and Ottoman periods. Area 15000, located outside the tower, reveals post-medieval transformations encompassing both indoor and outdoor spaces. Its primary chronological horizon indicates Early Ottoman period occupation phases involving sedentary and pastoral communities. The conclusions address updated hypotheses concerning the settlement and phased abandonment processes of the site.

Keywords: Medieval Levant; Jordan; Petra; Excavation; Crusader Archaeology; Islamic Archaeology; Historical Archaeology.

1. Al-Wu' Ayra: the site and the research

The Crusader Castle site of Al-Wu'ayra, located in South Jordan in Ma'an district and PDTRA, is an integral part of the UNESCO World Heritage Site of Petra Archaeological Park. It sits to the northeast of the ancient Nabatean city, and archaeological investigations have been ongoing there since the 1980s. The initial exploration, led by Robin Brown (1987a, b), was soon followed by excavations conducted by the University of Florence starting from 1987¹, under the direction of Guido Vannini (Vannini-Tonghini 1997 and Vannini 2011, for a bibliographic synthesis).

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¹ From 1991 in the frame of the Italian archaeological mission "Medieval Petra: Crusader-Ayyubid settlement in Transjordan" co-funded by the University of Florence and the Italian Foreign Office.

In 2019, the direction of the project was transferred to Michele Nucciotti, former co-director of the archaeological mission since 2002².

The placename "Al-Wu'ayra" is Arabic, signifying the "place of difficult access", though in Latin medieval sources the Crusader castle was known as "Li Vaux Moysis", or "the castle of Moses' valley". "Moses' valley" is the modern placename that translates to "Wadi Mousa", the village nearby the archaeological site of Petra. Al-Wu'ayra is strategically perched atop a rugged terrain surrounded by wadis and weathered ridges, creating a natural defense. Notable architectural features that remain visible today include the so called "cassero" or castle-keep, the outer defensive line with remains of curtain walls to the east and traces of defensive installations and their connective tracks to the south, west, and north of the site. The main archaeological-architectural remnants include: rock-cut installations of the Nabatean epoch, with potential burial sites; built traces of the Roman and Byzantine eras by the castle access gate; a number of rock-cut features for water management and the installation of a monastic community of Byzantine age; two ruined Crusader-era towers, a one-nave church, and two cisterns of the same epoch; as well as a very great number of ruined, poorly built structures of the Middle and (predominantly) Late Islamic periods³.

² The authors would like to express their sincere gratitude to the project donors, Ministry of Foreign Affairs of the Italian Republic, the Italian Embassy in Amman, Erasmus+ Extra EU Mobility, and the University of Florence, who granted funds for the research presented in this article. The authors want to especially thank H. E. Fadi Bala'awi, Director General of the Department of Antiquities of Jordan, for releasing the excavation permit to Florence University for season 2022, as well as for assisting and supporting the work at Al-Wu'ayra through the Directorate of Excavation (Director Mr. Aktham Oweidi) and the DoA Directorate of Ma'an (Director Mr. Abdallah Rawashdeh). The University of Florence team for 2022 season included Michele Nucciotti (project director); Elisa Pruno, Raffaele Ranieri (co-directors); Giovanni Curatola (senior expert); Elena Casalini (project management); Dario Abbate (administration); Francesca Cheli, Chiara Marcotulli, Giacomo Ponticelli, Lapo Somigli (square supervisors); Gianluca Carputo, Alessia Fontini; Fabiana Miceli; Carlo Pistis; Francesca Sani (Florence University students).

³ The periodization is often indicated as a compromise between the political periodization (e.g. Umayyad, Abbasid periods) adopted by most archaeologists and historians working in southern Bilad al-Sham and the archaeological periodization (e.g. Middle or Late Islamic periods) indicated by Whitcomb in his contribution of 1992 (compare also Walker 2012, in particular pp. 507-508), which seems to be adequate in

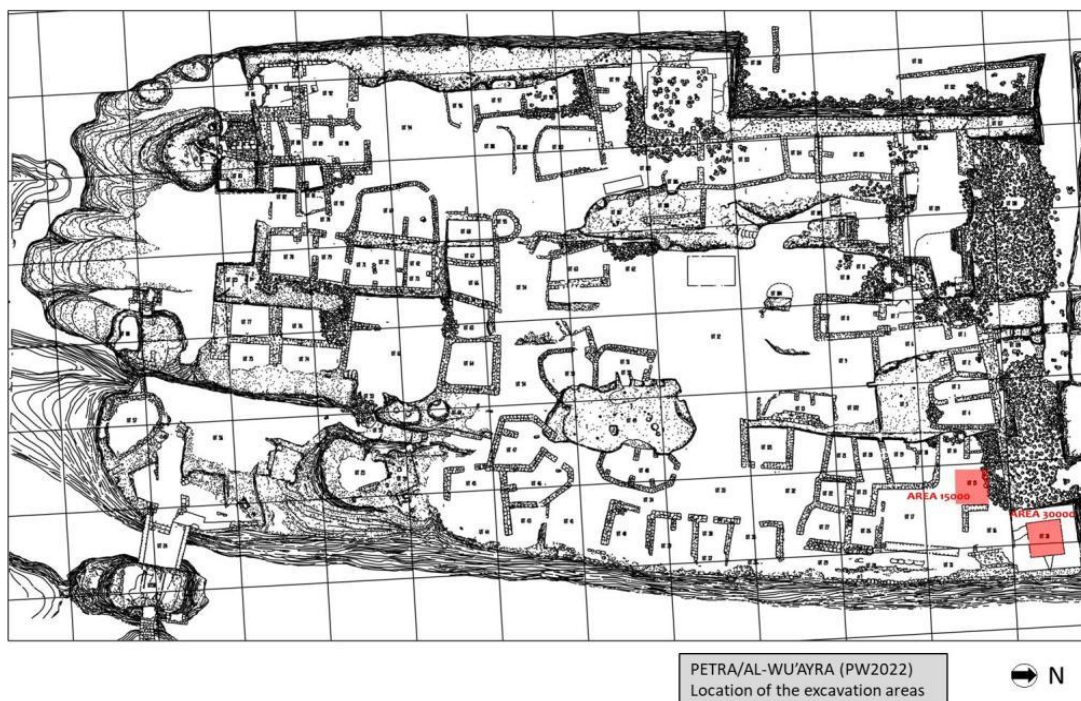


Fig. 1. Site Map of Al-Wu'ayra with the position of the two excavation areas (15000 and 30000).

As a Crusader castle, Al-Wu'ayra is believed to have been constructed between 1107 and 1116 during the reign of King Baldwin I as part of a broader network of fortifications in Petra, alongside the Al-Habis Castle in the city center, and supporting the wider Crusader kingdom's (and Lordship of Transjordan's) defensive system, as a key element for controlling the trade routes (Nucciotti 2019) connecting the area of Ma'an with the Wadi Araba' through the Baydha pass. The dating of the site is not uniformly accepted. Sinibaldi (2022, p. 130), for instance, following the arguments put forth by Pringle (1998, pp. 373-377), proposes a more recent dating to the years 1130-1140. The issue of dating the appearance of the Crusader castles in Petra is quite complex and cannot be succinctly summarized in this context. The dating proposed by Pringle and Sinibaldi relies on several interpretive points, among which are the architectural analogies between the main church of Al-Wu'ayra (TU 119)

order to better describe the region considered chronologically (compare also the editors' introduction in the volume edited by Walker, Insoll and Fenwick 2020, pp. 9-12). In particular, regarding specific pottery productions likely related to regional and/or little tradition "origins", such as handmade ceramics, the use of wider categories such as Middle and Late Islamic periods appears to be one of the best way to reach such aims. However, when the archaeological data allowed us to formulate more specific hypotheses, indications of the century, as well as dynastic eras, were mentioned.

and the lower church of Shobak (CF 1, datable post-1118), and a mention by William of Tyre that Shobak (referred to as “Mons Regalis” after its foundation by Baldwin I of Jerusalem in 1115) was the first castle constructed by the Latins in Transjordan (a synthesis of Latin sources on this point is available in Sinibaldi 2014, p. 19).

In brief, and solely for the purpose of introducing a matter that will be the subject of a detailed analysis of the results of historical-archaeological investigations by the Italian mission at the sites of Al-Wu’ayra and Shobak, the following observations can be made. Firstly, the toolmarks in ashlar of the apse of the main church of Al-Wu'ayra closely correspond to those in the upper church of Shobak (CF 10, consistently dated to 1115-1118), rather than to those of the lower and later church CF 1. Both at Al-Wu’ayra and in the upper church of Shobak (CF 10), toolmarks show the use of a toothed blade cutting tool, whereas both in the lower church CF 1 (later in construction) and in the door arch CF 3 at Shobak (PP 7, MSU 3021, II-III Crusader phase of Shobak, see Nucciotti 2007, figg. 21-22 and Matrix), toolmarks from a flat blade are present (probably a small stone-axe or a large chisel). Therefore, the archaeological productive-chain analysis suggests a closer affinity of the church at Al-Wu’ayra to the early phase of the Latin settlement rather than a later one (Fig. 2).

Regarding William of Tyre's assertion about the absence of castles in Transjordan before the foundation of Shobak, it is worth noting that such a reference does not appear in the chronicle of Fulcher of Chartres (b. 1058, d. 1128 c.), who was a contemporary “witness” to the events. In contrast, William of Tyre wrote in the second half of the 12th century, decades after the establishment of Mons Regalis (Shobak), and political-ideological considerations of his time, as well as ignorance of the factual details of 1115, may have had an influence on his writings. However, for the purpose of the present contribution, the issue is not very relevant.

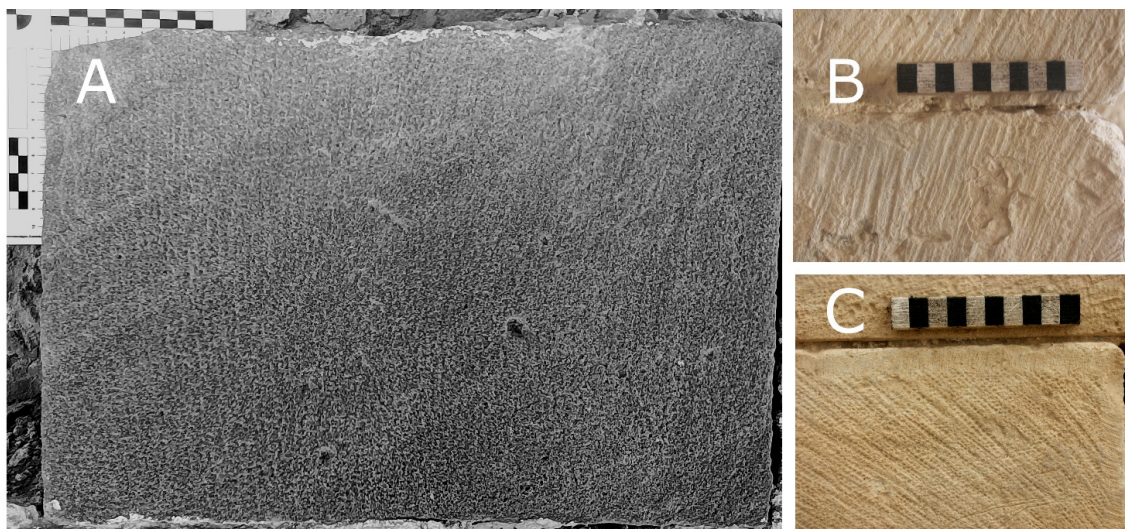


Fig. 2. Comparisons between toolmarks from Al-Wu'ayra church (A), Shobak Lower Church CF 1 (B), and Shobak High Church CF 10 (C).

From an archaeological point of view, Al-Wu'ayra's historical significance, besides its medieval role, predates Crusader occupation, as there is evidence of a Nabatean presence in the form of burial areas, with a particular concentration in the wadis of the northern sector of the site (Vanni Desideri 2020).

After the Roman annexation of Arabia in 105 CE, Al-Wu'ayra shifted its functions from funerary-religious to a permanent settlement place. Though research has yet to ascertain in detail how the site was first transformed from the 2nd century CE onward, the Roman/Byzantine epoch is evidenced by the remains of a curtain wall, and the transformation of a Nabatean tomb-cut into a sandstone pinnacle emerging from the bottom of wadi Al-Wu'ayra, which delimitates the site on the east-into a fortified entrance gate to the site (further restored and re-fortified by the Crusaders in the 12th century). Possibly in a second period, dated from the 5th to before the 12th century (possibly to the 10th-11th, see below) a complex hydraulic network and rupestrian settlement was developed within Al-Wu'ayra (Vanni Desideri-Vannini 2017), reflecting the transition from a defensive structure to a likely monastic-hermitic site. This transformation is evidenced by the reuse of several earlier rupestrian tombs as water reservoirs, as well as from the establishment of chapels: a rock-cut one was recently identified in Topographic Unit 126, to the south of the medieval cassero (Vanni Desideri-Leporatti 2020, pp. 134-139). The delimitation by rock-cut ditches of the rectangular space where the core of the 12th century

Crusader castle was to be built is possibly related to the same phase of activity.

With the Islamic conquest in the 7th century, the social and economic conditions of the region underwent a further shift, with the permanent loss of urban status for Petra; although Al-Wu'ayra's role as a center of hermitic and monastic communities apparently continued without interruption after the Islamic conquest. This point has not yet been confirmed by evidence from excavations, though the continuity of the monastic community in Jebel Harun until at least the 10th century, albeit with the reduction of the liturgical spaces (see Fiema 2016, pp. 560-563), and the discovery of Christian hermitages in the Petra valley (Vanni Desideri-Leporatti 2020, pp. 139-141) may strongly support this hypothesis. Ongoing excavation at the site of TU 126, started in 2023, is expected to clarify the situation in the near future.

Subsequently, in the Crusader epoch, following a first scouting survey carried out in 1100 by king Baldwin I and the Jerusalem court in Petra and/or Wadi Mousa (Vannini-Nucciotti 2003), a medieval castle was built on the ruins of the Byzantine monastic-hermitic site. This marks the beginning of what Vannini, in the late 1980s, referred to as "Medieval Petra". This terminology emphasizes a period of renewed vitality for the site of the ancient Nabatean metropolis, although marked by an *incastellamento* phase and not by large scale re-urbanization. Instead, "Medieval Petra" saw a revival of the political and economic significance and centrality of ancient Petra, albeit within the context of the Kingdom of Jerusalem (and the Lordship of Transjordan from 1142 onwards). Such a resurgence established the site as a local hub for Latin elites and Crusader contingents (based in the newly built castles), who organized themselves more precisely and systematically around the royal foundation of Mons Regalis (Shobak) initiated by Baldwin I in 1115, approximately 25 kilometers north of Petra. Thus, a military and socio-political network, led by the King of Jerusalem and locally administered (at least until the 1140s) by royal vicars and lords installed at Mons Regalis, emerged in the region. Subsequently, from circa 1142 (the date of the refortification of Kerak), Mons Regalis became one of the seats of the *Domini* and princes of Transjordan, who succeeded the royal officials in the top political and military positions in the region. In that framework, the Crusader castle of Al-Wu'ayra, due to the activity of King Baldwin I

of Jerusalem and his successors, played a vital role in the Crusaders' control of Transjordan, particularly in safeguarding caravan routes between Egypt, Syria, and Mecca. The site, which was controlled by the kings of Jerusalem until 1160s (Sinibaldi 2022, p. 131), was strategically located to monitor caravan and military traffic through the pass of Baydha (Nucciotti 2019, Sinibaldi 2022). It was part of a network of fortifications alongside Al-Habis and was complemented by smaller strongholds in Wadi Farasa and possibly villages including Baydha itself (according to Sinibaldi 2022, p. 142). This network, controlling a precious spot of arable lands, aimed to secure the "King's Way", protect the access to Arabia to and from Jerusalem, and help disconnect and control land connectivity systems extending between Fatimid Egypt and late Seljuk (then Zangid and Ayyubid) Syria and Iraq.

The layout of Al-Wu'ayra Castle reflected its defensive purpose, with an impregnable gate giving access to an uphill route leading to the *cassero* divided into two zones. The upper zone, to the west, contained residential housing and monumental structures, including the 12th century main church TU 119. The lower zone featured a large area enclosed by walls dedicated to maneuvering spaces. It was bordered to the north and south by rock-cut moats, which likely dated back to the preceding settlement phase and were reused with minimal alterations. To the east, it was bounded by the deep Wadi Al-Wu'ayra⁴, which could only be crossed at the location of the gate that had been opened during the Roman-Byzantine period, through the de-functionalized Nabatean tomb, as discussed above.

Despite facing sieges in 1144 (when the castle fell to the Turks for a brief period)⁵ and 1158, Al-Wu'ayra remained in Crusader hands until the capture of Mons Regalis in 1189, a turning-point date signaling the end of the Crusader polity in Transjordan.

Wu'ayra was eventually downgraded as a settlement in the following Ayyubid (1189-1260) and Mamluk (1260-1516) periods when the site went

⁴ See Nucciotti 2019 for a detailed description of the passive defense system set up in the Crusader period.

⁵ The identity of the "Turks" mentioned by William of Tyre (1943, XVI, VI) in connection with this episode is unclear. It cannot be ruled out that these were forces affiliated with the Seljuk atabeg of Mosul, Zangi, who, in the same year, captured Edessa.

through a phased abandonment process, ending with total abandonment in the late Ottoman epoch. Already after the Ayyubid conquest, Al-Wu'ayra ceased to serve a military and political function, and the settlement gradually transitioned into a rural and seasonal habitat for Bedouin tribes by the Mamluk and early Ottoman periods. Several archaeological features attest to these post-Crusader transformations, with evidence both from excavation (see Tonghini-Vanni Desideri 2001, for Ottoman contexts) and from the epigraphical record. For instance, the study of inscriptions left on the altar stone of the Al-Wu'ayra Crusader church reveals evidence from the Mamluk period onward, which includes several Bedouin tribal marks. The only dated marking belongs to the 17th century Dawykat tribe, from the Balqa region (information courtesy of Julia Maczuga, Bonn University).

(MN)

2. The 2022 season at Al-Wu' Ayra: purpose and strategy

The program of archaeological excavation carried out by the University of Florence at Al-Wu'ayra started in 1989 and ended in 1998, under the direction of Guido Vannini. It has produced the most complete and extensive classification of 12th and 13th century medieval handmade pottery in Jordan based on stratigraphic evidence to date. These research endeavors included the participation of Andrea Vanni Desideri and Cristina Tonghini in excavating and studying the archaeological materials and in the elaboration of ceramic chronotypology.

Before Vannini's excavations, Al-Wu'ayra was the subject of investigation by Robin Brown, who conducted a comprehensive examination for her PhD research, focusing on the study of medieval ceramic production in Jordan. Brown's work included a detailed analysis through stratigraphic sondages of limited extension at Al-Wu'ayra and Shobak. In the English-language scientific literature, the results of Brown's research were equally significant as Vannini's, despite the substantial differences in the size of the areas studied and the level of detail in the recognized stratifications. What is relevant for the present work, however, is that in both cases, Al-Wu'ayra's role as a guiding site

for the study of handmade ceramic production of the 12th and early 13th centuries is established *de facto* in scientific literature.

Therefore, it is necessary to briefly introduce the motivations and objectives for resuming archaeological excavation research at Al-Wu'ayra in 2022, more than 20 years after the conclusion of the initial excavation campaign on the site, when a new phase of the research was carried out under the scientific direction of Michele Nucciotti and co-directed by Raffaele Ranieri and Elisa Pruno. To do so, it is necessary to clarify that the conclusion of the excavation campaigns at the site did not coincide with the conclusion of archaeological research in Al-Wu'ayra. Starting in 1997-1998, as the excavation campaigns were winding down, a new phase of research for the Italian "Medieval Petra" archaeological mission began, with a more explicit focus on "light archaeology", emphasizing historical, territorial, stratigraphic, and non-destructive methods (Nucciotti-Vannini 2019). From that point until 2019, the site underwent extensive investigations, particularly in terms of topo-stratigraphy and technological-architectural analysis, primarily conducted by Andrea Vanni Desideri and Silvia Leporatti (see par. 1.1, for references). These research efforts, spanning roughly two decades, resulted in numerous contributions to scientific publications and allowed for a material understanding of Al-Wu'ayra's complex stratigraphy, gradually moving the site away from the predominantly Crusader and Crusader-Ayyubid archaeological narrative. Through a re-evaluation of the more recent stratifications from excavation campaigns, a reassessment of artifacts found in secondary deposition, and detailed architectural archaeological analysis, Al-Wu'ayra was fully recontextualized within the long-term cultural and archaeological history of the Petra Valley and southern Jordan.

It was at the conclusion of this extended research program, in conjunction with findings from the Italian mission elsewhere, especially in the Petra Valley (Al-Habis and Corinthian Tomb, see Ranieri and Cheli 2020), as well as at Shobak and Jaya (Nucciotti-Pruno 2016), and developments in rural archaeology and archaeology of abandonment in Bilad al-Sham (Walker *et al.* 2020, Walker 2021), that the decision was made to resume excavation at Al-Wu'ayra.

The primary objective of the new excavation project is the reconstruction of the archaeological history of the site over an extended

period, spanning from the Nabatean era to the 20th century. This is to be achieved through an in-depth stratigraphic investigation, refining and specifying the results of the light archaeology research conducted over the past two decades. This approach can be considered a form of "global archaeology", influenced by the methodological considerations put forth by Tiziano Mannoni in the Italian context (Mannoni-Cabona 1984, Mannoni-Giannichedda 1996).

Concurrently with Mannoni's global archaeology approach, the resumption of excavations aims to shed light on other aspects of the history of Al-Wu'ayra and southern Jordan. This includes the socio-economic and cultural relationships between sedentary communities and nomadic or semi-nomadic "Bedouin" pastoral groups in the medieval and post-medieval periods. Furthermore, it seeks to explore the site's connection to long-distance land trade and military routes between Egypt and Hijaz to the south and Syria, Iraq, and Iran to the north. These aspects had remained on the periphery of research efforts in the 1980s, primarily due to the fact that relevant theoretical literature and reference case studies only emerged in scholarly discourse subsequently⁶.

That being said, the strategy adopted since 2022 has focused on prioritizing areas of the site with multiple stratifications, characterized by the concurrent presence of architectural elements from both the medieval and late Islamic periods. These areas hold the potential to better address the new research questions. Within this framework, two pilot excavation areas have been identified: the northeast tower complex (areas 15000, 16000, 30000) and the south chapel complex (area 126000), both possessing the desired characteristics.

The excavation of the Northeast Tower Complex, for which an initial report is provided in this contribution, commenced in 2022, while the commencement of research in the south chapel is scheduled for 2023. Both excavation areas had been subject to limited stratigraphic surveys

⁶ See, for the connection with desert pilgrimage and trade routes from the north (Turkey, Lebanon, Syria) or the west (Egypt, Israel, and Palestine) heading to Mecca and Medina: Power 2011 and Guy 2019. Concerning celadon and porcelain see: Al Shqour 2019; ivory: Coutu 2019; frankincense and myrrh: King 2016. Concerning the more local scale circulation of pottery from Syria and Egypt (lustre, glazed wares) see: Walker 2011, 2021; glass bangles and wares: Henderson-Chenery-Kroeger-Faber 2016.

by Robin Brown (1987a, b), thus offering a preliminary assessment of their stratigraphic potential.

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3. Archaeological data

The 2022 excavation at Al-Wu' Ayra was organized into two distinct areas within the northeast tower complex. Excavation area 30000 (approximately 4.20×3.60 meters) comprises of the inner vaulted room of the northeast tower of the Crusader castle. Excavation area 15000 (approximately 4×4 meters) is located outside and to the west of the northeast tower, adjacent to the collapsed western cassero wall.

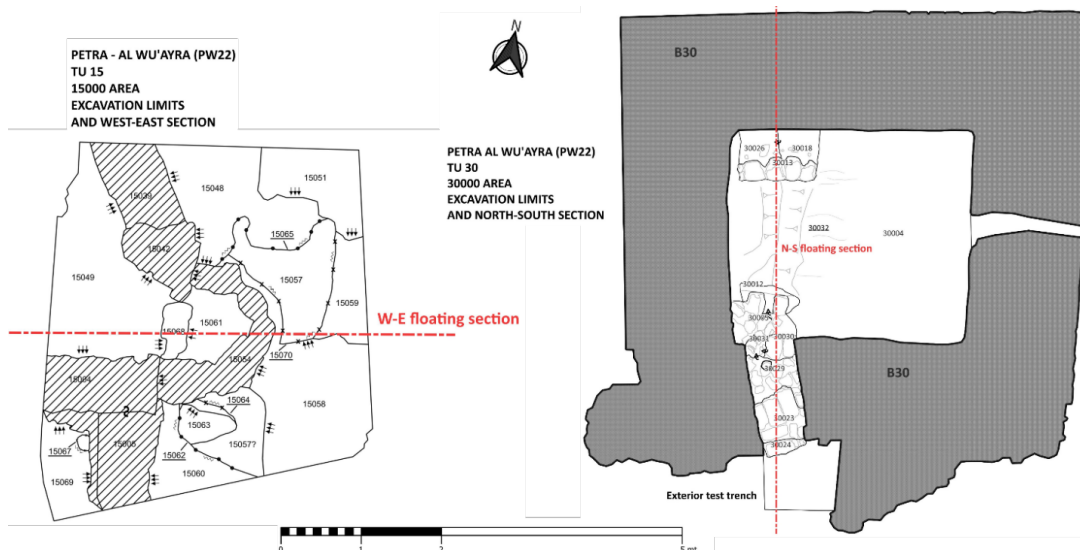


Fig. 3. Left: plan with excavation area 15000's limits and the west-east floating section's position. Right: plan with excavation area 30000's limits and the north-south floating section's position.

The excavation areas were designed and measured using a laser total station, and a set of summary floating sections (the position of the two main sections of each excavation area are shown in Fig. 3) was established to create a graphical record of the complete stratigraphic sequence in each excavation area. Furthermore, each stratigraphic unit underwent photogrammetric surveying to generate a three-dimensional model of the entire stratigraphic sequence. Additionally, soil samples from each layer were collected for future archaeobotanical analysis to gain a comprehensive understanding of environmental changes over time.

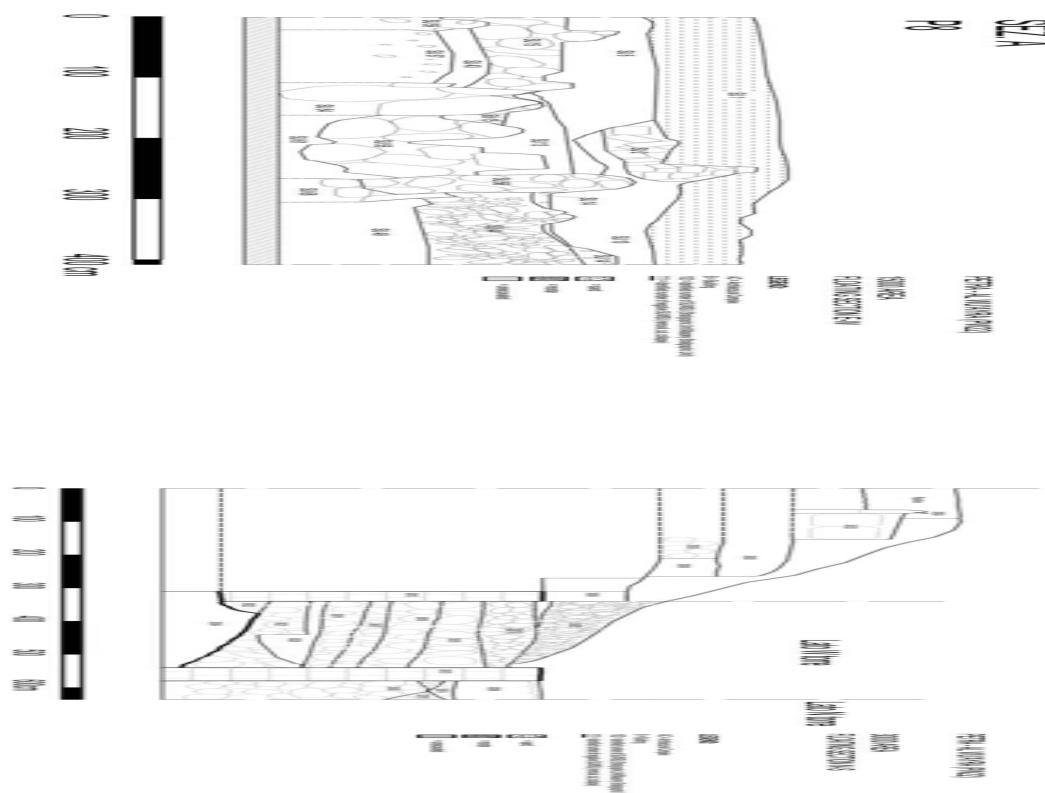


Fig. 4. Example of (summary) floating sections. Top: a west-east floating section of excavation area 5000. Bottom: a north-south floating section of excavation area 30000.

3.1 Stratification of Area 30000

Before commencing excavation within the tower, the space outside the entrance, which had been partially obstructed by a collapse of large-sized stones was cleared.

The initial conditions within area 30000 (referred to as TU 30, identifying the indoor space of northeast tower of the Crusader castle), consisted of a collection of medium and large-sized stones and ashlar. These appeared to have been placed along the northwestern corner of the area in relatively recent periods. It is likely that this space was used as a stable, possibly for goats and/or donkeys during the modern era. The rest of the area was predominantly filled with soil, chaff, and dung. Notably, remnants of an installation (recorded as Masonry Stratigraphic Unit–MSU–30002), utilized as a feeding/drinking trough and constructed from large, reused ashlar (spolia), were also identified in the northwestern corner.



Fig. 5. Initial situation outside and within area 30000.

Both the deposit of large stones/ashlars and the layer of sand, chaff, and dung were documented as SU 30001, and they were excavated together. Beneath these layers an intriguing situation was revealed. In the southwestern corner, near the tower's entrance, a collapse of large and medium-sized stones (SU 30003), similar to those cleared in the external space, was exposed under SU 30001. These stones were conceivably associated with a series of steps connected to the entrance gate. Following the removal of SU 30003 (and SU 30001), it became apparent that the eastern portion of the area was entirely underlain by bedrock (SU 30004), displaying signs of human modifications such as cutmarks (that await final interpretation). The bedrock surface exhibited an elevation difference between the eastern and western parts of the area, as it included a crevasse bridged by the medieval building. Fragments of small-sized stones and slabs in the western portion, under SU 30003 (possibly the base of it), might be linked to a foundation layer for the floor, hypothetically connected to the living phases of the Crusader era. Likewise, traces of small-sized stones and slab fragments, possibly related to a preparation layer or floor, were observed in the northern section, between the bedrock and the trough space (MSU 30002).

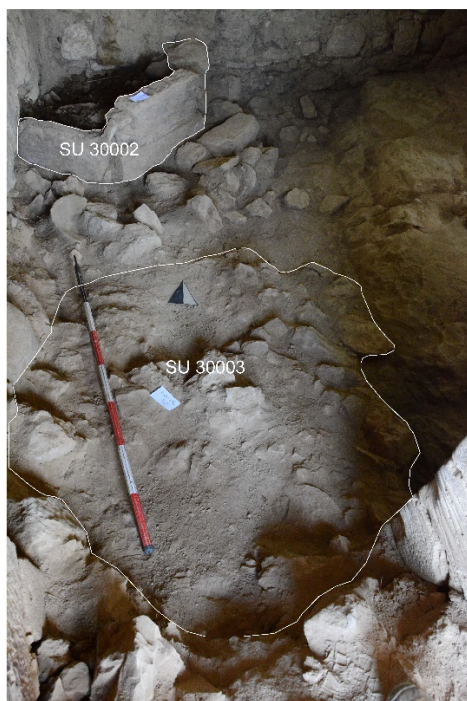


Fig. 6. SU 30003 and northwest corner of the tower with the installation SU 30002.

Following the removal of these layers, a clearer stratigraphic sequence emerged in the western part of the tower, enabling the formulation of an initial interpretation. In the vicinity of the trough space outlined by MSU 30002, it was observed that SU 30007, abutting against MSU 30002, might represent a layer of flat-set stones, conceivably associated with a pavement related to the use of the aforementioned trough space. After the removal of SU 30007, MSU 30002, and its associated filling layer (comprising remains of SU 30001), it was evident that the interior of the trough space was covered by a plaster layer composed of dung and chaff, likely from a later phase when the tower was (re)purposed as a stable.



Fig. 7. Left: view of SU 30007. Right: view of MSU 30002 and SU 30009.

Beneath this stratification, including the lowermost layer of collapse in the southern part of the area, two walls oriented from west to east were exposed. One was directly under SU 30005 (MSU 30012), and the other was positioned under the trough space (MSU 30013), fitting within a natural crevasse in the rock. Among these walls, a series of layers (SU 30010, 30015, 30016, 30017, 30019, 30020, 30021, 30022) were discovered, constructed with medium (and occasionally large) flat-set stones and mortar. These layers served to fill and level the space, with each layer being placed atop the other, collectively representing a part of the same leveling activity associated with the preparation of a floor or pavement, possibly made of mortar (evidenced by traces of mortar on the uppermost of these layers, SU 3010). During the excavation of the leveling layers, only a few pottery sherds (mainly plain handmade ware) and bones were recovered. The chronological context of this activity remains uncertain, but its connection to the Crusader occupation of the tower is highly plausible. The lowest (earliest) leveling layer was directly placed on the bedrock.



Fig. 8. Two of the layers of stones and mortar (SU 30015 and 30022) which made up the levelling activity between MSU 30012 and MSU 30013. The image on the left shows also the two aforementioned walls: MSU 30012 (on the southern limit) and MSU 30013 (on the northern limit).

North of MSU 30013, situated between that wall and the northern wall of the tower, a sequence of three layers composed of small-sized stones (30008), mortar (30014), and small-sized stones with traces of mortar (30018) was exposed. While 30008 might be associated with levelling the area for the construction of a floor, similar to the previously mentioned layers, the others are likely linked to the construction of a west-to-east-oriented wall. MSU 30013 represents the southern face of this wall, while its northern face may be positioned below the first line of the northern wall of the Crusader-era tower. Although further investigation is needed, the hypothesis of an earlier (perhaps very early Crusader or pre-Crusader

period) wall appears plausible. During the removal of these layers, only a few pottery fragments (handmade ware) were found.

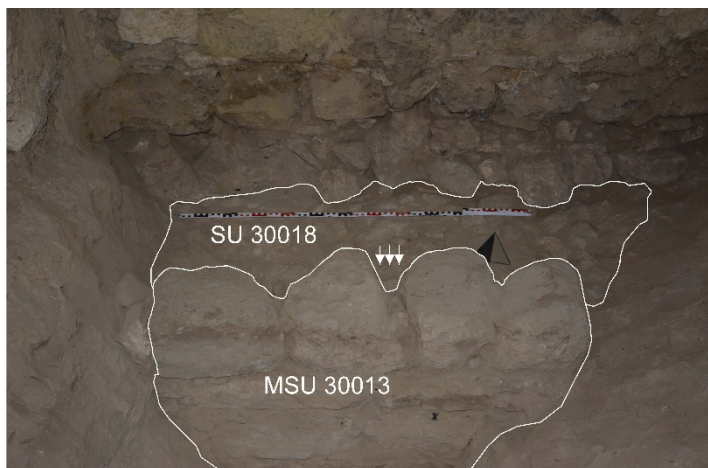


Fig. 9. View of SU 30018, detailing its relationship with the stones possibly related to a wall set underneath the northern wall of the tower dated to the Crusader period.

After the photogrammetric three-dimensional modelling of the bedrock of area 30000, the focus of excavation moved to the entrance gate of the tower. Here, a very small probe (circa 1 × 1 meter) was opened immediately in front of the exterior façade. After the removal of topsoil fill, a series of large, hewn stones came to light at a depth of around 15 centimeters.

The complex of large stones was interpreted as a threshold and consists of a series of spoliated boulders put orthogonally to the entrance (SU 30023), while a second group consist of three large blocks roughly oriented along the entrance vault axis (SU 30024).





Fig. 10. SU 30023 and SU 30024 in the small probe outside the tower.

Recognizing that this probable threshold was situated too high relative to the medieval living surface of the tower, it was decided to remove the layer (SU 30025). This layer extended across the entire width of the entrance, the latter being a vaulted corridor through the thick section of the south perimeter wall. It extended less than 1 meter toward the interior and was directly covered by the three large threshold blocks.

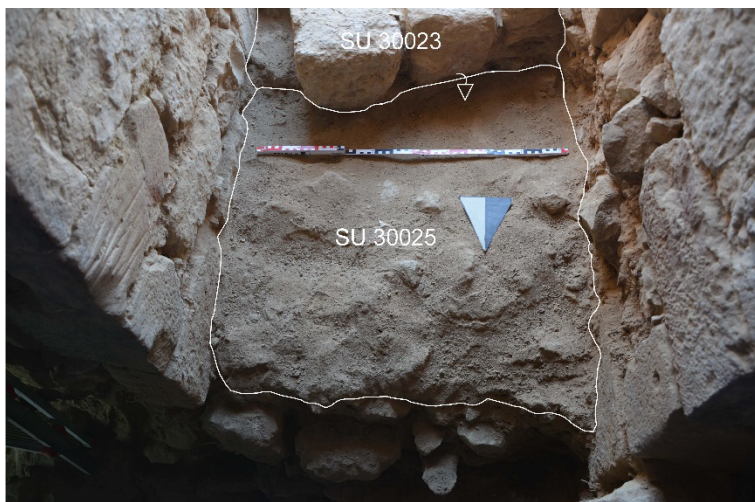


Fig. 11. SU 30025 covered by the threshold SU 30023.

The removal of this collapse layer led to the identification of a floor level (SU 30029), comprised of medium-sized flint blocks, deteriorated on the upper surface. This floor continued in the artificial section beneath SU 30024. Towards the interior, the floor was connected to a second threshold (SU 30030), constructed from two large limestone blocks positioned at the floor level. As a portion of the threshold was missing, it became possible to identify the preparation layer for the floor (SU 30031).

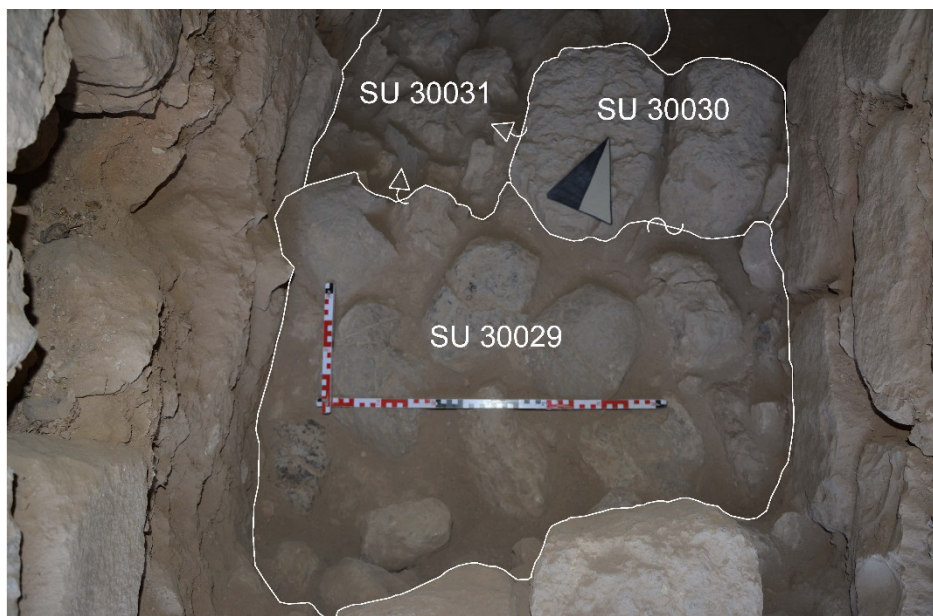


Fig. 12. SSUU 30029, 30030 and 30031.

Ongoing analysis of the materials from the layer SU 30025 will aid in clarifying the chronological gap between the ancient floor SU 30029 and the later, elevated threshold SU 30024. It is highly probable that SU 30029 represents the original Crusader-era floor of the tower, given its foundation level in relation to the positioning of the perimeter walls.

(MN)



Fig. 13. Final plan (with ortho-photo) of excavation area 30000/UT 30 (University of Florence archive, realized by Giacomo Ponticelli).

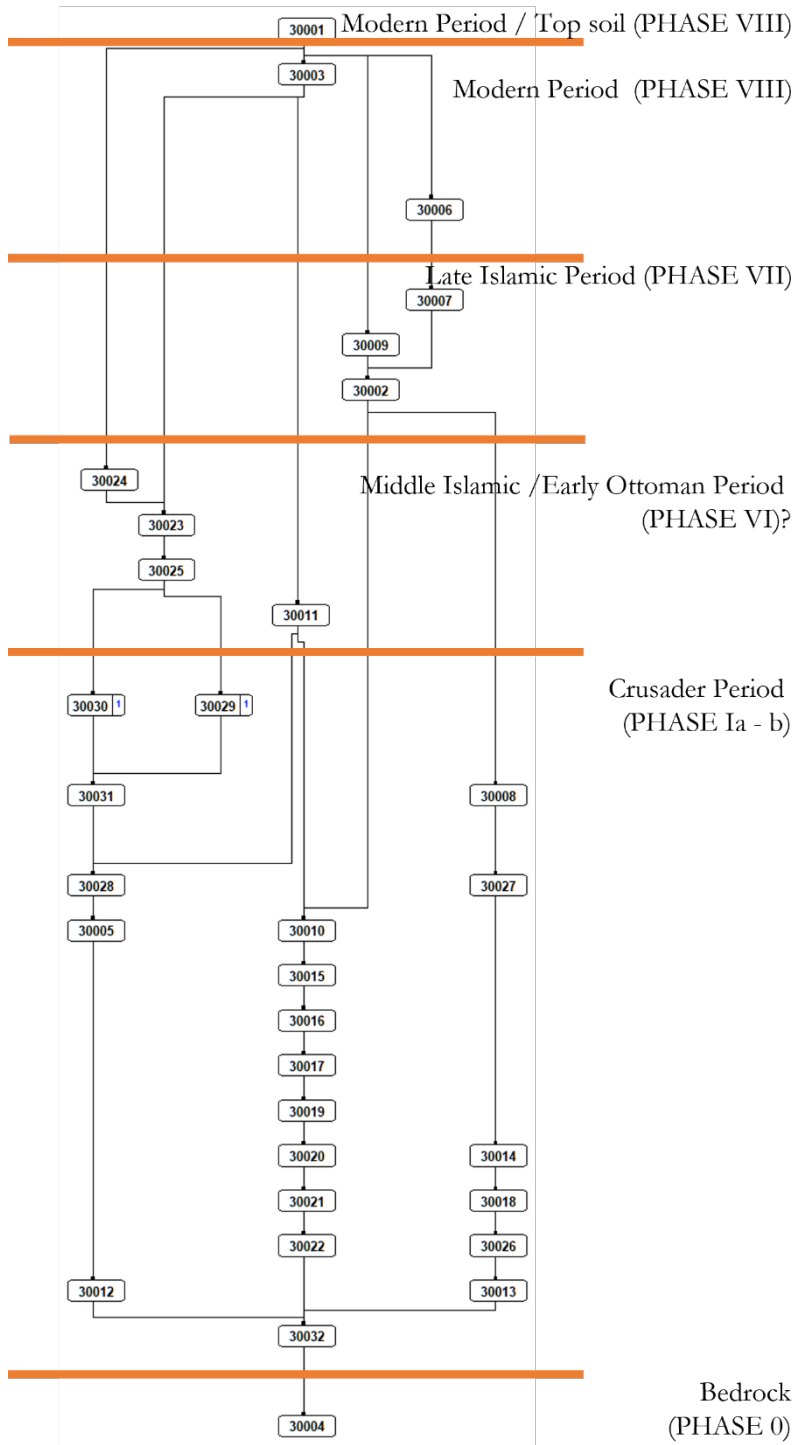


Fig. 14. Matrix of excavation area 30000 with the (preliminary) chronological phasing⁷.

⁷ The phasing of the stratigraphic diagrams refers to the Al-Wu'ayra phases as proposed in Vannini-Tonghini 1997, following the revision by Carputo in 2023.

3.2 Stratification of area 15000

In excavation area 15000, following the removal of the topsoil layer (SU 15001), a series of structures and layers of collapse were discovered.



Fig. 15. Excavation area 15000: initial situation.

Specifically, along the northern section of the area, part of the collapsed northern curtain wall (SU 15002) was uncovered. In the southwest corner of the area, two walls emerged (one, MSU 15005, oriented north-south, and one, MSU 15004, oriented west-east), possibly associated with subdividing the area into distinct internal spaces. MSU 15004 appears to extend from the wall that separates Topographic Unit (TU) 14 from TU 15, as documented during previous surveys. Northeast of these walls, beneath SU 15002, multiple layers of sand and collapse debris were encountered, present throughout the excavation area, including layers such as SU 15015 and 15014.

In the southwest corner, beyond MSU 15004 and 15005, two layers were identified: SU 15003, comprising small and medium-sized flattened stones, covering a layer of sand with scattered animal bone remains and pockets of ash/charcoal (SU 15012). An interesting arrangement was observed: an animal (possibly a goat) skull positioned against a flat stone, encircled by three medium-sized stones arranged semi-circularly. It remains uncertain whether this arrangement is a result of natural or human deposition. Worth noting is that these stones are themselves enclosed within (possibly a part of) a layer (SU 15016) consisting of small-

sized stones, found beneath SU 15012. This portion of the excavation area is relatively small, delineated by SU 15004 and 15005 to the north and east, with the west and south limits of the excavation area (compare Fig. 20)



Fig. 16. Detail of possible goat skull and SU 15016.

During the excavation of the aforementioned layers, several pottery fragments, predominantly handmade wares, along with various mineral slag pieces, were unearthed. Most of the second week of work was dedicated to expanding excavation area 15000 to the north in order to better identify the remaining portions of the castle wall, which were covered by collapse layers unearthed during the initial week within the “original” excavation area (e.g., SU 15.002, 15.014, 15.015). This “north extension” is approximately 3.50 meters in length and matches the width of the original area 15000 (compare Fig. 20).

Subsequently, the removal of the collapsed stone layers (SSUU 15028, 15029, 15027, and 15032) allowed the uncovering of a small section of the castle's wall (SU 15026). Furthermore, during the northern extension excavation, the successful outlining and removal of the three major collapse layers (SU 15033, 15035, and 15015) that covered nearly half of

the original area enabled the continuation of the excavation work in the southern section.



Fig. 17. The northern extension's final situation with SU 15026 (castle wall nucleus exposed), seen from the northwest.

Returning to the southern portion of the area (south of the Crusader-period castle's curtain wall), the removal of collapse layers (SSUU 15033, 15035, and 15015) revealed a division of the area, with the western part associated with internal rooms and the eastern part serving as an open space linking to the TU 16 structure. Under these collapse layers, two medium-sized limestone walls north of SU 15005 were identified. The first wall, quite small and oriented southwest to northeast (SU 15042), abuts against the second wall, oriented northwest to southeast (SU 15039), suggesting a rearrangement or restoration activity. Between SU 15005 and SU 15042, a medium-sized stone enclosure was found (SU 15056). This group of walls, along with SU 15004, enclosed the northwest corner of the area, with small stones combined with thin layers of sand and mortar (wall debris SU 15050 and SU 15044) covering a flat, compact sandy-brown layer (SU 15049). Moving eastward from this context, the area was mostly covered by a thick, soft, dark gray sand layer, rich in highly fragmented pottery sherds.



Fig. 18. The 15000 excavation area after the collapses' removal: SU 15043 in the eastern and northern part; emerging walls' line towards the north (SSUU 15056, 15042 and 15039); in the western corner small debris layers lean on SU 15049.

Following the removal of the layers, in the western portion, the nearly horizontal sandy layer covered most of the area between the western section and the walls. In the eastern section, stones delineating the boundary of a semi-circular space became more distinct. This space was filled with large-sized stones in a thin, gray, sandy matrix, which leaned on the closure between the walls SU 15005 and 15042.

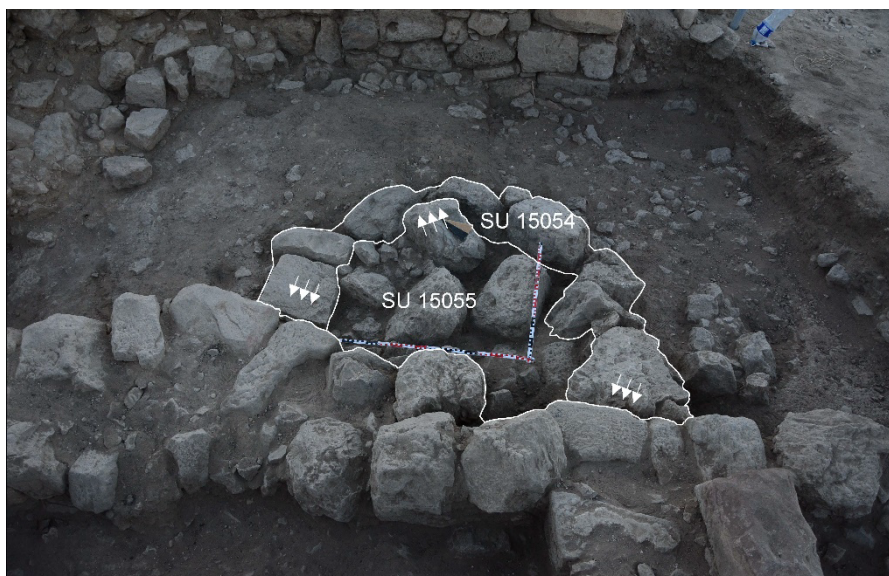


Fig. 19. Situation under SU 15043: the stones that define the boundary of a semi-circular space (SU 15054) and its filling (SU 15055).

The final situation observed at the conclusion of the campaign appears to be associated with the construction and utilization of the structure defined by walls SSUU 15039 and 15042 (with the latter likely being connected to a restoration of the former) and the semi-circular structure SU 15054. Initially, a flat surface composed of a sandy layer with small stones and a compact interface (SU 15057) was established, as well as the flat, compact gray layer SU 15060 to the south. In a subsequent phase, the semi-circular space, demarcated by the stones of SU 15054, was created, potentially in conjunction with the compact mortar layer SU 15048. It remains unclear whether walls SU 15039 and SU 15042 were constructed during the same phase as the semi-circular structure, as the mortar floor SU 15048 is supported by all these walls. To establish the semi-circular space, SU 15057 and SU 15060 were excavated (respectively by SU 15070 and 15062) and filled with stones (SU 15063) and layers of smaller rocks (SSUU 15058 and 15059), likely connected to the construction or restoration of the structure SU 15054. The excavation, SU 15065 (in SU 15048), appears to be associated with a later phase. Ultimately, the removal of the enclosure SU 15056 exposed a threshold between SU 15005 and 15042, designated as SU 15068, facilitating access to the semicircular inner space.

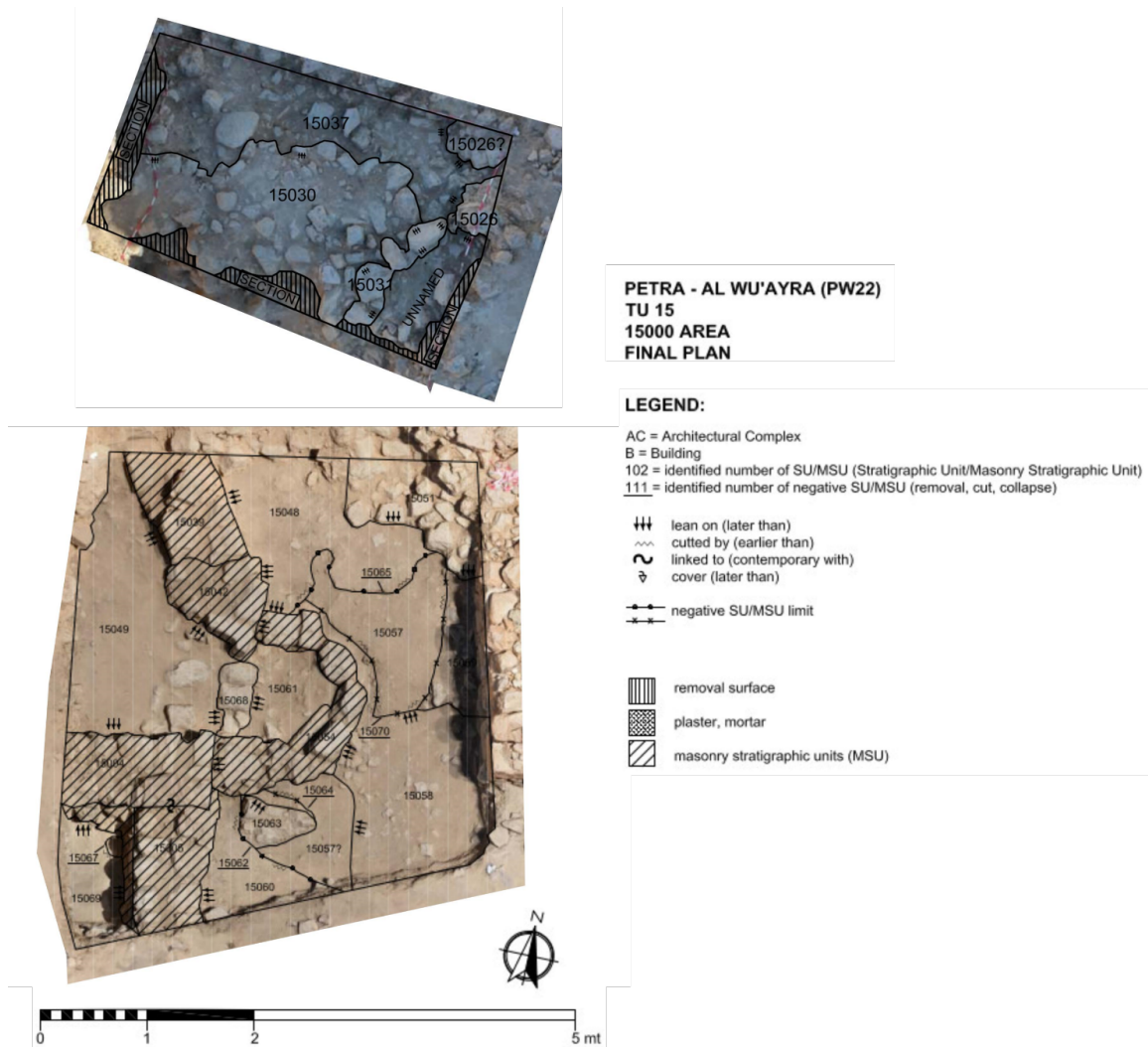


Fig. 20. The 15000 excavation area (plus northern extension, at top) at the end of excavation (plans with ortho-photos).

As mentioned earlier, a notable situation became apparent in the southwest corner of the excavation area, bounded by SU 15005 and 15004, despite it being a relatively confined area where most of the layers appear to extend further into the southern and western sections. The removal of a semi-circular arrangement of stones (SU 15018) and its accompanying gray sand filling (SU 15034) allowed one to observe that two of these stones were part of the foundation of wall SU 15004.



Fig. 21. Left: the arrangement of stones SU 15018. Right: the reused mortar fragment.

Below, there was a layer of medium to small-sized stones (SU 15036) covering a sequence of compact layers (SSUU 15041, 15047, and 15052) and soft layers (SSUU 15046 and 15066) that appear to rest on the foundations of walls SSUU 15004 and 15005. All these layers, although to varying degrees, contained small fragments of charcoal and clusters of mortar. As the excavation progressed to greater depths, the presence of stones diminished until they were nearly absent.

At the conclusion of the excavation, the southwest corner appeared to be covered by a compact, horizontal, light brown layer (potentially a floor) with small fragments of charcoal and clusters of mortar (SU 15069). This layer was intersected by SU 15067 in the northeast corner. The walls SSUU 15004 and 15005 seem to be stratigraphically linked (coeval).

Regarding pottery remains, apart from a relatively substantial quantity of handmade pottery, a fragment of fritware from SU 15036 and several plain wheel-made pottery fragments from SU 15066 were unearthed. The space in the southwest corner appears to be part of the interior of a room that extended south-westward, beyond the boundaries of excavation area 15000.

(RR)



Fig. 22. Excavation area 15000, southwestern corner (between MSU 15004 and MSU 15005) at the end of the excavation. In the northeastern portion is the circular-cut SU 15067 made in the horizontal layer SU 15069.

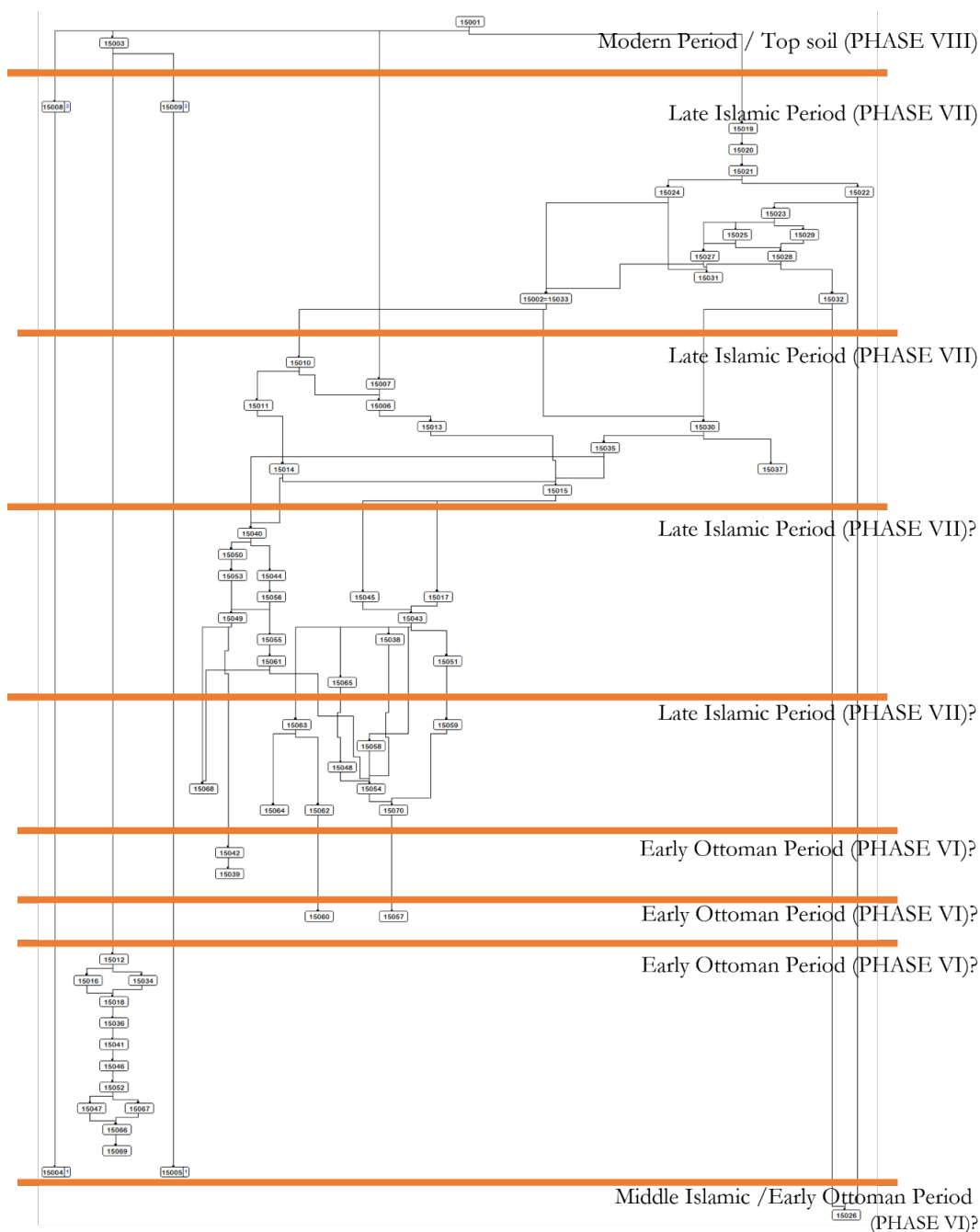


Fig. 23. Matrix of excavation area 15000 with the (preliminary) chronological phasing.

3.3 Pottery

The assemblages considered for this article are derived from the excavations conducted in 2022 at the archaeological site of al-Wu' Ayra. These assemblages originate from stratigraphic contexts within the two investigated excavation areas: 15000 and 30000. As previously discussed, in excavation area 30000, the identified stratigraphic column delineates a sequence from the topsoil layer to the bedrock, revealing evidence

associated with the foundation of the original Crusader-period tower. In contrast, in excavation area 15000, the bedrock remains concealed, and the (earlier) unearthed layers seem to likely date back to the Early Ottoman occupation.

The pottery assemblages from the 2022 excavation season in al-Wu' Ayra consist of 712 sherds (257 MNV)⁸. Those from excavation area 30000 constitute approximately 7 percent of the total, while those from excavation area 15000 make up the remaining 93 percent⁹. The assemblages analyzed consist of all the fragments recovered during excavations, encompassing both diagnostic and non-diagnostic sherds. This includes rims, bottoms, handles, as well as decorated and undecorated body sherds.

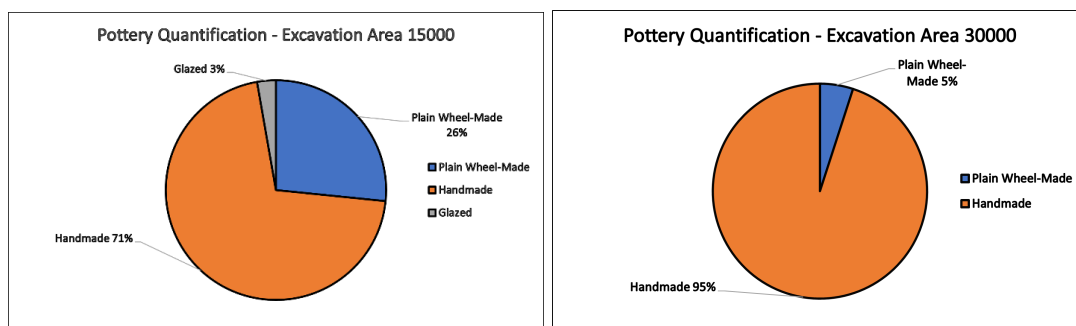


Fig. 24. General quantification of pottery from excavation areas 15000 and 30000.

Regarding excavation area 15000, approximately 29 percent of the assemblage consists of plain wheel-made wares, 3 percent of glazed wares, while 77 percent are handmade ware with around 17 percent featuring painted decoration (Handmade Geometric Painted Ware, or HMGP). Upon closer examination of the earlier layers unearthed during

⁸ The assemblages analysed in this contribution come from all the phases identified in the excavation areas 15000 and 30000, except for the two latest phases (see Matrixes), which consist of units that were quite intensively disturbed by recent activities, with evidence of plastic. Specifically, those from excavation area 15000 come from stratigraphic units related to the earlier six phases, while those from excavation area 30000 correspond to the earlier four phases (see Matrixes).

⁹ The percentages were calculated based on the minimum number of vessels (MNV). When considering the total number of fragments recovered during excavations, the gap between the two excavation areas remains relatively consistent, with approximately 5.5 percent and 94.5 percent.

this campaign, especially in the two earlier phases, the pottery assemblages appear to support a dating of the contexts to the Ottoman period. While evidence of Middle Islamic production, such as HMGP from SU 15036 and 15016, as well as glazed wares (e.g., Raqqa ware fragments from SU 15036), is present, several other sherds, particularly handmade pottery, seem to belong to later productions. Many of these are considerably damaged, notably due to the presence of lime mortar traces, and the overall level of fragmentation is quite high. Nonetheless, when the level of fragmentation allows for a precise identification of the form, many of the handmade pottery sherds mentioned exhibit differences in terms of decorative, technological, and morphological characteristics compared to typical Middle Islamic period productions¹⁰.

In particular, a number of HMGP seem to exhibit more linear patterns, as well as a number of HMGP and plain handmade fragments displaying a coarse fabric with a significant presence of chaff evidence, along with clearly visible mineral inclusions, some of which are large-sized. Additionally, a significant number of them show an irregular body shape. These characteristics appear quite frequently in sherds described in various contributions as Late Islamic or Ottoman productions¹¹. Concerning Late Islamic period glazed productions, some of the green glazed ware items exhibit a dark and glassy glaze, often with a reddish, somewhat friable paste.¹² Furthermore, they pertain to stratigraphic contexts later than the walls MSU 15039 and 15042, as well as the eastern wall of the excavation area, all of which appear to be associated with (Early?) Ottoman occupation phases.

¹⁰ For a comprehensive overview of handmade pottery productions from the Petra area and Southern Bilad al-Sham during the specified time periods, particularly focusing on Middle Islamic productions (with some direct comparisons to the pottery analysed in this article), one may refer to the following: Tonghini-Vanni Desideri 2001, p. 712; Brown 1987b, pp. 277-284; Johns 1998, p. 86; Pruno-Ranieri 2020, pp. 227-229. Additionally, see Walker 2012, pp. 553, 556.

¹¹ See for example: Walker 2009, p. 44; Brown 1988, pp. 237, 240-241, 244; Ranieri-Cheli 2020, plate 4:6, 8. As also argued in some of the contributions mentioned, it is important to highlight that stratigraphically distinguishing Mamluk HMGP from later periods in most of the sites remains challenging, and hypotheses of separation are primarily based on stylistic characteristics. What can be stated here is that the characteristics observed in al-Wu' Ayra and Shobak appear to be found in pottery finds from post-Mamluk stratifications.

¹² See, for example, Walker 2009, pp. 41-44.



Fig. 25. Examples of pottery types, with a focus on handmade and glazed wares from possible Early Ottoman period contexts of area 15000. Top row: fragments of probable Middle Islamic period productions. Lower row: possible later periods productions.

A similar situation was documented in pottery assemblages from Late Islamic period contexts. Specifically, SU 15043 reveals a diverse range of pottery finds spanning a considerable timeframe, encompassing at least the Byzantine through Ottoman periods. These include both Middle Islamic and later glazed ware productions (e.g., Pseudoceladon, fritware with underglaze blue painted decoration, and dark green glaze with pinkish red fabric fragments), as well as potential Middle Islamic and later period handmade productions.



Fig. 26. Examples of handmade and glazed wares fragments from SU 15043 contexts. Left: fragments of probable Middle Islamic period productions. Right: possible later periods productions.

Overall, the majority of handmade pottery finds are associated with cooking and storage types, with a significant prevalence of closed forms, primarily comprising jars and cooking pots. This is particularly evident in occupation layers like 15041 and 15036. In contrast, filling and collapse layers exhibit a high diversity of pottery types and a mixture of different chronological productions, ranging from Nabatean to the Late Ottoman periods.

It is worth noting that all the plain wheel-made ware fragments appear to be linked to “pre-Crusader” period productions, including Byzantine (and possibly Roman) periods – which make up around 70 percent of the total – and Nabatean periods – accounting for approximately 25 percent of the total. Less than 5 percent of these fragments can be attributed to Early Islamic period productions. All “pre-Crusader” period productions were recovered from secondary depositions within Late Islamic period contexts.



Fig. 27. Examples of “pre-Crusader” period productions from excavation area 15000.

The stratigraphic units in excavation area 30000 yielded a limited number of pottery finds, with a total of 38 sherds (17 MNV). Among them, 58 percent (based on MNV) were recovered from stratigraphic units associated with the phases that can be attributed to the Crusader period based on the previously discussed stratigraphic description. Additionally, 95 percent of the total assemblage comprises handmade pottery, including 6 percent of HMGP¹³.

From filling layers associated with the Crusader phase, such as 30010, 30020, and 30021, only body sherds of plain handmade pottery with a relatively high degree of fragmentation have been unearthed. These fragments predominantly consist of cooking ware and jars characterized by coarse fabric, chaff inclusions, and small mineral inclusions. The wall sections of these sherds typically measure between 3 and 7 millimeters, and their body profiles (where visible) look relatively regular. While the possibility of attribution to Middle Islamic period productions cannot be ruled out, proper identification can be difficult.

¹³ The only three fragments (1 MNV) that could be related to plain wheel-made productions are not very readable due to their state of preservation, possibly affected by lime mortar remains.



Fig. 28. Handmade pottery from Crusader period phases of excavation area 30000.

What can possibly be related to Middle Islamic (and Crusader) period productions are the HMGP fragments from SU 30025, such as the jar handle piece with dark decoration on a pinkish-red surface, as shown in the image below. It is worth noting that this layer is associated with the use of the area during the Late Islamic period (likely Early Ottoman period).

(RR)



Fig. 29. Handmade (and HMGP) pottery from possible Middle Islamic (or Early Ottoman) period phases of excavation area 30000.

4. Discussion of data and conclusions

The first excavation campaign at the Al-Wu'ayra northeast tower complex provides a series of important assessment elements regarding the settlement processes, use, and abandonment of the site within the chronological span from the 12th to the 20th century. It is important to note that these findings are not conclusive, because excavation area 15000 is still undergoing further investigation, as well as the adjacent excavation area 16000, located near the entrance to the Crusader tower TU 30.

However, for the interior of the tower, specifically within excavation area 30000, the results of the 2022 season can be considered final, as bedrock levels were reached in that excavation trench. Considering this, some noteworthy elements can be highlighted and, to some extent, made usable in the context of the research objectives as outlined above.

Let us attempt to summarize them in relation to some of the key problem areas or research questions, particularly those related to the site's evolution, its geographical-cultural connectivity, and the socio-cultural segments represented in the archaeological record.

Area 30000 reveals that the northwest tower was established during the Crusader period, situated astride a north-south oriented crevasse that had opened in the bedrock, likely previously cut by the northern moat of the Romano-Byzantine era. The construction overcame this natural obstacle by erecting two perpendicular wall segments, becoming a basis for the perimeter (MSU 30012 and 30013), and creating a construction level for the building yard of the medieval building. Prior to the construction of the walls, the bedrock east of the crevasse was levelled (SU 30032), an action possibly facilitating the installation of a flooring that leaves no trace in the interior environment.

Subsequently (it is not possible to determine whether this occurred before or after the construction of the perimeter walls and the vaulted space), the crevasse was filled with a series of lithic fill layers weakly bound by mortar, with the uppermost layer (SU 30010) displaying a more pronounced horizontal orientation. The limited pottery recovered from these filling layers could be plausibly dated to the 12th century (compare par. 3.3. See also Fig. 28). The original contemporaneous flooring, likely linked with abundant mortar (of which residue remains on the surface

and in the interstices of the elements of 30010), appears to have been removed in antiquity, possibly in relation to the destruction (SU 30027 and 30028) of the ridges of the restraining wall segments of the crevasse. A fragment of this flooring (SU 30029) might have been preserved in the connecting corridor between the tower's interior space and its entrance.

Subsequently, a portion of a flooring (or its preparation), assignable to a potential Middle Islamic (or, less likely, Early Ottoman) restoration of the original flooring of the vaulted chamber, was created as SU 30011 in the tower's interior. The floor possibly covered 30011 and may be linked to the raising of the access corridor's flooring (30025), from which fragments of Middle Islamic HMGP and a bronze rivet associated with wooden furnishings have been recovered. The room would therefore show traces of domestic use in this phase.

Following the 30025-30011 phase, a rather extensive chronological gap is observed (though the very limited quantity of artifacts may magnify it in the archaeological perception), up to a Late Islamic use surface, traceable in 30007, at a time when the space was equipped with a corner basin (30002) coated with chaff and straw. This signifies a material downgrading and repurposing of the space for domestic use or mixed domestic/stabling purposes. This particular *facies* corresponds to the chaff and straw coating observed on the tower's interior walls, with traces of housing for poles/brackets and the removal of some stones from the inner facing to create accommodations for lamps or small storage niches. Frequent use of fires within the room (for illumination, cooking, and heating) accounts for the progressive blackening of the masonry, due to the sedimentation of combustion particulates transported by smoke.

The sequence in area 30000 concludes with a conical-shaped accumulation of rubble (30003), with the apex oriented towards the tower's entrance, marking the phase of abandonment of the Late Islamic domestic occupation. Above this layer (30001) the topsoil exhibited a highly sandy matrix, rich in gravel, straw, and animal dung, likely resulting from sporadic visits, probably in the 20th century. During this period, basin 30002 was (still?) used as a feeding trough.

Regarding area 15000, more conclusive information is expected from the finalization of the research scheduled for 2023 - 2025. However,

already from the 2022 excavation campaign, it is possible to deduce certain elements related to the post-Crusader era evolution of the site.

The earliest identified layers (SU 15026, 15069, 15066, 15067, 15047, 15052, 15046, 15041, 15036, 15034, 15016), along with the structures (MSU 15005, 15004, 15039, 15042, 15018), define a chronological horizon that, within the Late Islamic period, seems to align with an Early Ottoman phase. The area comprises portions of confined space, both indoors (like the structure delimited by walls 10005 and 10004, likely a house) and confined open spaces, as can be hypothesized for 15039-15042, with a curved layout, possibly associated with an animal pen, where a small apse-like space (15054) is created at a later stage. The construction of 15054 involves the closure of the original access to the animal pen and a possible functional transformation, which will be discussed further in the future, as research progresses.

The identified occupation levels, all associated with the mentioned masonry structures, pertain to an open, unconfined outdoor area located outside the animal pen and wall 15107 (which delimits a built space, TU 16, situated outside the gate of tower TU 30). In these levels, modest traces of domestic activities are present (evidence of ash and cooking pots), along with a few fragments of dark-green glazed with pinkish red fabric bowls and jars (with friable paste), of Early Ottoman date, coinciding with the formation of the deposit. This context is also characterized by the presence of secondary deposits of occasional HMGP and rare glazed ceramics, dating to the Middle Islamic period. The latter is limited to a sherd of yellow monochrome glazed ware and a fragment of pseudoceladon, both assignable to the 14th century and likely originating in Egypt. This indicates that in a period not yet represented from a stratigraphic perspective in area 15000, but possibly not far from the time when the interior of area 30000 was restored (see above), the site's connection to international trade routes to the southwest was still active.

Within the small portion of the house delimited by walls 15005 and 15004 visible in the sondage, a series of probable occupation levels (15041 and 15036) has yielded handmade jars with a fabric compatible with an Early Ottoman (or generally Late Islamic) dating. Secondary deposits include HMGP (both jars and bowls) and a fragment of Raqqa ware, outlining a similar deposit formation pattern to what is observable in the

open areas around the building. It is worth noting that, with regard to the Raqqa ware, this confirms the site's connectivity to Syria during the Crusader-Ayyubid period, as demonstrated by similar findings in strata from excavation trench No. 3 by Vannini (Wu'ayra, period III, ref. Vannini-Tonghini 1997, pp. 382).

(MN, RR)

Sedentary or nomadic occupation? Towards a phased abandonment interpretation of post Crusader Al-Wu'ayra.

Regarding the elements that have emerged concerning the settlement and abandonment processes of the site in post-Crusader period, and in connection with previous studies on the stratifications of the southern moat (Vannini-Tonghini 1997 and Carputo 2023), several conclusive observations can be made.

In Phase IV of the southern moat (1189-1212, revised by Carputo 2023 to 1189-1293), Vannini and Tonghini observed a deactivation of defensive structures, despite the continued occupation of the site. The stratifications are characterized by a significant quantity of ceramic fragments and the presence of slag resulting from an iron smelting process. These contexts had been interpreted as a production site, whereas Carputo 2023 revises the formation process as a dumping of materials from an iron production process not localized within the moat and associated with the dumping of cooking wares. Subsequently, from Phase V (following the earthquake of 1293), the moat area is no longer settled, and it is the site of occasional use marked by the presence of faint fire spots associated with lithic tools, indicating seasonal and temporary use by nomadic or semi-nomadic pastoral communities.

On the other hand, the northeast tower complex shows more vitality with the presence of reuse, repurposing, and new stone constructions. However, there are still gaps, especially in the stratigraphy of area 30000, where faint traces of Middle Islamic occupation are followed by rather late-phase Late Islamic contexts.

In contrast, area 15000 presents a sequence where the Early Ottoman period appears to be in evidence, although it is not possible to determine whether it represents stable or seasonal occupation. There is evidence of an animal pen (indicative of livestock activities) and an absence (for now) of indicators for grain storage and preservation. In parallel, ongoing research on tribal marks by Julia Maczuga (as mentioned above) suggests that tribes from the Balqa region frequented the site in the 17th century. Additionally, traces of artisanal activities related to the production of stone mortars are evident, one of which, broken during its use, was reused in the construction of wall 15004.

The continuation of research will shed light on the details that link together seemingly discordant elements, and which currently contribute to confirming the following:

1. The period after 1189 saw Al-Wu'ayra lose the political-military centrality it had acquired at the beginning of the 12th century.
2. Settlement at the site still appears to be associated with sedentary and stable forms at least until the early Mamluk era, possibly until the earthquake of 1293, which seems to have marked a significant break in settlement, cultural, and commercial connectivity (there is a lack of evidence of imported productions after the 14th century).
3. In the 16th-17th centuries, some elements suggest fairly systematic visits by pastoral communities, although the area of the southern moat is neither cleared of debris nor resettled. In Area 15000 and possibly 30000, domestic contexts are present, sometimes equipped with facilities for animals but lacking structures for food storage, likely occupied seasonally. This does not exclude the possibility that some residential units within the site could have been permanently occupied. However, the overall settlement pattern appears generally weak, dwindling in the late Ottoman era.

(MN)

Bibliographical Abbreviations

Al Shqour 2019: Al Shqour, R. S., *The Aqaba Khans and the origins of Khans in Jordan. An archaeological approach*, Piscataway, Gorgias Press.

Brown 1987a: Brown, R. M., *Report of the 1987 excavations at al-Wueira*, Unpublished report. 'Amman: Department of Antiquities of Jordan.

Brown 1987b: Brown, R. M., *A 12th century AD sequence from southern Transjordan: Crusader and Ayyubid occupation at el-Wueira*, in «Annual of the Department of Antiquities of Jordan», n. 31 (1987), pp. 267-287.

Brown 1988: Brown, R., *Summary Report of the 1986 Excavations: Late Islamic Shobak*, in «Annual of the Department of Antiquities of Jordan», n. 32 (1988), pp. 225-245.

Carputo 2023: Carputo, G., *The decastellamento and the phased abandonment of Wu'ayra in medieval and post medieval age: the case study of the south ditch area*, MA Thesis in Archaeology (supervisor M. Nucciotti), University of Florence, unpublished.

Coutu 2019: Coutu, A., *Ivory Trade and Craftsmanship along the Red Sea*, in «Studies in Late Antiquity», vol. 3, n.4 (2019), pp. 508-546.

Fiema 2016: Fiema, Z. T., *The Jabal Hārūn Site: 1000 Years of Continuity and Change* in Fiema, Z. T. - Frösén, J. - Holappa M., *Petra – the Mountain of Aaron*, Vol II, Helsinki: Societas Scientiarum Fennica, pp. 539-582.

Guy 2019: Guy, J., *Long distance Arab shipping in the 9th century Indian Ocean: recent shipwreck evidence from Southeast Asia*, in «Current Science», Vol. 117, N. 10 (2019), pp. 1647-1653.

Henderson *et al.* 2016: Henderson, J., Chenery, S.R., Kroeger, J., Faber, E., *Glass Provenance along the Silk Road: The Use of Trace Element Analysis*, in J. Henderson *et al.* (eds.), *Recent Advances in the Scientific Research on Ancient Glass and Glaze*, World Scientific Publishing, <https://doi.org/10.1142/9341>, pp. 17-42.

Johns 1998: Johns, J., *The rise of Middle Islamic Hand-made Geometrically-painted Ware in Bilad al-Sham (11th-13th centuries A.D.)*, in Gayraud, R.P. (ed.), *Textes arabes et études islamiques*, 36. Atti del Colloque International

d'archéologie islamique, IFAO (Le Caire, 3-7 février 1993), Cairo, pp. 65-93.

King 2016: King, A. H., *Scent from the Garden of Paradise: musk and the Medieval Islamic world*, Brill.

Pringle 1998: Pringle, R. D., *The Churches of the Crusader Kingdom of Jerusalem: A Corpus*, Vol. 2., Cambridge, Cambridge University Press.

Mannoni-Cabona 1984: Mannoni, T., Cabona, D., *Archeologia globale del territorio. Metodi e risultati di una nuova strategia della ricerca in Liguria*, in *Castrum 2. Actes du colloque de Paris (12-15 novembre 1984)*, Collection de L'Ecole française de Rome, 105/2, Roma, pp. 43-58.

Mannoni-Giannichedda 1996: Mannoni, T., Giannichedda, E., *Archeologia della Produzione*, Torino.

Nucciotti 2019: Nucciotti, M., *Archeologia leggera dei sistemi di difesa passiva: i castelli crociati di Petra (Giordania) nel XII secolo*, in G. Annoscia (a c. di), *Scenari bellici nel medioevo: guerra e territorio tra XI e XV secolo*, Roma, Edizioni Quasar, pp. 135-152.

Nucciotti-Pruno 2016: Nucciotti, M., Pruno, E., *Great and Little Traditions in medieval Petra and Shawbak (Jordan): contextualizing local building industry and pottery production in cc. 12-13*, in «Archeologia Medievale», vol. XLIII (2016), pp. 299-310.

Power 2011: Power, T., *The Material Culture and Economic Rationale of Saracen Settlement in the Eastern Desert of Egypt*, in A. Borrut et al. (éd.), *Le Proche Orient de Justinien aux Abbasides*, Turnhout, Brepols, pp. 331-344.

Pruno-Ranieri 2020: Pruno, E., Ranieri, R., *Medieval Pottery in Southern Jordan: The case-study of HMW in Shawbak castle*, in SHAJ 13, Department of Antiquities of Jordan, Amman, pp. 223-230

Ranieri-Cheli 2020: Ranieri, R., Cheli, F., *Archaeological Research in the Petra Valley: Preliminary Remarks from the Excavation at the Corinthian Tomb*, in Bodzek, J. - Kołodziejczyk, P. (eds.), in «Studies in Ancient Art and Civilization», vol. 24, Krakow 2020, pp. 109-131.

Sinibaldi 2014: Sinibaldi, M., *Settlement in Crusader Transjordan (1100–1189). A Historical and Archaeological Study*, PhD Thesis, Cardiff

University, unpublished (available online from 30 March 2016)
<http://orca.cf.ac.uk/69267/>.

Sinibaldi 2022: Sinibaldi, M., *The Crusader Lordship of Transjordan (1100–1189): settlement forms, dynamics and significance*, in «Levant», n. 54:1 (2022), pp. 124-154.

Tonghini-Vanni Desideri 2001: Tonghini, C., Vanni Desideri, A., *The material evidence from al-Wu'ayra: a Sample of Pottery*, in SHAJ 7, pp. 707-719.

Vanni Desideri 2020: Vanni Desideri, A., *The Nabateans and Al-Wu'ayra: archaeological data, hypothesis and questions*, in «Journal for History and Archaeology», vol. 14, n. 4 (2020), special issue “Third international conference on Petra and the Nabatean Culture”, pp. 349-366.

Vanni Desideri-Leporatti 2020: Vanni Desideri, A., Leporatti, S., *Monks across the desert. Hermitic life in Christian Petra*, in «Studies in Ancient Art and Civilization», n. 24 (2020), pp. 133-152.

Vanni Desideri-Vannini 2017: Vanni Desideri, A., Vannini, G., *Changing water management and exploitation strategies at Al-Wu'ayra (Petra). A 'longue durée' perspective through light archaeology methodology*, in Nigro, L. - Nucciotti, M. - Gallo, E. (eds.), *Precious Water. Paths of Jordanian civilizations as seen in the Italian archaeological excavations, ROSAPAT*, n. 12, Roma, La Sapienza, pp. 43-54.

Vannini 2011: Vannini, G., *A medieval archaeology experience in Jordan. The 'medieval' Petra Mission of Florence University*, in «Annual of the Department of Antiquities of Jordan», n. 55 (2011), pp. 295-312.

Vannini-Nucciotti 2003: Vannini, G., Nucciotti, M., *Fondazione e riuso dei luoghi forti nella Transgiordania crociata. La messa a punto di un sistema territoriale di controllo della valle di Petra*, in Fiorillo, R. - Peduto, P. (a c. di), *III Congresso Nazionale di Archeologia Medievale, 2-5 ottobre 2003 (Salerno)*, Firenze, All'insegna Del Giglio, vol. 1, pp. 520-525.

Vannini-Tonghini 1997: Vannini, G., Tonghini, C., *Medieval Petra. The stratigraphic evidence from recent archaeological excavations at Al-Wu'ayra*, in SHAJ 6, Amman, pp. 370-384.

Walker 2009: Walker, B. J., *Identifying the Late Islamic period ,ceramically. Preliminary observations on Ottoman wares from central and northern Jordan*. In EAD. (ed.), *Reflections of empire: archaeological and ethnographic studies on the pottery of the Ottoman levant*, Annual of the American School of Oriental Research, vol. 64, pp. 37-63.

Walker 2011: Walker, B. J., *Jordan in the Late Middle Ages. Transformation of the Mamluk Frontier*, Chicago Studies on the Middle East., n. xii, Chicago, University of Chicago.

Walker 2012: Walker, B. J., *The islamic period*, in Sauer, J. A. - Herr, L. G. (eds.), *Hesban 11. Ceramics finds: tipological and technological studies of the pottery remains from Tell Hesban and vicinity*, pp. 507-593.

Walker 2021: Walker, B. J., *Searching for a Home in Long-Abandoned Places: the Resettlement of Late Medieval Syria*, in Vu, T.-D. - Pye, O., Olschleger, H. D. - Distelrath, G. (hrsg.), *Humanistische Anthropologie. Ethnologische Begegnungen in einer globalisierten Welt. Festschrift für Christoph Antweiler zu seinem fünfundsechzigsten Geburtstag von seinem Freundinnen und Kolleginnen*, Bonn, V&R Press, pp. 451-472.

Walker et al. 2020: Walker, B. J. et al., *Agricultural Terracing and Rural Revival in Late Medieval Palestine*, in Adelheid, O. (ed.), *Proceedings of the 11th International Congress on the Archaeology of the Ancient Near East*, Vol. 2: Field Reports. Islamic Archaeology, Wiesbaden, Harrassowitz Verlag, pp. 651-662.

Walker-Insoll-Fenwick 2020: Walker, B.J., Insoll, T., Fenwick, C. (eds.), *The Oxford Handbook of Islamic Archaeology*, Oxford University Press, Oxford, pp. 1-793.

Whitcomb 1992: Whitcomb, D., *Reassessing the archaeology of Jordan of the abbasid period*, in SHAJ 4, Department of Antiquities of Jordan, Amman, pp. 385-390.

William of Tyre 1943: William, Archbishop Of Tyre, *A History of Deeds Done Beyond the Sea*, eds. E. A. Babcock, A. C. Krey, New York, Columbia University Press, 2 voll.