

# The Rescue Excavations in Sūq Ḥarāj in 2005 Findings and Interpretation (Juren Meister and Samar Karam)

## 1. Introduction

The restoration of Sūq Ḥarāj and the removal of its 20<sup>th</sup> century tarring and floor tiling has allowed a small team of archaeologists and building archaeologists (OIB/DAI/DGA)<sup>1</sup> to accompany the restoration of the monument. On the one hand, rescue excavations aimed to examine and document the features unearthed during the construction work and interpret them in their historical context. On the other hand, two selective soundings sought to clarify

crucial working hypotheses on the structural development of the building. The soundings reinforce the assumption that the west entrance to Sūq Ḥarāj had originally been closed by a back wall. It should consequently be interpreted as a former shop chamber. Observations have also supported the hypothesis that the row of shops that forms the west wing of the building constitutes the oldest construction phase in Sūq Ḥarāj. However, the existence of an eastern counterpart to this row of shops in the area of the present-day courtyard could not be confirmed. Instead, both the selective soundings and the rescue excavations have provided insight into the former water supply and drainage system of the building in particular and the city of Tripoli as a whole (**Fig. 1**). This is especially true for the two water basins at the centre of the courtyard and the adjacent water tower (Arab. *ṭāli'*, locally called *qā'im mā'*), both of which are documented through historical photographs and local



Fig. 1- Soundings in overview.

A- rescue excavations in the centre of the courtyard; B- sounding in the area of the western entrance; C- sounding in the northern area of the courtyard; D- rescue excavations in the north wing (plan: Meister 2007; drawings: Lohmann – Scholz 2005).

oral history. A clay water pipe and a sewer junction provide additional material evidence.

The soundings in the north wing of Sūq Harāj indicate that the floor level of the shop chambers once lay considerably higher than that of the adjacent gallery and courtyard. The small finds – predominantly pottery fragments – unearthed during the excavations have been documented, described, and evaluated (see contribution Shehadeh).

The findings will be contextualized and described in terms of their functional and temporal relationships in the following sections.

## 2. Rescue Excavations in the Centre of the Courtyard

### 2.1 The Later Basin

The remains of a simple, square water basin (side length approx. 150 cm) was unearthed between the two columns in the courtyard about 10 cm below the former floor level. It was built on top of a larger basin of a decorative fountain, which was partially disassembled or destroyed (**Fig. 2**). A photograph from the early nineteen-twenties showing the large basin intact provides evidence that the conversion must have been carried out at a later date (**Fig. 3**). In



Fig. 2- Rescue excavation in the centre of the courtyard.  
E- later basin; F- earlier basin (plan: Meister 2007; drawings: Lohmann – Scholz 2005).

the course of the conversion, the basin's side walls were dismantled except the lowermost stone layer. Since the basin was sunken, the upper edge of this 20 cm stone layer barely reached above the surrounding floor level of the early 20<sup>th</sup> century. In order to adjust the inside floor level to the outside level, the bottom of the new basin was installed almost on par with the top of the preserved stone layer. This layer thus served as a base for the new side walls, at least parts of its southern possibly also its western side. Since the later basin is considerably smaller, additional constructive elements had to be inserted to form the base (**Fig. 4**). It is still unclear whether the two monolithic blocks integrated for this purpose at the northern and eastern side were in fact recycled from the removed north wall of the earlier basin.



Fig. 3- The earlier basin on a historic photograph of the early 1920s, view from west (IFPO).

The only preserved remnant of the inside of the later basin is a shallow square depression with 90 cm edges. This depression is completely covered by a thin, white-coloured seal that was applied to a brownish plaster grounding. The grounding was reinforced with plant fibres and is spotted with inserted sherd fragments (**Fig. 5**). A plughole with a diameter of approx. 10 cm was found in the north-eastern area of the basin. Though its side walls are not preserved, a thickness of 25 cm can be reconstructed by measuring the distance between the preserved basin's depression and the edge of a cement screed situated on top of the aforementioned stone block, which indicates the outer edge of the former basin's



Fig. 4- Later (E) and earlier (F) basin, view from north-west (Scholz 2005).



Fig. 5- Later basin, north-western inner corner, detail (Meister 2005).

eastern wall. Hence, the removed side walls can be inferred to have an outer dimension of 140 cm x 140 cm. This dimension does not correspond with the size of the base (150 cm x 150 cm) because of the wall's setback of five cm on each side. Based upon a photograph from the mid-20<sup>th</sup> century, the original height of the side walls can be estimated to have been at least 65 – 70 cm (**Fig. 6**). Those parts of the earlier basin not occupied by the later one were filled with coarse stone material and sealed at floor level by the aforementioned cement screed.

## 2.2 The Earlier Basin

Because of its convex rounded inner corners, the former dimension of the earlier basin can be approximated (265 cm x 210 cm). These corners have also been preserved – at least in part – on the basin's removed northern side. Both the south-eastern and the north-western corner are in moderately good



Fig. 6- Later basin on an undated historical photograph, view from south-west, 1960s (DGA).

condition. They are not exactly identical and resemble cylindrical segments. Since none of their upper sides are preserved, little can be said about their original height or the shape of their tops. The segments were probably reduced in height upon the dismantling of the basin's side walls. It is possible that they once served as spillovers<sup>2</sup>. This function is indicated by traces of clay powder presumably originating from a water pipe at the back side of the north-west corner (**Fig. 7: G**) formerly concealed by the northern side wall. A concrete lens on the upper side of the corner may be proof that the drain pipe was sealed when the basin was taken out of use (**Fig. 7: H**). Similar concrete traces are likewise observable on top of the south-east corner. However, in addition to their possible function as drains, the corner elements might have had a stabilizing character. Similar constructions have been documented in other fountains in the city<sup>3</sup>. From what can be inferred from the photograph, the side walls of the basin may have originally been approx. 70 – 80 cm high (**Fig. 3**). Their construction is best represented by the truncated eastern side wall. It is about 25 cm thick and consists of an outer masonry covered on the inside by a grounding plaster. This yellow-brown plaster is a few centimetres thick and reinforced with plant fibres. It serves as an undercoat for a layer of sherd fragments of different sizes and colours that are arranged like a mosaic.

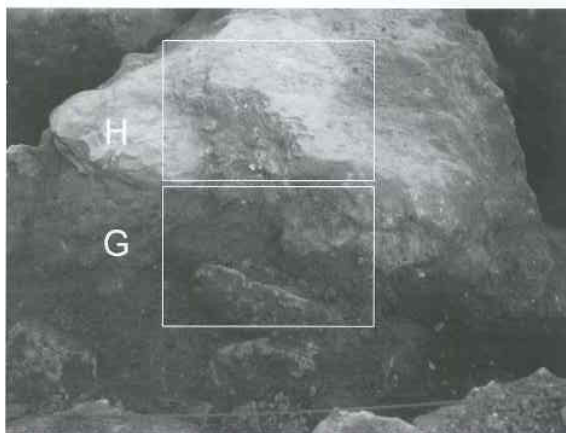


Fig. 7- Earlier basin, north- western rounded corner from north, view originally concealed by the northern side wall.

G traces of clay powder (a former water pipe?); H concrete lens (Meister 2005).

These were certainly applied in order to achieve a waterproof sealing. At least two such superimposed sherd layers have been verified on the inside of the eastern part of the basin (**Fig. 8**). However, it cannot be established whether these two sherd layers reflect different phases of construction or the original wall construction of the water basin. It also remains uncertain if these sherds formed the original surface and can therefore be regarded as a decorative pattern. In Khān al-Miṣriyīn, the sherds on the inner walls of the fountain were covered by a layer of plaster. However, the basin in Sūq Ḥarāj shows no remains of a comparable finishing plaster. Its ground is formed from pavement composed of rectangular sandy limestone elements that are variable in size and irregularly arranged. This pavement extends beneath the later basin (**Fig. 2**) and is inclined slightly to the north. Consequently, the outlet probably once lay adjacent to the northern side wall. A dislocated paving stone of about 18 cm X 21 cm with a 6 cm drill hole presumably served as a plughole. As for the original water inflow, no constructional indications have been preserved. Nevertheless, comparable basins (e.g. Meinecke *et al.* 2005: 135) show a central fountain, which likewise could be assumed for the basin in Sūq Ḥarāj.

### 2.2.1 Interpretation

The analysis of the data from the archaeological investigation allows for a few deductions and conclusions. However, it is difficult at this point to



Fig. 8- Earlier basin, inside of the eastern side wall, sherd layers on a yellowish-brown plaster grounding (Meister 2005).

assign a date to the construction of the basin, since no time-referenced evidence has been revealed. Indeed, the basin in Sūq Ḥarāj is set without any relation to the surrounding alignments of the hall, but it corresponds surprisingly well to the skylight above (**Fig. 9: I**). The interpretation that the flat roof had originally been drained into the water basin below through the centrally arranged skylight seems reasonable. Such a drainage system would be a simple solution, but remains highly speculative; similar arrangements are not known in urban contexts of the region. Furthermore, it is no longer possible to verify this hypothesis by material evidence, since the original inclination of the roof has been repeatedly modified.

If the water basin in the hall was part of the drainage system of the roof, the basin should be considered as integral part of the original design of Sūq Ḥarāj, which possibly dates to the second half of the 14<sup>th</sup> century (see contribution Weber). However, a later conversion of the drainage system along with the installation of the basin is also possible. In any case, the discussed function of the basin is no criterion for a relative temporal classification of the basin.

## 2.3 The Stone Pavement around the Earlier Basin

On the border of the north-eastern side of the earlier basin, 20 cm above its bottom, lay the remains of a stone pavement. The pavement consists of four rows of paving stones parallel to the basin, most likely framing the basin on all sides (**Fig. 9: K and Fig. 4**). The stone row directly adjoining the basin served as a gutter. This gutter, about 5 cm lower than the other stone rows, shows an inclination of 2.3% to the north and is lined with a waterproof bituminous coating. Traces of the coating are also preserved on the exterior of the basin's southern wall about 9 cm below its upper edge (**Fig. 10**). In the middle zone of the pavement, two uniformly 25 cm-wide stone rows are followed by a single narrow row, which presumably served as the outer rim. This means that other areas of the courtyard remained unpaved – an assumption that is supported by a profile of the neighbouring sounding to the north (**Fig. 18**).

The paving around the basin probably served as a protection against splashing water. The overall distance between the basin and the outer rim amounts to 80 cm. Further findings indicate that this depth of pavement can be assigned to the other sides of the basin, but in a limited manner. Given the axis of the columns as parting line, the southern section of 65 cm is considerably narrower than the northern section (**Fig. 9**).

The reason for such a division is not obvious. It therefore seems probable that the original pavement of the southern side had been disturbed, its remains integrated in the later pavement extension (**Fig. 9**, bottom right) that does not follow a clear pattern. This extension probably covered a larger area around the basin. It also may have included the remains of a pavement uncovered in the neighbouring sounding to the north (**Fig. 9**, top right). However, there is no material evidence of the limits of the pavement's extension.

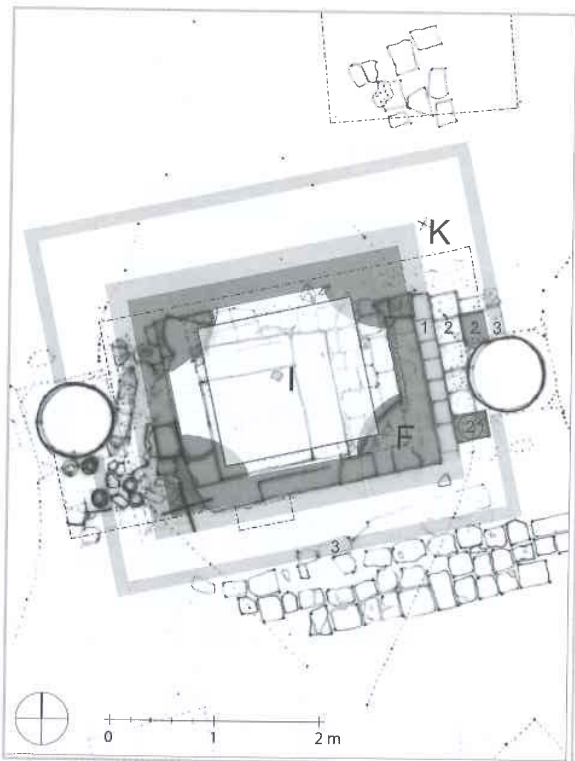


Fig. 9- Rescue excavations in the centre of the courtyard. F- earlier basin; I- skylight; K- framing pavement: -1 gutter; 2 - middle zone; 3- outer rim (plan: Meister 2007; drawings: Lohmann – Scholz 2005).



Fig. 10- Earlier basin, outer face of the southern wall, traces of the bituminous coating of a former gutter (Meister 2005).

## 2.4 The Water Tower (ṭālī')

The ground-plan of a dismantled water tower (Arab. ṭālī', locally called 'oyim moy / qā'im mā') has been identified west of the water basin, next to the column to the south (**Fig. 11**). This ṭālī' is also documented by a historical photograph showing the intact water tower (**Fig. 6**). Five truncated vertical clay water pipes with a uniform internal diameter of approx. 11 cm are preserved in the plan. Four of these pipes are arranged in pairs at the northern and eastern sides of the tower, marking its limits. An isolated pipe is positioned in the centre (**Fig. 11: L**). Given its position, this pipe may have served as the essential riser of the ṭālī'. In this case, the riser would have supplied a water reservoir, also called a distributing stone, resting on top of the towers. The water would then be conducted to the individual consumers by the connected conduits (cf. for example Çeçen 1979: 4–6; Forchheimer and Strzygowsky 1893: 23–34; Peleg 1996: 33–36). The truncated pipe labelled M in **Fig. 11** has been identified as a downpipe on account of the mating direction of its pipes. Inside the sleeve of the lower pipe, fragments of the tapered neck of the upwards connecting pipe have been preserved. This indicates a downward flow direction. The truncated pipes in the examined plan of the tower are embedded in a mortar containing coarse stone material that serves as an aggregate. It has been impossible to verify the western and

southern limits of the rectangular tower on the basis of these mortar remains. Nevertheless, the presence of a minimum spacing of 55 cm from north to south and 70 cm from east to west can be supposed. For the south-eastern truncated pipe, it was possible to detect the further direction of the conduit, turning away from the tower southwards at a depth of 31 cm.

The remains of another clay conduit run between the western column and the basin. This conduit descends slightly from the tower northwards (**Fig. 11: N**) and may be the product of a late construction phase. On the one hand, it differs from the other five pipes by its considerably wider diameter (inside: approx. 15 cm). On the other hand, its bend from the horizontal to the vertical is situated noticeably higher than that of the other pipes. The conduit enters the tower about 10 cm above the oldest detected pavement level and therefore must have been installed later. Parts of the old pavement must have subsequently been removed, at the very latest with the installation of this pipe.

Two other pipes made of metal appear on the aforementioned photograph (**Fig. 6**) at the western and southern sides of the water tower. These vertical pipes run closely along the outer wall and are connected with the distributing stone through an angular elbow conjunction. Based on the applied materials, both pipes can be attributed to a late construction phase of the *ṭāli'* during the first half of the 20<sup>th</sup> century. The remains of these metal pipes have not been found during the soundings. It is likely that they were removed during the abrasion of the modern tar.

#### 2.4.1 Interpretation

At the earliest, the *ṭāli'* was erected contemporaneously with the first water basin described above. If there was indeed a fountain, as suggested, its function may have been to provide the basin with sufficient hydraulic pressure. Water supply to the upper floors of the Sūq Ḥarāj by the *ṭāli'* can be excluded, given that the height of the tower is inadequate (**Fig. 6**) to generate the required pressure. Furthermore, no installations for the consumption of water have been found on the upper floors. Because of the spatial conflict between the presumed

pavement of the basin and the tower, the *ṭāli'* might belong to a later construction measure. This is supported by the fact that the two other known examples of basins with attached water towers in Tripoli appear as integrated structural units. This has never been the case in Sūq Ḥarāj, where both elements have always been detached. The supposed gutter on the west side of the basin (**Fig. 9: 1**) does not overlap with the ground-plan of the tower. Its destruction was thus not necessarily the result of the construction of the tower. It had to be given up at least in part only with the subsequent installation of the horizontal clay pipe. In any case, as the older of the two historical photographs proves, the water tower predates the second basin (**Fig. 3**).

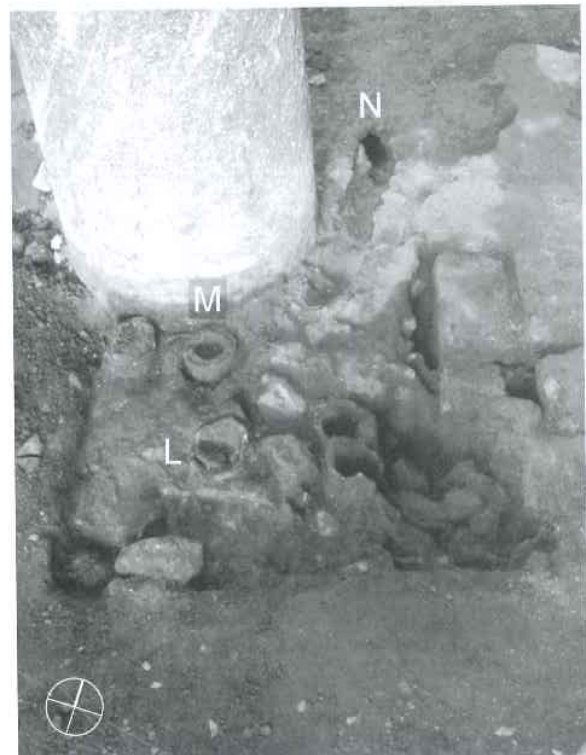


Fig. 11- Water tower (*ṭāli'*) west of the basin.  
L- riser; M- downpipe; N- clay conduit of a later construction phase? (Meister 2005)

### 3. Sounding in the Area of the Western Entrance

In the area of the western entrance a sounding (150 cm x 100 cm) was conducted (**Fig. 12**) to examine if the present-day entrance was originally closed by a back wall and can be considered a former shop of the west wing of Sūq Ḥarāj. The findings support this hypothesis, and, moreover, provide an insight into the historic sewage system. After removing the modern asphalt surface and a further filling of 20 cm, we found a still-functional sewer. This channel, which is 45 cm wide and 50 cm deep and runs roughly east-west, consists of side walls made of laid ashlars covered by aligned stone slabs. More recently, the stone slabs in the western area were substituted by one made of concrete. The channel gently inclines to the east, integrating a low stone step (**Fig. 12: O and**

**Fig. 13: O**). The orientation of this step corresponds with the alignment of the back walls of the shops to the north and south, suggesting a constructive connection. Finally, it has not been possible to verify definitively whether the step is a remnant of the former back wall of a shop or is part of its foundation. Apparently, the sewage channel originates from a later construction phase. Most likely, it was installed along with the earlier water basin, which presumably discharged into this sewer (**Fig. 14: R**). This implies an alignment toward the east, allowing it to intersect with the now severely damaged northern part of the basin where its outlet is to be expected. Moreover, the supposed channel route runs exclusively within public land, which is common to enable easy access for maintenance. Unfortunately, the channel could be detected solely in the area of the western entrance, because it had already been replaced by a modern

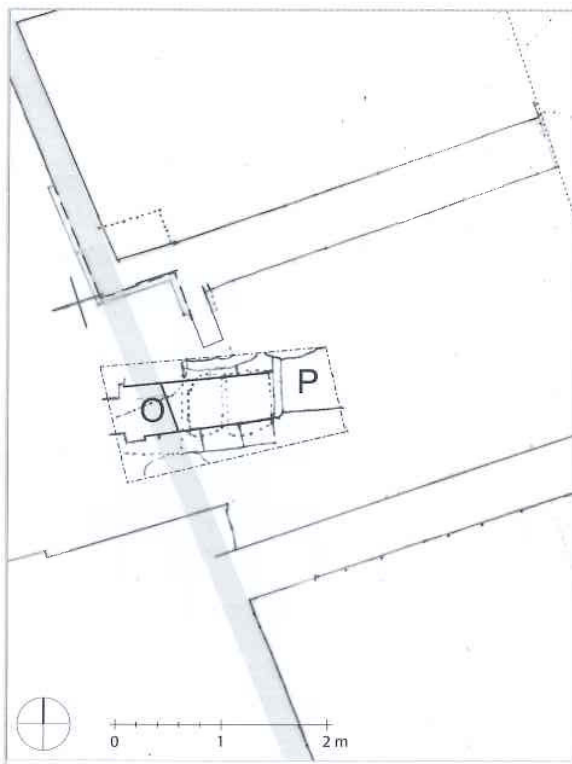


Fig. 12- Historic sewage channel in the area of the western entrance  
O- integrated stone step; P- modern concrete waste water pipe  
(plan: Meister 2007; drawings: Lohmann – Scholz 2005)



Fig. 13- Historic sewage channel in the area of the western entrance, view from east.  
O- integrated stone step (Scholz 2005).

concrete waste water pipe in the eastern part of the sounding (**Fig. 12: P**). Today, this modern sewer discharges into a transverse channel, following the main passageway of the Sūq Ḥarāj from south to north.

The western continuation of the old channel, which was not uncovered during the excavations, has been documented photographically from the inside (**Fig. 15**). These pictures show that the channel was butt-jointed to a pre-existing transverse channel. Some ashlar have been removed from this channel in order to connect both. However, the intention of this connection remains uncertain. It is possible that it served as an overflow spillway in order to relieve the transverse channel in case of high discharge.



Fig. 15- T-junction as western continuation of the excavated sewage channel (Meister 2005).

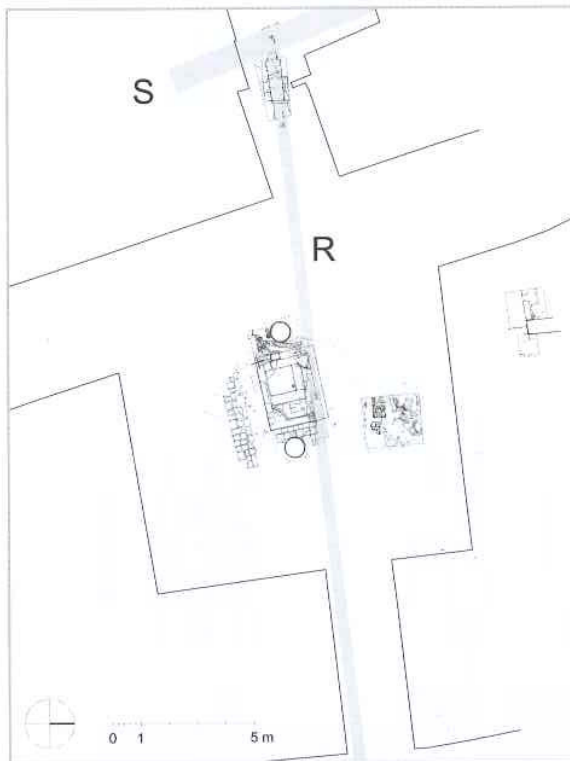


Fig. 14- Former sewage channel system.

R- presumed former route of the excavated sewage channel;  
S- earlier channel, inferred from photographs (plan: Meister 2007;  
drawings: Lohmann – Scholz 2005).

#### 4. Sounding in the Northern Area of the Courtyard

Another sounding of 220 cm X 190 cm has been carried out to the north of the fountain (**Fig. 16**). It aimed to examine a working hypothesis postulating the existence of an eastern counterpart to the row of shops found in the western ground floor. Since building archaeological investigations (see contribution Weber) have previously shown that the western shop alignment predates the rest of Sūq Ḥarāj, a similar row of shops may have once existed on the eastern side and been removed to allow for the construction of the hall. However, the soundings have not provided any clear evidence in this matter. Two large adjacent ashlar of the northern profile (**Fig. 16: V**) were found at the same level as the above-mentioned step in the sewage channel of the western entrance. But their orientation corresponds to the alignment of the north wing of Sūq Ḥarāj, making their function obscure.

A structure of quarry-stones (**Fig. 16: W**), whose surface level roughly corresponds to the upper edge of the second western column's foundation in the northern wing of Sūq Ḥarāj, is oblique to the fronts of the hall. Traces of decomposed clay sherds with the same orientation were found upon this surface, probably originating from water pipes.

Another elongated structure of stones running approximately parallel to the northern wing was found in the southern area of the sounding, and could be identified as a protection for a water pipe (**Fig. 16: X**). This protective structure has a cross-section of about 50 cm by 30 cm and covers the clay conduit, which inclines slightly to the east. The remnants of the pipe, observable in the eastern part of the sounding, consist of mated elements about 40 cm in lengths (**Fig. 17**). The eastern profile (**Fig. 18**) reveals the

cross-section of the pipe trench, which cuts a sequence of distinct historic layers and floor levels. A base of a hand clay pipe (**Fig. 19**) originating from one of these layers can be dated to the 18<sup>th</sup> century (cf. Bartl 2003: 321–338). This find provides a terminus post quem for the installation of the water pipe. The pavement (**Fig. 9**, top right) situated above this water pipe must therefore be considered later than the dated fragment of the hand clay pipe as well.



Fig. 16- Sounding in the northern area of the courtyard. V- adjacent ashlars; W- quarry-stone structure with traces of decomposed clay sherds (water pipe?); X- water conduit protected by a stone coat (Meister 2005).

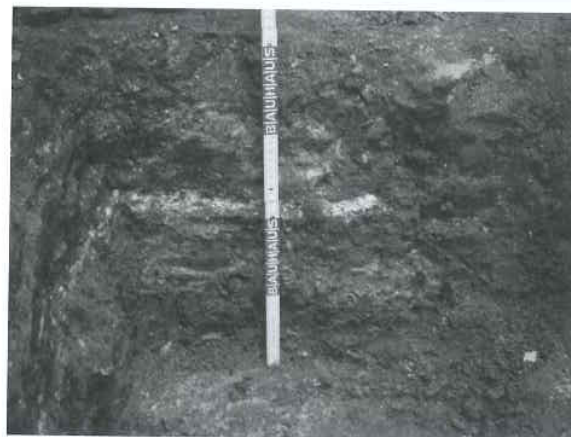


Fig. 18- Eastern profile of the sounding, distinctive historic layers and floor levels cut by the pipe trench (Meister 2005).



Fig. 17- Remains of clay pipe in the south-eastern part of the sounding (Meister 2005).



Fig. 19- Fragment of a base of a hand clay pipe dating to the 18<sup>th</sup> century (Meister 2005).

## 5. Rescue Excavations in the North Wing

The restoration measures also included the renovation of the construction and covering of the floor in the western shop of the north wing. This shop consists of two individual chambers and a section of the gallery in front of it (**Fig. 20**). Because its floor level had increased considerably in relation to that of the other shops, it had to be reduced during the restoration in order to align with the new level of the courtyard.

Upon removing the modern floor construction of terrazzo tiles and a concrete layer in the eastern chamber, it was possible to investigate the substructure of the floor (**Fig. 20: Z**). Two rows of

hewn blocks, parallel with the side walls of the shop, stretched from the back wall to a more recent threshold of the gallery's arcades. A transverse lost cast form of wooden planks for the screed layer once rested upon them. Imprints of these planks have been observed on the underside of the screed layer (**Fig. 21**).

In the western chamber, the upper edge of a plastered wall (**Fig. 20: Y**) was uncovered 15 – 20 cm below the modern floor level. This wall was perpendicular to the chambers' side walls and aligned with their fronts. Remains of its gallery-side plaster were also traced in the neighbouring shop chamber. This cross wall probably formed the front of the original shop platforms (Arab. *maṣṭaba*), whose floor level was elevated relative to that of the gallery. This is supported by the findings of three smaller soundings (**Fig. 20**).

In the gallery, 95 cm below the upper edge of the aforementioned wall, a condensed soil layer was discovered (**Fig. 22**). It was not sealed and probably formed the levelling layer of the gallery's foundation. The cross wall was traced down to this layer. It is conceivable that the foundation of the gallery's second column from the west also had its base on this level, since its upper edge was proofed approx. 40 cm above the assumed foundation layer. Unfortunately, the original floor of the gallery is lost, leaving no indications of its former level. However, it was most likely located above the foundation of the column, since the upper side of this foundation shows no elaboration suggesting it may have been visible. So far, a reconstruction of the layout of the former platform is not possible, since it is unclear whether the top of the preserved cross wall represents its original upper end (**Fig. 22**). Moreover, the traces of the former fittings and shutter system of the chamber are either destroyed or hidden under the plaster of the side walls and the vaults. Only the substructure could be investigated from inside the western shop chamber. The upper part of the cross wall, measuring 20 cm in width, develops from a 60 cm thick base (**Fig. 20: Y**). It is thus capable of absorbing the soil pressure that results from the elevated level of the platform.

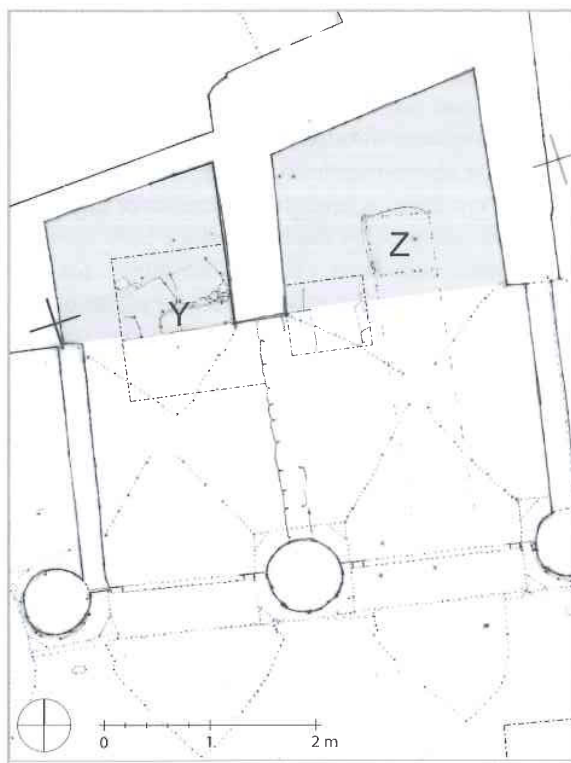


Fig. 20- Western shop-unit of the northern wing, comprising two former shop chambers with platforms.

Y- upper platform wall develops from a thicker base; Z- observed substructure of a modern concrete layer (plan: Meister 2007; drawings: Lohmann – Scholz 2005).



Fig. 21- Observed substructure of a modern concrete layer in the eastern shop chamber, view from north to south (Meister 2005).

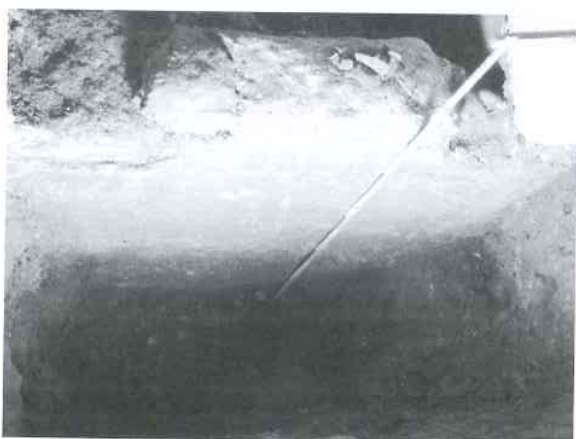


Fig. 22- Platform wall of the western shop chamber, view from south to north (Meister 2005).

## 6. Conclusion

Several conclusions can be drawn from the various surveys and soundings undertaken at Sūq Ḥarāj during the restoration work. The findings shed light on the history of the monument and their documentation forms a database for any future scientific study.

The findings mainly concern the former layout of the building, its spatial and functional components, and their temporal relation.

The present-day western entrance of Sūq Ḥarāj seems to have originally served as a shop chamber. This is indicated by a small step that is integrated into the old sewage channel running underneath this western entrance and possibly leaving the building through the eastern entrance. This channel should be dated later than the western row of shops but may be contemporary with the construction of the hall of Sūq Ḥarāj. It is connected to an earlier sewer running alongside the adjacent back walls of the western shop chambers.

Those shop chambers in Sūq Ḥarāj that were formerly entered from the gallery were probably originally characterised by platforms elevated above the gallery and the courtyard. A decorative basin likely equipped with a central fountain and elevated rounded inner corners for water overflow existed between the two columns. Its orientation, corresponding with the skylight above, might have been related to the flat roof's drainage system, discharging water through the central skylight into the basin. The above-mentioned sewer, excavated in the western entrance, is probably a product of the same construction phase as the basin, since both seem to have been connected. The water supply for the fountain was provided at least in a later phase by the neighbouring water tower. This water tower was an integral part of the fresh water network in the neighbourhood, distributing water to individual consumers. As shown by historical photographs, both the basin and the water tower existed and were probably in use long into the first half of the 20<sup>th</sup> century. Although the decorative basin was substituted by a smaller functional one, the water tower was still working at that time.

The findings of the surveys and soundings have been partially integrated into the restoration design, and traces of Sūq Ḥarāj's vanished past are again visible today.

## Notes

**1-** In alphabetical order: Nathalie Kallas, Ulrich Kapp, Samar Karam, Daniel Lohmann, Juren Meister, Maike Scholz, Lana Shehadeh. Stefan Weber co-organised the campaign. We are deeply indebted to all of them for an excellent teamwork. Special thanks to Stefan Weber for his outstanding support and Daniel Lohmann / Maike Scholz for the wonderful drawings. We would like to express our gratitude to the German Archaeological Institute, Head of Division of Architecture, Dr.-Ing. Ulrike Wulf-Rheidt for funding the campaign and scientific support. Thanks to Lana Shehadeh, Holger Ehrig and also Helen Pfeifer for correcting the English text.

**2-** That is attested for by numerous comparative examples (e.g. Meinecke *et al.* 2005: 135).

**3-** The fountain of the Mamluk Khān al-Miṣriyīn has no such elements in contrast to the one in the Ottoman Khān al-Ṣābūn and the 1357/1938–39 dated fountain in the Mamluk Khānqāh.

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