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The Gymnasium of Agrigento: Report of the Second Excavation Campaign in 2023

Monika Trümper*, Thomas Lappi**, Antonello Fino***

Keywords: *Gymnasium*, Agrigento, Hellenistic Architecture, Roman Architecture, Palaestra, Roman Sicily, Hellenistic Sicily.

Parole chiave: Ginnasio, Agrigento, architettura ellenistica, architettura romana, palaestra, Sicilia romana, Sicilia ellenistica.

Abstract:
The gymnasium of Agrigento has been excavated between the 1950s and 2005. While parts of a race-track section and a pool were revealed between two stenopoi*, the extension of the gymnasium and particularly the existence of a* palaestra *as well as the construction date could not be securely determined. A project launched in 2019 in cooperation between the Parco Archeologico e Paesaggistico Valle dei Templi di Agrigento, the Freie Universität Berlin, and the Politecnico di Bari aims to solve these questions. Based on the results of a geophysical survey carried out in 2020, two excavation campaigns were carried out in 2022 and 2023 in a field to the North of the pool where the* palaestra *was most likely located. The aim of this paper is to discuss the major results of the 2023 campaign that included ten stratigraphic trenches and an architectural survey. Results are discussed in a synthetic manner, focusing on the chronology and construction of the western* stenopos*; the topography, size, and subdivision of the* palaestra *lot; the construction technique of the walls; and significant architectural elements. One street level can be securely identified in the* stenopos *that was made together with the* palaestra*; a drainage pipe may have belonged to the original phase or a slightly later remodeling. The* palaestra *lot had an extension of maximally 62.50m North-South x minimally 35m East-West and was subdivided into at least two different terraces. A stamped tile with ΓΥΜ from an abandonment/destruction layer proves that the* palaestra *lot belonged to the gymnasium. This is confirmed by numerous well-made ashlar walls that are consistent in orientation, building technique, and material with the previously exposed walls of the gymnasium. At least four rooms can be identified on the lower terrace next to the pool (among them possibly a* loutron *and an exedra with benches) and a large vestibule on the upper terrace. While two cornices with* sima *from a Doric colonnade were found in 2022 and 2023 on the lower terrace, the location and size of the peristyle courtyard cannot yet be determined. The analysis of the architecture focused on the pool and architectural elements excavated in the* palaestra *lot. It supports a construction date of the gymnasium in the 2nd century BC and allows reconstructing the pool with a size of 15m North-South x 7.65m East-West and a staircase in the southwest corner, with 13 steps along the west wall.*

Il ginnasio di Agrigento è stato scavato tra gli anni Cinquanta del secolo scorso e il 2005 e, sebbene siano state messe in luce parti di una pista e una piscina tra due stenopoi*, non è stato possibile determinare con sicurezza né l'estensione, né l'esistenza di una* palaestra*, né la data di costruzione. Un progetto avviato nel 2019 in collaborazione tra il Parco Archeologico e Paesaggistico Valle dei Templi di Agrigento, la Freie Universität di Berlino e il Politecnico di Bari sta indagando su questo aspetto. Sulla base dei risultati di prospezioni geofisiche effettuate nel 2020, sono state effettuate due campagne di scavo nel 2022 e nel 2023 in un campo a Nord della piscina, dove molto probabilmente era collocata la* palaestra*. In questo articolo è sono presentati i risultati della campagna del 2023, discussi in modo sintetico, concentrandosi sulla cronologia e sulla costruzione dello* stenopos *occidentale, sulla topografia, sulle dimensioni e sulla suddivisione del lotto della* palaestra*, sulla tecnica costruttiva delle strutture e sugli elementi architettonici più significativi. In particolare, è stato identificato con sicurezza un livello stradale nello* stenopos *che venne realizzato contestualmente alla* palaestra*, oltre ad una tubazione di drenaggio potrebbe appartenere alla fase originaria o a un rifacimento di poco successivo. Il lotto della* palaestra *doveva misurare massimo m 62,50 Nord-Sud e minimo m 35 Est-Ovest ed era suddiviso in almeno due diverse terrazze. Il rinvenimento di una tegola con bollo ΓΥΜ proveniente da uno strato di abbandono/distruzione dimostra che il lotto dove si ipotizza la* palaestra *apparteneva al ginnasio. Ciò è confermato da numerosi muri in blocchi di buona fattura, coerenti per orientamento, tecnica costruttiva e materiale con i muri del ginnasio precedentemente scavati. Si possono individuare almeno quattro ambienti sulla terrazza inferiore accanto alla piscina (tra cui forse un* loutron *e un'esedra con banchine) e un ampio vestibolo sulla terrazza superiore. Mentre due cornici con sima di un colonnato dorico sono state rinvenute nel 2022 e nel 2023 sulla terrazza inferiore, non è ancora possibile determinare la posizione e le dimensioni del cortile del peristilio. L'analisi degli elementi architettonici scavati nel lotto della* palaestra *propone una datazione per la costruzione al II secolo a.C. e le osservazioni condotte sulla piscina hanno permesso di ricostruirla come una grande vasca di m 15 Nord-Sud x m 7,65 Est-Ovest con accesso da una scala nell'angolo sud-ovest composta di 13 gradini a ridosso della parete occidentale.*

* Freie Universität Berlin: monika.truemper@fu-berlin.de
** Freie Universität Berlin: thomas.lappi@fu-berlin.de
*** Politecnico di Bari: antonello.fino@poliba.it

While gymnasia in Sicily have long received little attention in scholarship, recent discoveries change this picture. For example, an *ephebeum* has been excavated at Segesta in 2021, securely identified by inscriptions and its shape. It must have belonged to a gymnasial complex which has not yet been fully revealed[1]. In Monte Iato, a large peristyle building explored since 2012 has recently been tentatively identified as a *palaestra*[2]. Both discoveries confirm the importance of fieldwork in order to significantly advance the knowledge of gymnasial life in Sicily. The ongoing excavation project at the gymnasium of Agrigento which is the topic of this article seeks to contribute to this goal.

The second excavation campaign of this project took place from August 28 to October 7, 2023, in a cooperation between the Parco Archeologico e Paesaggistico Valle dei Templi di Agrigento, the Freie Universität Berlin, and the Politecnico di Bari. The aim of this paper is to present the results of this campaign that included stratigraphic excavation in ten trenches and an architectural survey. Since the general layout of the gymnasium, the history of excavation and research, as well as the general goals of the project were discussed in detail in the first preliminary report, published in last year's volume of this journal[3], they are not repeated here. The gymnasium included an impressive complex with covered and uncovered race-tracks of ca. 190-200 m length and an open-air swimming pool that had been uncovered between the 1950s and 2005. Both are located in an insula of 35m width between two *stenopoi* and on two terraces with a height difference of ca. 1.50-1.60m (fig. 1).

The 2022 campaign provided evidence of monumental ashlar walls and architectural elements in the olive grove to the North of the pool that most likely belonged to a *palaestra*. *Palaestrae* are usually peristyle buildings with rooms for athletic and intellectual training, and often also bathing facilities (*loutra*). The focus of the 2023 campaign was on further clarifying the extension and design of the *palaestra* as well as its construction date and development. The second major target was the *stenopos* that bordered the gymnasium in the West and the chronology of which is closely connected with that of the gymnasium.

In the following, the ten trenches are presented first, followed by a discussion of the architecture. Since a detailed discussion of all trenches would exceed the limits and purpose of this article, results are combined to address three central topics: the chronology and construction of the *stenopos*; the topography, size, and subdivision of the potential *palaestra* lot; and the construction technique of the walls. To facilitate reference, the three different parts of the gymnasium are referred to as race-track section, pool terrace, and *palaestra* section or *palaestra* lot (fig. 1). While selected plans and sections of trenches are shown here they are not discussed US by US. Since assessing all finds would exceed the limits of this paper, the finds from trench 3N are presented exemplarily, with tables in an appendix.

Trenches excavated in 2023

Of the four trenches excavated in 2022[4] three were reopened and extended. The trenches are briefly described before moving to the synthetic evaluation (fig. 2).

- Trench 5 was made between trenches 3N and 3S to explore the chronology of the *stenopos* and the course of the pipe found in its center. It had a size of 3m North-South x 1.60m East-West and was excavated for a depth of 55-60cm to the natural clay layer (for a classification of strata, see below).
- Trench 6 extended the limits of trench 1 to the South and East, reaching from the north wall of the pool to the East-West-running walls discovered in 2022. It had a size of 11.60m North-South x 4.40-4.60m East-West. The foundation of the walls could only be reached at one point, in a depth of ca. 1.50m below the upper surface of the walls. The goal was to identify the connection to the pool and to further clarify the design and function of the rooms, most notably that with a pavement of large slabs found in 2022.
- Trench 7 was made as a northern extension of trench 1, with a size of 1.20-2m North-South x 2.40-3.40m East-West. It included the northernmost row of blocks found in 2022 and served to identify the function of these blocks and the space between trenches 1 and 2 (or trenches 6 and 8). It was excavated to a depth of about 40cm below the upper surface of the blocks, stopping in a spoliation/abandonment layer[5].
- Trench 8 extended the limits of trench 2 to the North and East. As a result of tracing walls, it had an irregular shape, with a maximum extension of 11.30m North-South x 4.70m East-West. Its goal was to further explore the monumental walls and the sima block revealed in 2022. The foundation of the walls and the natural clay level were reached in large parts of the trench.

[1] Ampolo 2022.
[2] Mohr 2021. For the state of research on gymnasia and palaestrae in Sicily, Trümper 2018, 2020a.
[3] Trümper *et alii* 2023.
[4] *Ibidem* 2023, p. 283 fig. 3.
[5] Cf. US2008 in trench 2; *Ibidem*, p. 290 figs. 16-17.

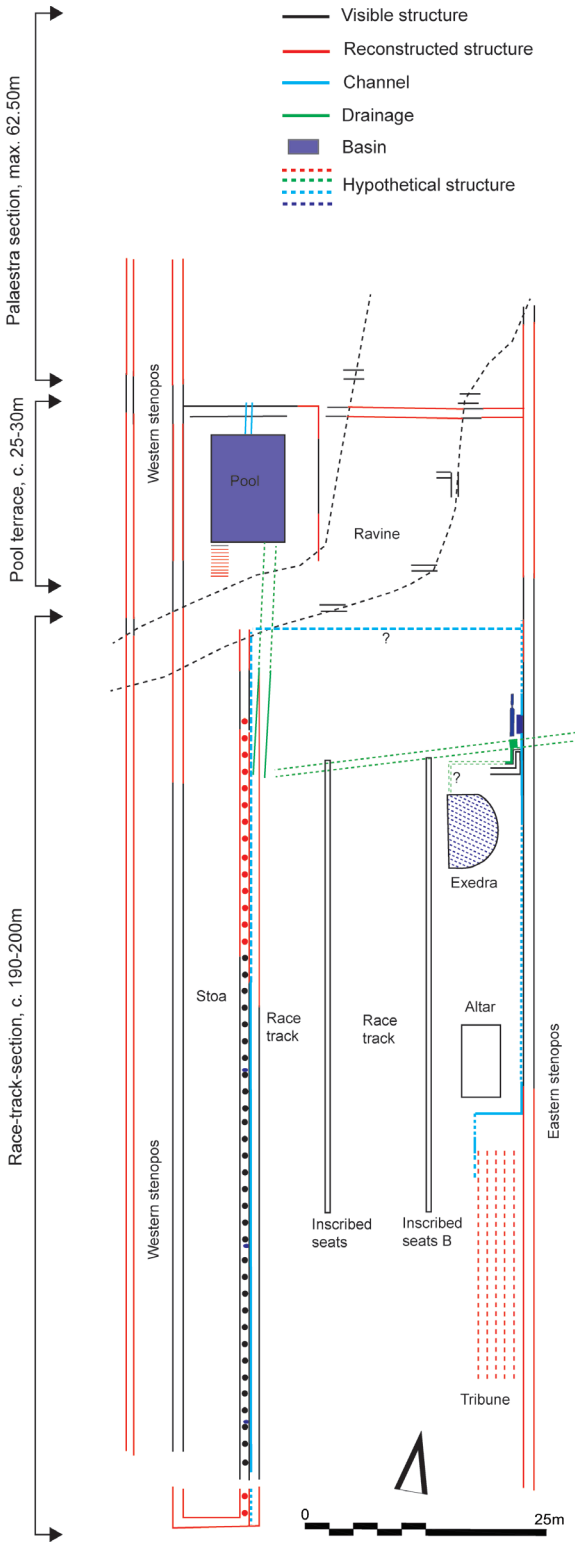

Fig. 1. Gymnasium, reconstructed plan (M. Trümper).

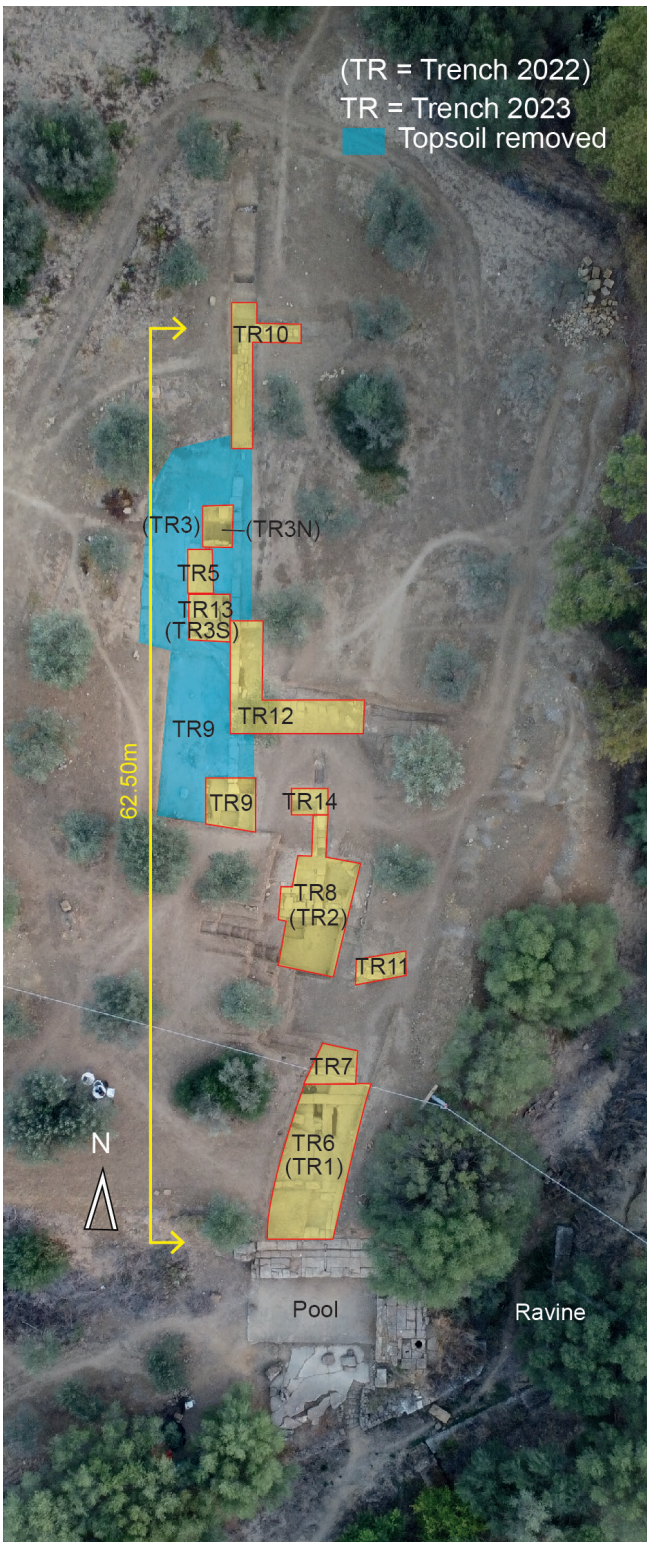

Fig. 2. Location of trenches 2023 (T. Lappi, M. Trümper).

- Trench 9 was made in the western *stenopos*, as a southern extension of trench 3. Topsoil was removed in an area of 11.20m North-South x 5.20m East-West, revealing the continuation of the eastern *stenopos* wall. The northern part of this wall was later explored in trench 12. Trench 9 was then limited to an area in the southeastern corner of the trench where the wall had disappeared. An area of 3.40m North-South x 3.45m East-West was excavated for a depth of 1.40m from topsoil to the natural clay level. The trench included terrain to the West and East of the eastern *stenopos* wall to explore both the *stenopos* and the interior of the *palaestra* and the relationship between street and building.
- Trench 10 was made as an extension of trench 3, with an L-shape. One branch had a size of 12.00m North-South x 1.20m East-West, the other of 1.60m North-South x 4.70m East-West. The eastern *stenopos* wall was followed to the

northwest corner of the *insula*, and then the north façade was followed for 3.90m to the East. The natural clay layer was found everywhere, met at 17cm below the upper surface of the walls and excavated for a maximum depth of 65cm.

- Trench 11 included an irregularly shaped paved area of ca. 2.25m North-South x 3.80m East-West. This pavement was bordered by two large reused ashlars in the South and otherwise made of small stones. It was most likely connected with a terracotta pipe of the 18th/19th century that had been found in trench 3 in 2022 and was found at the surface of trenches 8 and 12 in 2023. The pavement was cleaned and documented.
- Trench 12 was made to the North of trench 2/8 and to the East of trench 3 to explore the interior of the *palaestra* lot. Because several East-West-running walls were followed here, it had an irregular shape at the end, with maximum extensions of 8.40m North-South x 10.75m East-West. The trench included part of the eastern *stenopos* wall with a large threshold. The natural clay layer was found in the entire trench, in a depth of 40cm below the upper surface of the threshold, and was excavated for a maximum depth of 60cm.
- Trench 13 was made to the South of trench 5 and to the West of trench 3S to clarify the chronology of the street and the pit found in trench 3S in 2022. It ended at the obliquely running modern pipe, with a maximum extension of 2.90m North-South x 1.65m East-West. Since the upper strata had already been removed in 2022, only 25cm remained to be excavated down to the natural clay layer. As part of trench 13, a small trench of 55 x 55cm was made in the northeast corner of trench 3S because cleaning had revealed another block below the two preserved rows of blocks of the eastern *stenopos* wall. The lower border of this block was reached.
- Trench 14 was made between the northernmost part of trench 8 and trench 9, with a size of 1.50m North-South x 2.20m East-West, to investigate the existence of walls and floors in this area of the *palaestra* lot.

The geomorphology of the gymnasium area is important for understanding the nature and genesis of natural and artificial strata. It has been discussed with several experts who visited the excavations in 2022 and 2023[6] and all agreed that comprehensive geological research with coring is required to fully assess this topic. Since such research can only be carried out in future campaigns the following classification of layers found in 2022 and 2023 is necessarily preliminary, but used here to facilitate reference to the sequence of strata found in most trenches (figs. 3-5):

- Topsoil: dark brown loose uppermost soil, plow zone between olive trees that are regularly cultivated and harvested. These were usually assigned the x000 number (US1000, 2000, 3000 etc.).
- Mass flow layer: compact very hard grey brown layer with few finds, with thicknesses up to 2-3m; this may stem from landslides and inundations that occurred over centuries after the abandonment of the gymnasium. This layer was found below and above features dated to the modern period (18th/19th century), suggesting that the area was continuously impacted by such natural events. These usually received the x001 number (US1001, 2001, 3501 etc.), but occasionally also the x002 number (US3002, US8002) or even x003 number (US7003).
- Spoliation/abandonment layers: two different strata could be distinguished in trenches 1/6 and 2/8: a compact grey-brown layer with many tiles, pottery fragments, and small stones that was found with an inclination from North to South in trenches 1/6 (US1003/6002/6003), 2/8 (US2003/8003), and 9 (US9004/9007/9008/ 9009/9012/9013). It may stem from a catastrophic landslide of flooding event in antiquity and is called upper spoliation/abandonment layer here. Below this was a horizontally running compact layer with lots of plaster and small stones, probably from robbing-out and cutting the calcarenite ashlars. This was found with a more horizontal course in trenches 1/6 (US1004/6004/6006), 2/8 (US2008/8010), and 7 (US7004), and is called lower spoliation/abandonment layer here. Finds from the lower layer that have been fully evaluated so far provide a *terminus post quem* of the early 3rd century AD for the spoliation process[7].
- Floor levels: only one pavement made of calcarenite slabs could be securely identified so far (US1010 in trench 1) and a second tentatively (USM12002 in trench 12). Earth or sand floors which commonly prevailed in gymnasia because they are most appropriate for athletic training were identified in two cases because of their position, consistency, and leveled upper surface (US2006/8015 in trench 2/8; US6010/6014 in trench 6). These floors must have been regularly maintained and renewed. This may account for the fact that finds providing a *terminus post quem* of the mid-2nd century AD were found in US2006, suggesting that the gymnasium was still used in the second half of the 2nd century AD[8].
- Street level: one street level could be securely identified from its consistency and location in relation to the foundation of the eastern *stenopos* wall. Found on top of clay layers (see below), this a sandy layer with lots of medium-sized stones at the bottom that served to level and support the street (US3003/3503-3505/5003-5004/9017/13001/13010).
- Yellow bluish clay layers – "natural layers": found in the race-track section and in 2022 in the *palaestra* lot, these were often identified as natural soil ("banco naturale") or sterile natural layer[9]. But a differentiation is required

[6] Particular thanks are owed to Prof. Dr. Gregor Borg for detailed discussion and very helpful insights during the 2023 campaign.

[7] Trümper *et alii* 2023, pp. 290-292.

[8] In *ibidem*, p. 292, US2006 was still identified as a spoliation/abandonment layer, but this was corrected when continuing trench 2 as trench 8 in 2023. For the finds from US2006, *ibidem*.

[9] *Ibidem*, p. 290 n. 27; p. 296.

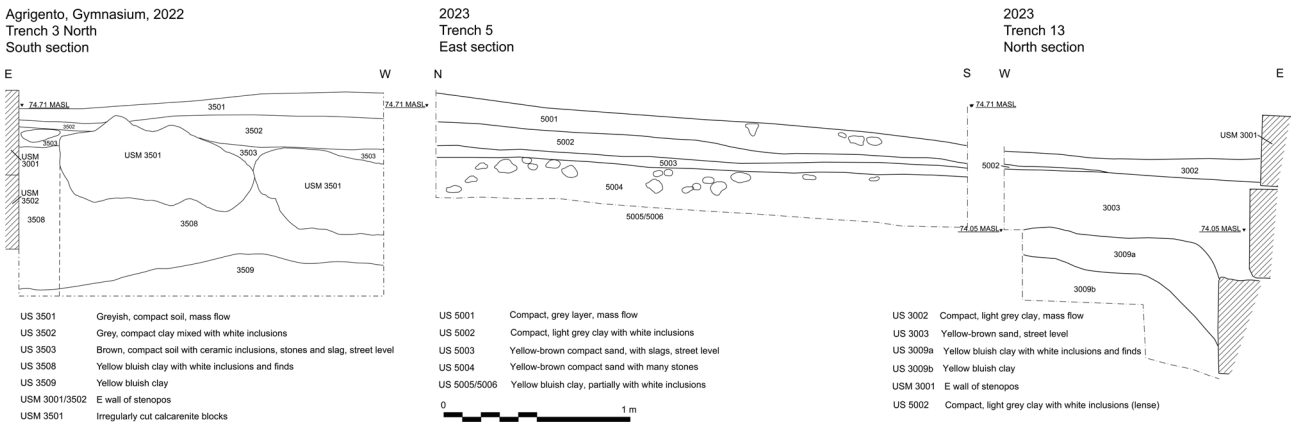

Fig. 3. *Stenopos* connected sections: trench 3N south, trench 5 east, trench 13 north (B. Kupke, M. Trümper, J. Winzek).

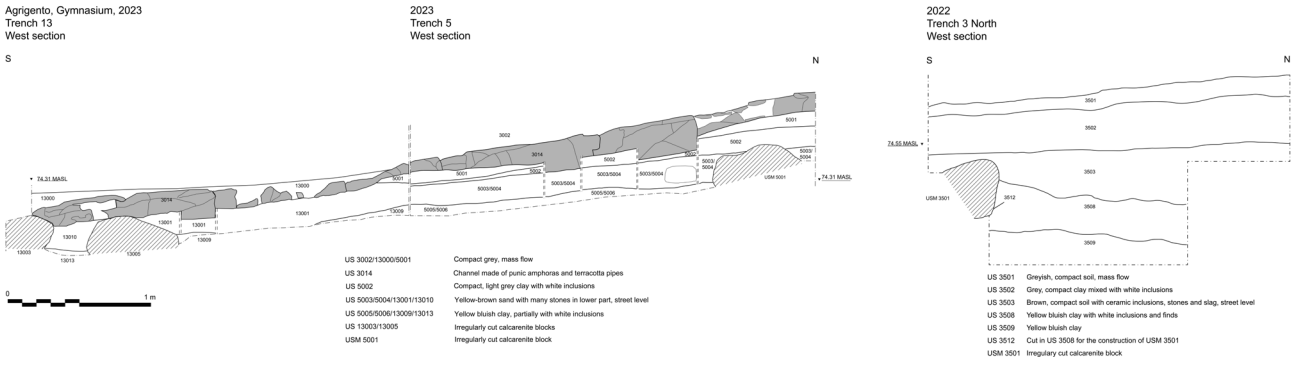

Fig. 4. *Stenopos* west sections: trench 3N, trench 5, trench13 (B. Kupke, M. Trümper, J. Winzek).

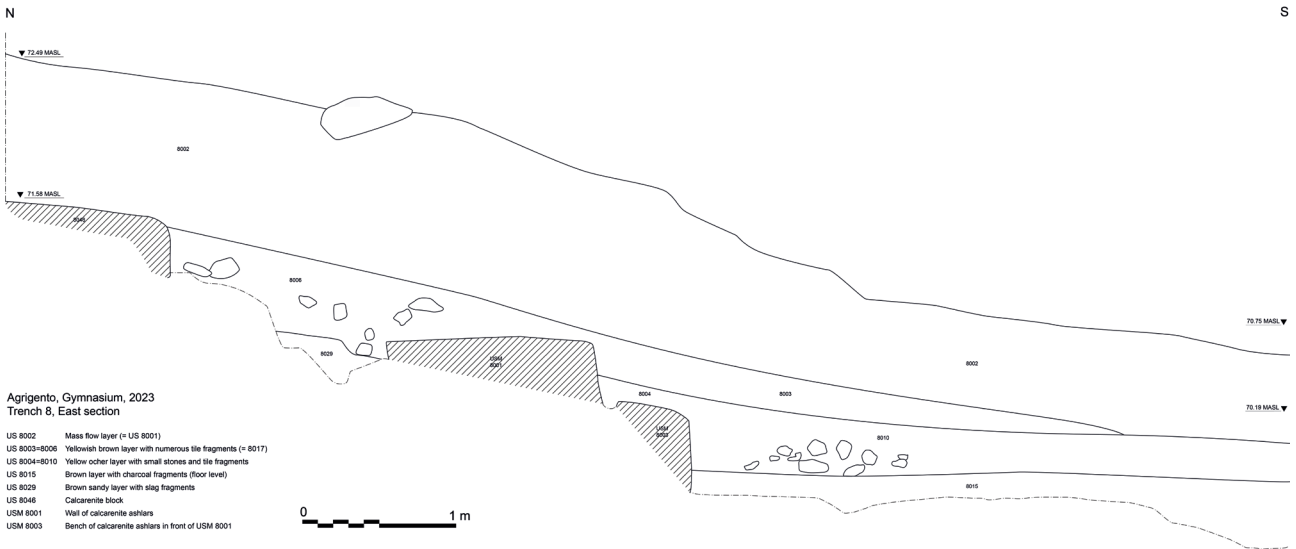

Fig. 5. Trench 8, east section (F. Birkner , T. Lappi).

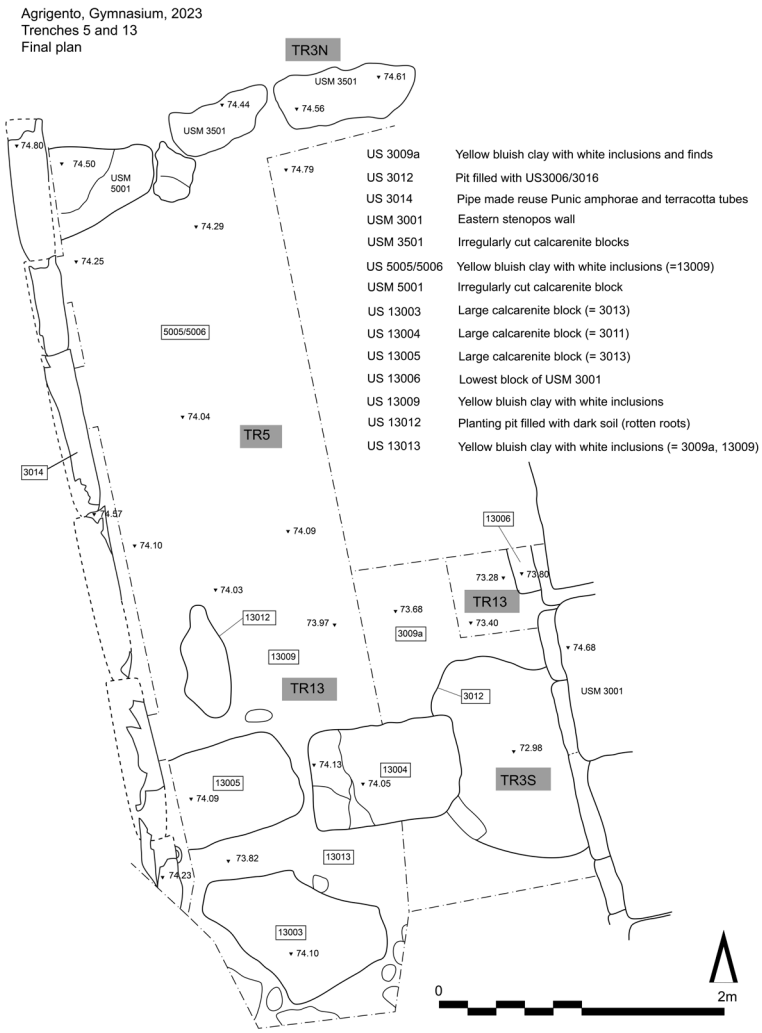

Fig. 6. Trench 5, trench 13, final plan (B. Kupke, M. Trümper, J. Winzek).

Fig. 7. Trench 5, trench13, orthophoto of final state (M. Trümper, J. Winzek).

according to consistency and finds. Pure clay without any finds or inclusions was only found in significant depths in trenches 3S (US3009b, fig. 3), 3N (US3509, figs. 3-4), and 4 (US4003). On top of these were usually similar clay layers that often comprised white inclusions, which may result from exposition to the elements and infiltrations, and a significant number of finds: for, example, in the small trench 3N, US3508 included 113 pottery fragments, 15 iron slag fragments, 33 bone fragments, and charcoal fragments (see *Appendix*). Since excavation often stopped at the first appearance of clay layers, it could not be clarified whether these still included finds or can be classified as pure clay layers. Several factors suggest that the clay layers with finds were not the result of intentional artificial filling and leveling activities but generated naturally, e.g. as a result of landslides or alluvial processes. They were usually uneven in thickness and on surface, and the foundation trenches of walls were cut into these layers[10]. If the finds were not introduced into the clay by alluvial processes, sporadic use of the area could be responsible for their existence. The few datable finds can be assigned broadly to the 5th/4th century BC, but no evidence of contemporary buildings or settlement structures were identified anywhere in the area of the gymnasium.

Such more or less naturally developed clay layers – without and with finds – were found in almost all trenches below the built features. To facilitate reference, they are called natural clay layers in the following; the presence or absence of finds is mentioned when known: trench 2/8: US2010/8014 (with finds); trench 3S: US3009a (with finds) / 3009b (without finds); trench 3N: US3508 (with finds) / 3509 (without finds); trench 4: US4002 (with finds) / 4003 (without finds); trench 5: US5005/5006; trench 9: US9014/9021/9025 (with finds); trench 10: US10003 (with finds) / 10005 (without finds); trench 12: US12005; trench 13: US13001/ 13010.

In one instance, stratigraphy shows that a clay layer with white inclusions and significant finds was brought in as an artificial fill (US5002 in trench 5); occasionally, clay lenses were identified that may stem from alluvial activities or have served to fill holes, e.g. in the *stenopos* (e.g., US9015/9016 in trench 9).

[10] An exception is US2010/8014 found in trench 2/8 which was leveled because it supported the floor of the room. But the foundation trench for the wall USM2001/8001 was cut into this layer, see below.

Fig. 8. Trench 3N, natural clay layer US3508 (B. Kupke).

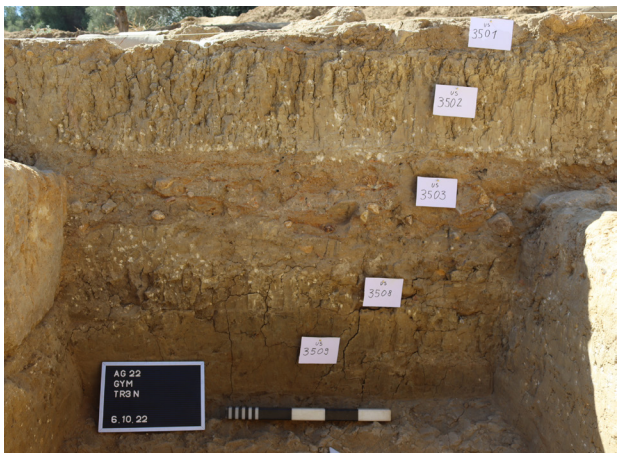

Fig. 9. Trench 3N, west section (B. Kupke).

Fig. 10. Trench 3N, south section (B. Kupke).

Fig. 11. Trench 5, natural clay US5005/6 (B. Kupke).

Stenopos

The *stenopos* was explored for a length of 33m North-South and in its full width of 5m East-West (figs. 2, 6-7). The street was flanked by walls made of calcarenite ashlars. While the eastern wall was preserved for a length of 31.45m in the excavated parts, the western wall was preserved for 6.40m of an excavated length of 9.25m. Several East-West-running walls branching off the *stenopos* façade walls were revealed, one connected with the west façade, three with the east façade, in the *palaestra* lot. A pipe made of reused Punic amphoras and terracotta tubes was located roughly in the center of the *stenopos* (1.95m from the west wall, 2.95m from the east wall). While it was not preserved to the North of trench 3N, it was excavated for a length of 7.90m to the south border of trench 13, with an inclination from 75.26 MASL in the North to 74.23 MASL in the South. There, it was crossed by the above-mentioned modern pipe which runs through the *stenopos* from northwest to southeast with an excavated length of 9.20m. This pipe was followed for another 10m further southeast, in trenches 12 and 8.

The natural clay layer, which had already been identified in trenches 2-4 in 2022, was found in all trenches, with an uppermost level of 74.39 MASL in the North (trench 13) to 72.87 MASL in the South (trench 9) (tab. 1). The above-mentioned change in consistency of the clay layers was recognized in trenches 3N, 3S, and 13, when digging down to foundation level of the walls and to the bottom of a pit (figs. 3-4, 8-11). The upper natural clay layers US3009a, US-3508contained white inclusions and finds (see above and appendix), while the lower strata US3009b and US3509 did not.

The lower border of the eastern *stenopos* wall was revealed in trenches 3S, 3N/13, 9, and 10. The wall was built on top of or even cut into the natural clay layer with different strategies that are discussed below. The difference between the lowest border of 72.30 MASL in trench 9 (imprint of the robbed-out wall at the south border of the trench) and the lowest border of 75.05 MASL (or slightly lower) in trench 10 is 2.75m (fig. 12). This equals seven superimposed rows of ashlars with a height of 39cm. The preserved blocks are between 25 and 60cm high, but mostly between 30 and 50cm. The surface of the rows of blocks is not strictly horizontal, but rises slightly from South to North, like the terrain and the *stenopos*. The upper surfaces of the preserved blocks range from 73.40 MASL in trench 9 to 75.56 MASL in trench 10, but they are often

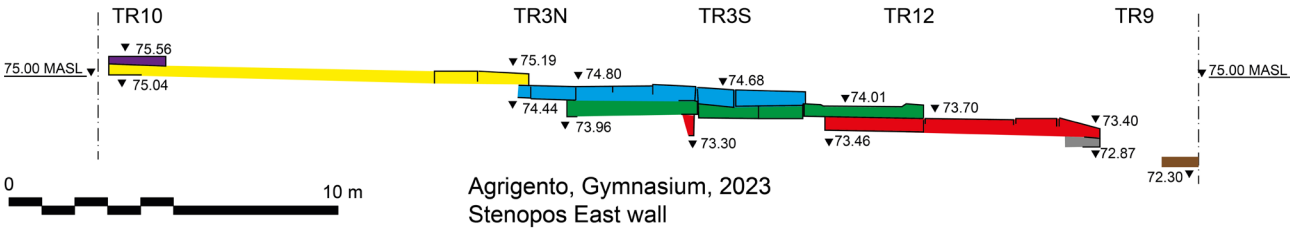

Fig. 12. Stenopos, eastern wall, schematic reconstruction (M. Trümper).

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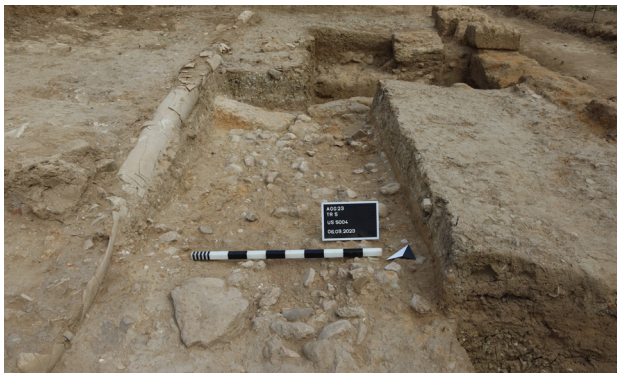

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Fig. 13. Trench 3S/13, north section (J. Winzek).

Fig. 14. Trench 5, preparation layer of street US5004 (B. Kupke).

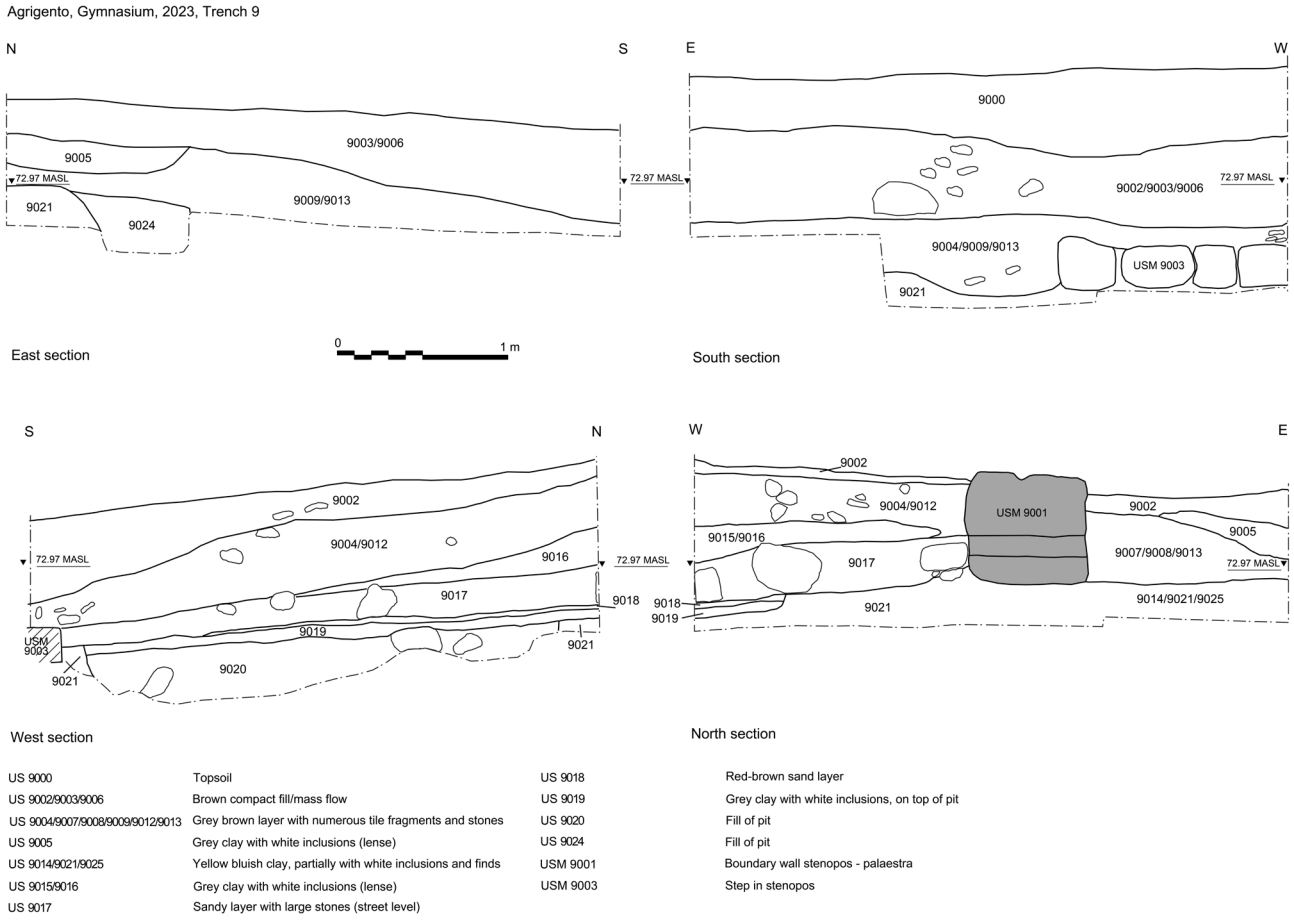
Fig. 15. Trench 5, street layer US5003 (B. Kupke).

Fig. 16. Trench 3N, preparation layer of street US3503/3505 (B. Kupke).

Fig. 17. Trench 3N, street layer US3503/3504 (B. Kupke).

significantly damaged by plowing and weathering. The foundation of the wall is a clear indication for the minimum level of the street. There are even two protruding layers in trench 3N/13 (fig. 13) that were hardly meant to be visible.

Above the natural clay, a leveling layer for the street was found in all trenches except for trench 10 (tab. 1). This was best preserved in trench 5 where two strata were distinguished: a lower (US5004) with medium-sized stones and yellow brown compact sand and clay (fig. 14); and an upper (US5003) of yellow brown compact sand with pottery fragments (fig. 15). In all other trenches, this was excavated as a single layer (US 3003, US3503-3505, US9017, US13001/ 13010), but with the same consistency of sandy soil mixed with medium-sized stones (figs. 16-17). The preparation for the street included some very large stones that were set onto or into the natural clay layers: three irregularly cut calcarenite blocks were found set upright at the south border of trench 3N/ north border of trench 5 (USM3501, USM5001), and three flat



US 9000	Topsoil	US 9018	Red-brown sand layer
US 9002/9003/9006	Brown compact fill/mass flow	US 9019	Grey clay with white inclusions, on top of pit
US 9004/9007/9008/9009/9012/9013	Grey brown layer with numerous tile fragments and stones	US 9020	Fill of pit
US 9005	Grey clay with white inclusions (lense)	US 9024	Fill of pit
US 9014/9021/9025	Yellow bluish clay, partially with white inclusions and finds	USM 9001	Boundary wall stenopos - palaestra
US 9015/9016	Grey clay with white inclusions (lense)	USM 9003	Step in stenopos
US 9017	Sandy layer with large stones (street level)		

Fig. 18. Trench 9, sections (F. Spadaro, M. Trümper).

calcarenite blocks were found lying horizontally in trench 3S/13 (US13004-13005) (figs. 6-7). Large stones are also still visible in the street layer US9017 in the north and west sections of trench 9 (figs. 18-19).

The upper border of the street strata was leveled, rising from 73.07 MASL in trench 9 to 74.55 MASL in trench 3N. If the street level rose evenly, it would have been at 75.50 MASL in trench 10 – at a point where only topsoil was found, however. In trench 3S/13, the street layer went just above the protruding foundation of the eastern *stenopos* wall, as expected. With a consistent incline between trenches 3S and 9, the street would have been roughly level with the lower edge of the threshold in trench 12. A step built of at least four small square blocks was found at the south border of trench 9, at a point where the terrain steeply inclines in the adjacent trench 2/8 (figs. 18-19). Further South, no street levels have been identified yet so that it cannot be calculated how many steps were required to mitigate the incline.

Between trenches 5 and 9, the difference in level of 1.96m over a distance of 21.40m corresponds to a gradient or slope of 9.15%. Between trench 9 and the eastern *stenopos* wall at the northwest corner of the pool (fig. 1) the slope would have been about 12% (30m distance with a height difference of ca. 3.50m), and between trench 9 and the northern border of the race-track complex about 13% (ca. 53m distance with a height difference of ca. 7m). These are considerable slopes that could have been evened out or flattened with a few steps. In contrast to the aforementioned large blocks, the block US3506 at the north border of trench 3N was set on top of the street level US3503-3505 (figs. 8, 16-17). It is square and well worked (size of 80cm North-South x 65cm East-West) and was meant to be seen. It may have served as the base of an altar or another object. Altars were common in streets of cities from at least the Classical period onward, serving for various purposes such as the veneration of deities of the crossings or streets, or for neighborhood cults[11]. While altars were most commonly found at corners or next to doors, the situation here cannot be fully evaluated. No threshold can be securely identified in the badly preserved wall next to the block, but it may not be preserved (fig. 12)[12]. The existence of

[11] Morgantina, 5th century BC: Bell 2022, pp. 37-42, citing parallels from 5th century BC Naxos and Himera; Diodoros 13.84.2 mentioned fires on altars in *stenopoi* at Agrigento, in a context of the later 5th century BC. For Late Hellenistic Delos: Hasenohr 2001; for Pompeii in the Late Hellenistic and early Imperial period: van Andringa 2000; Anniboletti 2010 with further bibliography.

[12] The threshold may have been on top of the preserved block, at the level of row 6, thus two rows above the preserved threshold in trench 12 that is located at the level of row 4 (fig. 12). The preserved rising street level suggests that next to the base block, a threshold must have been located at least in row 5, if not better row 6.

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Fig. 19. Trench 9, west section (F. Spadaro).

Fig. 20. Trench 3N, clay fill with inclusions US3502 (B. Kupke).

Fig. 21. Trench 5, clay fill with inclusions US5002 (B. Kupke).

Fig. 22. Trench 5, west section with two cuts under the pipe (B. Kupke).

East-West-running partition walls to the East of the eastern *stenopos* wall may further elucidate this question, but this area has not yet been investigated.

A key question is the chronology of the conduit that was made of at least two terracotta pipes in the North and six reused amphoras in the South. One amphora can be dated to the period of 430-300 BC, the other five to 225-130 BC[13]. It is clear that the street level in the North would not have covered the conduit at all because the difference between the upper surface of the conduit and the street level is ca. 40cm at the southern border of trench 3N and 70cm at the northern border of trench 3N (figs. 4, 16-17). In trench 13, however, the pipe is embedded in the street level (figs. 4, 25). Thus, the gradient of the pipe was significantly greater than that of the street level. This required extra support for the pipe which was found in trenches 3N and 5: a clay layer with white inclusions, US3502 and US5002, which was 30cm thick in the North but got successively thinner towards South to the point that it vanished entirely at the southwestern border of trench 5 and was not identified at all in trench 3S and 13: it is but a tiny lense in the western part of the north section of trench 13 (figs. 3-4, 20-21). Two "windows" cut into the west section of trench 5 (fig. 22) showed that the pipe rested on US5002 in the northern part (fig. 23), but on the street layer US5003 further South (fig. 24), while it was entirely cut into the street layer US13001 in trench 13 (figs. 7, 25).

The upper surface of US3502 and US5002 was leveled and may have supported a thin sandy layer, similar to US5004, which has, however, vanished. While US3502 and US5002 were clearly brought in to raise the level and provide sufficient gradient for the pipe it cannot be securely determined when this was made: already in phase 1 of the *stenopos* or at a later time. The base block US3506 was partially concealed by US3502 but not to the point that it

[13] Trümper *et alii* 2023, p. 293 n. 32: the study of the amphoras allowed a more precise dating. Five amphoras determined as Ramón Torres 1995, T-4.2.1.5 can now be identified as T-5.3.2.1, which has a length of up to 1.50m and a stepped foot. This type is dated by Ramón Torres 1995, pp. 197-198 to the last quarter of the 3rd to the second third of the 2nd century BC. One of these amphoras included a stamp. The sixth, southernmost amphora is the smallest and can be identified as Ramón Torres 1995, T-4.2.1.3 (430-300 BC).

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Fig. 23. Trench 5, west section, northern cut under the pipe that rests on US5002 (B. Kupke).

Fig. 24. Trench 5, west section, southern cut under the pipe that rests on the street level US5003 (B. Kupke).

Fig. 25. Trench 13, west section, cut under the pipe that is embedded in the street level US13001 (J. Winzek).

Fig. 26. Trench 10, north-west corner of the insula (K. Bilias).

would have become invisible and unusable (fig. 20). Similarly, US3502 and US5002 did not impact use of the threshold in trench 12 because they did not reach to this point, and the original street level was maintained here. Neither the street strata nor US3502/5002 included diagnostic finds that could clarify the date of the pipe (see *Appendix*). But the typology of the amphoras suggests that they were reused close to their production dates and common use spans, thus sometime in the 2nd century BC and not much later, e.g. in the Imperial period.

Three pits were found in the street. In trench 9, a pit was cut into the natural clay layer, filled (US9020) and covered with two thin strata (US9018, US9019) before the street level (US9017) was laid out (figs. 18-19). Unfortunately, the layers US9018-9020 did not include diagnostic finds except for a tiny black gloss sherd the type and date of which cannot be securely determined.

In trench 3S, a pit with an upper diameter of 1.15-1.20m was dug between the block US13004 that served to level the street and the eastern *stenopos* wall, slightly undercutting the wall (fig. 7: partially backfilled)[14]. This pit was cut into the street level US3003 and the natural clay layers (US3009a/3009b), going down from 74.30 to 72.98 MASL. The latest datable find from the fill, a fragment of an imitation of Eastern Sigillata A[15], provided a *terminus ante quem* for the cutting of the pit and the street level, and also indicates that the street was used at least until this time. The pit was found carefully covered with tiles that were at level with the upper surface of the street level US3003, suggesting that the street was still used after the filling of the pit. The purpose of the pit could not yet be identified, but excavation of the area to East of the pit and the eastern *stenopos* wall may provide answers.

A third shallow pit was found embedded in the natural clay in trench 13 (US13008) and filled with dark pure soil (US13007), while its relation to the street level (US13001) could not be securely clarified (fig. 25). This may have been a plant or tree hole because the outline of the pit is irregular and a similar disturbance was observed at the

[14] Trümper *et alii* 2023, pp. 293-295 figs. 23. 25.

[15] *Ibidem*, p. 297 fig. 30: no. 4.

southern border of trench 5 and the street level (US13001) was disturbed by roots; furthermore, no cover could be identified here as for the two other pits. The dark pure fill could be the remains of rotten roots.

In the northern trenches, 3S, 3N, 5, 10, and 13, no evidence of securely identifiable ancient strata was found on top of the street levels and US3502/5002. The upper surfaces of the walls appeared immediately below the topsoil, and in trench 10, the natural clay level was even partially met immediately under the topsoil (fig. 26). Only one further layer was identified below topsoil (US3001/3002, US5001), in which the modern pipe was embedded: the above-mentioned mass flow layer. In the northern part of the *stenopos*, the mass flow layers were at most 20-30cm thick (figs. 3-4).

In trench 9, further downhill, a more complex stratigraphy was preserved (figs. 18-19). Under the topsoil (US9000), a compact mass flow layer (US9002/9003/9006) of up to 55cm thickness was found; then an abandonment/spoliation layer of up to 40cm thick was revealed in the street (US9004/9007/9008/9009/9012/9013), which, in turn, covered the street level (US9017), the foundation layer of the robbed-out eastern *stenopos* wall (US9021), and the step in the *stenopos* (USM9003). Finds from the abandonment layer provide a *terminus post quem* of the late 2nd/ early 3rd century AD.

At Agrigento, several streets were explored with stratigraphic trenches. In the Hellenistic-Roman quarter, trenches were up to 3.50m deep and revealed a particularly complex stratigraphy with numerous street levels. The street levels ("*battuti*") were usually made of very compact fine yellow ocher sand, including medium-sized to small pottery sherds and animal bones. Fill levels of different thicknesses were found between the street levels, the most significant (with ca. 70cm) of which was made when the entire quarter was reorganized and insulae newly subdivided most likely after the second Punic war, in the 2nd century BC. The date of the street levels ranges from the Archaic period to late antiquity, but they seem to have been renewed much more frequently only from the Late Hellenistic period onwards. A covered water channel made of calcarenite blocks was found in *stenopos* III and served most likely to provide fresh water to a nearby public fountain; inside, the channel was reveted with tiles and hydraulic mortar[16]. While the date of the channel is debated, its foundation trench cut almost all of the uppermost street levels, suggesting that it was made late[17].

The consistency of the street levels in the Hellenistic-Roman quarter corresponds well with the one identified in the western *stenopos* of the gymnasium, but the preparation with medium-sized stones on natural clay layers is without comparison in the residential quarter. What is also conspicuously missing in the western *stenopos* is the large number of street levels. This is not just due to the shallow depths of the trenches and stratigraphies. The stratigraphy of trench 9 revealed only one securely identifiable street level between the natural clay layer and the ancient abandonment/spoliation layer. The *stenopos* must have been used for at least 150-200 years (Augustan period to AD 200), or rather 300-350 years (2nd century BC to AD 200), serving, among others, as main access to the *palaestra* (see below) and the buildings to the West of the street. One can only speculate about the reasons for the significant discrepancy of street levels in the Hellenistic-Roman quarter vs. gymnasium area. The western *stenopos* may have been much less frequented than streets in the residential quarter or it may have been much more solidly made so that no constant renewals were necessary. The water pipe is distinctly different from the channel in the Hellenistic-Roman quarter, and may have functioned as a drainage rather than a supply conduit. Since its provenance and destination are currently unknown its significance and function cannot be assessed.

To summarize, the following sequence of events can currently be reconstructed from the trenches made in the *stenopos*:

1. Pit in the natural clay layer in trenches 9: US9020; whether this was made before or during the construction of the street, cannot be determined.
2. Construction of the eastern wall and the *stenopos*: US3003/3503-3505/5004-5003/ 9017/13001/13010; possibly including the pipe US3014. The pit in trench 3S provides a *terminus ante quem* of the early 1st century AD.
3. Construction of the pipe US3014, if this is a separate phase; possibly not long after 200 BC.
4. Pit in trench 3S (cut and fill): US3006/3016; *terminus ante quem* of the early 1st century AD; it cannot be correlated stratigraphically with a possible later construction of the pipe.
5. Spoliation of the walls, and abandonment of the gymnasium.
6. Ancient layer above the robbed-out walls and street in trench 9; US9004/9007/9008/9009/9012/9013; possibly late 2nd/early 3rd century AD.
7. Post-ancient mass flow layer: US3002/3001; US5001; US9002/9003/9006.

[16] De Miro 2009, pp. 187-190 fig. 69: 3.50m deep; two street levels (*battuti*) below the Hellenistic street level (= livello III), six further street levels above this, to the lower edge of a water channel. Papa 2015, p. 25 fig. 11: 1.70m deep; seven street levels between the lower edge of the water channel and a "banco in tufo", which is, however, 1.80m above the "terra nerastra primitiva" in De Miro's trench. Cappuccino 2019, p. 98 fig. 27: 70cm deep; eight street levels, from the upper edge of the water channel to shortly below its lower edge. For recent stratigraphic excavations in streets outside the Hellenistic-Roman quarter, Giorgi 2019, p. 127. For the chronology of the Hellenistic-Roman quarter, Lepore 2019.

[17] De Miro 2009, 189: late antique; Papa 2015, p. 18: dated generically to the 4th-6th century AD; information provided by Cappuccino 2019 is contradictory, ranging from the 3rd/2nd century BC to the 3rd/2nd century AD.

8. Construction of the modern pipe (18th/19th century).
9. Topsoil: US9000.

Uppermost MASL of layers	**TR03N**	**TR03S**	**TR05**	**TR09**	**TR10**	**TR13**
Natural clay level	74.31 = US3508	74.05 = US3009a	74.29 = US5005/5006	72.87 = US9021	75.39 = US10003	74.03 = US13009
Lower border of east *stenopos* wall	74.44 (N); 73.96 (S)	73.75	-	72.87 (N); 72.30 (S) = robbed out	75.04	73.30
First street level	74.55 = US3503-3505	74.30 = US3003	74.52 = US5003/5004	73.07 = US9017	Not preserved	74.30 = US13001
Second potential street level	74.87 = US3502	-	74.67 = US5002	-	-	-
Destruction/ abandonment layer	-	-	-	73.47 = US9004/ 9007/ 9008/ 9009/ 9012/9013	-	-
Mass flow layer	75.05 = US3501?	-	74.79 = US5001?	73.61 = US9002/ 9003/ 9006		

Tab. 1: Comparison of strata in *stenopos* trenches

Palaestra: location, size, and design

The northwest corner of the insula was discovered in trench 10, in a distance of 62.50m from the north wall of the pool (fig. 2). This is 13m South of the point where the recently reconstructed hypothetical city plan shows an intersection of *stenopos* and *plateia* and where trench 4 was made in 2022[18].

The geophysical survey carried out in 2021 suggested that the eastern *stenopos* continued further North in the area to the East of the pool, called Field 2 (fig. 1)[19]. Since the pool was located on a different terrace than the *palaestra* it cannot be excluded that the *palaestra* extended further East, covering the eastern *stenopos*.[20] The area to the North of Field 2 is significantly affected by the post-ancient ravine and lush vegetation and cannot be investigated at present.

For now, it can be concluded that the lot to the North of the pool had a size of 62.50m North-South x at least 35m East-West. About a third of this terrain has been destroyed by the ravine; many large blocks are lying at the bottom of the ravine and several ashlar walls are visible in the scarps of the ravine which may all have belonged to the *palaestra*. Whether the *palaestra* occupied the entire terrain in North-South direction remains to be clarified. A size of 62.50 x 35m would have been highly unusual for *palaestra*e that were commonly square so that rooms could be grouped ideally on all sides of a centrally placed square peristyle courtyard[21]. There are some Late Hellenistic exceptions, however, like the *palaestra*-section on the upper terrace of the gymnasium of Pergamon (ca. 55-60m North-South x 110m East-West) and the *palaestra* at Solunto (ca. 41m North-South x 24m East-West). In both cases, the peristyle included only three colonnades and was surrounded by rooms on two and three sides, respectively.

In the *palaestra* lot, six East-West-running walls (USM1002, 1003/7001, 2001/8001, 6003/6006/6007, 12001, 12006, fig. 27: yellow) and two North-South-running walls (USM2002/8002, 1005/6004/6005, fig. 27: blue) were found in trenches 1/6, 2/8, and 12 (figs. 27-31). In material, technique, and orientation, all walls correlate with those of the race-track complex and the pool. They are located at different levels, suggesting that the *palaestra* was built on at least two different terraces. The lower terrace was laid out 60cm above the terrace of the pool and had a north-south extension of 23m (between the north wall of the pool and wall USM2001/8001), the upper terrace was 4-5m above the lower one, with a north-south extension of 38.30m (between the north façade USM10001 and wall USM2001/8001).

[18] Trümper *et alii* 2023, pp. 293-296.
[19] Trümper *et alii* 2022, p. 154 fig. 30; p. 158 fig. 33: Field 2.
[20] If the northernmost wall in the eastern scarp of the ravine that is shown on *ibidem*, p. 144 fig. 15 as wall 0 is the continuation of the eastern façade of the race-track and pool sections the palaestra lot was probably only 35m wide. This remains to be clarified in future campaigns.
[21] Cf. the scale-to-scale comparison of palaestrae in *ibidem*, p. 146 fig. 16: the option to install rooms on all sides of a square peristyle courtyard was not always used, however.

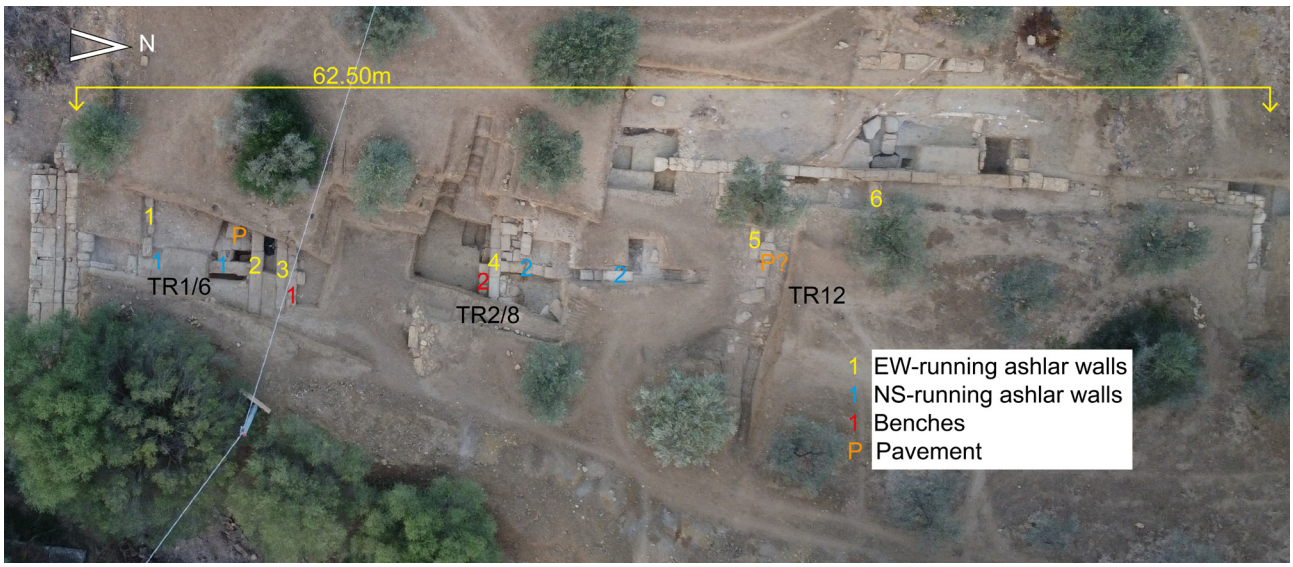

Fig. 27. Palaestra lot with ashlar walls and built features, based on drone photo (T. Lappi, M. Trümper).

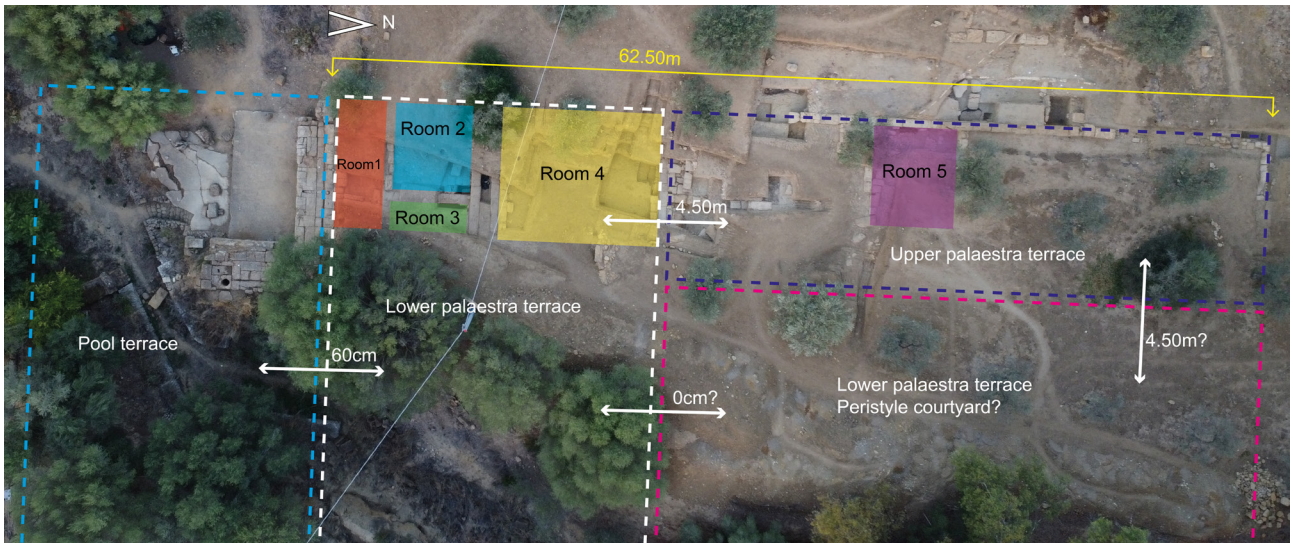

Fig. 28. Palaestra lot, hypothetical schematic plan of terraces and rooms, based on drone photo (T. Lappi, M. Trümper).

On the *lower terrace*, at least four rooms can be distinguished the size, accessibility, and function of which cannot yet be determined. To facilitate reference, they are provisionally numbered here (fig. 28).

Room 1 was located immediately to the North of the pool, with an interior north-south extension of 3.40m. While it has barely been explored so far, remains of a tap installation, made of iron and lead, and cuts in the walls, presumably from lead pipes, were found (figs. 28, 29, 32). These certainly served to supply the pool with running water. Evidence of the water supply system was also found in the center of the northern walkway of the pool and fully cleaned and documented. A channel cut into the slabs of the walkway contained a conduct made of a terracotta tube and a reused Punic amphora, similar to the drainage system found in the western *stenopos* (fig. 33). At the northern end, the pipe crossed (or rather blocked) a narrow channel that ran all along the north wall of the northern walkway and was also discovered in the eastern walkway (figs. 34-35). At the southern end, the pipe corresponded with a narrow square opening (4 x 6.5cm) in the northern wall of the pool which shows traces of calcareous concretions. While the currently visible pipe certainly belongs to a remodeling of the water supply system a comprehensive assessment of this process requires full excavation of room 1.

[22] Trümper *et alii* 2023, p. 284 figs. 6-7; p. 288 figs. 12-13.

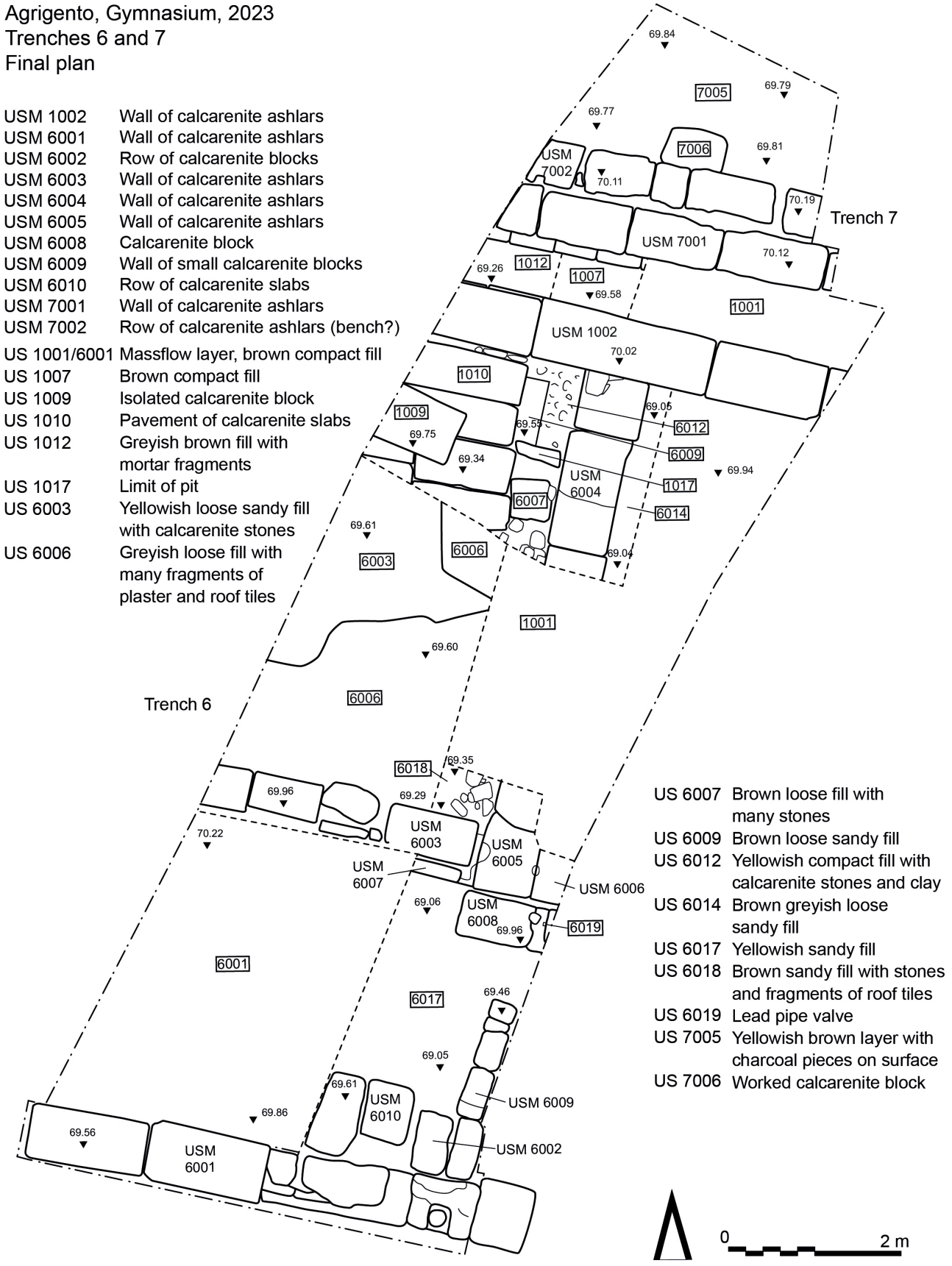

Fig. 29. Trench 6, plan of final state (P. Santospagnuolo, H. Bräuer, T. Lappi).

Agrigento, Gymnasium,
2023
Trench 8
Final plan

US 8005	Yellowish brown layer with numerous tile fragments
US 8008	Brownish grey sandy layer with few small ceramic fragments
US 8009/8014 /8034	Greenish grey clay with white calcareous inclusions
US 8027	Fill of foundation trench US 8030
US 8030	Cut in US 8014 for foundation trench of USM 8001
US 8032	Fill of foundation trench US 8033
US 8033	Cut in US 8009 for foundation trench of USM 8002
US 8037/8048	Fill of terrace wall USM 8001/8002
US 8041	Fill of foundation trench US 8047
US 8044	Three calcarenite blocks in US 8005
US 8045	Calcarenite block above US 8009 and foundation trench US 8033
US 8046	Three calcarenite blocks set on US 8009
US 8047	Cut in US 8034 an US 8008 for foundation trench of USM 8002
USM 8001	Wall of calcarenite ashlars
USM 8002	Inner terrace wall of calcarenite ashlars
USM 8003	Row of calcarenite ashlars in front of USM 8001 (bench?)

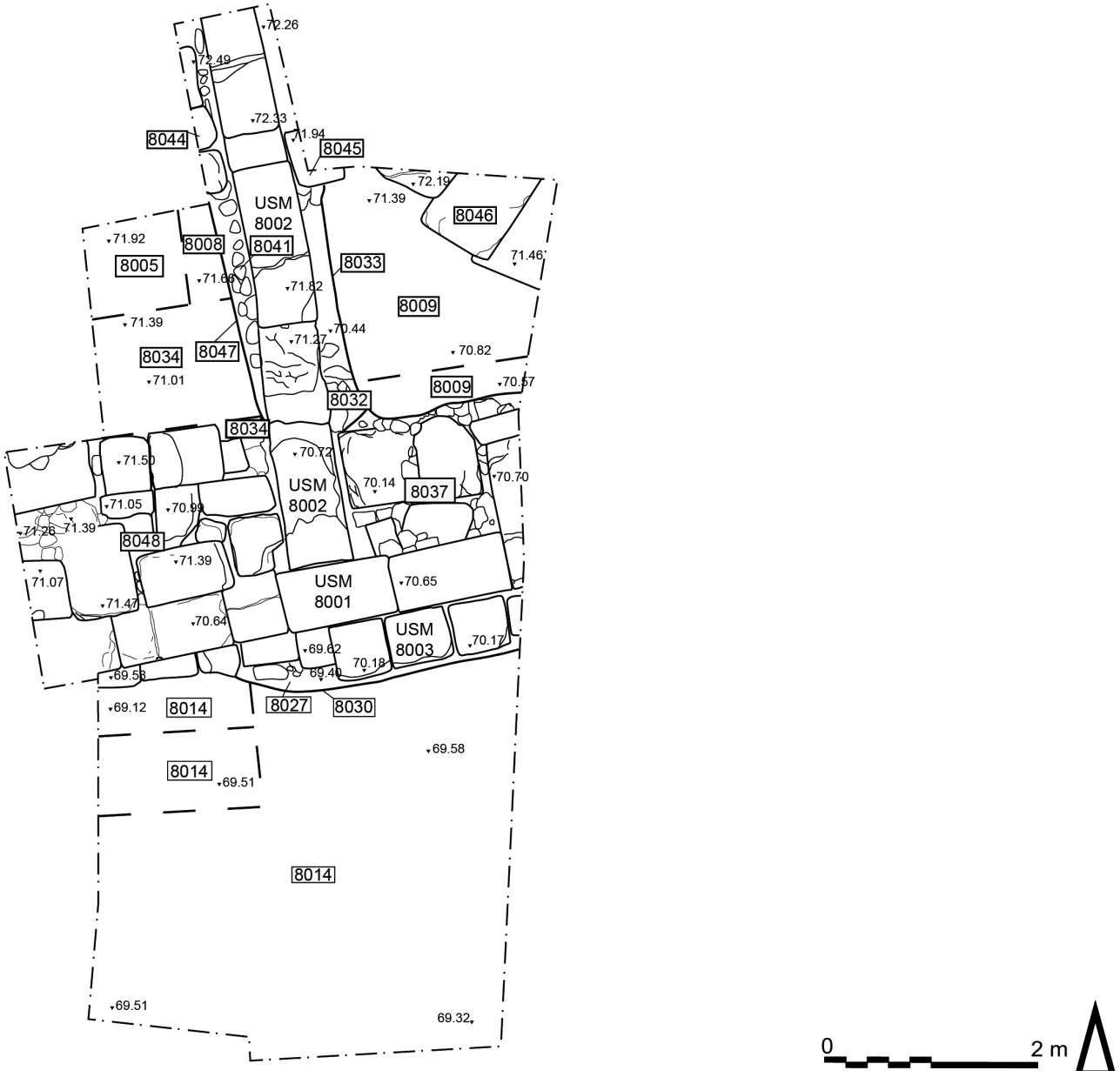

Fig. 30. Trench 8, plan of final state (F. Birkner, H. Bräuer, T. Lappi).

Agrigento, Gymnasium, 2023
Trench 12
Final plan

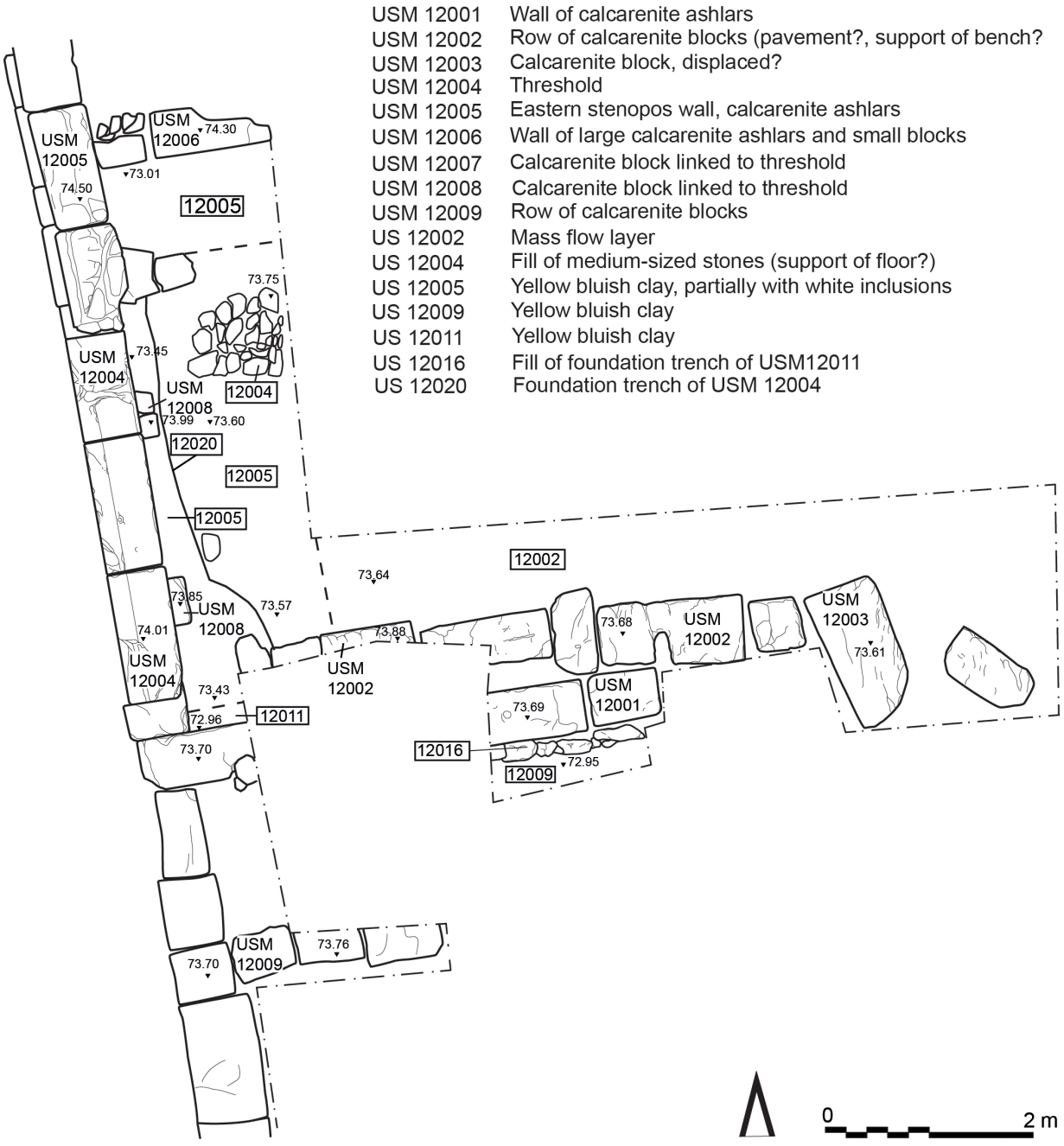

Fig. 31. Trench 12, plan of final state (R. Schönell, H. Bräuer, M. Trümper).

Room 2 had a size of 5.40m North-South x at most 6m East-West if it extended to the *stenopos*. Only the north-east corner was fully excavated to the foundation of the walls. A pavement with large calcarenite slabs had already been found in 2022[22]. Spaces in gymnasia were commonly not paved with the exception of those were water was used and had to be drained, most commonly in bathing facilities (*loutra*). Only complete excavation of room 2 may reveal conclusive evidence of its possible function as a *loutron*, such as basins and water management features. To the South of the pavement, excavation stopped at the surface of two abandonment/spoliation layers (US6002/6003, 6004/6006) which had been already been identified in several of the 2022 trenches[23]. US6006 yielded a stamped tile with the

[23] Trümper *et alii* 2023, p. 285 figs. 8-10: trench 1, US1003/1004; p. 290 figs. 16-17: trench 2, US2003/2008.

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Fig. 32. Trench 6, room 1 with water supply installation (P. Santospagnuolo).

Fig. 33. Pool, northern walkway, supply channel with terracotta pipe and reused Punic amphora; from W (M. Trümper).

Fig. 34. Pool, northern walkway with channel along the wall; from East (M. Trümper).

Fig. 35. Pool, eastern walkway with channel; from North (M. Trümper).

letters ΓΥΜ at the southern border of the room (fig. 36). A second stamped tile was found on the surface next to the modern fountain that is located South of the excavated race-track section (fig. 37). Similar tiles had been identified in the excavation of the race-track complex, and a photo with two small stamped fragments was published in the report of 2009[24]. The number of stamped tiles and their exact findspots were not mentioned, however. The tile from room 2 is particularly important because it proves that the room and building to the North of the pool belonged to the gymnasium. In the comparable layers on top of the wall USM6004 (US6002), a *Faustina Minor* coin was found, minted between AD 165 and 175, which provides a *terminus post quem* for this layer and the abandonment process[25].

Room 3 had a similar north-south extension as room 2, while its east-west extension remains to be determined (figs. 28, 38). A trench of 30cm width to the East of wall USM6004 revealed a different stratigraphy than in room 2. Under the spoliation/abandonment strata (US6002/6004/6008) a leveled sandy fill was found (US6010/6014) that may have been a floor, at the same level as the pavement in room 2 (both at ca. 69.34 MASL). The foundation of the walls was not reached here.

The narrow space between the two parallel walls USM1002 and USM1003/7001 in trench 1/6 was not further explored in 2023[26], but excavation in trenches 7 and 8 provided evidence for the hypothetical reconstruction of a fourth large room on the lower terrace. This would have extended for 11m between USM1003/7001 in trench 6 and USM2001/8001 in trench 8, while it may have been at least 8.90m wide with an extension between the eastern

[24] Fiorentini 2009, p. 103 fig. 54: one with fully preserved letters which are in total 5.6cm wide and 1.6cm high. This corresponds exactly with the letter sizes of the newly discovered stamped tiles.

[25] Obverse: FAVSTINA AVGVSTA. Draped bust at right, wearing a circlet of pearls. Reverse: LAETITIA S-C. Laetitia standing left holding wreath and scepter. RIC III 1654, Cohen 149, BMC 924.

[26] Trümper *et alii* 2023, p. 284 fig. 6.

Fig. 36. Trench 6, stamped tile from abandonment/spoliation layer US6006 (L. Garske).

Fig. 37. Stamped tile, surface find next to modern fountain (L. Garske).

stenopos wall and the easternmost block of USM1003/7001 (fig. 28). A strange row of blocks found immediately North of USM1003/7001 in 2022 (US1008/7002) has now a parallel to the South of USM2001/8001 (fig. 39). Remains of six large blocks (with sizes of 50-60 x 50-60cm and heights of 50cm, USM8003) were found in situ in 2022 and 2023, resting on the protruding foundation of USM2001/8001[27]. Both rows (US1008/7002 and USM8003) have upper surfaces at the same level (70.15-70.18 MASL), and the northern row corresponded with a floor level that was laid against the blocks (US2006/8015: sloping from 69.90 MASL in the West to 69.75 MSAL in the east). Two cornice with sima blocks were discovered in trench 2 in 2022 and trench 8 in 2023, lying turned over on and in a spoliation/abandonment layer (US2008/8010) (see below). These suggest that a Doric colonnade was located close by. Thus, room 4 may have been a very large room (11 x at least 9m) with benches along the walls and an earth floor. It can be hypothesized that this was an exedra ("*ephebeum*") opened off to the East and with a third row of benches along the west wall. It must have received light from a courtyard in the East, most likely a peristyle courtyard with Doric colonnades.

The upper terrace of the *palaestra* lot has been less explored for now, but two important insights were gained in the 2023 campaign. A large threshold was identified in the eastern *stenopos* wall in trench 12 (figs. 40-41). This was 2.40m wide, framed by door posts or pilasters, and provided with cuttings for a door with two wings. It led to a large vestibule of 5.50m north-south-extension that was defined by two deeply founded walls in the North and South (USM12001/12006). The vestibule is called room 5 for now. While the threshold rested on one single row of blocks with a lower border at 73.46 MASL, the north wall was founded at 73.01 MASL, and the south wall at 72.96 MASL. For all three walls, foundation trenches had been cut into the yellow blue clay layer with white inclusions (US12005) the fills of which did not include closely datable diagnostic finds. The clay layer was leveled at places with a layer of stones (US12004), which, in turn, were covered by a mass flow layer and topsoil.

[27] Numbered from west to east: blocks 1 and 2 were found damaged and removed in 2022 and 2023, respectively; only the western edge of block 6 was revealed at the eastern border of trench 8.

Fig. 38. Trench 6, east section to the East of USM6004 (P. Santospagnuolo).

Fig. 39. Trench 8, terrace wall system (F. Birkner).

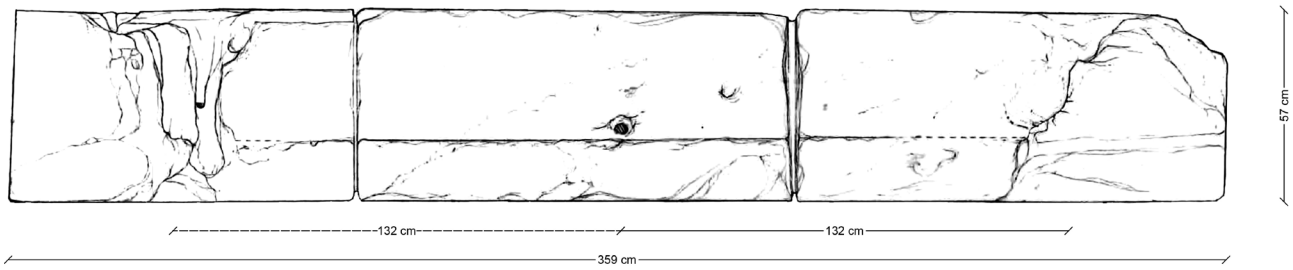

Fig. 40. Trench 12, limestone threshold (M. Delfino).

Fig. 41. Trench 12, threshold and north wall with foundation trenches cut in clay layer (R. Schönell).

Fig. 42. Trench 8, foundation trench of USM2001/8001(F. Birkner).

An East-West-running row of seven differently sized blocks (USM12002/12003) was found along the south wall (USM12001), with an upper surface at 73.88 MASL while the threshold is at 74.01 MASL (fig. 31). The blocks are resting on the clay layer, and the only fully revealed westernmost block is 20cm high. They are much disturbed and partially also displaced by plowing which hinders determining their function. Since their shape and position speaks against their use as a bench, they may have belonged to a pavement or have served to support something like a bench.

The south wall USM12001 stopped 4.50m and the row of blocks USM12002/12003 6.70m East of the eastern *stenopos* wall, although the trench was extended to 13m East of the *stenopos* wall (figs. 2, 28, 31). Immediately East of USM12003, two moulded architectural elements were found in the mass flow layer; while they may have decorated one of the walls of the terrace systems (see below), their original location can currently not be determined. The north and south walls of the vestibule may have been founded so deeply because the terrain sloped towards East and required correspondingly deep walls. With 1-1.20m, the easternmost test trench may not have been deep enough to meet the potentially successively descending deep foundations (fig. 28). The many open questions regarding trench 12/room 5 can only be clarified by further excavation.

The terrain between USM12001 in trench 12 and USM2001/8001 in trench 2/8 has a north-south extension of 12.70m. While there is currently a difference of more than 3m between the upper surfaces of USM12001 (73.69 MASL) and USM2001/8001 (70.63 MASL), the latter certainly was the southern retaining wall of the upper terrace the floors of which must have been at 73.80-73.90 MASL while the pavement of room 2 (US1010) was at 69.34 MASL. Full excavation of the northern part of trench 2/8 revealed an impressive terracing system which can now be much better understood than in 2022 (figs. 30, 39). This system was installed where the (upper) natural clay layer (with finds) sloped steeply, from ca. 72.51 MASL in trench 9 to 69.50-69.60 in trench 2/8 over a distance of about 9m; and from 71.38 MASL to 69.60 MASL in trench 2/8 itself, over a distance of 4.60m. The uppermost preserved row of USM2001/8001 was built with alternating runner and binder blocks: two runner blocks (each ca. 1.05-1.10m East-West) were followed by a binder block (0.50m East-West) which protruded North beyond the wall for a total length of 1.10-1.25m. Two binder blocks were identified at the eastern border of trench and right to the West of wall USM2002/8002. If the system is hypothetically reconstructed with 2-2.10m between binder blocks, two binder blocks would have fit exactly between the eastern *stenopos* wall and USM2002/8002, and two to the East of USM2002/8002, the easternmost possibly serving as east wall of the rooms. Room 4 would then have had an interior East-West-extension of 10m.

The north-south-running wall USM2002/8002 served as an additional very long binder of 6.75m length. Where visible, its foundation rose in steps, with preserved upper surfaces ranging from 70.71 MASL (South) to 72.33 MASL (North); its course is not strictly straight, but slightly warped, and it ends abruptly on the upper terrace, in trench 14. It served probably primarily to contain the fill of the upper terrace: two "chambers" were defined by USM2001/8001 and USM2002/8002 which were found filled with large blocks and earth on top of the steeply sloping natural clay layer. Thus, both "chambers" were never accessible and usable at the level of the lower terrace but served as substructures for the upper terrace. The technique of filled or void chambers in terrace systems is well known from the Hellenistic world, for example from Pergamon[28]. Terrace systems are also known from Hellenistic Agrigento, esp. in the area of the agora and Hellenistic-Roman temple[29]. While USM2002/8002 was most likely completely hidden under the floors of the upper terrace rooms, USM2001/8001 must have been very high to support both the roof of room 4 and the rooms on the upper terrace.

The terrain between USM12001 in trench 12 and USM2001/8001 may have been subdivided into two or more rooms, but no securely identifiable partition walls and floors were found so far in the small investigated parts, trench 9 to the East of the eastern *stenopos* wall and trench 14. Similarly, the terrain of 18.80m length between USM12006 in trench 12 and USM10001 in trench 10 remains to be explored to determine whether this belonged to the *palaestra* and how it was structured and subdivided.

The most pressing unanswered question is whether there was a peristyle court and where it was located in relation to the two terraces. The two sima blocks found in trench 2/8 suggest that colonnades were located nearby, but both terraces seem to be too small (in the known north-south extension) for an appropriately sized peristyle. A peristyle spread out on two different terraces is known from a building at the agora of Sicyon whose identification as a *palaestra* is much debated, however[30]. If the peristyle courtyard was built on a single sufficiently large terrace here the lower terrace may have been L-shaped, extending to the South and East of the upper terrace (fig. 28). This should be

[28] Klinkott 1991; Laufer 2021, pp. 137-149.

[29] Livadiotti, Fino 2018, pp. 65-66.

[30] Kazakidi 2012, pp. 207-211; Kazakidi 2015, pp. 219-222; Lolos 2015, pp. 64-74; Emme 2018, p. 145; Lolos 2020 with earlier bibliography.

Fig. 43. Trench 8, foundation trenches of USM2002/8002 (T. Lappi).

Fig. 44. Trench 12, foundation trench with fill of USM12001 (R. Schönell).

Fig. 45. Trench 6, foundation trench with fill of walls USM1001/6001 and USM6004 (P. Santospagnuolo).

verifiable in large and deep trenches to the East of trenches 2/8 and 12 which are planned for the 2024 campaign. Until then, the vexed question of the existence, location, and size of the peristyle must remain open.

Construction technique

It has already been mentioned that all walls were single-faced and made with calcarenite ashlars. Those that were excavated to foundation were almost exclusively set onto and into clay layers. The only exceptions are the walls USM1002 and USM1005/6004 in trench 1/6 that were built onto and into a dark pure natural soil layer (US6009). Since the deep foundation trench was cut into this layer, it was not filled in artificially for the construction of the gymnasium.

Foundation trenches can be observed for: USM1002 (south side), USM 1005/6004 (west side) in trench 1/6 (fig. 29); USM2001/8001 (south side), USM2002/8002 (west and east side) in trench 2/8 (fig. 30); USM3001 (under the wall) in trench 3N; USM10001 (north and west side) in trench 10 (fig. 26); and USM12001 (south side; north side only in southeast corner of vestibule) and USM 12004 (east side) in trench 12 (fig. 31). These were filled in different manners, but the fills included overall few finds, and none of them diagnostic:

- The very narrow trench South of USM2001/8001 was filled with reddish sandy earth and a few stones. The layer also went on top of the protruding foundation row. The bench USM8003 rests on this fill/layer (fig. 42).
- The large trenches to the West and esp. East of USM2002/8002 were filled with differently sized stones and earth (fig. 43). The trench on the east side was significantly wider than the western parallel.
- In trench 10, the wall seemed to have a separate facing made of small and medium-sized stones mixed with clay, but this is the fill of the foundation trench. The fill remained as a kind of separate layer because the natural clay was significantly dug down here (fig. 26).

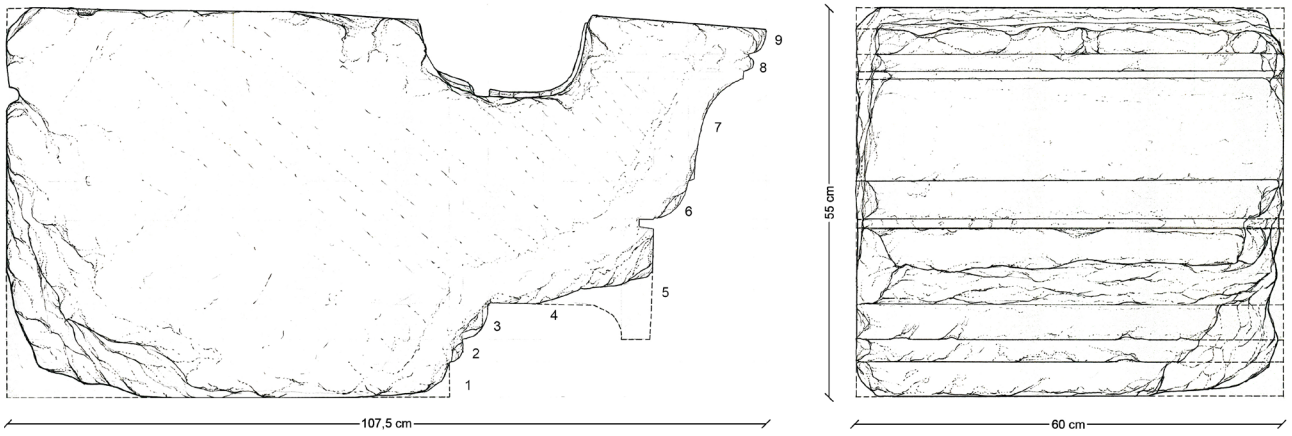

Fig. 46. Cornice with sima, C16: 1. fillet/*fascia*; 2. half-round; 3. half-round; 4. *geison*; 5. *geison fascia*; 6. *hawksbeak*; 7. sima/*cavetto*; 8. half-round; 9. *ovolo* (M. Delfino).

- The shallow foundation trench of the threshold USM12004 in trench 12 was filled with stones and clayish earth; and the deep foundation trench for the south wall USM12001 with brown sandy earth that included very few finds (fig. 41). To the South of USM12001 the foundation trench could not be identified but the fill of stones remained, similar to the situation in trench 10 (fig. 44).
- The very broad trench south of USM1002 and West of USM1005/6004 in trench 1/6 yielded the most idiosyncratic filling (fig. 45). A large trench must have been cut into a dark brown sandy-clayish pure natural layer (US6009). The ashlar walls were set into this trench and flanked by a kind of additional built foundation (US6012), made of small stones and clay with a width of 31-34cm and a height of 22cm. Partial removal of US6012 showed that its lower edge was at level with the lower edge of the ashlars and that it was set onto US6009. On top of US6012, a greyish brown fill of up to 50cm thickness was found (US6013) which served as support of the pavement slabs (US1010).

In several cases, no foundation trenches were found, e.g. to the West of the eastern *stenopos* wall, in trenches 3N, 3S, and 9. The walls were either set onto the natural clay, or the clay must have been cut vertically and the walls set against the cuts from the East. Thus, foundation trenches should be found on the east side of the wall which could be proven in trench 12 (US12010 next to the threshold US12004).

M.T, T.L.

Architectural Survey

During the 2023 campaign, investigation of the architecture of the gymnasium was primarily focused on the area to the North of the ravine. Special attention was paid to the pool and to certain architectural elements that were found during the excavation. At the end of the 2022 campaign, a cornice block with a sima (C13 = US2015a) had been discovered in trench 2[31]. It was fully explored and removed at the beginning of the 2023 campaign when a second cornice block (C16) and other fragments from the same series (C14-15,17-19) were found in trench 8.

The proportions of the two best-preserved blocks suggest that these elements formed the crowning of a large building. The size and findspots of the blocks suggest that they belonged to the peristyle courtyard of the *palaestra*, supporting its existence (see above). The cornices have a smooth *geison* profiled with a *cavetto* molding, connected at the base by a series of overlapping moldings; the latter consist, from bottom to top, of a tall fillet crowned by two slightly unconventional quarter-circle profiles that project progressively and increase in height (fig. 46). The coarse surfaces of

[31] During the architectural survey that was begun in 2020 and continues in each campaign, all architectural elements are numbered and fully documented. These catalog numbers are referred to here, even if the full description and documentation of the elements cannot be provided here.

[32] Definition first appeared in Shoe 1952, pp. 91-93, 99-100.

[33] For research on the Hieron moulding and its local and regional dissemination, see Fino 2021, pp. 27, 77-88, 123-126, with previous bibliography.

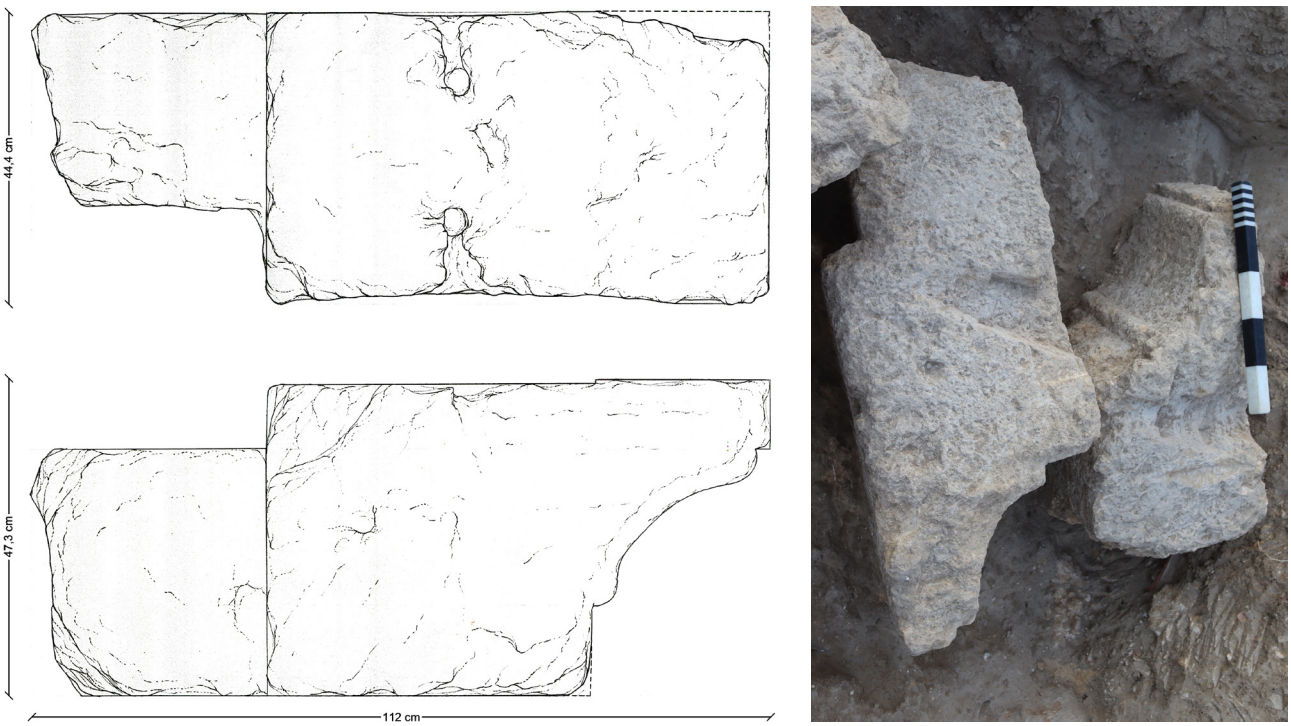

Fig. 47a,b. Moulded crown blocks: a. drawing of Cor 1 (M. Delfino); b. view of the blocks (R. Schönell).

these quarter-circles may have been reveted with fine *stucco* finishing, to create a typical Hieron moulding[32]; the two curves can be identified as the spaces for the canonical astragal and ovolo[33]. Less canonical, however, is the absence of an element for creating a *cyma reversa* to connect with the *geison*, which normally completes the appearance of this particular profile[34].

A quarter-circle profile crowns the vertical band of the *geison* and connects to the sima. This is a quarter-circle profile with an engraving at its base, suggestive of a *hawksbeak*. The *sima* is shaped as a tall *cavetto*, terminating at the top with a small fillet, a little half round profile, and an *ovolo*. It is possible that the *cavetto* profile may be interpreted as a way to build a significantly straightened *cyma reversa*, which, together with the two upper profiles, is typical for Hellenistic architecture in Agrigento and Sicily[35].

The general simplification of profiles served to facilitate the production of standardized architectural elements that were most likely made for the porticoes of the *palaestra*; given the dimensions of these porticoes, more refined profiles would have required considerably more craftsmanship and expense[36]. Similar reasons may account for the decision to produce a Doric cornice that was identifiable as such by the presence of a hawksbeak, but lacked the typical *mutuli*. Because of the gutter on the upper surface, the blocks could not have belonged to a raking cornice. A simplification of the architectural order has also been recognized in the architecture of the Doric stoa (*xystos*) in the race-track section: its column shafts are faceted and not fluted, the entablature does not include a frieze with metopes and triglyphs, and the *mutuli* of the *geison* have only one row of guttae that is schematically defined at the front of the *mutuli*[37].

[34] Rocco 1994, pp. 95-96. For possible variations or anomalies of the Hieron moulding in extra-insular contexts, see Rocco 2015, pp. 782-785. However, there is a Doric frieze element from Palermo, dated to the late 2nd century BC, which, carved from the same block, features an astragal and Hieron leaf at the crown, without an upper Lesbian *kyma*; it is possible, however, that this was carved together with the cornice, thus completing the canonical sequence (Sydow 1984, pp. 293, 351 cat. no. 24 pl. 85.2 fig. 23).

[35] Consider the cornices of the so-called Oratory of Phalaris (Wolf 2016, pp. 73-82; Fino 2021, pp. 86-87 and fig. 69), those of the so-called Temple of the Dioscuri (Sydow 1984, pp. 294-295 cat. no. 28 pls. 84.2; 88.3; 91.1), dating between the end of the 2nd and the beginning of the 1st century BC, but also those of the triporticus of the so-called Roman Temple (Livadiotti, Fino 2018, pp. 74-76, especially figs. 8a-d).

[36] In this context, it is useful to refer to Monica Livadiotti's contribution on the standardization processes of Hellenistic architecture, particularly focused on the context of Kos (Livadiotti 2010). Based on the current understanding of Hellenistic architecture in Agrigento and the observations presented here, we seize the moment to initiate a reflection in this direction.

[37] Fino 2023.

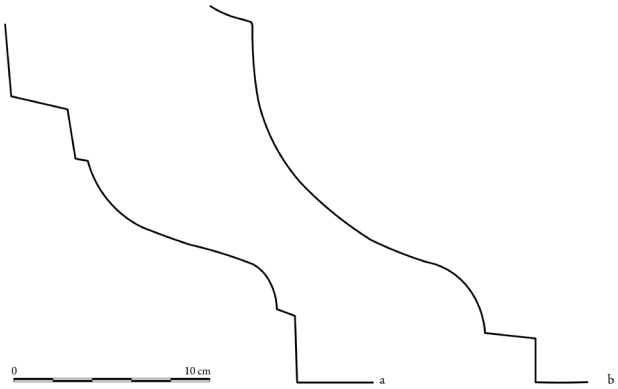

Fig. 48a,b. Profiles of podium base mouldings: a. Agrigento, Oratory of Phalaris; b. Agrigento, so-called Roman Temple (A. Fino).

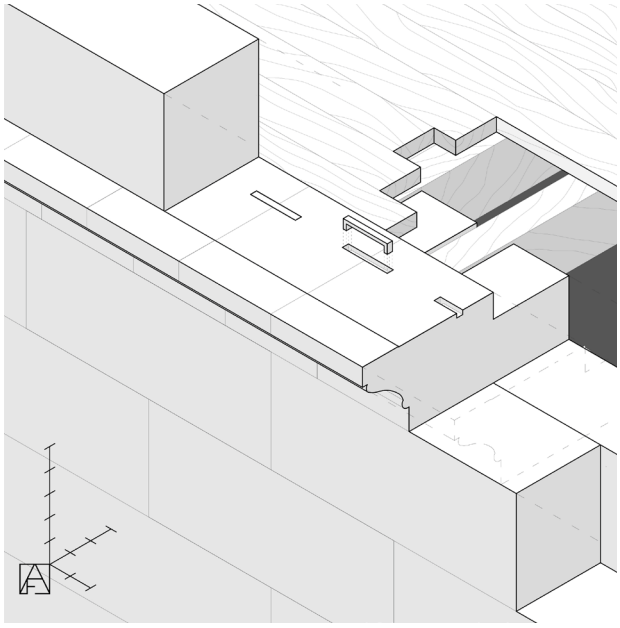

Fig. 49. Hypothetical reconstruction of the original position of the cornice blocks (A. Fino).

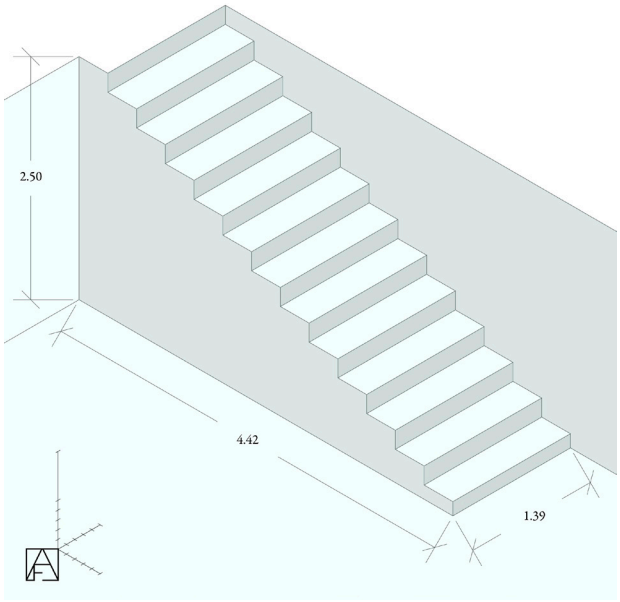

Fig. 50a,b. Staircase of the pool: a. base steps *in situ*, surrounded by the slightly rising border of the cement floor (M. Trümper); b. hypothetical axonometric reconstruction of the staircase (A. Fino).

While the cornice blocks were found in abandonment/destruction layers that do not allow to date their making (see above), the analysis of their morphological features provides some clues. The sima was highly verticalized probably to reduce the waste of material when it was carved. But it resembles Doric orders which were made in Syracuse at the end of the 3rd century BC by the Hieronian workshops and from there spread to the rest of the island[38]. The advanced level of simplification suggests, however, that the architectural elements of the gymnasium were made in the 2nd century BC[39]. Also because, indeed, in Agrigento, architecture of the late 3rd and 2nd centuries BC was still influenced by principles and models of early Hellenistic architecture, as shown by the entablature of the *xystos*[40].

Two moulded blocks from trench 12 (Cr1,2 fig. 47a,b) belong to the same chronological horizon. The slots for Π-shaped metal clamps on the bedding surface (cf. fig. 47a) are rare in Agrigento[41] and confirm that the large *kymata* adorning the façade of the elements were meant to crown a wall. Because of the depth of the bedding surface (85cm) it is possible that the cornices belonged to a double-faced structure. The blocks are 49cm high and display on their front a wide and projecting *cyma reversa*, situated between a base band and a second crowning band. Both elements show a bulge at the lower end of the *cyma*, which at least in one case seems to suggest an additional semi-circular profile. The

[38] Campagna 2017, pp. 209-210.
[39] Cfr. n. 35.
[40] Fino 2023.
[41] See M. Livadiotti in Livadiotti, Fino 2018, p. 69.
[42] Fino 2021, p. 87.

Fig. 51. Pool to the South of the Olympieion at Agrigento, view of the north wall with staircase (A. Fino).

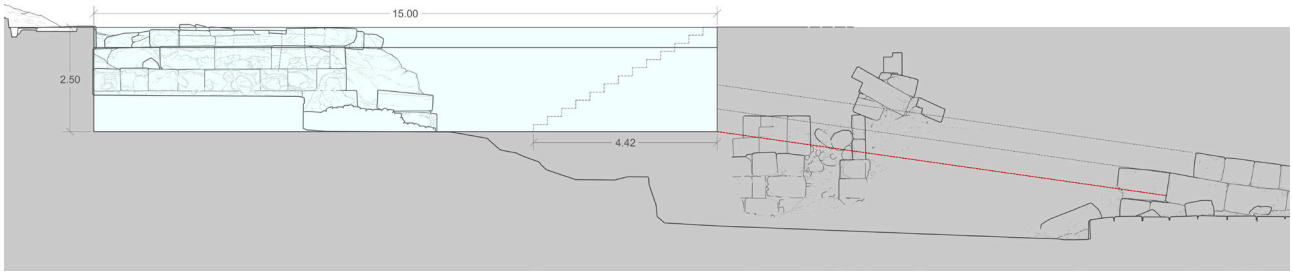

Fig. 52. Reconstructed north-south-section of the pool: the pavement of the pool correlates with the reconstructed slope of the drainage channel (A. Fino).

concave part of the cyma reversa is wider and more developed than the convex part; its profile comparable with those of the podium bases of the so-called Oratory of Phalaris and the first phase of the Roman Temple at Agrigento that can both be dated between the end of the 2nd and the beginning of the 1st century BC (fig. 48)[42].

The surface of the better preserved block is subdivided into three stepped parts: the moulded front part is 28cm deep and protruded beyond the wall; the middle section is 47.5cm deep and slightly lower, and served to support the blocks of the rising wall; the rear part is 36.5cm deep and significantly lower, serving to support wooden beams of a floor (fig. 49). While the original location of these blocks can currently not be determined[43], they may have belonged to one of the terrace walls, decorating the transition between lower and upper terraces.

Only the northern part of the pool is preserved while its southern border has been destroyed by the ravine, making it difficult to understand its relationship with the race-track section[44]. Remains of two steps at the southwest corner of the basin allow to reconstruct a staircase of 1.39m width along the west wall (fig. 50a,b). The block with the steps shows plaster on its eastern face and is surrounded by the slightly rising border of the cement floor of the pool on its northern and eastern sides[45]. The pool was 2.50m deep, its bottom being at 66.29 MASL and the walkways at 68.80 MASL. The difference can be bridged with 12 steps of ca. 19.5cm height and the lowest preserved step that is only 14.5cm high. The surface of the preserved steps is 34cm deep, suggesting that the staircase had a north-south extension of 4.42m (fig. 50b). The pool would then have been 15m long, with a staircase along one of its long sides. This configuration has a local parallel in the pool located to the South of the *Olympieion*[46] that includes a staircase with five steps along its shorter north side (fig. 51).

The newly reconstructed dimensions of the pool (7.65 x 15.00m) lead to a better understanding of its role within the complex, linking it more closely with the race-track section (fig. 1). The reassessment of the architecture has also revealed a perfect correlation between the pool and the large drainage channel that runs along the eastern side of the foundation of the Doric stoa (fig. 52). While the channel has also been partially destroyed by the ravine an evenly sloping line can be reconstructed from the preserved bottom of the pool to the bottom of the preserved channel[47]. In

[43] So far, no double-faced walls have been excavated.

[44] Trümper 2020b, pp. 171-175.

[45] M. Trümper (Trümper 2020b, p. 172; fig. 6) has already refuted the hypothetical reconstruction by Graziella Fiorentini who identified three narrow steps at the upper edge of the eastern border as main access to the pool; Fiorentini 2009, p. 86. While Trümper reconstructed a staircase in the south, based on the preserved steps in the southwest corner, she assumed that the steps extended across the entire width of the south side.

[46] De Cesare, Portale 2017.

[47] As previously hypothesized by Fiorentini 2009, p. 86.

2024, investigations will aim to clarify the functioning of the supply system of the pool and to reconstruct the connection between the pool terrace and the race-track section.

A.F.

Conclusion

The 2023 campaign yielded significant results that help to answer the central questions of the project. That the features in the olive grove to the North of the pool belonged to the gymnasium, and more precisely most likely to its *palaestra*-building, is proven by the stamped ΓΥΜ tile from the abandonment/spoliation layer (fig. 36) and by the orientation and nature of the many monumental walls (fig. 27). While the possible maximum north-south extension of the *palaestra* is now known (62.50m) only the minimum east-west extension of 35m can be determined and it remains open whether the *palaestra* occupied the entire lot of 62.50m x 35m or more (fig. 28).

It is certain that the *palaestra* occupied at least two different terraces, and the pool and race-track section two further terraces, but how the terraces were connected is not yet clear. The gymnasia at Delphi and Pergamon that are both located on two and three terraces, respectively, show that simple (roofed or unroofed) staircases are the most likely option. With steps of 25cm height, 6-7 steps would have been required between the race-track section and the pool sections, 2-3 steps between the pool and the lower terrace of the *palaestra*, and 18-19 steps between the two terraces of the *palaestra*.

The lower *palaestra* terrace included at least four rooms, among them possibly a *loutron* (room 2) and an *exedra* (room 4) with benches, while only a monumental vestibule can currently be reconstructed on the upper terrace (fig. 28). That the *palaestra* most likely included a peristyle courtyard is not only suggested by typological comparisons, but also by the discovery of a second sima block in 2023. The location, design, and size of the peristyle courtyard remain, however, elusive.

The design and construction process are much better understood now. When the gymnasium was built according to a clear, uniform concept and in one go, builders largely followed the natural course of the terrain, that is the natural clay layers (with and without finds). Some leveling took certainly place, e.g. for large spaces like the *exedra* (room 4) and possibly the race-tracks, and a sophisticated terracing system was implemented for the *palaestra* (figs. 39, 43), and possibly also between the race-track complex and pool (destroyed by the later ravine). The clay layers seem to have been so solid and substantial that no deep foundations were required in most places.

Finalizing the chronology and esp. the construction date of the gymnasium is still challenging. It is now clear that the western *stenopos* and the *palaestra* (and the entire gymnasium) were built together. While the fill of the pit in trench 3S provides a *terminus ante quem* of the early 1st century AD for the construction process no securely datable diagnostic finds were discovered in areas and features that can be assigned to the original gymnasium: the first street level in the *stenopos*, the foundation trenches of the *palaestra* walls, and the original floors or strata below them (US1010, US6010/6014?, USM12002?). Finds like the reused Punic amphoras (*stenopos* pipe, pool supply), the style and typology of the architectural elements, and Campana A/B sherds in the fill of the terrace chambers in trench 2/8 suggest that the gymnasium was not built before the 2nd century BC. This corresponds well with the above-mentioned observation in the Hellenistic-Roman quarter where a major urban renewal could be dated to the period after the second Punic war[48]. The construction of the gymnasium in an area that had not been built before fits well into this monumentalizing building program.

Evidence of remodeling can be identified in several places (pit and possibly pipe in the *stenopos*; features in room 1; pit in room 2; floor of room 4; water management and border of the pool; features in the race-track complex[49]), but when they were made and whether they all belonged to one single coherent phase must remain open for now. Some findings suggest that the *palaestra* was used until the second half of the 2nd century AD (esp. the floor US2006/8015 in trench 2/8) and abandoned at the end of the 2nd or beginning of the 3rd century AD.

The 2023 campaign confirmed that the area was not built and used for identifiable activities between the 3rd/4th century AD and the 18th/19th century when pipes and a rudimentary pavement were installed above a mass flow layer that was much thicker on the lower than on the upper terrace of the *palaestra*.

Much remains to be done to complete all goals of the project. The 2024 campaign will focus on finalizing the chronology of the *stenopos*, on clarifying the design and function of rooms on the lower terrace, and on finding the peristyle courtyard.

M.T., T.L., A.F.

[48] Lepore 2019.

[49] Not all of them have been discussed in detail here; for changes in the race-track section, Trümper 2020b.

Acknowledgments

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Appendix

Trench 3N, 2022, Find analysis

US3501: mass flow layer

US3501	Rim	Handle	Wall	Base	Total
Fine wares	2		5	3	10
Plain wares	10	2	28	1	41
Amphorae		2	1		3
					54

11 tile fragments
5 metal fragments (not identified)
4 bone fragments

US3502: clay fill with white inclusions to raise the level of the street

US3052	Rim	Handle	Wall	Base	Total
Fine wares	6	1	10	0	17
Plain wares	7	2	24	1	34
Amphorae		2		1	3
					54

1 pyramidal loom weight
1 iron fragment (not identified)
3 bone fragments

US3503: sandy fill with medium-sized stones and sandy layer on top, street level (= US3504)

US3503	Rim	Handle	Wall	Base	Total
Fine wares	10	18	67	6	101
Plain wares	15	16	213	10	254
Cooking wares	4		11		15
Amphorae	1	5		1	7
					377

4 tile fragments
30 pieces of iron slag
Small glass fragments
Charcoal
51 bone fragments

US3504: sandy fill with medium-sized stones and sandy layer on top, street level (= US3503)

US 3504	Rim	Handle	Wall	Base	Total
Fine wares	2	5	28	0	35
Plain wares	0	8	173	12	193
Amphorae	5	9	5	0	19
Ceramica impressa			3		3
					250

1 tessera of mosaic
1 loom weight
8 tile fragments
1 lamp fragment
2 pieces of metal (not identified)
8 bone fragments

US3508: yellow blue (upper natural) clay layer with white inclusions

US 3508	Rim	Handle	Wall	Base	Total
Fine wares	2	2	12	2	18
Plain wares	9	6	69	5	85
Cooking ware	2	0	6	0	8
Amphorae	1	1	0	0	2
Total					113

Amphora MGS II | 2nd half of 5th to end of 4th c BC
Charcoal fragments
15 pieces of iron slags
33 bone fragments

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