

Morphometric survey of the Etruscan tomb of La Mula in Quinto (Sesto Fiorentino, Florence)

The documentation and the enhancement of a hidden “private” heritage

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Introduction

The Etruscan tomb of La Mula, located in Quinto, a hamlet of Sesto Fiorentino near Florence, is one of the most remarkable examples¹ of the Etruscan funeral architecture of the Orientalizing period (675 b.C. – 575 b.C.). It probably refers to the second half of the 7th century b.C. and it was built for the burial of a very rich family as a funeral monument. Around the 11th century AD a villa was built in this area owned by family Della Tosa; between the 15th and the 16th century the owner of that artefact was family Dei, who probably discover the tomb, built as a false dome with the center located under the main front of the villa, and starts to use it as a cellar. Later, the property passed through families Guardini, Dazzi, Gherardi Dazzi Del Turco, Garbi² and Pecchioli.

The coexistence between tomb and villa today characterizes this unprecedented monumental complex, which only in 1906 was declared National Monument. In 2018, thanks to the interest of the Architect Matteo Vallauri, one of the owners of the villa, it was possible to digitally document the artefact and the context that surrounds it, in order to understand the original relationships (Fig.1), both physical and visual, between the tomb and the surrounding territory³.

¹ Another remarkable thòlos tomb is the “Tomba dei Carri” in the Necropoli of St. Cerbone (Populonia, Livorno, Italy): it has a diameter of about 30 m. with a long dromos that consents the access to the tomb (Proceedings of Conference Castello di Populonia, 2000).

² Alessandro Garbi, owner of the villa from 1884, was the first to recognize the artefact that lied under his house as an Etruscan Tomb.

³ The survey was carried out thanks to an agreement between the Municipality of Sesto Fiorentino and DIDA (Department of Architecture of Florence), with the scientific direction of Prof. Tessa Matteini. In particular, the data acquisition was conducted within the module of “Garden and landscape representation techniques” held by prof Alessandro Merlo in the second level Master in “Landscape Design” of UNIFI.



Fig. 1. Relationship between Villa Pecchioli and La Mula tomb.

The tomb of La Mula in Quinto (Sesto Fiorentino, Florence)

The name of the tomb probably refers to an ancient Tuscan history that tells how in the countryside around Florence a golden mule was hidden somewhere underground like a part of the great treasure of the Etruscan period of which something has often discovered.

Today, only a part of the dromos (the path that connects the external area with the tomb) remains; the multiple uses of the tomb in the centuries (also including the use like a cellar) caused several changes to the original configuration and nowadays, to access the dromos it is necessary to go down a staircase, which starts from a cellar, rotated about 90 degrees with respect to the original path.

The tomb is a “thòlos” structure, very well conserved: it’s built like a false dome, that means that is covered by slabs (made by “alberese” stone⁴) that project one on the other approaching towards the center. It doesn’t present the central pillar (like, for example, the nearby Etruscan La Montagnola Tomb) and the circular walls curve from the ground level to close up to the top: in particular, the overhang between the blocks that make up the walls is minimal from the ground until 3,25 m.; after that the overhang begin to grew and at about 4,80 m. from the ground the blocks become slabs.

It’s a remarkable example of Etruscan tomb because of the diameter (8,90 m.) that is one of the widest known until now in the Italian pre-romanian tholos tombs and it is remarkably well preserved despite the construction of the Villa.

The digital survey of the tomb

The importance of this survey lies in the fact that actually the access to the tomb isn’t free (despite some guided tours organized by the Proloco of Sesto Fiorentino) and Villa Pecchioli is inhabited and

⁴ Alberese stone is a very common marly limestone in Tuscany.

the results of the data acquired allowed to build a project of revaluation of the entire area around this tomb, focusing the attention on the conservation of this important artefact.

There are two known direct surveys concerning the tomb of La Mula: the first was redacted by Frido Chiostrì and Marcello Mannini before the publication of the volume "Le tombe a thòlos di Quinto nel comune di Sesto Fiorentino" published in 1969 and the second was conducted by Grazia Ugolini at the same time of the archeological investigations carried out by the Superintendence of the Archeological Heritage in 1995-1996.

The digital survey was carried out by the use of the scanner laser Z+F 5006h; the survey required 36 scans that were registered through the software Autodesk Recap Pro to obtain a dense point cloud of $3,09 \times 10^8$ points.

The digital survey allows to compare the results of the first surveys and these ones: although the accuracy of the firsts is very high, there are still some inaccuracies related to the difficulty of acquiring data of an artefact that does not present exact geometries.

The digital data acquisition started from the courtyard in front of Villa Pecchioli, continued in the cellar, whose floor lies one meter under the altitude of the entrance of the Villa and where there is an inscription above the right doorjamb of the entrance that indicates the year of the discover. Beyond this passage, seven steps lead to a first landing of about 2,5 m. in length (at this point, the difference in level between this path and the entrance of the Villa is about 2,70 m.); after that, 22 steps are necessary to link this passage to the direction of the original dromos (today consisting in great part of a more recent stair) oriented along the NW/SE axis.

Interpretation of the morphometric data

After the restitution of the morphometric data it's possible to make some assumptions: the original path probably continued up to exit the hill, without the current angle but horizontal (as is usually seen in well preserved dromos), but today it is not possible to trace the position of the original access so it's only possible making hypothesis about the conformation of this path based on the current morphometry. It seems that the height of the path decreased starting from a sort of vestibule located in front of the tomb towards the exit: from 2,40 m. to 2,0 m. in height, but it must be said that the original coverage of the path no longer exists and the hypothesis is only based on the height of the springers of the vault.

Before the entrance of the tomb the height of the path decreased considerably (about 1,95 m.), while the highest point of the dome is at about 5,45 m. from the ground and at about 4,50 m. under the level of the entrance of the Villa; the latest part of the path seems to present the original coverage built by two large slabs. Near the entrance there is a well which could perhaps constitute the modern reuse of an ancient burial cell: the left jamb and the architrave seem original.

The door leading to the tomb is enclosed between two large jambs and a monobloc architrave. On the entrance, on the inside, there is an unloading trapezoid consisting of slabs that connect the straight entrance with the curvilinear perimeter of the tholos; around runs a bench, perhaps built recently.

The center of the dome (Fig. 2), partly covered by bricks much more recent than the rest of the coverage, is located exactly under the main front and presents two channels that rise upwards: one

vertical (identifiable by a grate placed in the courtyard) and one sloping towards the center of the Villa of which there are no further information; this condition, with the presence of a structure similar to a buttress located along one side of the tomb, raises some doubts about the foundations of the Villa and opens up to new studies on the structures of these artefacts.

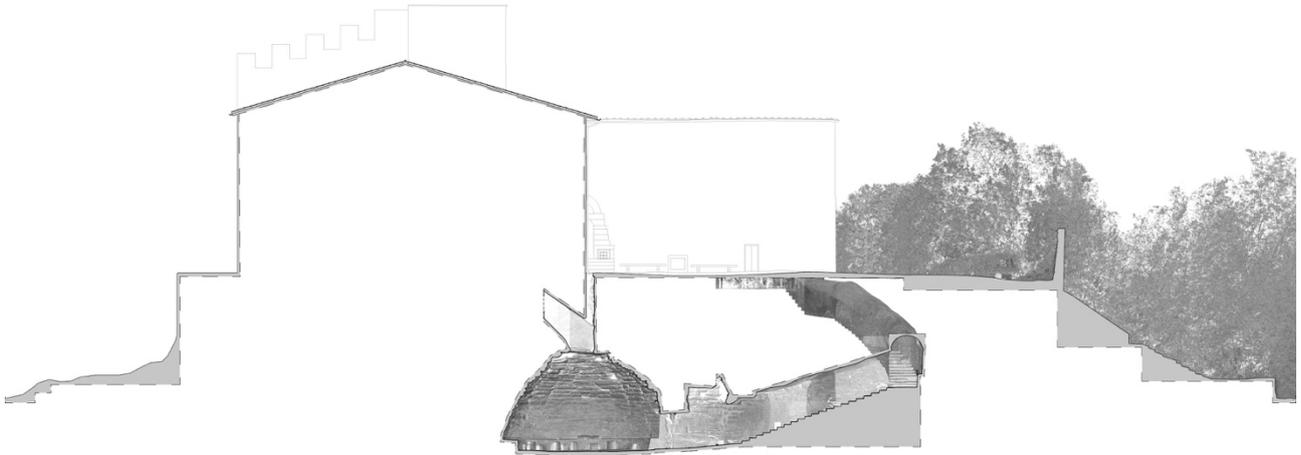


Fig. 2. Section passing through the center of the false dome.

The enhancement of the Cultural Heritage through the Artificial Intelligence

Furthermore, with the aim of promoting a smart use of the archaeological park, exploiting the development of weak artificial intelligence it would be possible to realize systems of image processing⁵ that would be able to guide the visitor through a new experience of visit. In particular, without the necessity of tourist guides (touristic tours are difficult to organize in such an extensive area like the path along the River Zambra that links the archaeological finds: La Montagnola, the other Etruscan tomb and La Mula itself) it will be possible for the visitors to enter in a full immersion experience of an Etruscan necropolis; through the use of the most common device (like phones or tablets) it will be possible to visualize the original landscape and the architectures that were part of it and to visit them also without the possibility to access to the private properties. Linking to the most common technologies of the position tracking through a GPS system, visitors would be guided through the ages and the surrounding landscape and they would learn the relative notions directly on place, promoting the distribution in the area around nearby Florence of the most interesting tourist and scientific research points.

The research carried out will also, hopefully, be used by the Municipal Administration for landscape plans, aimed at a critical reading of the historical and environmental elements in their specific context.

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⁵ The system would recognize the location and it would be able to overlap on the displayed landscape the representative images of the surrounding of the tomb.

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