

3D Graphic for promoting Cultural Heritages: the example of Petrarò archaeological site in Villasmundo (Melilli - Siracusa, Sicily)

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The main goal of this work is to present a virtual reconstruction of the prehistoric archaeological area known as Petrarò in Villasmundo (Melilli – Siracusa, Sicily), in which the remains of an interesting fortified village dated back to the Early Bronze Age are recognizable. The archaeological structures have been evaluated as an unicum in Sicily for their architectural characteristics and the relevant archaeological records found in the site. Unfortunately, for many years, the area has been abandoned and inaccessible to visitors, causing an important degrade of it. In order to clarify some features of the area and offer a new tool for promoting the archaeological site, a virtual model of the prehistoric village of Petrarò and the archaeological records therein recovered have been produced in form of a 3D short educational film. The project has been supervised by Legambiente Melilli – Sezione Timpa Ddieri; the 3D film is actually available at the Legambiente Melilli and it is distributed in local schools.

1. Introduction

This work is part of a wider project aimed at studying and promoting the Petrarò archaeological area in collaboration with Legambiente Melilli – Sezione Timpa Ddieri.

In the last decade the use of virtual reconstructions of Cultural Heritages are becoming a recurring custom for the visualization of several features of archaeological sites [STANCO *et al.*2009, 2012a]. In particular, 3D computer graphics have been interpreted as useful tools for the understanding of prehistoric remains [STANCO *et al.*2012b], often characterized by bad preservation and absence of documentary sources. Moreover, the fragility of these archaeological sites requires a controlled use of them; therefore, a large number of visits and visitors should be avoided. For aforementioned, 3D modeling represents an efficient option able to allow virtual tour in these sites. The case of the Petrarò prehistoric village site in Villasmundo (Melilli – Syracuse) represents a significant example of this approach.

In fact, the present research has been devoted to the realization of a 3D short educational film in which the actual arrangement of the site and the 3D models of the original structures are shown. The video is actually available at Legambiente Melilli and it's used during the numerous workshops organized by Legambiente in the schools of the Siracusan area.

2. Archaeological context

The Petrarò fortified village (Figure 1) is located in the Villasmundo district (Melilli, Sicily) on the top of a natural slope known as Timpa Ddieri. It rises over the Mulinello river and exhibits a lot of artificial cave tombs referred to the Castelluccio culture. The archaeological site has been investigated from 1967 by a mission of Superintendence of Cultural Heritages of Siracusa under the supervision of Prof. Voza [VOZA 1968]; the excavation of the area highlighted a fortified structure of trapezoidal shape and extension about 2500 m² (Figure 2).

The archaeological evidences testify that the area has been occupied from Neolithic to Early Bronze Age; during this latter period, the fortification walls and the structures known as Tower A, Tower B and Tower C were built.

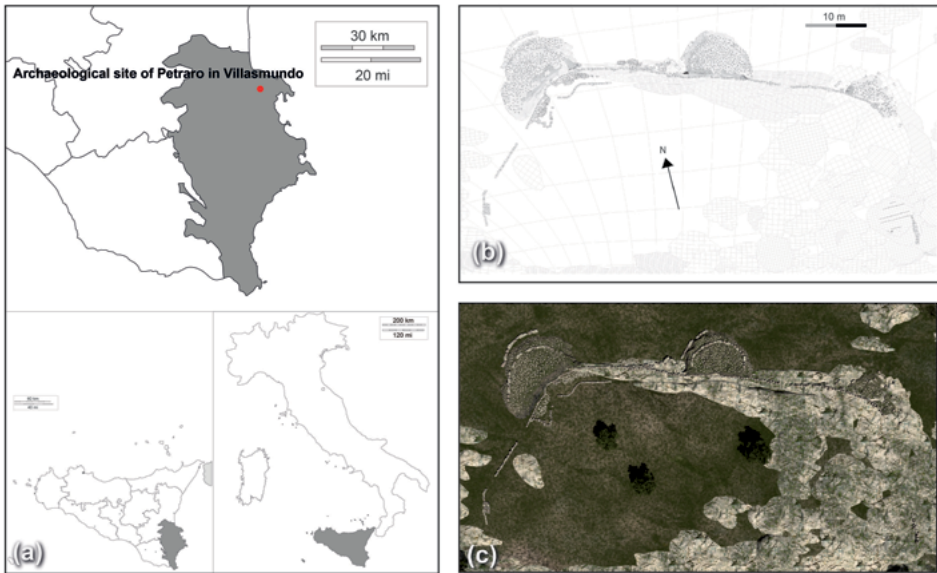


Figure 1 – (a) Geographical location of the site. (b) Plan of the fortified village. (c) 3D model of the actual arrangement of the archaeological area.

Tower A was the northern structure of the fortification; it was made up by a semicircular mound of 15 m in diameter; the building had both external and internal rows of rectangular blocks with roughly stones and soil on the inside. Tower B was the intermediate structure, placed 25 m far away Tower A; near Tower B, a little tower has been identified as a later construction with defensive aims. The remains suggest also the presence of a southern tower known as Tower C, showing the same structural characteristics of the previous ones.

The archaeological records found in the site [RUSSO 2003] belong to two different archaeological contexts. In fact, stone tools and pottery fragments referred to both Stentinello and Castelluccio cultures have been identified; in particular, the Stentinello Ware has been recognized by the typical impressed decoration made through sticks, combs, fingernails or seashells, while two “ossi a globuli” and many fragments of a buff-ware painted with black or green lines and draws have been related to Castelluccio culture.

3. Interactive 3D model of the fortified village

In order to promote the site and allow a virtual tour of the archaeological area, a 3D short educational video has been realised. In particular, it shows the actual arrangement of the protected archaeological area and suggests the archaeological hypotheses on the evolution phases of the village (Figure 3). Moreover, a selection of relevant archaeological records have been placed in an ideal interactive virtual Museum (Figure 4). Finally, the film offers 3D models of how original buildings had to be, also showing the artifacts set in a realistic context (Figure 5). For the development of this project, Blender free and open-source 3D computer graphics software has been used as work tool.



Figure 2 – Virtual reconstruction of the area occupied by the fortification wall.

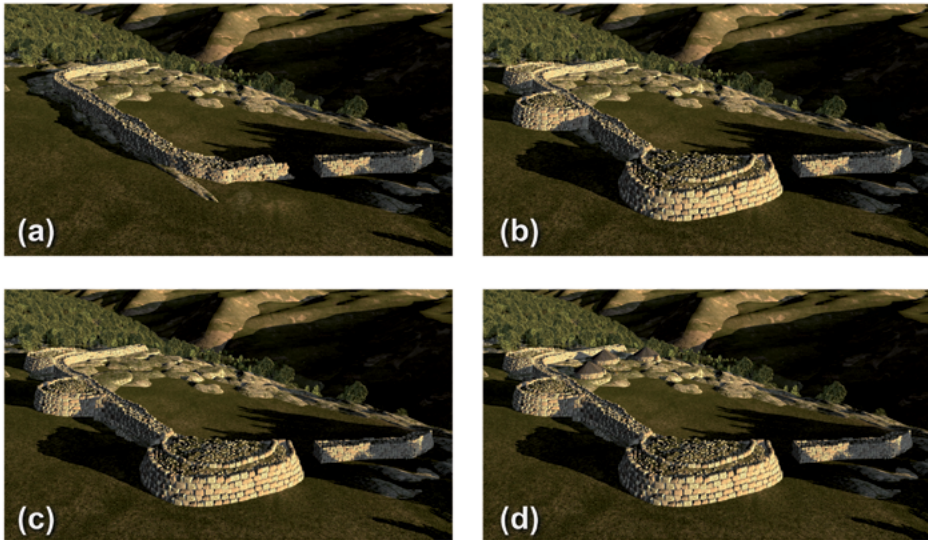


Figure 3 – Multilayered 3D model of the Petraro village: (a) phase I, surrounding wall; (b) phase II, surrounding wall and Towers A, B and C; (c) phase III, previous structures with little tower; (d) Spreading of huts both inside and outside the fortified area.

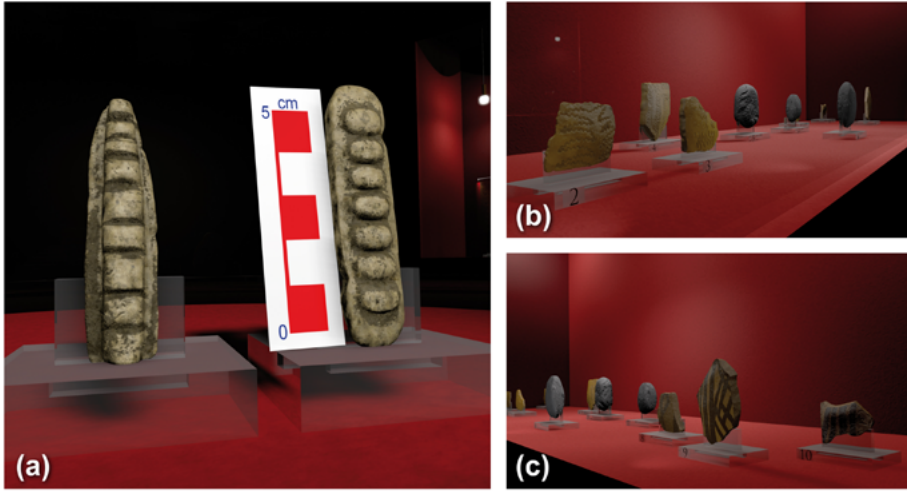


Figure 4 – 3D model of the archaeological records in a ideal virtual museum. (a) Ossi a globulo; (b) pottery fragments and c) stone tools and Stentinello and Castelluccio Ware fragments.



Figure 5 – 3D model of the site. Artifacts set in original context.

4. Conclusion

In this work the 3D virtual reconstruction of the Petrarò prehistoric fortified village is presented as part of a project realized in collaboration with Legambiente Melilli. The realistic 3D model has been based on ~~the~~ documentary data collected during the excavation about buildings, artifacts and archeological setting of the site and represents a relevant scientific and educational tool useful in interpreting the evolution of the area. Finally, the achieved success of the 3D short educational film demonstrates the potentially of 3D modeling for promoting Cultural Heritages.

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