3D DIGITAL TECHNOLOGIES FOR ARCHITECTURAL ANALYSIS. THE CASE OF THE "PAGAN SHRINE" IN THE CATACOMBS OF SANTA LUCIA (SIRACUSA, SICILY)

The so-called Pagan Shrine is a trapezoidal room located in the south-western corner of *Regio* C, the largest and most articulated sector of the Catacomb of Santa Lucia (Sgarlata, Salvo 2006; Sgarlata 2007). The chamber displays a NW/SE orientation and still has its original access on the northern side, although now it is connected to the rest of the Catacomb through a narrow corridor opened at the north-eastern corner of the room.

The Shrine belongs to a complex of pre-existing buildings located along the western limit of the Catacomb. These structures were probably orientated and accessible from the front of an ancient stone-quarry (Ricciardi 2015), where over time several rooms with different purposes (funerary, religious and industrial) were excavated or simply enlarged. The structures date between the 3rd BC and 1st century AD; they were included in the Catacomb and converted into burial places between the 4th and 5th century AD. Among these contexts stands out a pottery workshop, whose activity is closely connected to the events of the Shrine (Lagona 1972-1973).

The Pagan Shrine was discovered in the 1950s, during the archaeological campaign of the *Regio* C (Agnello 1954, 53-60; 1963). The archaeologists reached the room via the north-eastern corridor, that was filled with debris of a landslide concerning the entire western end of the Catacomb (Agnello 1996). The room was partially occupied by material coming from the primitive access: several strata of ceramic fragments gradually deposited in the vestibule of the Shrine, and thereby causing its abandonment.

Establishing chronology and origin of the deposit appears crucial to understand the chronological and functional relationship between the Shrine and the surrounding structures. Recent studies (Malfitana, Cacciaguerra 2014, 2015) tend to differentiate the stratigraphy of the deposit in two main phases; these two phases were respectively related to the frequentation of a sacred area (4th/3rd-2nd centuries BC), evidenced only by finished pottery (Hellenistic and Republican black and red slipware; cooking ware, amphorae, lamps and terracotta figurines), and to the production activities of the pottery workshop, testified by kiln wasters (2nd BC-1st century AD). However, this first important distinction has been made on the basis of materials collected in the 1950s from the ground of the chamber, whereas a detailed analysis of the preserved stratigraphy is yet to be carried out. Especially obscure is the identification of a sacred area presumably above ground and not otherwise attested. Similarly unclear is the physical and ritual

connection between the supposed sanctuary and the Shrine (Malfitana, Cacciaguerra 2014, 2015; Germanà Bozza 2016).

The religious purpose of the Shrine was determined after the discovery of several frescoes depicting mundane themes and pagan deities (Agnello 1954, 1957, 1963). These frescoes cover the three sides of the pillar protruding from the southern wall of the chamber. The most relevant scene is located on the eastern side of the pillar, into a large niche: on the background, a naked male figure stands on a high wall flanked by towers; his right foot rests on the prow of a ship, the right arm is raised and seems to indicate the route, while his left hand holds a long pole.

Over his head – that just like all figures in the frescoes appears damaged, almost certainly by hand of the Christians – runs a legible caption: ΖΕΥΣ ΠΕΛΟΡΟΣ. A second male figure is seating before the wall, on the left side of the scene, and he is also marked by a caption: ΠΟΡΘΜΟΣ. The two characters are thus clearly identifiable: the first one is a god particularly venerated in Messina and remembered till today by the ancient toponym Cape Peloro – the promontory representing the nearest end of the island to the peninsula (Agnello 1963). The second character, however, is the only case of personification documented for the Messina strait (Caruso 2009).

The subjects of the other scenes are not as easily interpretable due to the conservation state of the frescoes and the lack of captions. Nonetheless, comparisons with funerary contexts from the Hellenistic and Roman period in Western Sicily (Bonacasa 1986; Giglio 1996) – which will be analyzed elsewhere – suggest a reinterpretation of the Shrine in a funerary key (Germanà Bozza 2016). In this perspective, the presence of *Zeus Peloros* – represented in a side scene and therefore subordinate within the hierarchical imagery – would derive from the devotion of the tomb owners, who were probably involved in naval activities.

The same suggestion comes from the finding of some terracotta figurines of sailors in two dimples, dug in the floor level of another room of the *Regio* C. On the grounds of architectural similarities, this room has been identified as a second shrine (Agnello 1955). Unlike the first one examined – that remained intact in its perimeter and was exploited by the Christian cemetery simply by opening burial niches along the walls – this second room presents phases of use much more articulated, which have radically altered its original appearance (Gradante, Tanasi 2016).

The religious purpose of the room has been determined by the previous scholars (Agnello 1955) only on the basis of the architectural comparison with the Shrine – trapezoidal plan and pillar with remains of a front niche – and because of the aforementioned sailors figurines, interpreted as *ex-voto*.

If, as discussed above, it is possible to question the religious function of the so-called Pagan Shrine of *Zeus Peloros*, such a purpose is harder to recognize in the case of the second shrine, due to the absence of any iconographic

Fig. 1 – The pillar of the Pagan Shrine.

Fig. 2 – Detail of the western niche.

Fig. 3 – Detail of the eastern niche.

Fig. 4 – QR code poin-
ting to the Sketchfab
collection.

references to pagan cults. Even the presence of the sailors is not indicative, given the numerous occurrences of these characters in funerary contexts (Basile 1991, 1993; Gianfrotta 2014).

Many aspects of the analysis of this monument are yet to be explored and the Pagan Shrine still has a central place in the academic debate. A considerable advancement of the research will certainly come from the possibility that we now have to study a detailed three-dimensional model of it. This means being able to consider the minimum structural details of a context currently in very poor conditions of accessibility and visibility. The goal is to achieve a complete edition of the Shrine directly on the 3D model.

In order to better understand the complex nature of such puzzling monument, in summer 2015 a 3D model of the Pagan Shrine was generated using Digital Photogrammetry (Figs. 1-3), in the frame of a larger 3D scanning activity of the *Regio* C of the Catacombs (Gradante, Sgarlata, Tanasi 2016). Coded targets were set on the walls in order to create a reference system for the alignment phase. A data-set of 310 pictures was produced using a Nikon D3300 with 24.2 MP, covering every spot of the surfaces of the chamber. Subsequently, the data were processed via Agisoft Photoscan 1.2.6 on the workstation of USF CVAST. For the dissemination of the model, we have relied on the Digital Collections of University of South Florida Library (http:// digital.lib.usf.edu/), a platform for archiving of digital data (audio, media and 3D models) connected with a database where the related metadata are stored. To the 3D model of the Pagan Shrine has been assigned a DOI (http:// dx.doi.org/10.5038/21.00001) which redirects to the webpage of the Digital Collections, where information about the production of the model itself, a brief descriptive text of the monument and the bibliography are listed. The 3D web viewer embedded in the Digital Collections platform based on 3DHOP is an open-source software package for the creation of interactive Web presentations of high-resolution 3D models, oriented to the cultural heritage field (Potenziani *et al.* 2015). To reach out the largest audience possible, the 3D model of the Pagan Shrine and the related metadata were stored in a thematic

private collection in the USF CVAST page on Sketchfab, the URL of which was connected with a QR code (Fig. 4). This way, the access to the 3D model will be easier and simpler for mobile devices' users.

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REFERENCES

Agnello S.L. 1954, *Recenti esplorazioni nelle catacombe siracusane di S. Lucia*, I, «Rivista di Archeologia Cristiana», 30, 7-60.

Agnello S.L. 1955, *Recenti esplorazioni nelle catacombe siracusane di S. Lucia*, II, «Rivista di Archeologia Cristiana», 31, 7-50.

Agnello S.L. 1957, *Paganesimo e cristianesimo nelle catacombe di S. Lucia a Siracusa*, in *Actes du V Congrès International d'Archeologie Chrétienne (Aix-en-Provence 1954)*, Città del Vaticano, Pontificio Istituto di Archeologia Cristiana, 235-243.

Agnello S.L. 1963, *Un sacello pagano con affreschi nella catacomba di Santa Lucia a Siracusa*, «Palladio», 13, 8-16.

Agnello S.L. 1996, *Eventi sismici nella Siracusa romana*, in G. Giarrizzo (ed.), *La Sicilia dei terremoti. Lunga durata e dinamiche sociali. Atti del Convegno di Studi (Catania 1995)*, Catania, G. Maimone, 37-48.

Basile B. 1991, *Modellini fittili di imbarcazioni dalla Sicilia orientale*, in *Atti della IV Rassegna di Archeologia Subacquea (Giardini Naxos 1989)*, Messina, P&M, 11-50.

Basile B. 1993, *Modellini fittili di imbarcazioni dalla Sicilia orientale*, «Bollettino di Archeologia Subacquea», 1, 69-101.

Bonacasa N. 1986, *L'Ellenismo e la tradizione ellenistica*, in Sikanie. *Storia e civiltà della Sicilia greca*, Milano, Garzanti, 277-358.

Caruso F. 2009, s.v. Porthmos, in Lexicon Iconographicum Mythologiae Classicae *(LIMC)*, Supplementum 2009, 2. *Abellio-Zeus*, Dusseldorf, Artemis, 434.

Germanà Bozza G. 2016, *Persistenze pagane a Siracusa in età tardo antica*, in E. Piazza (ed.), *Qui est qui ligno pugnat? Missionari ed evangelizzazione nell'Europa tardo antica e medioevale (secc. IV-XIII)*, Verona, Alteritas, 123-140.

Gianfrotta P.A. 2014, *Barchette fittili siceliote e prove di immaginarie navigazioni*, in *Tradizione, tecnologia e territorio*, 2, Topografia Antica 3, Acireale, Bonanno, 183-193.

Giglio R. 1996, *Lilibeo: l'ipogeo dipinto di Crispia Salvia*, Quaderni b.c.a. Sicilia 20, Palermo, Accademia nazionale di scienze lettere e arti.

Gradante I., Sgarlata M., Tanasi D. 2016, *3D technologies to record excavation data: The case of the catacombs of St. Lucy (Siracusa, Sicily)*, in J.L. Lerma, M. Cabrellas (eds.), *Proceedings of the ARQUEOLOGICA 2.0. 8th International Congress on Archaeology, Computer Graphics, Cultural Heritage and Innovation (Valencia 2016)*, Valencia, Editorial Universitat Politècnica de Valencia, 71-77.

Gradante I., Tanasi D. 2016, *Nuove indagini archeologiche nella regione C del cimitero di Santa Lucia a Siracusa*, in M. Sgarlata, D. Tanasi (eds.), Koimesis. *Recenti esplorazioni nelle catacombe siracusane e maltesi*, Sioux City, Parnassos Press, 31-62.

Lagona S. 1972-1973, *Vasai a Siracusa in età ellenistica*, «Archivio Storico Siracusano», 2, 91-98.

Malfitana D., Cacciaguerra G. (eds.) 2014, *Archeologia classica in Sicilia e nel Mediterraneo. Didattica e ricerca nell'esperienza mista CNR e Università. Il contributo delle giovani generazioni. Un triennio di ricerche e tesi universitarie*, Ricerche di Archeologia Classica e Post-Classica in Sicilia II, Ist. Beni Archeologici, Catania.

Malfitana D., Cacciaguerra G. 2015, *Archeologia della produzione ceramica nella Sicilia ellenistica e romana. Primi dati dal quartiere artigianale di Siracusa*, «HE-ROM», 4, 2, 223-275.

Potenziani M., Callieri M., Dellepiane M., Corsini M., Ponchio F., Scopigno R. 2015, *3DHOP: 3D Heritage Online Presenter*, «Computer & Graphics», 52, 129-141.

Ricciardi G.T. 2015, *Latomie, apprestamenti idraulici, officine di vasai e luoghi di culto pagani. Il reimpiego delle preesistenze nelle catacombe di Siracusa e le puntuali analogie con alcuni dei cimiteri maggiori e minori di Roma*, in R. Martorelli, A. Piras, P.G. Spanu (eds.), *Isole e terraferma nel primo cristianesimo. Identità locale ed interscambi culturali, religiosi e produttivi. Atti del XI Congresso Nazionale di Archeologia Cristiana (Cagliari 2014)*, Cagliari, PFTS University Press, 181-186.

Sgarlata M. 2007, *La catacomba di S. Lucia a Siracusa: origini e trasformazioni*, in R.M. Bonacasa Carra, E. Vitale (eds.), *La cristianizzazione in Italia tra Tardoantico e Altomedioevo. Atti del IX Congresso Nazionale di Archeologia Cristiana (Agrigento 2004)*, II, Palermo, C. Saladino, 1565-1588.

Sgarlata M., Salvo G. 2006, *La Catacomba di Santa Lucia e l'Oratorio dei Quaranta Martiri*, Siracusa, Grafica Saturnia.

ABSTRACT

The Catacombs of Santa Lucia are one of the oldest and most important monuments in the Christian communities of Siracusa and Sicily in the late Roman period. The name of the complex derives from a tradition, according to which Saint Lucy was buried here, after her martyrdom in the early 4th century AD, under the reign of Diocletian. A large underground cemetery extends beneath the homonymous square. The cemetery gradually expanded from the 3rd to the 5th century AD, as it incorporated pre-existing constructions once used for funerary, religious and industrial purposes, by transforming them into monumental burial chambers. One of the most significant structures is the so-called "Pagan Shrine": a chamber that is dated between the 3rd century BC and 1st century AD, prior to the foundation of the cemetery and frescoed with worldly themes and pagan deities. The Shrine is located in the South-western corner of *Regio* C, an area that is hard and rather dangerous to reach, never opened to the public and visited only by few scholars over the past decades. The excavation project undertaken in the years 2011-2015 by the Pontifical Commission of Sacred Archaeology, in association with the Arcadia University and the University of Catania, led to the development of the first virtual replica of the Shrine, using Digital Photogrammetry. This new approach facilitated an accurate examination of both its structure and its decoration, allowing us to propose a new theory about the original purpose of the room, traditionally regarded by scholars as a place for worshipping *Zeus Peloros*.