1. Digital enhancement of the "Paolo Orsi" museum: a Google Street View 360° pilot project tour

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Abstract

The aim of this paper is to present the pilot project in progress at the "Paolo Orsi" Archaeological Museum (Syracuse, Italy). Thanks to a free partnership with Google Business Photos, we have managed to map the entire museum for a online 360° tour on Google Street View. A dozen archaeological finds have been selected for 360° virtual tours, provided with descriptive sheets. Among them the beautiful '*inscription of Nassiane*', from the Catacombs of San Giovanni in Syracuse, has been selected.

Keywords

Google, Sicily, Sicilian Cultural Heritage, Virtual Museum, Virtual tour, Digital Heritage.

1.1. The "Paolo Orsi" Archaeological Museum

The "Paolo Orsi" Regional Archaeological Museum of Syracuse, together with the "Antonino Salinas" Regional Archaeological Museum in Palermo, is the most important Sicilian archaeological museum and it is one of the most important and richest archaeological museums in Italy.

The National Archaeological Museum of Syracuse was born by a royal decree in 1878, known as "national" for its collections' importance and size. Well-placed inside the historical palace in the Cathedral Square on Ortigia island, it was directed by Paolo Orsi from 1895 to 1934.

The archaeological collection has been enlarged by over 70 years of archaeological research making it necessary to move the collection to a new museum space. Designed by the architect Franco Minissi, the new museum was built in the Villa Landolina garden between 1967 and 1986 and inaugurated in January 1988. The collection consists of artefacts from the prehistoric, Greek, Roman and Christian periods found in archaeological excavations in Syracuse and in other Sicilian sites. The museum space is divided in three levels (floor 1, 2 and basement), distributed around a central space which is dedicated to the history of the museum and temporary exhibitions. First level is divided in three sectors (A – C) and testifies the history of central-eastern Sicily from prehistoric ages to the Greek one. On the upper floor, sectors D and F were inaugurated in 2006 and contain finds from the Hellenistic-Roman and Christian periods. Section E will open next year with findings from sites in central-eastern Sicily (as Centuripe, Morgantina, Tindari and so on). Moreover, a precious and unique collection of coins and medals from archaic to the medieval age is located in the basement, opened in 2010.

1.2. The project: reasons and birth

This project born from the desire to fill the deep gap in the promotion and enhancement of Sicilian cultural heritage.

Sicily has the highest number of UNESCO heritage sites (7/51 in total[1]) and of UNESCO intangible cultural heritage (3/6[2]) in Italy and in the world.

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[1]   1997: Valley of Temples in Agrigento; 1997: Villa del Casale; 2000: Eolian Islands; 2002: Late Baroque Towns of the Val di Noto (South-Eastern Sicily); 2005: Syracuse and the rock necropolisof Pantalica; 2013: Mount Etna; 2015: Arab-Norman sites, Palermo and the Cathedral Churches of Cefalù and Monreale.

[2]   2008: Opera dei Pupi, Sicilian puppet theatre; 2013: Mediterranean diet (transnational);

Infact, Sicily has some of the largest and most important archaeological sites in the world: the temple of Concordia in Agrigento, for its exceptional state of preservation has become the symbol of UNESCO itself.

Despite of this, Sicilian cultural heritage struggles to be present on Google's platforms such as *Google Art Project* and others, as it should, compared to other Italian cultural sites (Bonacini 2013; Bonacini 2014).

It is not so difficult to explain where the difference between the island and its mother country comes from. Sicily has the status of independent region, therefore it has an exclusive competence in the field of regional cultural heritage. Sicilian heritage is released from any convention that the Italian Ministry of Cultural Heritage and Tourism has signed since 2009 with Google. The Regional Department of Culture and Sicilian Identity has never bothered to solve this really huge gap regarding its cultural heritage and landscapes.

In *Street View Gallery*[3], which now has contributed a great number of users from all over the world, thousands are the spherical and geo located photos of Italian places. However, tightening the selection to "Landmarks of Italy"[4], Sicily has only 9 spherical photos, showing the beaches of the Aeolian Islands (7), the islands of Favignana (1) and Marettimo (1).

Among *Art Project*'s 605 museum collections[5], 47 are Italian, especially relevant to Rome, Turin, Venice and Milan. One of these, not the best artistic production, is a Sicilian contemporary collection, relevant to the International Festival of Street Artists in Giardini Naxos (Me). No other Sicilian museum, collection or archaeological site has been included in Art Project.

Browsing on the Street View Gallery, 21 sites are all over inscribed on the *World Wonders Project*[6]: for Italy, only Pompeii and the historic center of Florence are inscribed in this still restricted list. Many more sites can be visited virtually from the same project linked on Google Cultural Institute's website[7]: 172 sites in the world, 22 in Italy and, finally, 2 of them in Sicily. Until last year the Unesco site of the baroque town Val di Noto was the only one in Sicily; currently Mount Etna, has been added.

Google organized its *Google Camp* 2014 and 2015 editions by selecting as exceptional locations two of the most evocative archaeological sites in the

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2014: Traditional agricultural practice of cultivating the 'vite ad alberello' (head-trained bush vines) of the community of Pantelleria.

[3] https://www.google.com/maps/views/streetview?gl=us.

[4] https://www.google.com/maps/views/streetview/italy-highlights?gl=us.

[5] https://www.google.com/maps/views/streetview/art-project?gl=it.

[6] https://www.google.com/maps/views/streetview/world-wonders-project?gl=it.

[7] www.google.com/intl/it/culturalinstitute/worldwonders/.

world, Selinunte and Agrigento. Nevertheless the beauty and heritage of Sicily, ironically, is not on Google's platforms.

This project was born in collaboration with Mr. Gianfranco Guccione, a certified Google Business Photo photographer, while he was working as a freelance consultant at the General Direction of the Regional Department for Cultural Heritage and Sicilian Identity in 2014. He proposed to realize the Street View mapping of a museum and an archaeological site in Sicily, considering the possibility of creating "augmented" virtual tours (3D virtual tours of objects displayed in museum's windows and virtual aerial tours, with the addition of text and audio descriptions).

The profound reason of this project consists in an effort to bridge this gap, "increasing" fruition and enhancement of Sicilian cultural heritage.

With the agreement between the General Direction of the Regional Department for Cultural Heritage and Sicilian Identity and the European Coordination of Google Business Photo, it was decided to choose as a sample of this project two cultural regional institutions, the "Paolo Orsi" Museum in Syracuse and the Valley of the Temples in Agrigento, both UNESCO sites since 2005 and 1997. The project was then structured as a research fellow project at the University of Catania and carried out by the present writer in close collaboration with Mr. Guccione.

The first part of the project at the "Paolo Orsi" Museum, which we will discuss here, is about to be completed. The second part at Valley of the Temples in Agrigento is going to start.

1.2.1. The 360° tour on Google Maps: some technical data

A large photographic survey began in August 2014, with the aim of mapping all areas of the first and second level open to visitors (only the collection of coins and medals, for security reason, has not yet been photographed).

A total of 3.924 shots to get about 327 360° virtual tours have been made using a mobile station made up by a reflex camera with fisheye type camera lens, tripods with panoramic head. Because of the peculiarity of the light in the different museum's sectors, it was necessary to adjust the brightness each time. The windows in the winding path often reflect one another and precautions were taken to avoid, as far as possible, those refractions.

Once loaded on Google's software Business Photos, the pack of images from the 327 virtual tours were geo located in Google Maps Street View, mounted avoiding defects of sight between the images.

The 360° virtual tour makes it possible browsing the entire museum and its collection, between levels connected by arrows, placed online at the link
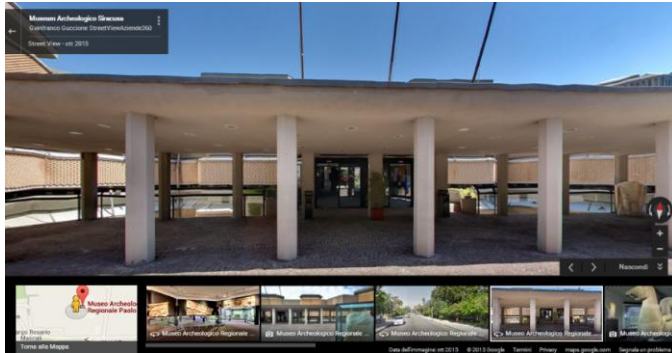
Fig. 1.1. The virtual entrance to Archaeological Museum "Paolo Orsi" on Google Street View.

https://goo.gl/maps/oagnd8urP1H2   (for   the   first   level)   and
https://goo.gl/maps/vrpDfuPPgwM2 (for the second level). As you can see
in fig. 1.1., by clicking on the first link, the remote user can enter the muse-
um through the Street view panel: the 360° virtual tour begins at the en-
trance and the user can browse moving with the directional arrows, between
sectors and levels.

The project provided the opportunity to carry out 360° virtual tours of
some exposed archaeological finds, like an "augmented" virtual tour, cer-
tainly innovative compared to what Google's platforms provide.

Art Project, for example, allows you to view points of interest along the
path in a museum, but captions are short and photos are static. A pilot initia-
tive has been recently launched featuring the possibility to in-browse almost
300 3D photos of objects from the collections of six cultural institutions in
the world. However 242 of these consist of scans of animal skulls (pieces of
nature, not works of art) from the California Academy of Science collection;
22 objects of art come from Museo d'Arte Orientale (the only Italian cultural
institution to join the project until now). These 3D objects, described by
short captions, are available to users to be rotated and zoomed. The aim of
this new Google's project is to begin building the most important and largest
database of 3D scan art of works worldwide.

As for the displaying on Google Maps of the 360° virtual tour of the ob-
jects, we must specify that Maps so far does not support the integration of
menus, captions, photos, video, info inside the Street View virtual tour tech-
nology. Infact,it is only allowed navigation in 360°, ie a virtual walk.

We tried to find an answer in order to show on Maps all the information,
captions, maps, levels and 360° virtual tour of objects. Thanks to customized
i-frame we made these virtual tours possible with their captions and the

maps with different levels and clickable points of interest, adding them to the existing virtual tour of the Museum, already on Maps, through a link containing the Google mapping of the Museum. In this way the virtual tour of the Museum - made with Google standards - is "augmented" by another virtual walk much more exhaustive, located via link on the Google Maps board of the Museum, where you can view all these additional items.

Both the virtual tour of the museum and the virtual tour of the objects will also be placed on the Museum's website, on the Regional Department for Cultural Heritage and Sicilian Identity portal (http://www.regione.sicilia.it/beniculturali/museopaoloorsi/). Because of the profound principle that this non-profit project would improve the visibility and promotion of Sicilia Cultural Heritage, the Museum's virtual tour and its reproductions belong to Google; Museum's objects virtual tours, instead, belong to Paolo Orsi Museum, which is free to reuse them.

1.2.2. The "Paolo Orsi" Museum 360° tour

Coming from Sector A, after turning around a couple of casts of dwarf elephants from Spinagallo cave (Syracuse), a remote user can see the displayed artifacts, starting with Neolithic phase of Stentinello (VI millennium B.C.) to reach the great exhibition space dedicated to Bronze age: Ancient Bronze age (facies of Castelluccio), Middle Bronze age (facies of Thapsos), Late Bronze age (facies of Pantalica) and Final Bronze age (facies of Finocchito), where the large containers from Thapsos and Pantalica necropolis.

Fig. 1.2. 360° tour of Sector A: a couple of casts of dwarf elephants from Spinagallo cave.

In the Sector B1 remote users can admire findings from the first colonies founded by the Greeks in eastern Sicily (Naxos, Zancle, Leontinoi, Katane, Megara Hyblaea) with some of the most important Greek masterpieces, as the naked sculptures of young men from Leontinoi and Megara Hyblaea.

The B2 Sector introduces the visitor to the archaeological finds from the city of Syracuse, from its foundation to classical age. Here the most important spaces are those dedicated to the architecture of archaic and classical temples (Athenaion, Ionic temple, Olympeion and Apollonion), to the statuary and the terracotta findings from urban excavations during the last decades (Piazza Duomo, Ortigia, Piazza della Vittoria) and to the urban and extraurban necropolis (Fusco, Giardino Spagna) with rich funerary kits.

Fig. 1.3. 360° tour of Sector B2: the findings from Athenaion and Ionic temple in Syracuse.

Sector C is dedicated to the colonies founded by Syracuse - Eloro (670 B.C.), Akrai (664 B.C.), Kasmenai (644 B.C.) and Camarina (598 B.C.) -, to Gela (689 B.C.) and Agrigento (580 B.C.), the largest colonies of southeastern Sicily with their ceramics, architectural remains of temples, findings from sanctuaries and necropolis, as well as finds from other indigenous hellenized centres.

Sector D on the second level contains finds from the Hellenistic age to the Roman period, including statuary, beautiful portraits from the Roman age, architectural pieces, ceramics, mosaics, cinerary urns and various handcrafts.
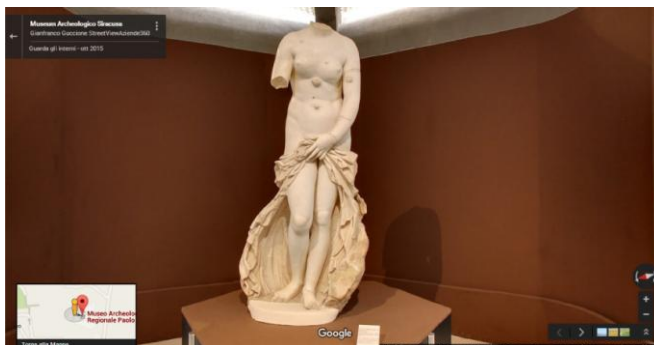
Fig. 1.4. 360° tour of Sector D: the *Venus Landolina*.

They document the multiple aspects of life in Syracuse and come from urban necropolis from III-II century B.C. Here are masterpieces like the wonderful statue of the Venus Anadiomene, called *Venus Landolina*, here in Fig. 1.4.

In Sector F finds from the various catacombs in the city are on show, documenting life in the Christian era. Here is the Sarcophagus of Adelphia, a Christian marble sarcophagus found in the Rotunda of Adelphia inside the Catacombs of San Giovanni, just near the museum.

1.2.1.1. 360° virtual tours of archaeological selected objects

The Museum staff has selected 12 objects along the path between the two levels, which can be linked as points of interest placed on the Museum map - where the remote user can identify sectors, plans and POI - with virtual 360° tours equipped with labels with captions and descriptive texts.

Here are the selected objects:

From Sector A: 1) A foot-cup dated to the 15th century B.C., relevant to the facies of Rodì-Tindari and coming from Vallelunga, in the province of Caltanissetta. From Sector B1: 2) A red-figured wedding lebes, attributed to Painter of Siracusa 47099, dated to 360-340 B.C. from Lentinoi. From Sector B2: 3) A proto-corinthyan oinochoe, dated to 670 B.C., coming from the excavations in Piazza Duomo; 4) A plastic Corinthian vase in the form of a lion, dated 610-590 B.C., from the Garden Spain Necropolis; 5) An Attic black-figured calix-crater, by the Antimene Painter in 520 B.C., coming from the Garden Spain Necropolis; 6) An Attic black-figured Panathenaic amphora, dated to the middle of the 6th century B.C., coming from excavations in Viale Paolo Orsi; 7) A terracotta bidder statuette, dated to the 4th century B.C., coming from the sacred votive deposit in Piazza della Vittoria. From Sector C: 8) A red-figured bell-shaped krater, coming from Camarina, produced in the workshop of the Athenian painter Polignoto, around 440-430 B.C., decorated on the principal side with the Delphic triad (Apollo, Artemis and Latona); 9) An Attic red-figured lekythos, coming from the necropolis of Capo Soprano near Gela, dated to 470 B.C. and realized according to the manner of the London painter E342; 10) The *Ephebus of Adrano*, a small bronze athlete, dated to the first half of the 5th century B.C., generally thought to be a scaled-down copy of a large bronze original by the famous Greek sculptor Pythagoras. From Sectors D: 11) A small Hellenistic terracotta boat in the shape of a pistrix (sea monster), from the Fusco necropolis in Syracuse. From Sector F: 12) The *Nassiane inscription* (Fig. 1.4), a curious marble disk, from the Catacombs of San Giovanni.

Fixed on tripods the reflex camera with a quadrangolar lens, the objects have been photographed flipping them on a graduated portable rolling disk. Each

360° object virtual tour took a number of about 88 shots, for a total of 1.062 shots, mounted with specific software. In this way the remote user, clicking on the preview pictures, can admire the selected object in all its sides, by moving the mouse on the right and left and zoom in-out.

1.2.1.3. 360° virtual tours of *Nassiane inscription*

The last selected object we present here is a disk from Sector F: it is a marble disk, discovered by Paolo Orsi in the Catacombs of San Giovanni in 1894 (Orsi 1895: 509-510), decorated by a wreath of laurel leaves on one side; the other side was reused in the 4th century A.D. for the funerary inscription of Nassiane, woman who died at age 32 in God faith.

This object, which the remote user can observe with a 360° virtual tour, has been selected both for the peculiar reuse and because it documents the religious syncretism of the early centuries of Christianity. Re-using of architectural is well documented in the catacombs of Syracuse (Sgarlata 2013). It was found shattered in front of a burial, distinct from others, known as "the Saint's Tomb" (Sgarlata 2004: 40-44).
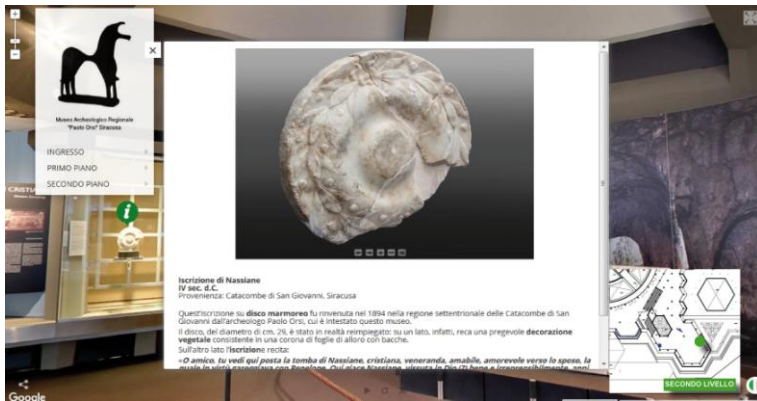
Fig. 1.5. 360° tour of the *Nassiane inscription*.

This is the Greek text:

chrismon ς χριστ<ι>ανῆς σεμνῆς ἀγανόφρονος [ἠδ]ὲ φιλάνδρου Νασσιανῆς τύμβον εἰσορᾷς, φίλε, κίμενον [ὦδε ἥ]τις σεμνοσύνησιν [ἐριζε]το Πηνελοπίη *palma chrismon* ἐνθάδε κῖτε [Νασσ]ιανή, ζήσασα [ἐν Θ(ε)ῷ] καλῶς καὶ ἀμέμπτως ἐτη λβ΄, μῆνας ι΄.

The inscription says: "Oh friend, you see here the tomb of Nassiane, Christian, ripe, sweet, fond of her husband, who competed for virtue with Penelope. Here lies Nassiane, she lived well and blamelessly in God (?), 32 years and 10 months". This inscription documents such as epigraphic formulas affected by religious syncretism (syncretism generally means that a complex of phenomena and concepts derive from the meeting and fusion of different religious forms) between Pagans and Christians, for which a Christian like Nassiane could have competed in life with Penelope, the hero Odysseus' wife and symbol of marital devotion. Its circular shape suggested that it was a table for the ritual of *refrigerium*, the funeral feast that symbolically was consumed with the dead, even this syncretic practice dates back to the pagan world (Sgarlata 2013, Scandurra 2014).
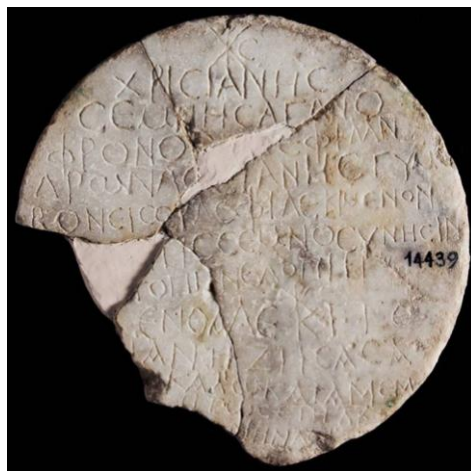
Fig. 1.6. The *Nassiane inscription,* recto (courtesy by the "Paolo Orsi" Museum).

1.3. Conclusions

As discussed elsewhere (Bonacini 2013 and 2014), Google is undoubtedly the most active entity in the world committed to preservation, dissemination and promotion of cultural heritage, well above any public institution, through an unparalleled campaign of digitization open to users' collaboration. This could happen because Google itself has an incomparable capacity of economic investment. Even large international projects of digitization (such as Europeana itself) are not able to compete with Google.

Therefore, after initial hesitation towards these Google's initiatives, now most of museums and cultural institutes in the world have seen in Google a partner that enables them to progress in the online visibility and in the process of heritage digitization.

Regarding the project here presented, which concerns one of the two selected sites, we can rightfully say that it is the first archaeological museum in the world - needless to say, the first museum in Sicily - entirely browsable on Google Maps platforms with a virtual tour in all exhibition halls and 360° virtual tours with integration of captions and full description of artworks.

In the near future we hope to allow 360° visualization of a greater number of objects, with their accompanying captions translated at least in English and in audio version.

Thanks to this project we hope that Google itself could realize how the time has come to "rejuvenate" the Google Maps Street View system, allowing enabled users to apply additional content on the maps.

However, the wide interoperability between Google software the development of new solutions and the integration of geo-referenced results in the page results on the search engine continues unabated: the "Paolo Orsi" Museum - and with the museum, the city of Syracuse and the whole of Sicily – will surely take advantage of this new tool for its visibility.

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