KONFERENZBAND | PROCEEDINGS

EVA BERLIN 2023

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Electronic Media and Visual Arts

29. November 2023 – 01. Dezember 2023
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INHALTSVERZEICHNIS | CONTENT

TRANSFORM

Game-changing Technologies stehen im Mittelpunkt der Konferenz EVA-Berlin 2023. Machine Learning, Künstliche Intelligenz, Blockchain und XReality-Anwendungen sind die innovativen Treiber in den Ökosystemen der Kultur- und Kreativwirtschaft sowie der künstlerischen Produktion. Haptische Komponenten eines Werkes werden greifbar gemacht und bildliche Darstellungen in passende Worte gefasst. Ein Landschaftsgemälde erhält als Klanglandschaft einen neuen akustischen Erlebnishorizont oder wird als animierte Wetterkulisse in ein Gaming-Setting integriert.

Digitale Kompetenz und der Erwerb technologischer Souveränität erweisen sich damit als Voraussetzungen, um die Transformation der Kultur zu gestalten und die neu gewonnenen virtuellen Räume angemessen zu möblieren. Die Vermittlungsarbeit in den Kultureinrichtungen profitiert von diesen Möglichkeiten. Es bieten sich neue Wege an, mit dem Publikum zu interagieren und eine breitere Öffentlichkeit zu adressieren. Multimodale Zugänge und personalisierte Interaktionsangebote unterstützen die inklusiven Ansprüche eines partizipativen Kulturverständnisses und öffnen die Angebote für eine barrierefreie Wahrnehmung durch benachteiligte oder beeinträchtigte Publika. Zugleich etablieren sich innovative technologische Werkzeuge in den ewigkeitsfesten Arbeitsfeldern der Dokumentation, der Konservierung und der Rekonstruktion. Maschine Learning Tools, von der linguistischen Analyse historischer Aufzeichnungen bis zum OCR handschriftlicher Texte, liefern bereits heute wertvolle Metadaten für die Dokumentation. Digitale Repräsentanten werden in der Konservierung und Restaurierung von Kunstwerken eingesetzt, um Schäden zu analysieren, Restaurierungsmethoden vorzuschlagen oder die Farben und Texturen zerstörter Artefakte plausibel zu rekonstruieren.

Das 'Kunstwerk im Zeitalter seiner technischen Generierbarkeit' birgt aber auch Risiken. Im neuen Miteinander von Mensch, Maschine und Objekten lösen sich vertraute Bindungen an das Faktische, an die materielle Zeugenschaft der Objekte und an die physische Präsenz vor dem Original. Das wirft nicht zuletzt Fragen der Glaubwürdigkeit auf. Mit wem sprechen wir eigentlich, wenn wir mit einem algorithmischen Gegenüber in Dialog treten? Und welcher Intentionalität ist das KI-basierte Kunstwerk verpflichtet?

Die 27. Berliner EVA-Konferenz lädt dazu ein, aktuelle Positionen und praktische Anwendungsbeispiele zu diesen Themen kennen zu lernen. Es werden innovative Beiträge zu den Schwerpunktthemen der Konferenz vorgestellt und in Workshops können Kooperationsprojekte verfolgt oder grundlegend neue Arbeitsweisen kennengelernt werden. Konkrete Verfahren, Projekte und Produkte werden parallel zur Konferenz in einer Ausstellung und in der Postersession präsentiert.

Als Teil des internationalen EVA-Konferenzen-Netzwerks ist die Berliner Veranstaltung eine Plattform länderübergreifenden Austauschs und der europäischen Kooperation.

Andreas Bienert,
Eva Emenlauer-Blömers,
Dominik Lengyel

TRANSFORM

Game-changing technologies are at the centre of the EVA-Berlin 2023 conference. Machine learning, artificial intelligence, blockchain and XReality applications are the innovative drivers in the ecosystems of the cultural and creative industries and artistic production. Haptic components of a work are made tangible and visual representations are put into words. A landscape painting is given a new acoustic experience horizon as a soundscape or is integrated into a gaming setting as an animated weather backdrop.

Digital expertise and the acquisition of technological sovereignty are thus proving to be prerequisites for shaping the transformation of culture and appropriately furnishing the newly acquired virtual spaces. Educational work in cultural institutions benefits from these opportunities. New ways of interacting with the public and addressing a broader public are opening up. Multimodal access and personalised interaction offerings support the inclusive demands of a participatory understanding of culture and encouraging innovative offerings for barrier-free perception by disadvantaged or impaired audiences. At the same time, innovative technological tools are establishing themselves in the everlasting fields of documentation, conservation and reconstruction. Machine learning tools, from the linguistic analysis of historical records to the OCR of handwritten texts, are already delivering valuable metadata for documentation. Digital representatives are used in the conservation and restoration of works of art to analyse damage, suggest restoration methods or plausibly reconstruct the colours and textures of destroyed artefacts. However, the 'artwork in the age of its technical generability' also harbours risks. In the new coexistence of man, machine and objects, familiar ties to the factual, to the material testimony of the objects and to the physical presence in front of the original are loosened. Not least, this raises questions of credibility. Who are we actually talking to when we enter into a dialogue with an algorithmic counterpart? And to what intentionality is the AI-based artwork committed?

The 27th Berlin EVA Conference invites you to discover current positions and practical application examples on these topics. Innovative contributions to the main topics of the conference will be presented. Workshops and co-operation projects can be pursued to learn about fundamentally new ways of working. Practical processes, projects and products will be presented in an exhibition and in the poster session alongside the conference.
As part of the international EVA conference network, the Berlin event is a platform for transnational exchange and European co-operation.

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Eva Emenlauer-Blömers,
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EVA BERLIN 2023

29. NOVEMBER – 01. DEZEMBER 2023

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Visualising Drawings: from Archives to QGIS. A methodological overview.

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ABSTRACT: This paper aspires to propose a methodology to visualize and preserve the documentary heritage in museum archives, using the case study of the Archaeological Park and Museum of Lilybaeum-Marsala (TP, Italy). In particular, we will focus on those documents that have the possibility of being georeferenced, such as maps, project plans and excavation surveys contained in the archives of the Park and the Superintendence for Cultural and Environmental Heritage of Trapani.

It is therefore a matter of re-proposing an objective history, considering the printed papers as the bearers of objectivity and immodifiability, the "written" history of the folders. In particular, here we will look at the methodology applied to the visualization of the boards drawn by the architects for the perimeter of the park. Approximately 50 boards including design drawings, satellite photos and the excavation surveys carried out since the first project to establish the park were analyzed. All the material was georeferenced in QGIS for more precise and agile consultation. The use of this method will give not only the possibility to understand and visualize the chronology of the works, of the choices made for conservation, but also to prospect future works for layouts and to better plan exploratory essays and archaeological excavations.

1. INTRODUCTION

On 5 June 1994, the French philosopher Jacques Derrida made the following statement during the international symposium *Memory*: *The Question of Archives* in London:
«Non bisogna [forse] cominciare dal distinguere l'archivio da ciò al quale lo si riduce troppo spesso, specialmente l'esperienza della memoria e del ritorno all'origine, ma anche l'arcaico e l'archeologico, il ricordo e lo scavo, in breve la ricerca del tempo perduto?» [1].
Translation: *"Should we not [perhaps] begin by distinguishing the archive from that to which it is too often reduced, especially the experience of memory and return to the origin, but also the archaic and the archaeological, remembrance and excavation, in short, the search for lost time?"*
The text was then published in the *Preghiera da inserire/ Prayer to be inserted*, placing it before the beginning of *Mal d'archivio* (*Le concept d'archive. Un'impression freudienne*). It is no coincidence that Derrida quotes Proust's Recherche in which the theme of memory, of the dizzying passage of time and the disaster it has wrought upon us and the world, stands out. Novels, as well as archives and all binders of written memories, are places where time is

celebrated and sculpted to the tune of words and, as in the present case, especially to the tune of protocol numbers.
For the philosopher, the archive corresponds to a dual value: container and content; it also contains the capacity to create 'occasions' by activating re-readings of context and object and triggering new, critical, and creative processes. The management and communication of archives must also be ensured according to scientific competence, involving the competencies tangential to it [2].
The archive is thus an authoritative and indispensable tool for the knowledge and transmission of memory.
A particular case study of archives is that of museum archives, more specifically archives of archaeological museums. Often the events concerning the birth and creation of the museum itself are as exciting as the history that the museum itself divulges and communicates. Such events generally belong to a history that is chronologically closer, but because it is often a history that is still in progress, on which one can intervene, more or less indirectly, to redirect those lines of protection and enhancement that have not always taken the correct turn, perhaps by seeking appropriate and fitting comparisons. History is written by men, decisions are made by men, mistakes are made by men. All this is traced and traceable precisely because of the documents kept in the folders.
In museum archives, as is the case somewhat in all archives, time stands still. An affair is immortalized like a photograph through the redaction of an administrative act, with a phonogram, or through the preservation of the clipping of a newspaper article that caused a stir and now demands a press correction.

1.2 THE ARCHAEOLOGICAL SITE OF LILIBAEUM-MARSALA

This paper will address a particular type of data that forms the core of the documents that led to the establishment of the Lilybaeum-Marsala Archaeological Park and Museum (which we will refer to here by the abbreviation PMALM) in Sicily (province of Trapani).
In order to better frame the site under analysis in the Sicily region, it should be specified that the archaeological area is located on the promontory of Capo Boeo, south of the Stagnone of Marsala, in the province of Trapani, and is one of the island's points closest to the North African coast, an element that should not be underestimated since it was decisive for the history of the Lilybaean settlement. After the destruction of the city of Mozia in 397 BC, the surviving inhabitants moved to Capo Boeo, fleeing the island besieged by the tyrant Dionysius of Syracuse. The newly founded Lilybaeum thus became an important trading point and a compulsory stop on the sea routes both in the direction of Sicily and the Tyrrhenian Sea. The city was equipped with three harbors that allowed landing in all weather conditions, and with imposing fortifications, which are still preserved today.
Another important milestone in Lilyba's history occurred after the Battle of the Egadi in 241 B.C., which not only determined the end of the First Punic War, but marked the Roman conquest over Carthaginian territory.

1.3 THE INSTITUTION OF PARK AND ARCHAEOLOGICAL MUSEUM

Since the late nineteenth century as a result of the systematic research begun with Antonio Salinas, the Marsala City Council took important and far-sighted actions in safeguarding the Capo Boeo area from building expansion, sparing the ancient city from destruction.
In 1939, during work on the construction of the municipal stadium, the large domus with mosaics was discovered. From that moment a real policy of protection of the area began, which converged in 1949 with the Ministerial Declaration of Particularly Important Interest of the land at Capo Boeo.
The first project for the realization of the park was drawn up by the technical study of engineer Luigi Giustolisi and Renato Bazzoni in 1973. It was not until 1986 that Baglio Anselmi, now the site of the museum, was finally opened to the public, where not only artifacts from excavations in the city, but also the Great Punic Ship unearthed in those years, were preserved.
The project continued with the expropriation of the entire area and buildings starting in 1990.
The municipal roads of Via Vittorio Veneto and Via Nazario Sauro, which cut through the park as bisectors, are also acquired by the Regional State Property Office under a memorandum of understanding between the Department of the Presidency, the Superintendency of Archaeological Cultural Heritage of Trapani and the Municipality of Marsala in 2003 and then included in the park's perimeter in 2005

(from 2004 to 2006 the restoration and enhancement of the Church of San Giovanni and the underlying "Cave of the Sibyl" [3] are also included in the perimeter.
Now the park enjoys financial and administrative autonomy (A.D. No. 42 of 07/27/2020).

2. MATHERIALS AND METHODS

The goal is to create a tool for archiving, analysis, research, protection and subsequent valorization of the heritage that is received in the GIS, starting with archival records. It is necessary to have a streamlined, fast and homogeneous container that also serves at the administrative level to have a clear view of the territory, facilitates data query procedures and is a useful support for the valorization of the archaeological heritage.
If the use of PCs and computer tools could be occasional until 2009[4], to date it remains essential and indispensable for the establishment of an automated system for archiving, management and processing of documentation especially for excavation. Here we find a slightly different application, in that historical materials were georeferenced. purely administrative in nature, and not reports of ongoing excavations.
"In order to frame our work, first of all, we began from the so-called "human factor" - that is, we applied all that networking, knowledge, and meetings with the Director and Park officials. Already from the first meetings it became clear that over the years the PMALM archive represented only a partial section of the entire documentation pertaining to the city of Lilybaeum-Marsala.
The retrieval of the plates was therefore not immediate and simple: in fact, most of the administrative documentation pertaining to the institution is kept not only in the archives of the museum itself, but also in the archives of the Soprintendenza per i Beni Culturali e Ambientali di Trapani (SBCA-Trapani) and, albeit to a small extent, in the archives of the Soprintendenza per i Beni Culturali e Ambientali di Palermo (SBCA-Palermo).

This phase of requesting permits from all institutions took several months to be granted. In fact, the PMAML granted access on February 25, 2022 and the digital document acquisition work was completed in March 2023 with the acquisition of 1,218 files, the SBCA-Trapani granted access permission on April 21, 2023 (prot. no. 007230), and the SBCA-Palermo on May 26, 2023 and is still in progress and document acquisition for the SBCAs. It is important to emphasize this because the establishment of contacts and relationships with institutions is essential and vital to move the project forward and to get information that the folders do not provide, e.g., it was essential to interview the Park's archaeological officer, Dr. Maria Grazia Griffo, and the architects, Drs. arch. Giovanni Nuzzo and Enrico Caruso, who were personally involved in drawing up the perimeter plans for the PMALM.

Institution	Folders	Weight (GB)	Number of files	Status
PMALM	28 on 28	8,43 GB	1.218	Completed
SBCA-Trapani	40 on 114	3,67 GB	444	In progress
SBCA-Palermo	6 on 21	9,28 GB	681	In progress

Table 1: *Panoramic view of the material collected from the archives.*

In tab. 1, the digitized material was broken down by the number of folders scanned out of the total number, weight in GigaBytes, number of files (consisting of .pdf scans, metadata in word and photographs, and scans in .jpg), and the status of progress.
To date (November 2023), the material described in Tab 1 has been collected.
Digitally sifting and scanning all this amount of material, which at first glance may seem an unnecessary and excessive operation, is what allows for contextualization of the documents even at a later date precisely because they remain available and in consultation for study purposes.
It remains essential to make this explicit from a methodological point of view because archives are not always accessible and in Italy they are rarely digitized and freely usable, especially the administrative ones, and, to access them, it is necessary to make appointments with officials well in advance. In addition, there were not always indexes for these types of folders, as is good practice in archival work. So each folder was a surprise.

2.1 THE DRAWINGS SELECTION

It should be pointed out that for this work a selection of the documents to be treated was made: precisely in order to shed light on the events that led to the current establishment of the Archaeological Park and Museum of Lilybaeum-Marsala, it was decided to use the

maps, plates and drawings of the old projects for the establishment and perimeter of the institution.
Therefore, only what was useful for georeferencing was selected for this work, arriving at the following in Tab. 2.

	Scanned Folders	Selected Folders	% utile
PMALM	28	7	1.96 %
SBCA-Trapani	40	1	0.4 %
SBCA-Palermo	6	0	Null

Table 2: *Selection of the material to be geo-referenced.*

The maps selected for georeferencing are, in the totality of the 8 folders, a total of 48, of various and varying sizes. Digitization was done by scanning at 300 dpi with large format plotters at the University of Palermo printing center.

2.2 DIGITAL MAIPULATION OF THE DRAWINGS

QGIS, as will be seen in section 2.3, allows maps to be overlaid as layers, and no matter how much we play with the program's opacity functions and transparency values, images will always be displayed as if we were overlaying paper sheets on top of each other. The visibility of the underlying sheet is not perceptible (fig. 1).

Figure 1: *Example of overlapping board on QGIS (elaborated by C. Vitaloni).*

Faced with this problem of overlapping and not being able to manage the transparency and opacity of all the maps by selecting a particular color, it became imperative to use software (Photoshop) to clean from the background, effectively making each map in .jpg (fig. 2) a .png.

From the map in exported in .png format, all those disturbing factors, such as cartouche, northern directions, legends, were also removed, also by virtue of the fact that these could be easily retrieved from the map in original, also georeferenced (fig. 3).

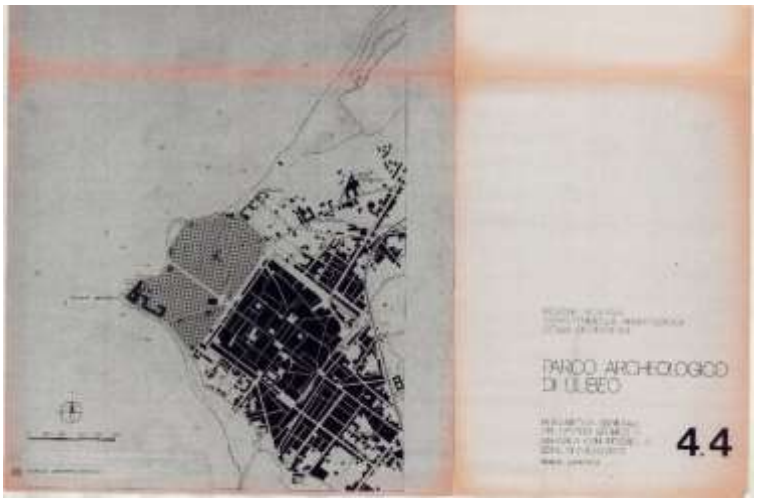


Figure 2: *Example of original map 4.4- "Planimetria generale del centro storico di Mardaka con indicate le zone di intervento" (elaborated by C. Vitaloni).*

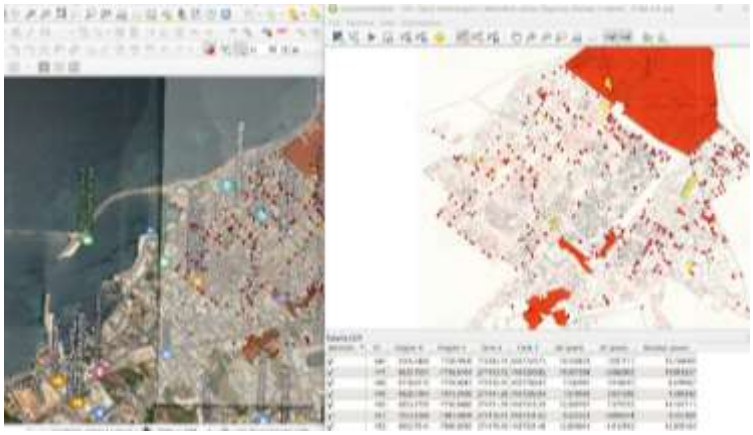
Figure 3: *Example of the map 4.4 in .png after the manipulation in Photoshop (elaborated by C. Vitaloni).*

2.3 QGIS

In this case-study, as has already been anticipated, the Geographic Information System included the tables of the projects that led to the establishment of the Archaeological Park and Museum of Lilybaeum-Marsala.
A free GIS program, such as the open-source software QGIS (https://www.qgis.org) in its stable version 3.28.1 Firenze was used for the management of the Geographic Information System applied to the methods of digital cartography.
As is the case with stratigraphic units, archival documents and tables must also be entered objectively, with their own attributes (including information inherent to the preservation of the table, acquisition parameters, table author, etc.), so that the digital translation of the documentation is not over-interpreted. The GIS must therefore be functional, flexible, and objective so that data can be preserved and queried in a dynamic and chronological order, by project attribution and archival ownership.
With the Geographic Information System we have two ways of describing the world: first we have location information (where it is in space), second we have descriptive information (what it is and what are its attributes). The first type of information provides us with graphical data, i.e., the elements of a map in a specific reference system (SR), and attribute-type data, which express the characteristics of the map elements and can be associated as an "attribute table". This kind of attribute table is inserted into the GIS or it is linked to it through relationship with an external DB. In the case presented here, the attribute table was used instead of a DB (for the distinction see [5]). However, the pragmatism of archaeology tends to lose the richness derived from the conceptualization of theoretical resources that lead to the definition of the method. An attempt will therefore be made to define the archive according to its possible declinations.
The tables were geo-referenced using Ground Control Points (GCPs), which are anchor points of features that have not changed topographically over time.

Since the sheets were designed by architectural firms in the 1970s, the grid indicating the Reference System was not available, except for the metric scale. The GCPs used to anchor the sheets were the corners of the known buildings (i.e., the "Baglio Anselmi" and the historic bagli, historic churches of the city), avoiding instead the coastlines, which -as is well known- are subject to erosion and changes even over the course of a few decades (fig. 4).

Figure 4: *Example of the georeferencing with GCP*



in QGIS (elaborated by C. Vitaloni).

The Reference System (SR) used for this project is ED50/UTM zone 33N - Datum: ED50 - Projection: UTM - Zone: 33N - EPSG: 23033, since the GCPs were anchored to the available Google Satellite map.

In order to maintain an orderly criterion and avoid possible loss of information, the maps were organized according to which each map belongs to a group in which the original and "cleaned" tables were placed and renamed with "_contours" (Fig. 5).

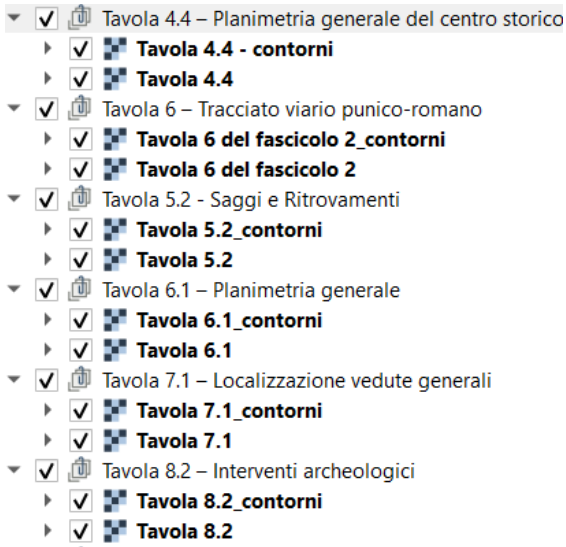


Figure 5 : *Example of the layers management using the .jpeg and .png georeferences for each drawn (elaborated by C. Vitaloni).*

3. DISCUSSIONS

The archive remains an indispensable and authoritative physical tool for the preservation of information related to the history (and thus the identity) of the museum itself.

Figure 6: *Concentration map for Files scanned about Park and Archaeological Museum of Lylibaeum-Marsala. (elaborated by C. Vitaloni).*

Figure 7: *Concentration map in terms of Gigabytes collected about Park and Archaeological Museum of Lylibaeum-Marsala (elaborated by C. Vitaloni).*

Although this is still a work in progress, it can be seen from the concentration maps (Figs. 6 and 7) that the amount of material collected is not directly proportional to its weight in GB. This has depended on the numerous images scanned in image format (.jpg) and not as .pdf scans present mainly at the "Di Stefano" archive of the SBCA in Palermo, of which -to date- no plan useful for georeferencing has been found. The only forms of "maps" are only freehand sketches on squared paper by Dr. Di Stefano, a leading archaeologist in the research at Lilybaeum [6], known for having devoted her research activity to ancient Lilybaeum during her work both at the Park and in the City. Thus, as can also be seen from Tab. 2, for the Palermo archive, no items were included in the georeferenced documentation.

Moreover, quantity does not mean quality: only an insignificant percentage (1.96 % and 0.4 %) went to constitute material useful for populating the GIS.

There is, however, a margin of error in geo-referencing: for example, for the table "2011_ Archaeological and Environmental Park at Stagnone, Marsala and Comuni limitrofi_ ZONE A B" as many as 4011 GCPs were needed for an average of about 30 hours of work (about 150 GCPs per hour) to obtain a satisfactory result that overlapped with the base of the SR (fig. 3).

It should also be pointed out that dealing with numerous (48 original .jpg and 48 in .png) large raster files could lead to a program crash, but it depends on the technical characteristics of the machine you are working with.

Certainly, vectorizing the .png files could help the handling and loading speed of the layers.

4. RESULTS

The results of the present work, although partial since the folders were not surveyed in their entirety, already show that they can be used for the creation of thematic maps.

By overlaying multiple layers, it was possible to reconstruct and georeferenced the 2011 Delimitation Project. Another indispensable support for a greater understanding of the data was the comparison with the project report, which allowed the attributes related to the decoded area to be included in vector format: A) for state-owned areas in the city center; B) for areas of archaeological interest subject to constraints; C) for areas of landscape interest.

Thanks to this cross-layering, it was also possible to georeference some archaeological essays and place them with their sections directly in a SR. One example is essay 3 along Isonzo Avenue (fig. 9). To obtain this valuable information, it was necessary to overlay three maps:

- the Google Satellite base as an anchor point;
- the table in which traces of the excavation appeared, but not in detail (here specifically Table 6 in PMALM Folder 26 entitled "Table of the Punic-Roman layout of the project area" from 1973, scale 1:500);

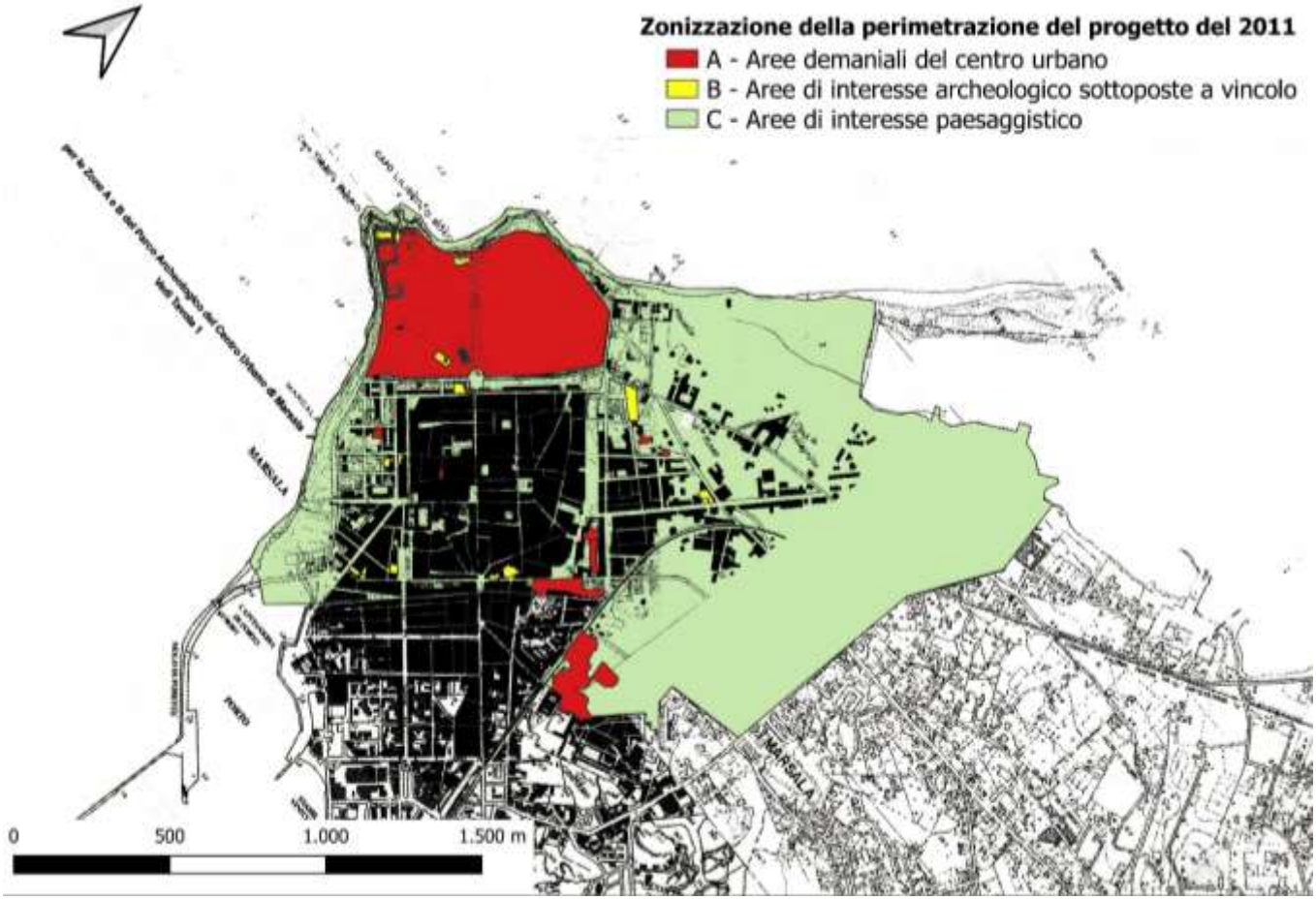


Figure 8 : *Map of the archaeological zones for Park and the city of Lylibaeum-Marsala (elaborated by C. Vitaloni*).

- the detailed survey of the archaeological essay (table 6.7 "Essay 3" in PMALM's 1980 folder 33, scale 1:50).

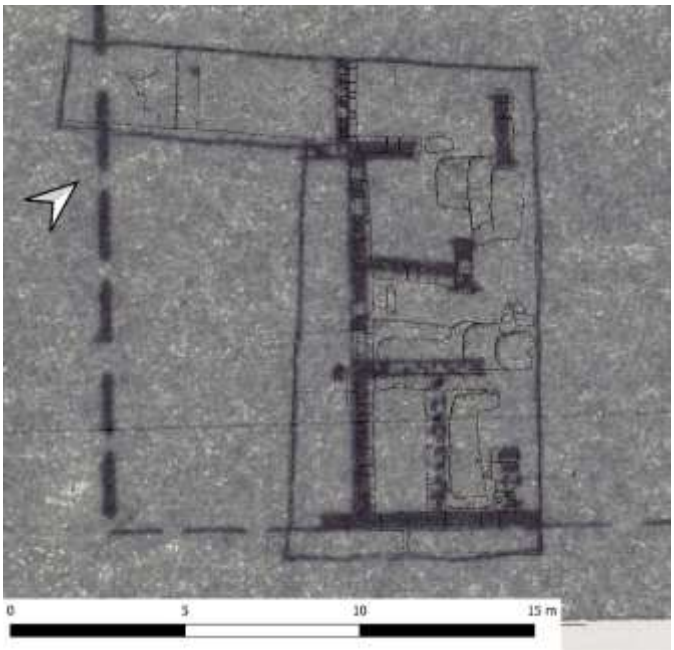


Figure 9: *Example of an excavation georeferenced (elaborated by C. Vitaloni).*

5. CONCLUSION AND FUTURE DEVELOPEMENTS

Historical archives, like the foundation of a house, form the essential second floor for the creation and subsequent development of a museum institution. To understand how a museum came into being, developed and is evolving, it is necessary to start with the analysis of each brick. In our case, the bricks are the archives folders and they form the core, the heart, of the institution.

The work here did not delve into the specific historical issues, but rather preferred to focus on the methodological vision, which, in summary, involved scanning (by photography or scanner plotter), organizing and georeferencing the papers on GIS. This is making it possible to reconstruct the history of the museum institution, its establishment, its past projects and their evolution over the decades. As well as planning for possible future excavations. The identity use of archives is linked to the concept of identification by the producing subject-institution that operates the recovery of its memory, responding to a cognitive need, but also, and above all, to the need to guide and

define its image and choices in a perspective of evolution that looks to the future [2].

Future development thus involves first concluding the screening of the remaining folders, vectorizing the .png files to lighten GIS consultation, and likely contextualizing all the tables chronologically.

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