Data Management of Preservation Activities on Archaeological Sites

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Abstract. The acquisition of the data concerning the restoration activities and the deterioration processes proved to be the unavoidable premise for the drafting of a complete preservation project. Such requirement drove to the drawing up of a number of forms, structured under the same strict rules adopted in the archaeological data recording. The filing and the investigation of the huge amount of the collected data will be carried out by means of a RDBMS-GIS based computer system. This seems to be the most satisfactory tool in order to fulfill the appointed results, thanks to its intrinsic methodology of integrated management of alphanumeric and graphical data.

1. Introduction

The research project named Data Management of Preservation Activities on Archaeological Sites has been developed within the activities carried out in the sites of Tas-Silg and San Pawl Milqi by the Italian Archaeological Mission in Malta.
Till the present day, the sanctuary of Hera/Astarte in Tas-Silg and the roman villa of San Pawl Milqi are among the few archaeological sites of the historic period which have been deeply investigated in the maltese islands. Between 1963 and 1970, the Italian Archaeological Mission in Malta has carried out a specific program of investigation in order to evaluate the historical culture of the Maltese Archipelagos, which has often been neglected in the past with respect to the monumental sites of prehistoric age.
Tas-Silg was a huge Phoenician sanctuary built in the second half of 7th century BC on the area of a pre-existing megalithic temple of Eneolithic Age.
The said sanctuary was consecrated to Astarte, one of the most important divinity of the Phoenician Pantheon, which has been later assimilated to the Greek Hera and to the Roman Giunone. It lasted for many years following its foundation and proved to be a meeting point of different cultures such as the Maltese, the Phoenician and the Greek ones. The sanctuary was still used not only under the Roman rule, but also in the Byzantine period, and maintained a relevant importance even during the Arabs and Norman's dominations.
San Pawl Milqi is, within the Maltese territory, one of the few Roman Villas which has been studied in depth. Excavation has shown that the villa was preceded by a Punic building, and survived until the Arab conquest of the Islands in the 9th century.
Starting from 1970, on-site researches have been suspended, and then restarted in 1996 under the scientific direction of prof. A. Ciasca, together with a composite team of scholars coming from the University "La Sapienza" of Rome, the Università Cattolica of Milan and the University of Lecce.
Since 1999 in Tas-Silg and 2001 in San Pawl Milqi, the archaeological research has been related to a programmatic activity of restoration, in order to assure the conservation, the exploitation and the tourist benefit from the two sites within the maltese archaeological context. The Istituto Centrale per il Restauro (ICR) of Rome is the scientific advisor for theese conservation activities.
The start of the conservation campaigns has required the appointment of new professionals (mainly in connection between archaeologists and restorers) able to connect the preservation needs together with the priorities arising from the current archaeological research.
In fact, experience on field has clearly proved the need of a specific study of the relationship between archaeology and conservation, in such a way to reconsider the issues related to the protection of the archaeological areas in the light of an accurate planning of the preservation procedures.
During the restoration campaigns, the development of a formalized methodology in the collection of data concerning the restoration activities appeared to be extremely relevant.
A proper data-collecting method proved to be the unavoidable premise in order to draft a complete and effective conservation project. Such requirement had to consider the different concept of documentation existing in archaeological and restoration field (the former a systematic collection of all information, helped by a codified form, the latter often a non-standardized reporting methodology).
The intense work experience, carried out in cooperation and interaction between archaeologists and conservators, made the strict rules adopted during archaeological data recording translated into conservation methodology. The most relevant result consists on:

- the drawing up of specific forms to field recording of conservation activities;
- the establishment of a plotting and mapping praxis of the damages and of the restorations.

To drawing up the said products and praxis, the comparison with conservators has been necessary, especially in handling of the issues related to conservation processes and in checking the real need of the documentation method.
Further testing on field is needed. This will point out limits and incoherencies within the research plan and will make any possible revision easier.
The present project represents the first step toward the definition of a general protocol for the preservation of the

archaeological heritage. Such a protocol must combine data-recording practice and action paradigms.
The above said protocol and products, which have been designed and tested for a specific context, can be extended as a model on any archaeological site, for its character of repeatability.

2. Protocol

The goal of the present research project is the codification of recording methods related to all the steps of the conservation activity.
Hereby are the four different steps of the activities:
1 Survey: A multidisciplinary team of consultants, restorers and the "new professionals" mentioned above – the so-called interfaces – plan to tackle the next conservation campaign. The survey will consider the filing of a specific form (SP – in Italian: "Scheda di progetto") which has been conceived in order to record all the data collected during the survey activity. Such form will be completed with a site map which can be helpful for the topographic localization of intervention areas. Pictures will be attached to the written and graphic recording.
2 Campaign set up: All the data collected during the previous step will be evaluated and reviewed by the team. With this respect, consultants and restorers will draft a technical report; interfaces will arrange forms, lists and graphical supports on which topographic information about each restoration's action shall be recorded.
3 Restoration campaign: Each operation carried out by restorers is fully recorded on specific form and lists (SIC – in Italian "Scheda d'Intervento Conservativo"; location map; graphic documentation of restoration; pictures, operation, drawings, photographic lists) under the terms and conditions described below.
4 Post-restoration reports: At the end of each campaign, the massive amount of recorded data (which has been fully collected) will be examined, in order to draft a post-restoration report and to increase the documentary heritage of the files related to the status of preservation of the archaeological site. Since the recorded information give clues of the effectiveness of the operations at different times, they represent the base for a diachronical evaluation of each single restoration.
The recording and management of the collected data will be carried out by means of a relational database and GIS based computer application. This seems to be the most satisfactory tool in order to fulfil the appointed results, thanks to its intrinsic methodology of integrated management of alphanumeric and graphical data.
The final result of the research is the improvement of a computing system. Its open structure allows the integrated management of new data of different nature, that will enrich the research project archive.

3. Products

The main product will be a set of forms for the recording of conservation data.
Two types of form have been defined: the first to record the data of survey (so called SP) and the second to collect the information of each operation during the conservation campaigns (so called SIC).
Hereby it will attempt to explain only the contents of the SIC form (the SP form is its simplification).
These are the sections of the SIC form and their contents:

1. Identification (Identificazione):
written in bold, it has to be filled in by interfaces.
- Intervention (Intervento): a progressive and univocal number assigned to each restoration's operation, quoted in a specific list;
- Site (Sito): name of the archaeological area;
- Campaign (Campagna): month and year of the campaign;
- Location (Localizzazione): area or sector of the operation;
- Quadrant (Quadrante): localization within the site-grid;
- US: Stratigraphic Units involved;
- Face (Faccia): surface of the Stratigraphic Unit.

All the sections below have to be filled in by ICR's consultants and restorers

2. State of Conservation (Stato di Conservazione)
- Damage and code (Tipo di danno e codice): kind of damage pursuant to the codes reported in the appendix E of the "Supporto alla Compilazione della Scheda di Rilevamento Monumenti e Complessi Archeologici" (i.e a model for the identification of the monuments and the archaeological sites) and on the "Carta del Rischio del Patrimonio Culturale" (i.e. a list of the potential damages concerning archaeological heritage) drawn up by the Istituto Centrale per il Restauro;
- Seriousness degree (Grado di gravità): seriousness combined with damage is expressed with a numeric degree between 1 (between irrelevant and not so serious) 2 (between serious and very serious);
- Emergency degree (grado di urgenza): expressed in a numeric value between 1 and 3. The analysis of the state of preservation is based on the existing and on the potential damage (3 deterioration status and degree of damage progress; 2 deterioration advance – when not too serious; 1 deterioration not in progress);
- Diffusion (Diffusione): spread of deterioration case expressed in percentage, in a value between 1 and 100. The setting out of such value is unavoidable in order to relate the extent of the damage with the size of the Stratigraphic Unit;
- Building material (Materiale costitutivo): Stratigraphic Unit material.

3. Operation features (Caratterizzazione dell'intervento)
- Operation typology (Operazione);
- Extension (Estensione) in square meters;
- Material (Materiale/prodotto): type of product and commercial name;
- Percentage composition (Composizione in %): dilution and strengthen;
- Application technique (Modo di applicazione): numbers of application, treatment mode;
- Total cost (Costo totale): the cost for the intervention;
- Realization time (Tempi di realizzazione): expressed in hours.

4. Documentation (Documentazione)
This section has to be filled in with all information concerning graphic and photographic recording:
- Location map (pianta di localizzazione);
- Graphic documentation of operation (documentazione grafica dell'intervento);
- Pictures (foto): photographic recording of each operation before, during and after every single intervention.

5. Monitoring (Monitoraggio dell'intervento)
- Forecast (Previsione): how many times the monitoring is expected;
- Date (Data) of the monitoring;
- Outcome (Esito): effectiveness of the operation according to the aims settled in advance.

6. Observation (Note e osservazioni)
This blank space will contain all the information not already described, such as protective system, micro-climate measures, soil nature (slope, drainage), previous conservation's measures, previous documentation of the context.

7. Compilatore:
the name of who fills in the form

8. Date of compilation (Data di compilazione):
date of the form compilation.

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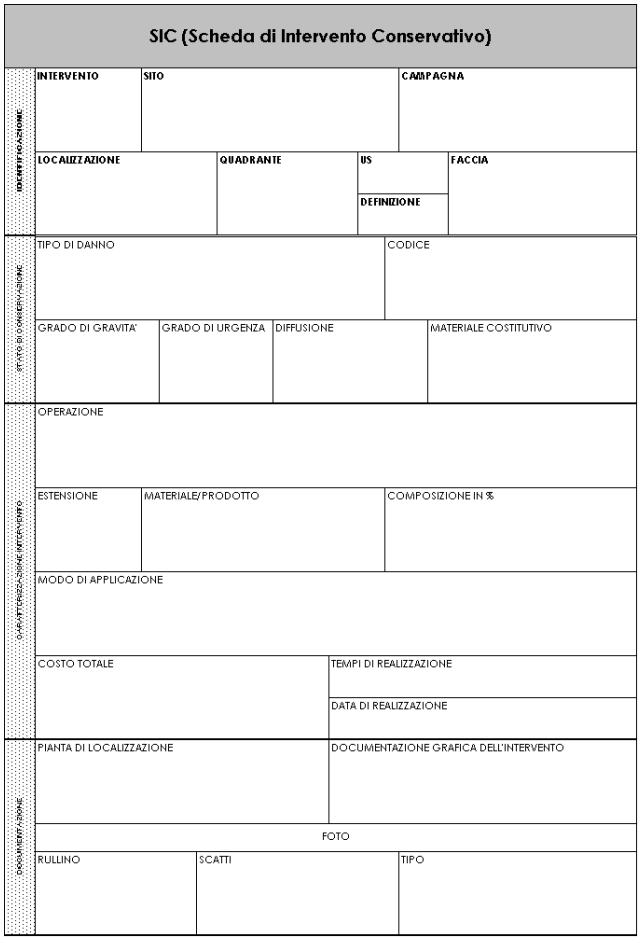

Fig. 1. SIC recto.

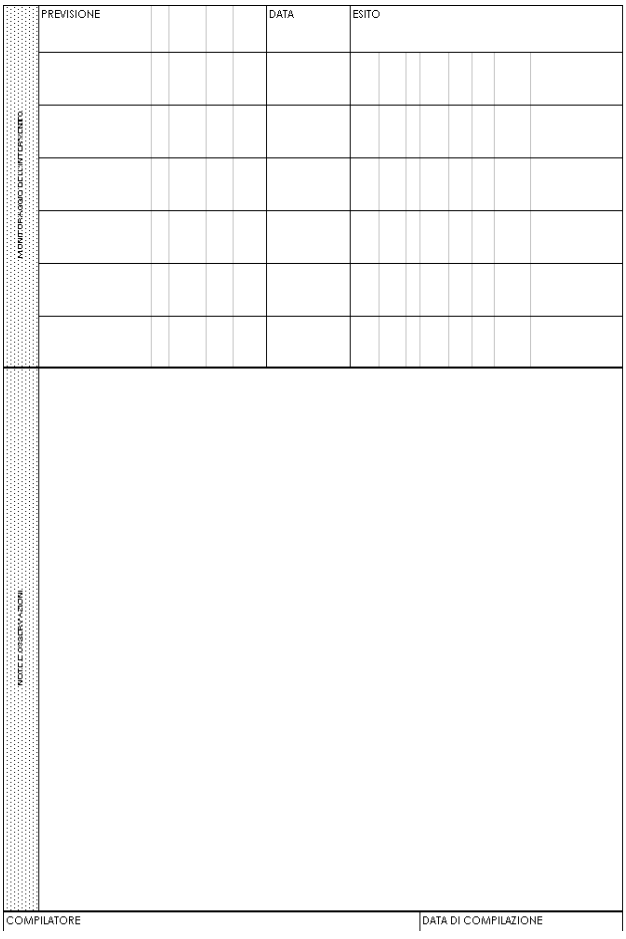

Fig. 2. SIC verso.