FRAUNHOFER GESELLSCHAFT

Report

PSPP Summer School 2018

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Report 2018 PSPP Summer School

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Introduction: Organization of the PSPP Summer School 2018

The second edition of the Pompeii Sustainable Preservation Project (PSPP) Conservation Summer School took place in the area of the necropolis of Porta Nocera, Pompeii from September 3rd to October 26th, 2018. The school could welcome 12 participants from 7 different countries who traveled to Pompeii and worked in situ for 8 weeks with full financial support. The generous grant of the Katritzky Foundation, USA, that has already supported the project in previous years made this possible. The grant was used to cover all expenses of the Summer School.

The participants were selected from a pool of applicants responding to an open call posted on the website of PSPP's partner ICCROM. Two of the participants, however, could stay only for 5 of the 8 planned weeks. They were admitted because of their qualifications: the guiding principles of the PSPP, also in the admission process, impose to consider high preparation standards as well as motivation as decisive criteria for admission, even over availability.

The daily work on site was supervised and accompanied by two restorers, Lea Oetinger (Fraunhofer IBP) and Marta Ebbreo. Professor Monica Martelli-Castaldi and three very experienced restorers and scientists from Germany, Klaus Klarner, Jürgen Pursche and Dr. Eberhard Wendler, had further supervision and consultancy roles. Additionally, one collaborator of Dr. Wendler, namely Benjamin Hübner, traveled to Pompeii for three days in September to run material tests. Dr. Ralf Kilian, current director of the PSPP, traveled twice to Pompeii to contribute to the school, while Sara Saba was in charge of the organization and coordination of the project from Germany in close collaboration with the experts of the PAP. In particular, the PAP referents for the work carried out by the school were Dr. Luana Toniolo and Dr. Stefania Giudice. To them and to the general Director of the site, Prof. Massimo Osanna, goes our thank you for their work and support.

The area where the Summer School took place is the Necropolis of Porta Nocera. The PSPP project has been active there from 2014 to 2018. As noted above, the intervention program for 2018 was developed in close collaboration with the experts of the PAP, Dr. Luana Toniolo and Dr. Stefania Giudice. As a first step in the preparation of the school, they recommended a preliminary survey that the conservators Marta Ebbreo and Maria Lorek, with Prof. Monica Martelli Castaldi as a consultant, conducted between June 11 and June 16, 2018. The survey was intended as an update to the first PSPP 2014 preliminary survey, which had been reviewed also in 2015 during the first edition of the Summer School. The work allowed the PSPP team to check the interventions carried out during the 2015 Summer Academy, with special attention to those for which foam mortar was used. It was, however, only in September 2018, with access to the higher portion of the tombs through scaffolding, that the team saw the earnest condition of some of the monuments. Parts of the original stucco decoration were in immediate danger of falling down. This too led to changes to the first original intervention plan (see infra report by M. Martelli Castaldi). In brief, both the complexity of the interventions and the difficult and intensively debated choices regarding the approach to the materials and to conservation planning of the monuments that made only a fraction of the originally planned work feasible.

The very bad situation of roofs and *cornici*, with detached and collapsing original structural stones and overlapping layers of very heavy concrete, obliged the team in situ first to secure, consolidate and fill the upper areas, and only then they could move to the full intervention on the monuments.

Furthermore, the big detached and collapsing *cornice* and intonaco fragments of the PN_EN_04 tomb needed difficult preparatory work of temporary securing and blocking, before one could proceed with the delicate intervention of cleaning and re-adhesion of the detached areas.

In general, protection of the roofs to prevent water from intruding into the ancient walls and structures is still the key to make all emergency interventions long lasting and sustainable. Therefore, the plans of the PAP to work in this area offer the urgent and necessary long-term perspective to the preservation of the Porta Nocera Necropolis and the valuable ancient surfaces, stuccos and plaster that still remain.

(2) Preparatory Survey in June 2018 and the Plan of the Summer School

The report of the Preparatory survey in June 2018 was handed over to the PAP in July (see Survey report for details). Within it M. Martelli Castaldi clearly lists the aims of the survey:

1. To assess the present conditions of the tombs in relation to the 2014 Survey;
2. To revise and document the changes eventually occurred from 2015 to 2018;
3. To document the present conservation conditions of the areas treated in 2015;
4. To define the priorities of intervention for the campaign 2018.

Therefore, the team surveyed the necropolis areas of Porta Nocera and Via Nucerina to assess the *status quo* and propose a plan for the interventions to be carried out during the Conservation Summer School 2018. The survey revealed that the numerous problems already recorded in 2014/15, which are/were caused mainly by water, salts and exposure conditions, are still present. After considering the timeframe and nature of the Summer Academy, a first plan was presented, which, as said, had to be modified during the 8 weeks of the school also because of the earnest condition of some of the tombs. It indeed was the view from above - possible only with the use of scaffolding - that revealed the full extent of the state of disrepair of some of the tombs and also the urgency of emergency work on roofs and cornici. There collapsing elements, missing of joint mortar, and voids needed to be treated at the beginning of the intervention, both for security and for conservationist reasons (see the treatment sheets of the PN_EN_04 tomb, both for the cornice and the South wall).

At the end of October, after the end of the school, the PSPP offered to complete some of the work that was not possible to carry out during the 8 weeks of school. The PAP, however, decided to intervene directly and asked our team to remove the scaffolding. PSPP duly complied with the request.

The School: How it happened

The School started with a first workshop that aimed to provide the participants with a general background on the project and on the archaeology of the site of Pompeii. Moreover, the participants could introduce themselves and their own work to their fellow students, as PSPP considers communication and experience exchange a key aspect of the school. A second workshop took place at the end of the school and was meant to present the results of the 8 weeks of lectures and work.

Immediately after the first workshop, work started with the review of the condition of the monuments in the necropolis alongside lectures on techniques and materials for conservation held by our team of instructors.

The second week was then devoted to the second thematic core of the summer school: digital (3D) documentation. The PSPP partner IBAM-CNR, on the forefront of research for digital archaeology, held lectures and practical sessions on this very theme.

While the third week was devoted to finishing the survey and mapping of the Necropolis, the fourth was the week in which the practical work started, albeit with a somewhat prolonged decision making process on the materials to be used. As noted already, a central point of discussion indeed concerned the materials to be used in the interventions. This led to further scientific tests for usability of conservation products and sands (see report by Dr. Eberhard Wendler) and also to the formulation of a research topic that the PSPP aims to conduct and further develop in 2019 and 2020.

One more note pertains to the topic of crowdfunding: four weeks into the school and at its very end, colleagues from the Fraunhofer IMW, Leipzig presented material related to possible crowdfunding initiatives for a future summer school. This project is part of a bigger research initiative started by the Fraunhofer IMW, Leipzig to the end of investigating different forms of financing for scientific projects in the public domain, like for example cultural heritage research.

In what follows, is a table with an overview of the day-by-day work of the Summer School. For a description of the practical work and of the results we refer to the detailed report by Monica Martelli-Castaldi, see *infra*. In an additional section the reader can find (1) an update to the report on the materials used (report given to the PAP in August 2018); (2) the introduction to the documentation sheets; (3) the documentation sheets; (4) the individual presentations by the participants in the Summer School; (4) the general conclusions including considerations on possible future research.

Overview of the Conservation Summer School 2018

September 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
3	**4**	**5**	**6**	**7**	**8**	**9**
First Workshop; Welcome Dinner	First Workshop	Archeological Overview - Tour of Pompeii (morning); Preventive Conservation Survey with the Participants (afternoon)	Preventive Conservation Survey with the participants (morning); Decision on working priorities (afternoon)	Methodologies and Technical aspects of the interventions. First discussion about the concept of the Summer school; Salt - Lecture with E. Wendler Clay - Lecture with M. Michette	Lecture with E. Wendler (Water-up taken, Drilling resistance)	
10	**11**	**12**	**13**	**14**	**15**	**16**
Introduction 3D Methods: 3D-Documentation (IBAM CNR); building of scaffolding	3D: Practical part in situ; building of scaffolding	Kastenmaier Presentation: Construction techniques and materials Klaus Klarner Presentation: Foam Mortar	3D: Practical part in situ	Morning: 3D in situ Afternoon: overview survey		
17	**18**	**19**	**20**	**21**	**22**	**23**
Survey and mapping	Last day of survey and conclusions	Discussion about the mapping	Mapping of each tomb	Visit to Stabiae; mapping of individual monuments		
24	**25**	**26**	**27**	**28**	**29**	**30**

Workshop Materials with B. Hübner; discussion with Kl Klarner	Workshop materials with H. Hubner	Workshop materials with H. Hubner	Mapping and decisions about materials	Mapping and decisions about materials		

October 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	**2**	**3**	**4**	**5**	**6**	**7**
MID-Term seminal discussion round-table; Presentation of the participants on the current work; Work in-situ	MID-Term seminal: Crowdfunding Workshop with Fraunhofer IMW, discussion round-table (Morning); Work in-situ	Work in situ	Work in situ	Work in situ		
8	**9**	**10**	**11**	**12**	**13**	**14**
Work in situ	Work in situ; First meeting of the documentation group	Work in situ; Documentation group work on the state of conservation mapping	Work in situ; Documentation group work on the state of conservation mapping	Work in situ; Documentation group work on the state of conservation mapping		
15	**16**	**17**	**18**	**19**	**20**	**21**

Work in situ; Documentation group work on the state of conservation mapping	Work in situ; Documentation group work on the state of conservation mapping	Work in situ; Documentation group work on the state of conservation mapping	Work in situ; Documentation group work on the state of conservation mapping	Work in situ		
22	**23**	**24**	**25**	**26**		
Preparation of the materials for departure and review of the deposit	Materials in the car; Workshop crowdfunding	Closing Workshop of the Summer School and Goodbye Dinner	Packing	Departure		

GENERAL conclusions and future research

The Summer School 2018 lasted 8 weeks alternating theoretical, methodological and practical work in the archaeological area of the necropolis of Porta Nocera. As described in the report and in the sheets, emergency and long-term conservation interventions could be carried out on three monuments (PN_EN_02; PN_EN 04; PN_EN_06). The international and interdisciplinary participants of the course worked well as individuals and as a group, also exchanging different approaches to the objects and the general archaeological context. The international environment of the School was at the same time stimulating and challenging as it was a first, hard experience for many of the participants who saw their teachings and certainties second-guessed. A difficult and prestigious site like Pompeii, that poses many challenges to archaeologists and conservators alike, was their work place and they operated under the leadership of an international team and experts with different approaches and priorities.

The second focus of the school was digital documentation: the group implemented activities related to the development of a 3D documentation system. The theoretical part was conducted by a team from the IBAM-CNR from Catania, a long-term partner of PSPP. Also a very efficient German software, Metigo Map, has been used for the documentation of state of conservation and interventions.

Materials

As reported in the document "Metodi e materiali" that the team gave to the referents of the PAP in August 2018, the materials used for the emergency intervention have been:

- Tylose MH300 ps and japanese paper, for the temporary facing; dowels and wood bars for the temporary fixing and blocking of the collapsing fragments
- Slacked lime and Natural Hydraulic lime (Lafarge, NHL 3,5) with aggregates for the mortars (grey and yellow river sand SILCO, white marble Botticino, Basalt, from M.P.R. di Pannullo Mario, Pompei).
- Foam mortar (made by NHL 3,5 Mariensteiner) and commercial grouts (PLM-A; PLM-AL) for the re-adhesion of detached layers;
- Nanolime Calosil E25 (IBZ) for consolidation of sanding - powdering intonaco and arriccio layers

Topics for future research

The practical work carried out during the school has left the team with several open questions that need to be addressed. The PSPP intends to pursue these research topics this year 2019 and next year 2020 both to attempt to clarify themes that were intensively debated during the two first editions of the Conservation Summer School and to better prepare for a next edition of the Summer School. The PSPP would indeed like to organize a new Conservation Summer school, in agreement and close collaboration with the PAP, in the Spring 2020. The team is currently formulating a research plan to submit to the attention of the PAP, but, in what follows, we offer a preview of the most debated and urgent research topics:

(1) Mortars and groutings

An intensively debated topic during the school pertains to the composition and behavior of the original materials in the surface decoration, and of the restoration materials. This will be based of new research findings from the related project "Pompei Arch&Lab", that is currently concluded by the Max-Planck-Institute für Kunstgeschichte KHI at Florence and Fraunhofer IBP, Holzkirchen. This study will also give valuable information for the creation of porous and not too hard new mortars, to be used for the filling of edges and lacunae.

(2) Consolidation of the surface decay

Another important line of research concerns the problem of the surface explosions, scaling, flaking and powdering. This kind of decay is generally due to the presence of salts, combined with sun irradiation and other environmental factors. Previous research exists but fails to offer clear or satisfactory conclusions (see HCP trials in 2011-2012). Therefore an articulated study would be useful. The central idea is to improve the work done until now in different fields by structuring a series of tests of consolidants, methodologies of their application and medium-long term efficacy, as well as codify the criteria for the choice of the product/s to be applied.

Finally, one of the PSPP's aims is to develop the research on inorganic, nanometric products for consolidation.

(3) Development of a small in-situ laboratory for conservation materials

A small in-situ laboratory and the support of scientific tests can help develop a system of "in-situ test applications", under different environmental conditions, which could help put together theory and practice for one of the most difficult problems in the preservation of decorative features.