

THE ARCHITECTURES OF LUCCHESIAN VILLAS GARDENS: PROPOSAL OF CONSERVATION PROCEDURE ON A DIFFUSED HERITAGE SYSTEM

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ABSTRACT

The Tuscan town of Lucca has around its famous walls a complex system of more than 300 villas developed since 15th century. Their gardens are characterized by different architectures: fountains, grottos, nymphaeums, etc. Three were the elements mainly used: vegetation, minerals and water. Properly mixed, they give birth to micro-cosmos where natural and artificial materials meet art. Today most of these architectures show an high level of damage, due both to their disuse and to atmospheric factors.

The research was developed creating a specific cataloguing format for the architectures of six Villas gardens and performing non-destructive tests on materials in order to know if there are damaging factors to be immediately solved and to monitor their future deterioration.

First of all, an archive research about each villa and its history was done to establish – if possible – the different building periods and data about materials and their provenience.

All the elements of the garden were then identified and catalogued. Then a specific form about every element was reported: pictures, description of the building and of the different materials used to create and restore it and a report about its conservation level.

This forms were created especially to be inserted in a geo-referenced system (GIS), in order to design a specific map of this villas system and to be used for tourist promotion.

Non-destructive tests – macroscopy, stereomicroscopy and chemical analysis on stone materials – were then planned, partially performed and inserted in a format related to the specific building. These tests will become the basis for other future analysis and research on these architectures, until now analyzed just from an historical point of view.

Each format will be given to the landlords too, in order to create a complete document about the actual extent of the damage and a basis for future analyses of their maintenance conditions. Periodical checks will be planned regularly. The constant monitoring will be possible only if the landlords themselves will be involved in it.

NATURE vs. ARTEFACT

Lucchesian Villas gardens are poly-material complexes where vegetal and artificial creations coexist. They were designed during centuries in order to be functional to the construction of a path that – divided into episodes – is brought back to a visit itinerary inside the garden itself.

The pleasant presence is fundamental to understand the elements constituting the garden: the tour is – and has been since the planning – a fine experience; spaces were studied to amaze, intrigue and captivate. These targets will completely culminate in grottos and nymphaeums.

However - over the building function of the individual elements – nature and artefact often change place each other to deceive, evoke and amuse.

Stylistic innovation keeps up with material research. The introduction of new stylistic matching does not exclude the use of ancient and traditional materials from Lucca's territory.

Except for a few cases where sea-materials were used [1], all the raw materials used in the mineral architectures inside the gardens of Lucchesian Villas are probably from Lucca, i.e. from hills and quarries around the city. The railing of Villa Torrigiani was created using stone from Guamo, a small village in the southern side of Lucca's territory [Fig. 1, 2, 3]. In this creation it was used near to travertine, a sedimentary stone widespread in central Italy [2].



Fig. 1 - The railing of Villa Torrigiani



Fig. 2 - Particular of the railing of Villa Torrigiani: tuff and stone from Guamo.

Even if there is not a big variety of materials, a high number of stylistic and chromatic solutions was used, in order to adapt the same stone to different and new situations. Rustic mosaics with dark-light colour combining, in order to create geometric and fanciful shapes.

Nowadays, visitors often do not understand the design of the gardens because of their conservation conditions.

Materials decayed not only because of time and disuse, but also of atmospheric factors as rain, frost, wind and water itself. Actually there are no scientific researches about the decay of the materials of Lucchesian Villas gardens: no studies about materials used to build architectural elements as fountains, grottos etc., no project to restore them.

Typology of the Elements Archived

On the inside of the villas' gardens, a series of elements of great artistic and constructive interest, each with different functions, were identified for the file. All of these elements have

been inserted in the context of natural fiction, of which this theme is strongly shown in the complex structures of these gardens.

One finds oneself in front of versatile shapes, as in the case of the grottos and the nymphaeums in which very different material has been inserted, which is not only used as decorative natural elements elegantly combined together, but also to simulate natural caves, drawing on special techniques which imitates the rocky face of a cavern.

Therefore it is notable that the innovative and experimental stylistic field has developed like that of the material sector, however this development, has created dangerous conservation problems, which with time will require monitoring.

At the same time other fundamental presences within the garden were identified for the file: the fountain and all elements dependant upon the use of water (apart from the fishing pond and baths) of which all are susceptible to particular conservation problems. Also identified were some pieces of furniture, such as benches and tables made out of stone or metal, situated in strategic positions in order to enjoy the intimate ambient or the panoramic scenery to its maximum effect.

In conclusion, the research based on a cross section of eight Lucchesian Villas (Villa Torrigiani, Villa Reale, Villa Mansi, Villa Oliva, Villa Grabau, Villa Bernardini, Villa Garzoni, Villa Oliva), identified around fifty elements to file depending on their different functions, materials used, position of location etc. It was as a consequence of these different elements that the simplest and most useful way of compiling the information was found and developed into the format that will be demonstrated in the following pages.

Survey and Research

The first step necessary in order to understand the identified elements, was a bibliographical research of the historical sources containing technical information about the origin and composition of the materials used.

The introduction of new solutions and innovative approaches does not however exclude the use, on the part of the programmers and executors, of antique and traditional Lucchesian material. In fact except in rare cases, in which marine material [3] was incorporated, all the material used in the architecture present in the villas' gardens, more than probably came from the same Lucca area, that is the mountains and from the quarries and from the area around the city [Fig. 3].

Facing the problem of not having a massive variety of material, one therefore notes multiple stylistic solutions and chromatic, which permit the same stone to be adapted many times and always within new contexts. Rustic mosaics designs have been achieved using chromatic dark and light combinations, creating geometric forms, flowers and vegetal fictional images.

Other fundamental instruments for our research were the use of photographic evidence: we created a database of images of the elements and of their particular attributes or conservation problems in order to supply the file with evidence and to create the possibility to compare changes in time, necessary to understand the speed of deterioration and to investigate the causes.



Fig. 3 – Villa Torrigiani: shell in Grotta dei Venti plaster.

The Composition of the File

The composition of the file was created in a way to transmit to private landlords and scientists information in a format easy to archive and also able to ensure that data could be easily added in the future to allow comparisons with older information.

The first part of the file contains the data of the elements in consideration: the place and the ownership of the garden if it is an area well identifiable.

There has also been a code added which will become useful if the files are added to a computer database, whereby cross section searches would be made much more simpler.

In fact a more detailed project on the creation of a system of the Lucchesian Villas contains the creation of a GIS, in which these research files would be merged into.

The second section is dedicated to photographic material taken in natural sunlight, with the elements shot in their entirety, and with a series of more unusual shots apart, sometimes shot with macro photographic techniques.

The following parts of the file contain a succinct architectural description and also give the exact positioning of the area and the structures in the zone and also an analysis of the materials used with a reference to the bibliographical research already cited in the file.

A large space of the file is given to the analysis of the elements' state of conservation. The considerations can be multiple in relation to the function of the element and to its positioning; for example the presence of water can encourage corrosion problems or create calcium deposits, or the birth of micro-bacteria, mould, moss or vegetation not foreseen [Fig. 4]. In other cases integration of vegetables with architecture can cause problems at the time of the year when vegetation comes into bloom in that they have to be moved, as in the case of the lemon vases in the lemon grove.



Fig. 4 – Villa Mansi: mould and moss on a dog statue.

In conclusion, the file's structure was chosen in a way to create various fields to complete in a way that the elements are archived in an organised and uniform way and with the initiative in mind to development the project in towards an IT direction.

Utility

The instrument that we created has a variety of advantages.

Firstly the file can be compiled at a low cost for the conservationists and architectures collaborating with the university institutes, employing graduates, apprentices and trainees, in an easy way avoiding any ambiguity. The low cost is therefore a strong incentive to keep the file up to date and to maintain monitoring which would in turn prevent any serious conservation problems from occurring. This would therefore help the owners of the gardens, in the case of the lucchese gardens, almost all of which private, to never have to confront sudden situations of grave disrepair, and would instead enable them to employ a direct and planned program of intervention before it becoming too late.

Below the file of Grotta di Pan at Villa Reale is reported.

VILLA REALE (area of Villa del Vescovo)	Place Marlia, Lucca, LU
Element “Ninfeo di Pan”	Code VR-01
Function Relax place	

Photographic Documentation (selection)



1.



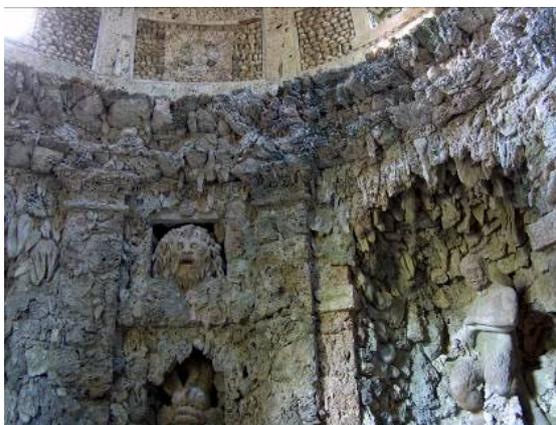
2.



3.



4.



5.



6.



6.



7.

1. External view, side South
2. External view, side West
3. Second floor, side South
4. Mosaics of second floor, side South
5. Internal wall covered with tuff sculptures
6. Footpath of the Nymphaeum
7. Internal wall and cupola
8. Roof

Description

The Ninfeo di Pan is a structure, built in various phases starting from beginning of the sixteenth century. The oldest part, the one which constitutes the cavern is an octagonal structure, surmounted by a large impressive dome scene made out of stone which in the lower surface shows geometric decoration made by using different mixtures of materials. On the inside there are small niches positioned where the statues of Pan and two Tritoni can be found. The rich decorations achieve the objective of creating a natural underground ambient rich in stalactites and cavities.

Before accessing the cave, in which there are refined and scenic water “games”, it is necessary to cross the square lodge, which is also decorated with polichrome and stone materials, with a green stoned fountain positioned in the centre, which is today not used.

The top floor, covering only the part of the entrance, is on the outside a little bit different on a decorative level (even if the material used is almost the same) to the elements previously described. The top floor was added at the beginning of the twentieth century by the actual owners, the count Pecci Blunt, who bought Villa Reale from the Savoia family.

Material

The use of different natural stones creates a magnificent chromatic effect, this is above all thanks to the elegant mosaic technique used on the outside and on some parts of the entrance. The floor of the cave was made by placing black and white river pebbles side by side. These stones placed side by side create a design that starts at the centre of the room and finishes at the feet of the eight columns that, hidden by decoration, structurally support the dome. On the contrary, the floor of the entrance is decorated with fragments of white, black and red marble, placed side by side and brick work. This brick work creates a geometric design with various kinds of forms inserted specifically on the inside of a large square space, emphasised by a line of hexagonal clay tiles, which in turn are internally and externally bordered by smaller pieces of the same brick work. On the inside of the cave the walls are principally covered by scabbled tuff blocks. These blocks are attached to the walls by using hydraulic mortar. The principal structure, probably made in stone, is almost completely hidden by these various kinds of natural deposits of lime and tuff that contribute to create pilaster, large masks,

fountains and geometric designs.

The lower surface of the dome is on the contrary richly decorated by both the same materials used on the walls and the same river pebbles decidedly bigger than those used on the floor. The statues have been obtained by sculpting more compact lime materials. The decoration of the external walls are rich in different material of quartz, red, green and black stone, tuff and more compact materials and defused clinker. Even the designs obtained with these materials are many and if observed with a keen eye, one can distinguish between the decoration of the top part that was added only a few decades ago with that of the older one. The pilasters have been obtained by alternating the very porous tuff with thinner and smoother stones.

An unusual element of this building is the arch that indicates the access between the entrance and the cave: on the plastered surface small shellfish valves have been applied, which form the frames of decorations, which today have been lost.

State of Conservation

The Ninfeo overall has been well conserved. Even if there aren't serious lacuna in the external decoration, unfortunately in the internal part there are many problems. The original mortar made in *cocciopesto* or *pozzolana* has been almost completely substituted by cement material that has a dark colour and isn't very well integrated with the yellow and warm tones of the building.

On the inside of the cave the scabbled tuff blocks are often broken or damaged as well as the statues, especially the ones against the wall. The statues also have problems due to water: moss, erosion and build up of deposits.

It must be emphasised that closing the water “games”, which were an indispensable element to being completely able to enjoy this area, resulted in the loss of a huge amount of information about the place.

In a second moment the research brought to the detection of a *fil rouge* between the different architectures in the gardens, pointing out interconnections related to materials and building techniques. Connecting architectures by technical and stylistic similarity should be important especially to program and realize specific conservation issues to groups of handiworks.

In many cases it was not possible to analyze materials using lab tests, so it was not given definitely a scientific name to stone materials detected. The probable nature of stone was so reported (tuff, sandstone, etc.) depending from their appearance.

Because of a specific bibliography about materials of Lucchesian Villas does not exist, data were gathered from a treaty of 16th century, written by a Lucchesian writer: Giovanni di Vincenzo Saminiati. He wrote non only about materials to be used to build architectures, but also about building techniques to be followed.

Saminiati wrote also about the six main materials to use in Palaces of Villa and in gardens of Lucca: “*Calcina, Rena, Matoni et altri lavori di terracotta, Pietre, Legnami et ferramenti*”, i.e. “lime, sand, bricks and other clay materials, stones, timber and iron” [4].

Also Giorgio Vasari, a few decades before Giovanni Saminiati, had written in details the techniques to build grottos and artificial caverns [5].

CONCLUSION

The knowledge of history and development of a building is essential to preserve and protect it and its cultural value. On diffused heritage systems it is not possible to perform detailed and expensive tests. To protect architectures, especially properties of private landlords, a research on their conservation is necessary to discover connections between different buildings and to monitor their damage conditions.

Conservation of so many and different buildings depends on many causes, just partially referred to inconstant maintenance.

Often the nature of materials brings to a faster deterioration of structural resistance and aesthetical features of the building. Often also the materials used to restore the same buildings are not compatible with ancient ones. The most diffused are erosion, detachment, delamination and mechanical damages.

Water has a big importance in damage process, especially if architectures are designed and built in a garden, a place where nature rules space.

To protect and monitor conservation state of a system of buildings, it is necessary the use of modern technology (i.e. GIS and database) and to select specific non-destructive tests to perform on materials in order to discover their composition and to choose new one to replace damaged.

In the future, chemical and physical tests on materials sampled from Lucchesian Villas gardens architectures will be performed and inserted in a specific GIS that will be consulted by specialists and landlords. The monitoring of their buildings will be possible just with their help and their competence, but it will be impossible without a constant observation and practical care of private landlords.

ENDNOTES

1. In the Grotta dei Venti of Villa Torrigiani and in the Nymphaeum of Pan at Villa Reale there are small pieces of shells used as covering for statues plinths. They are common in Tuscan seaside. In other fountains and grottos of analyzed Villas no marine material were found, even if the association with sea world is very clear and seaside is quite near to Lucca.
2. G. Nolledi, *La pietra di Guamo e la pietra di Matraia*. Maria Pacini Fazzi, Lucca, 1986 – pag. 17
3. It is the case in *Grotta dei Venti* of Villa Torrigiani and the *Ninfeo di Pan* at Villa Reale. In both cases the bases of the statues are covered in shells and fragments of shells in reduced dimensions and of the type that can be easily found along the coastal area.
4. Giovanni di Vincenzo Saminati, *Dell'edificar delle case e palazzi in villa e dell'ordinar dei giardini ed orti*, 1580 ca., ASL Dono Paganini n.3, Capo XIII.
5. G. Vasari, Cap. V de Le Vite dei più eccellenti pittori, scultori e architetti (1550): “Come di tartari e di colature d’acqua si conducono le fontane rustiche, e come nello stucco si murano le telline e le colature delle pietre cotte. Se ne fa ancora d’un’altra specie di grotte, più rusticamente composte, contraffacendo le fonti alla selvatica in questa maniera. Pigliansi sassi spugnosi, e, commessi che son insieme, si fa nascervi erbe sopra, le quali, con ordine che paia disordine e selvatico, si rendon molto naturali e più vere. Altri ne fanno di stucco più pulite e lisce, nelle quali mescolano l’uno e l’altro, e mentre quello è fresco mettono fra esso per fregi e spargimenti gongole, telline, chiocciole marittime,

tartarughe, e nicchi grandi e piccoli, chi a ritto e chi a rovescio. (...)È oggi similmente in uso un'altra sorte d'ornamento per le fontane, rustico affatto, il quale si fa in questo modo: fatte di sotto l'ossature delle figure o d'altro che si voglia fare e coperte di calcina o di stucco, si ricuopre il difuori a guisa di mosaico di pietre di marmo bianco o d'altro colore, secondo quello che si ha da fare, ovvero di certe piccole pietre di ghiaia di diversi colori; e queste, quando sono con diligenza lavorate, hanno lunga vita. E lo stucco con che si murano e lavorano queste cose è il medesimo che inanzi abbiamo ragionato, e per la presa fatta con essa rimangono murate.. a queste tali fontane di frombole, cioè sassi di fiumi tondi e stiacciati, si fanno pavimenti murando quelli per coltello e a onde a uso d'acque, che fanno benissimo”.

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