



POLITECNICO  
DI TORINO

# Honors thesis

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## COURSE OF ARCHITECTURE CONSTRUCTION AND CITY

*Abstract*

**Reading history through the walls:  
the case of the Southern front of Masino's Castle**

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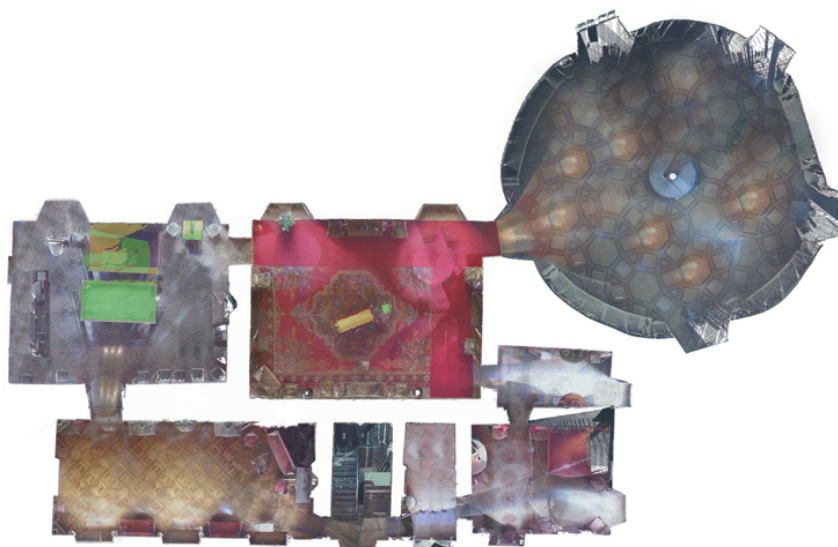
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The focal point of this work rolls around an opportunity born thanks to the coexistence of more than one actor, different one to another but all focused on reaching a common result: FAI association, restoration, metric survey's Lab and diagnostics Lab.

The birth of the main theme is bounded to a special need expressed by the association of a profound knowledge and specific studies of a part of Masino's Castle in particular about the southern prospect, the one standing in front of lemon's terrace and belonging to the East oriented part of the Castle. The history of the castle and it's historical and constructive development is not exhaustive at all for the period forerunning the 1650, year in which Ludovico Carlo Francesco Valperga of Masino begins the first big requalification. Most important works will however be commissioned by the successor, Carlo Francesco II who, chosen as the Vicerè of Sardinia's Reign will soon be in need of an appropriate abode. Some historic papers belonging to that period have been consulted at the castle's private library and show a real project for the total closure of the gallery once (maybe?) existing at the ground floor, on the front examined. It set some questions related to that front which is now continuous.

The first necessity was to make an updated metric survey to have a base to work on. Thanks to the precious help of the metric survey's Lab it was easy to understand how the perfect way to produce the survey was through the Laser Scanner technology. This technique bases the measurement on how much time the laser pulse, coming from the equipment, takes to go and come back from the surface, it permits also to measure everything possible without moving or ruining any painting or old furniture pieces.

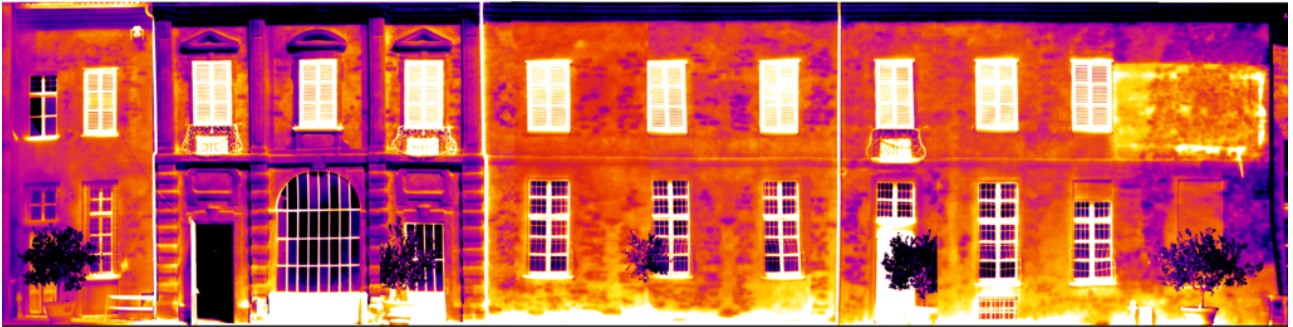
Sectioning the 3D point cloud obtained by the connection of all the scans made, it was possible to deduce some ortophotos which were then loaded on Cad programs and transformed in plans and prospects.



Exemple of an Ortophoto coming from the Laser Scanner 3D point cloud, groundfloor plan;

After building the metric base it was the time of the thermographic analysis made thanks to the diagnostics Lab of Politecnico di Torino. The necessity was of a profound analysis to avoid us to see under the plaster, to understand how walls internal texture was made, in order to verify some hypothesis advanced in the first passages.

The results of the thermograms elaboration have outlined several anomalies for which it was necessary to organize the prospect in analogy areas of thermal response.



Total termographic restitution of the whole front;



The analogy areas of thermal response's front organization;

The thermal response of the green zone , has confirmed the presence of the gallery buffered in the mid eighteenth century and drowned in today's continuous front . Consisting of seven columns and six strings it is perfectly matching with the historical

paper and metrically reliable when compared with the plan extrapolated from the relief.

The thermal response of the purple zone has outlined the presence of a constructive band, which could be decorative or perhaps used as a railing. This architectural element responds thermally in a manner which is similar to the gallery's one, perfectly and metrically corresponding. It's also possible to see the discharging arcs above all the windows.

The yellow area presents instead a variation of the thermal response in correspondence of which it is possible to delineate a structural lesion. The thermal response of masonry linearly situated before the lesion, clearly reveals the texture, while in the following portion it becomes totally invisible.

The thermal response of the orange area outlines some specific evidence as a vertical infill of a possible chimney. The cummerbund disappears upstairs while the discharging arcs return visible on the windows. The thermal response of the blue area is characterized by its enigmas because it was not possible to see anything below the plaster.

The thermal response of the red part finally outlines the composition of different materials from the rest of the prospect, made mainly by stone and in congruence with those of the near 'torrazza'.

What made this work so interesting and unusual was certainly the multidisciplinary nature that allowed the approach to several questions from different points of view, in order to formulate a theory able to bound all the related contributions. For example the presence of the ground floor gallery is assumed due to the historical map and verified metrically thanks to the survey and materially thanks to thermography; or the material correspondence with the adjacent torrazza which was outlined by the thermographic survey and verified the suspicions related to the coevalness of the two parts.

The comparison opportunities, the use of different technologies and job versatility have made reliable to elaborate theories from various points of view, creating a complete thesis in its entirety.

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