

POLITECNICO DI TORINO  
SECOND SCHOOL OF ARCHITECTURE  
Master of Science in Architecture  
***Honors theses***

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**The gypsum ceilings in Piedmont. Metric survey, 3D models and GIS to develop the analysis and awareness of a spread heritage**

by Paolo Abellone

Tutor: Antonia Spanò

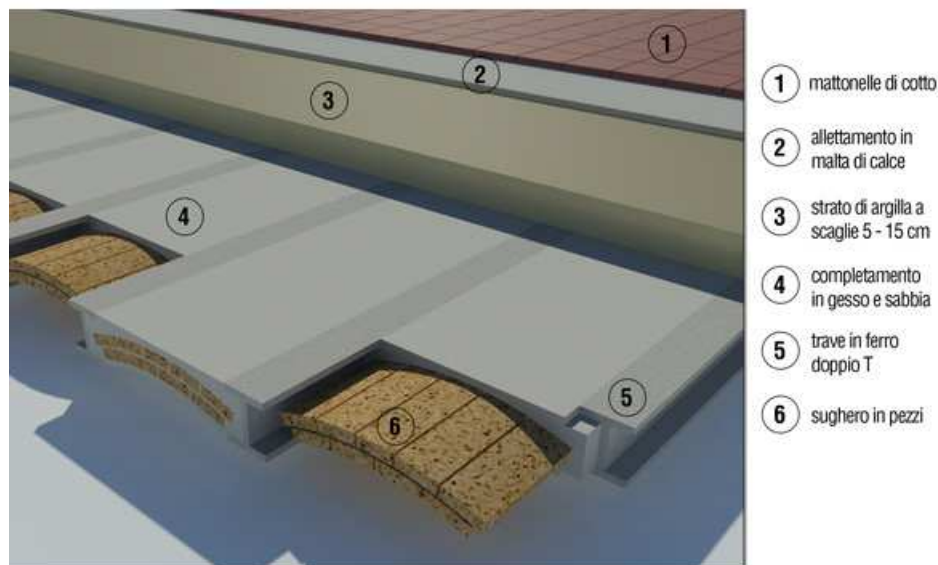
The study discussed in this thesis focuses on some tools of analysis and representation to highlight the particular characteristics of a particular case study: the gypsum ceilings in Piedmont.

These methods are the result of new technologies that go to support the metric survey techniques and the representation of a phenomenon in the area.

The objectives are taken parallel to pursue are mainly two: the first coincides with the purpose of obtaining results that can contribute original and unpublished research on the gypsum ceilings in Piedmont, after several decades used in the census, in cataloging and study of phenomenon, there are still issues to be investigated, and the second is try to finalize the study for lay the roots of a small concept map would be appropriate to use in analyzing and archiving data on common cultural and architectural heritage, to be sensitive to treated by statistical systems and spatial analysis by applying the new technologies.

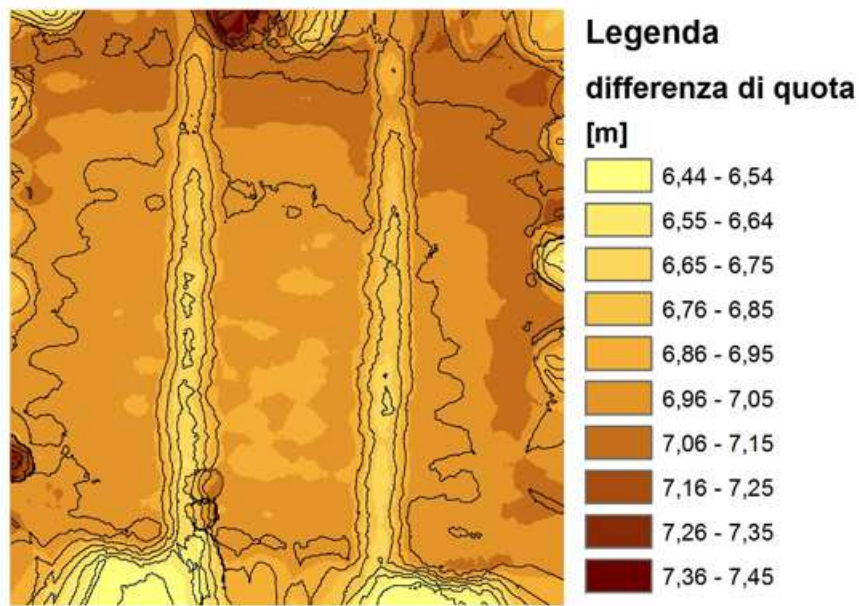
The methodological approach starts from the metric survey, which is the basic tool for understanding the object, it allows us to obtain geo-referenced data and accurately predetermined, the topographical framework, which underpins the metric survey, allows updates data even after several years.

Then three-dimensional models have been developed, which in this thesis were of two types: the first are virtual models, realized by availing the use of texture in order to associate a qualitative thematic content to communicate the overlaps between the various materials and understand the constructive technology. These virtual 3D models were made from general dimensions that characterize "model-type" found in the bibliography, they are each a different type of floor which in reality is definitely subject to change, due also to the living environment where these may exist, then be assessed as a level synthesis technology and design.



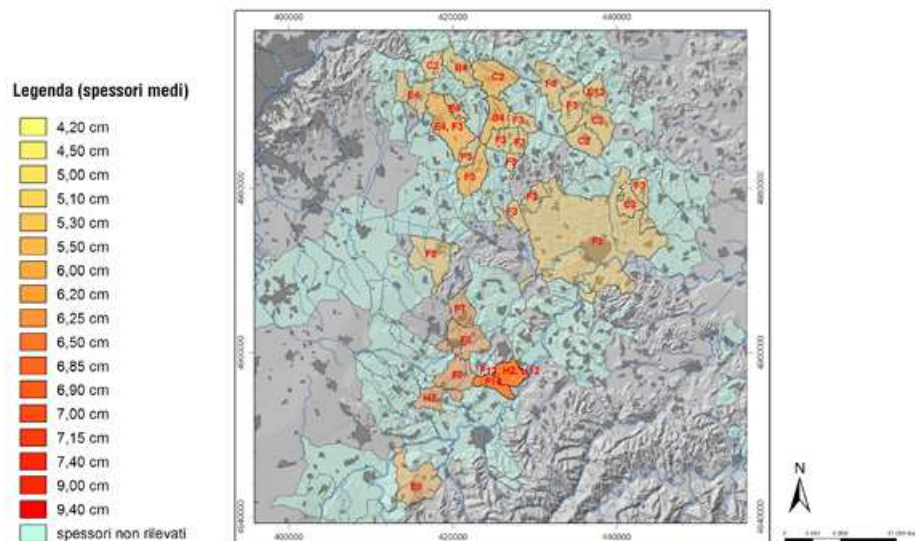
*Three-dimensional visualization of a floor of iron, gypsum and cork pieces*

Another type of 3D model was developed that generated by the acquisition of points instead of metric survey and laser scanning, here was proposed the creation of surface models from metric data acquired using different survey methods, with different accuracy and level of detail captured and treated to be mapped to a single system of reference; because of this dual method of data acquisition, I was offered a starting point for a comparison of the final products in order to understand in what situation it is more advisable to obtain one or the other result. The surface patterns obtained are similar and easily available, but the assessment of economic, technical and production times that represent the desired selection criteria to be taken as a function of the vastness and complexity of goods to be detected.



*Surface model of a gypsum ceiling obtained by points acquired with laser scanning*

The part that completes the analysis conducted during the thesis is the use of resources GIS (geographic information system), understood as a complex information system and made with the concurrence of a variety of information. The data have been implemented previously are analyzed using descriptive statistics and then integrated into the information system to verify their distribution on a map-based representative of the territory in question and highlight it through the creation of thematic maps that can visually depict the evolution of a specific data.



*Thematic map with the distribution of the average thickness of the floors between 6 and 6.5 cm between Monferrato and Albese*

All the documentation is a hint at what could be achieved if all the data we have were collected in an orderly and organized multi-scale system, involving different types of representation and also different types of processing. The latter may also use additional tools found in other disciplines, because in the analysis and documentation is increasingly important to create a synergy between the various scientific and methodological fields to make more effective and sustainable processes and knowledge enhancement . The role of this analysis is intended to document the architectural heritage, artistic and cultural that often exist in precarious condition, if not in a state of partial or total abandonment.

Metric survey, GIS and 3D models, can be considered a complete information system only if they are integrated together to measure, represent, analyze, update and file, so unique, orderly and efficient manner all information that we have on the case study.

For further information, e-mail:

Paolo Abellone: [sclatter@libero.it](mailto:sclatter@libero.it)