

Genesis and development of band vault in Turin during baroque age

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This paper regards a structural element usually not quoted in architecture manuals and treatise: the band vault.

By performing an historical and bibliographical research it was possible to establish which were the precursory models for this type of vault.

A census of the premises with such a covering has been made among the ones located in Turin, inside the perimeter, by now ideal, which includes the three enlargements of the city during baroque age.

The historical research on band vaults has its starting point in the document containing the first clear definition of such a structure: the treatise "Architettura Civile" by Guarino Guarini.

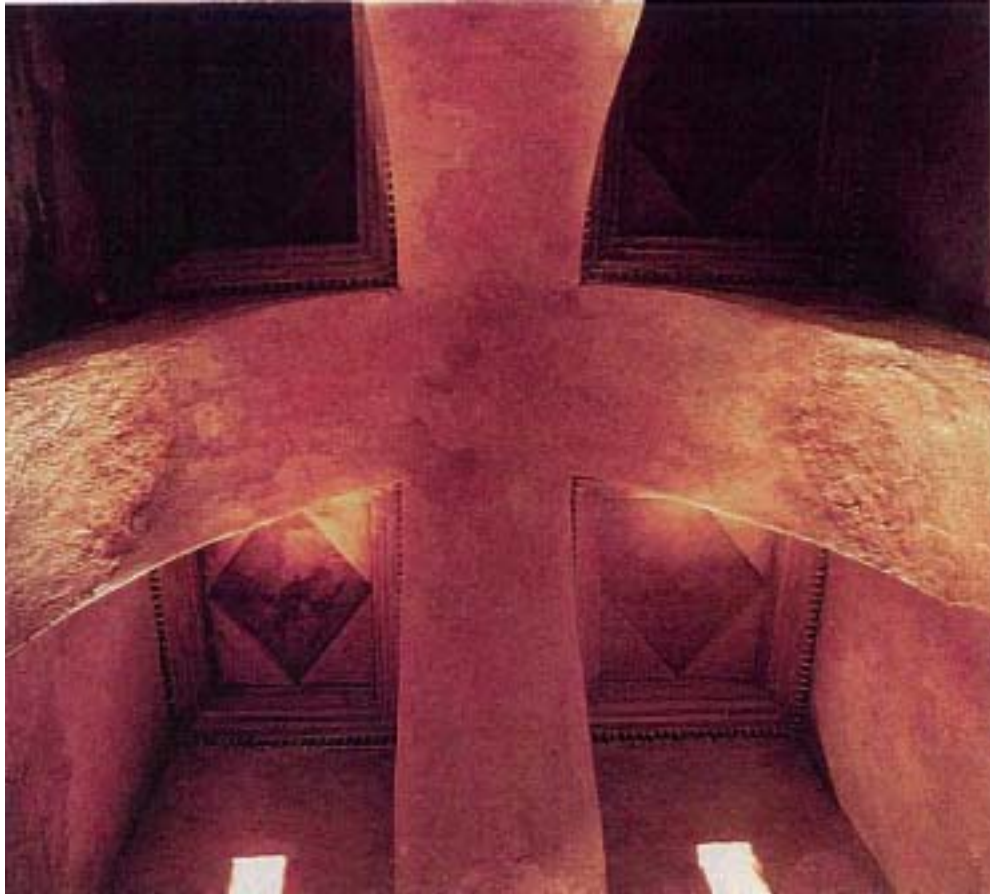
Guarini maintains to be the inventor of this type of vaults.

In order to find out which have been the sources influencing him, his training period was reconsidered.

Many authors suppose he stayed in Spain for a while, thus ascribing a spanish/morish matrix to some of his inventions such as the San Lorenzo Dome or some of the decorations in Carignano Palace.

A research for any sign of pristine band vaults has been undertaken by studying the arabic and islamic architectural culture.

The research was successful: some evidence were found in vaults and interlaced archs whose shape developed and changed starting from Persians and following arabic expansion, thus reaching on one side the Armenian country and, on the other, through Northern Africa, the Spanish country at the fast beginning of Christian Europe.



Siria – Kasr-Karana: Vault in the hall of the castel, VIII century

Shape changings, probably due to different possibility of finding building materials in the quoted countries, give rise to band vaults, starting from interlaced archs geometric model; these two elements have similar architectural structure, but different estetic features.

By knowing that the vault type definition does not comprehend its building material, it's easy to understand why usually interlaced archs vaults are assimilated to band vaults.

As a matter of fact interlaced archs vaults are built using stone blocks, while band vaults are built using bricks.

These two building materials impose different thickness to the supporting arch; usually the first type is named "arch", the second "band". Going back to Guarino Guarini it has been verified how he had influenced piedmontese architectural outline, during his stay in Turin, where in fact a great number of band vaults was found.

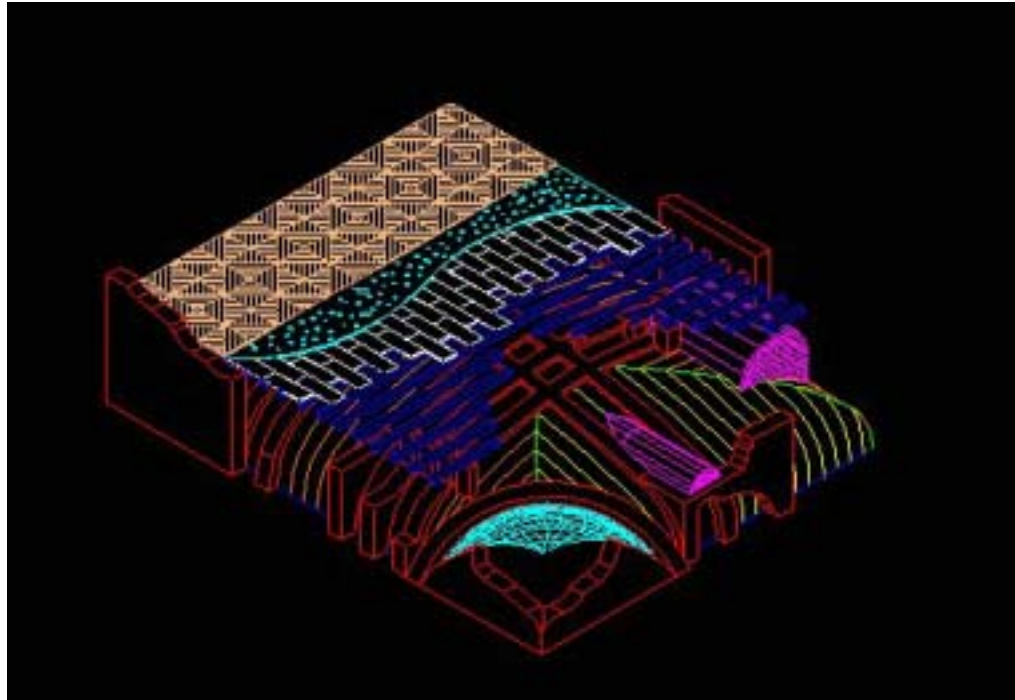


Turin: Palazzo di Città place, vault in a palace, XVII century.

While doing the census of the baroque city vaults were found not only in main palaces halls and rooms, but also in minor palaces ones.

By using the Personal Computer program "Autocad 12" the following survey drawings have been made:

- Hall of Barolo Palace
- Hall of Graneri Palace
- Temporary Exhibition Hall of Egyptian Museum, inside the "Accademia delle Scienze" building.



Structure of the vault in the Temporary Exhibition Hall of Egyptian Museum, once Collegio dei Nobili.

Then a verification of the vaulted structure in the Hall of Barolo Palace has been made.

The structure has been regarded as a mixture of wood and brick by comparing the studied vault with those of the same period found in Turin.

The vault has a wooden floor, made of floorboards, foundation and planking on wooden-beams, based on supporting walls.

The supporting walls are visible at intrados as bends; they are the framework of the vault.

Little vaults, considerably lowered, have been built among the supporting walls

The band vault has been verified statically according to the H. F. Mery method.

The positive result obtained proves what supposed, that is this structure is really solid and therefore durable.

This goes also with the fact that among the band vaults screened in Turin no one present any statical problem.