

# Learning from the restoration site: the biodiversity of historic wooden structures.

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## **Extent Abstract**

Wood is among the first materials used by man since ancient times. Everywhere, during archaeological excavations, there are evidence of this wooden past but it ignoring the causes for which the historians and archaeologists have never dealt with a period that can be called "the wood age", preferring to concentrate, for example, on stone age and iron age.

Perhaps the reason lies in the fact that, somehow, we are still in the age of the wood of which we can not do without.

All the authors of texts on architecture of the past, from Vitruvius onwards, enhance the quality of the wood that, until the XIX century, was one of the main materials used to make, in the wooded areas, whole buildings and, on a widespread across the region, to build structures as well as completion elements (windows and floors).

In Italy, over the past one hundred and fifty years, the wood has gone from oblivion, with irreversible loss of skilled workers (carpenters and shipwrights), whose teaching was handed down orally for centuries from master to practicing, to the appreciation, also motivated by ecological reasons, of last decades.

The progressive reduction in the availability of species as well as lead to unavailability of the market, or an increase in supply costs, it also determines the availability of limited variety can be grown at low cost (but frequently also low quality and durability) with "industrialized" method of cultivations.

This situation implies, in the case of substitutions on site of unrecoverable material, the approval given due to the introduction of a lower biodiversity than in the past.

Today we can count very few species being traded for structural purposes: larch, fir and spruce. The oaks (very few varieties) yet on the market, have a high cost so in the recent years is rarely used in new works or building rehabilitation.

Environmental reasons, cultural reasons and economic reasons have led in recent decades, professionals in the field of building restoration (architects and engineers), a new approach to retain the existing elements in place yet reliable and of species (often much more durable and high mechanical strength of the elements of new use) now no longer marketed.

From theories on a scientific approach to the conservation of the historical material started in Italy in the early 70s of the twentieth century we, through the sharing of rules, moved to the design, testing and use of methods, materials and techniques of intervention preceded and supported by careful observations on the conservation status of the components in wood work and diagnostic tests more accurate, less invasive and less expensive.

The conservation of the in situ historicized items also allows to obtain, through direct observation, and to have access to the reserchers of the future, information on manufacturing techniques, assembly techniques and installation equipment, techniques and finishings.

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Very often, moreover, impressed marks, on fire marks, writings, etc. that allow, together with the date of the material, to identify the sites of primary processing (sawmills) and sometimes the same craftsmen who built the structures. There is, though often neglected, writing on wood similar to that which sometimes can be seen on the walls of old buildings.

Not an uncommon observation of elements for reuse on site. Indeed, in the past, the demolition of buildings or their conversion or restoration was, after a selection of reusable material, an opportunity to retrieve semi-finished items for use in new construction or for renovation works in the same building. The men of the past were better than us in recycling materials.

The frequent apparent disorder of the roof wooden structures in a historic building is the result of overlapping of long-term transformations that hide very useful technology information.

These reuse often found in attics where the primary and secondary frame can be composed, in part, by elements which previously belonged to the floors structures (sometimes with large traces of painted decorations) or where one of the trusses degraded elements (strut or tie) could be reused, remove the degraded portion, to achieve at least the truss-post of a new truss.

In these cases the joints are often more obvious function of the previous item. Sometimes it notice boards laying plans for the tiles using old painted floors boards.

Details found on wood surfaces as written, decorations, dates, logos, signs of working, provide a wealth of information useful for relative dating of wood components in place, and sometimes of entire portions of historic buildings.

The relationship between species + wood processing and finishing + assembly technique and type of steelwork allows achieve good information on the age of belonging of the observed element.

The identification of the rarity of a species of wood in a cultural heritage building will consequently lead to its on site conservation without fail even when the diagnosis had to reveal his irreplaceable because it is a material document of a particular era, and its permanence is necessary also if economic evaluations were to demonstrate that its conservation is more costly than replacement.

Only in this way we can ensure to the future researcher the permanence of an heritage of tangible material culture that requires, with the passage of time and with the changing ways of interpreting the world around us, constantly new interpretations of our past.

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