

THE ACTUALITY OF ANCIENT WOODEN STRUCTURES. KNOW TO CONSERVE

Wood is among the first materials used by man since ancient times. Everywhere in the world, during archaeological excavations, there is evidence of that wooden past. But we ignore the causes for which the historians and archaeologists have never dealt with an age that can be called "Wood Age", preferring to devote himself, for example, to the "Stone Age" and "Bronze Age". Maybe the answer lies in the fact that in some way, we are still in the age of the wood of which we can not do without.

All authors of books on architecture of the past, from Vitruvius onwards, enhance the quality of the wood. Until the nineteenth century wood was one of the main materials used to make, in wooded areas, entire buildings, and in a diffuse manner for building structures as well as components (window frames and floors).

Keywords: wood, survey, diagnostic, standards, conservation, reuse.

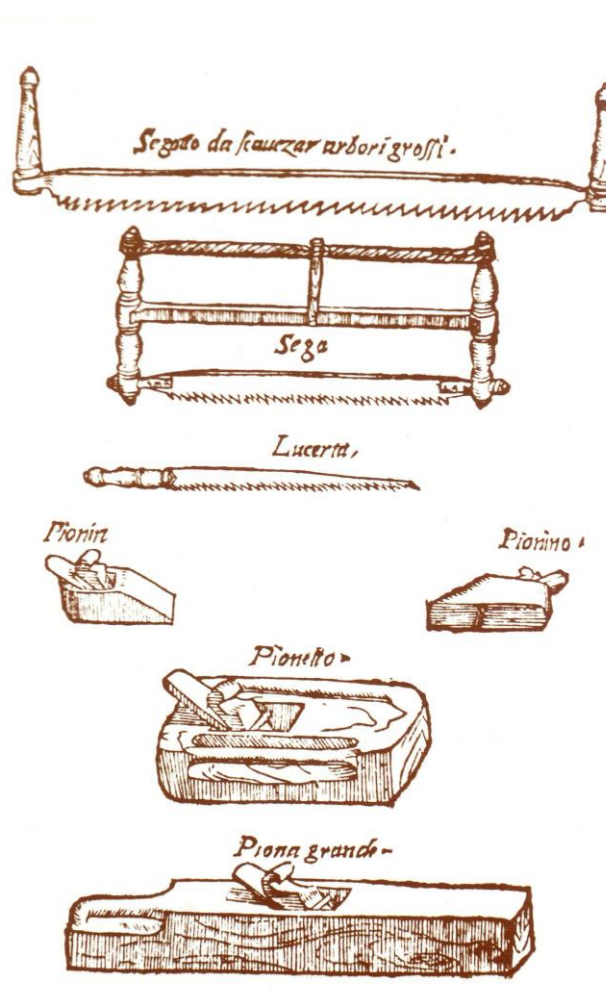


Fig.1. Tools for wood working of the seventeenth century in the treatise of Gallo Agostino, Venice, 1584 [1]

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

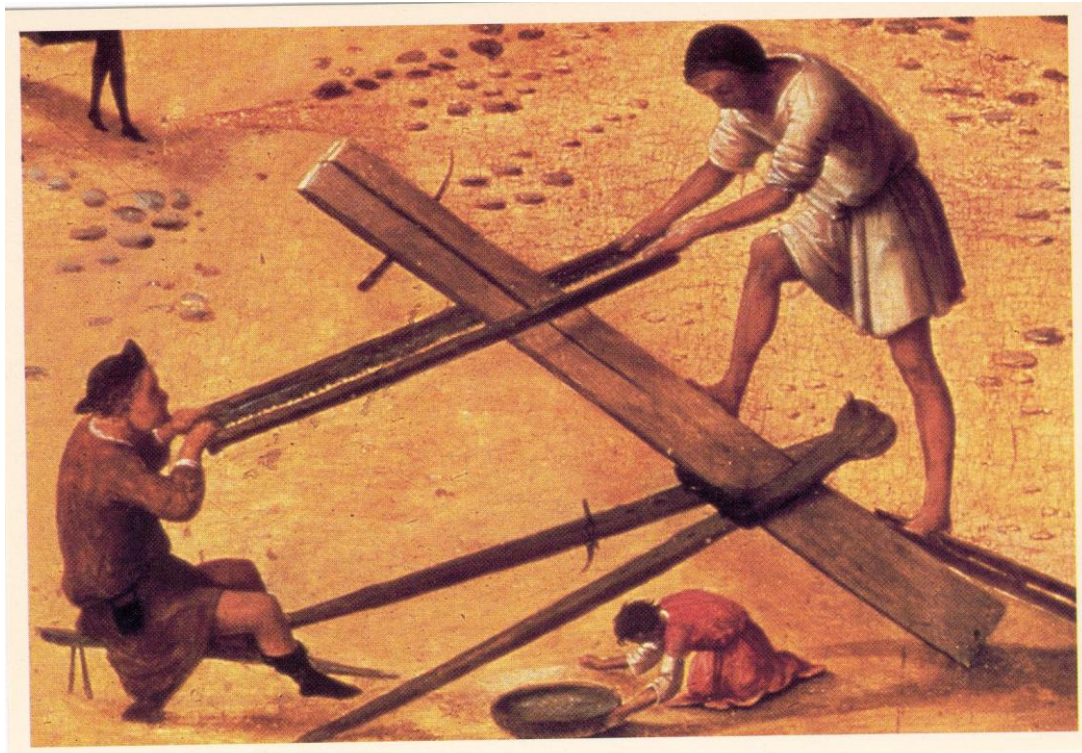


Fig.2. The squaring of a log. Detail of a building site of the sixteenth century in a painting by Piero di Cosimo, The construction of a building.

In Italy among the re-founders of the renewed interest in the wood were Raffaele Cormio (1883-1952) and Guglielmo Giordano (1904-2000). They were internationally known experts, authors of several books and essays and engaged for decades in the formation of new experts of wood in Italy.

The presumed unreliability of wooden structures, and alleged by some of the materials for "modern" has been disproved in recent years both scientifically and in practice.

Certainly, wood is a heterogeneous material, biodegradable and flammable, but studies have shown that, in case of failures or fires the main cause of damage, in addition to negligence and malice, is due to lack of knowledge of the material, to errors design and to a not suitable use of it.

The wood, raw material par excellence, has become a "precious" and noble material because, although it is a renewable material, can no longer be considered, as in the past, an inexhaustible good.

Senseless deforestation have put, especially in certain geographical areas, an alarm both forestry and ecology scientists about the impact that the reduction of forest areas on the planet has, on landslides, on climate change, air quality and consequently on survival of many animal species and populations that in these environments have always lived in symbiosis with the plant kingdom.

The depletion of the territory is also triggering the extinction of numerous species of trees to the point that some of these may no longer be marketed or are subject to remarkable restrictions for their marketing [2].

The progressive reduction of the availability of species as well as lead to an unavailability of the market, or an increase in procurement costs, determines the availability of limited varieties cultivated at low cost (but low quality and durability) with "industrialized" methods.

This situation implies, in the case of substitutions of material irrecoverable in work, the homologation determined by the introduction in the yard of a lower biodiversity than in the past.

As an example we can mention the great variety of species marketed in Italy at the time of the Venetian architect and writer of treatises Vincenzo Scamozzi [3].

In the seventeenth century in Italy about fifty species were marketed as a material of work. Of these, about twenty had used in construction.

Today we can count very few species marketed for structural purposes: the larch and spruce, oaks (only a few varieties), yet on the market, have a cost likely to be, in recent years, now rarely used in new works or building rehabilitation.



Fig. 3. Decayed old wooden structures of Bjni Church in the Kotayk Province-Republic of Armenia

Ecological, cultural and economic reasons have led in recent decades, professionals in the field of building restoration (architects and engineers) to a new approach in order to preserve the existing elements still in place and reliable species that are not more commercialized and often much more durable and high mechanical strength of the elements of new use.

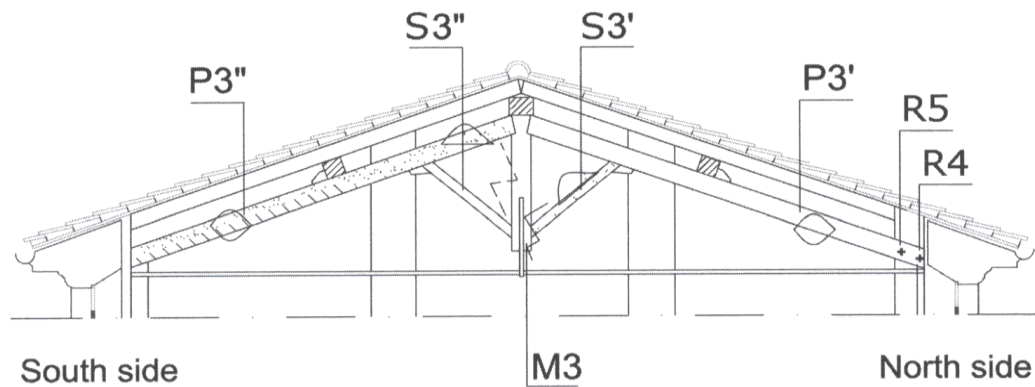


Fig.4. Inspection of historic wooden structures for the assessment of preservation and safety condition.



Fig.5. Inspection of historic wooden structures for the assessment of preservation and safety condition.

From the theories of a scientific approach to the conservation of the historical materials started in Italy in the early 70s of the twentieth century, has passed 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 [4,5].



P Principal rafters
 M King post
 S Braces
 R4₊ Test location

DEFECTS



Angle grain



Knottiness



Natural tapering



Spiral grain



Shrinkage shake



Ring shake

DISARRANGEMENT



Crack



Rotation on axis

DECAY



Infestation



Infestation Infection



Infection



Infiltration

Fig.6. Example of technology assessment of a truss.

The wealth of experience accumulated over the years by industry experts has led the UNI, the only authorized standardization body in Italy, to the publication, since 1999, of useful documents governing the wood "sector" belonging to the category of cultural heritage.

The purpose of the new approach on historical buildings is precisely to determine the operating protocols for the diagnosis on site and then, through a proper evaluation, the reduction to a minimum, and motivated, of material sacrifice and with it a considerable saving of economic resources in restoration works.

Ֆ. Առաքելյի

ՀՆԱԳՈՒՅՆ ԺԱՄԱՆԱԿՆԵՐՈՒՄ ԿԻՐԱՌՎՈՂ ՓԱՅՏԵ ԿՈՆՍՏՐՈՒԿՑԻԱՆԵՐԻ ԱՐԴԻԱԿԱՆՈՒԹՅՈՒՆԸ (ՃԱՆԱԶԻՐ, ՈՐ ՊԱՀՊԱՆԵՄ)

Բարձրացվում է փայտե կոնստրուկցիաների կիրառմամբ կառույցների պահպանման խնդիրը:

Ընդգծվում է, որ վերջին տասնամյակներում ճարտարապետական կառույցների վերականգնման բնագավառի մասնագետները, ելնելով մշակութային, էկոլոգիական և տնտեսական դրդապատճառներից, հանգել են նոր մոտեցման, որն է՝ պահպանել շինությունների դեռևս լավ վիճակում գտնվող փայտե տարրերը: Վերջինիս նպատակն է սահմանել չափանիշներ և հստակ արժևորման միջոցով տեղերում իրականացնել ախտորոշում՝ հնարավորինս և պատճառաբանված կերպով նվազեցնելով նյութական

կորուստը: Դիտարկվող եղանակով հնարավոր է հասնել տնտեսական միջոցների նվազեցման խնայողության:

Նշվում է, որ նման մոտեցումը կիրառվում և կայուն կերպով զարգանում է ոչ միայն Եվրոպայում, այլև ողջ աշխարհում:

Առանցքային բաներ. փայտ, ուսումնասիրություն, ախտահիշ, չափորոշիչներ, պահպանություն, վերածրագրործում:

Փ. Ауджелли

АКТУАЛЬНОСТЬ ПРИМЕНЕНИЯ ДЕРЕВЯННЫХ КОНСТРУКЦИЙ С ДРЕВНЕЙШИХ ВРЕМЕН (ЗНАЙ, ЧТОБЫ СОХРАНИТЬ)

Поднимается проблема сохранения строений с применением деревянных конструкций.

Подчеркивается, что за последние десятилетия, исходя из культурных, экологических и экономических предпосылок в области реставрации архитектурных строений, специалисты приходят к новому подходу, который оберегает сохранившиеся в хорошем состоянии деревянные элементы строений. Целью является установить критерии, и с помощью четких оценок на местах осуществлять диагностику: по возможности аргументированно уменьшить материальные потери. Рассматриваемым методом возможно достичь значительной экономии средств.

Отмечается, что подобный подход применяют и стабильно развивают не только в Европе, но и во всем мире.

Ключевые слова: древесина, исследование, синдром, стандарты, сохранность, утилизация.

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