

# Durable beauty from wood

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# Durable beauty from wood

Sun, water and poor design are the worst enemies of a wooden house. The effects of solar radiation, rain water and moisture can be easily be controlled with careful, creative design. Much new wooden architecture that has been admired in international magazines has not stood the test of time. Though the design of such buildings has aimed to create new, high-quality architecture, the use of wood has been insufficiently understood.

Finns have always build wooden houses and well-preserved examples hundreds of years old still exist all round Finland. So wood as a building material is not why buildings have short lives.

## The Anatomy of a timber house

Present-day architecture usually uses wood only as a facing attached to the building's wall. The few exceptions take wood's potential and limitations into account and seek an expression specific to modern timber architecture.

The durability of a wooden house has three basic factors, which must be accepted as the very start of design: the house must be raised off the ground, rain and splash-water must be carefully led away, and damage from solar radiation must be minimised.

Since the 1960's and 70's, building has sought an easy junction with the ground through ground-based concrete slab and low foundations - the two factors leading to the greatest problems in durability of buildings.

The traditional wooden house, however, seems to have been built to defy the centuries. It is carved from thick logs, rests on high, solid stone foundation, is raised off the ground, and has a ventilated crawl-space. It's location too has been chosen to drain off surface water.

The design of wooden city-house in Basel by the famous architects Herzog and de Meuron emphasises the building's lightness and tectonic nature by raising it into the air. This avoid any contradiction between technical implementation and the architectonic goal of the foundation and the building while emphasising the architectonically important extreme where the building meets the ground.

## The Beauty of material

Changes of shape due the moisture and temperature variations cannot be eliminated, but good design can reduce their effect. Wood is not an easy material, but it can be mastered by accepting it's imperfection and problems and allowing for them in design. Even if wood is carefully selected for specific applications, it is not eternal. A wooden house must be protected and the maintenance and repair of its components facilitated. A modern wooden house can have f.ex facades of easily replaceable detachable units.

Wood's tendency to split is an important part of the attraction of old log buildings, emphasising wood's individuality and unpredictable behaviour; an imperfection that is a natural feature rather than a fault.

Chemical and mechanical ways to improve wood's properties are being continuously investigated. Traditional methods include surface treatments, carbonisation, and impregnation, alongside newer methods like heat treatment. The aim to control the material and minimise its changes of shape, but though they cut the risk of building component damage or decay, they are insufficient. A wooden house must be designed to protect itself.

Surface articulation using the natural dimensions of lumber is a central characteristic of timber architecture. A wooden house has hundreds of components, the boundary surfaces between them forming an essential part of its character. Important aspects include how one timber piece meets another, relation between cladding and gaps, the spans of the components, and how one wood joins another.

Designing a wooden house is laborious due the number of components, the joints between which make the house vulnerable, which the design must allow for. The components should protect each other.

### **The Soul of timber**

Wood is a renewable organic material, with properties that need emphasising by using appropriate natural, breathable surface-treatments. Plastic varnishes and paints and cladding with hard-faced boards hide wood's best properties. Mineral wool insulation, plastics, synthetic insulation foams and mastics are both foreign to the spirit of a wooden house and technically questionable. Better building materials, suitable for wood, are available for among others thermal insulation or sealing.

Wood is breathing, warm material. Studies show the surface temperature of timber panelling to be high enough for the room temperature to be kept few degrees. Wood should be used more, not only for dwellings, but also small-scale public and office buildings.

Wood has superior qualities that are worth recognising and exploiting. However, the success of even small details demands knowledge, skill, care, and especially creativity and a respect for wooden materials. Building a wooden house nowadays should be real high-technology.

(Abstract from an article published in Finnish Architectural Review 1/2001)

<b>Pekka Heikkinen</b> born 1960	Architect, SAFA; Helsinki University of Technology, 1991 Director of Studies, Wood Program, Helsinki University of Technology  Own office 6B Architects since 1995- HUT, Wood Construction, teacher, 1996-1999 HUT, Wood Program, Director of Studies, 2000- Worked in several architectural offices 1985-1995																																
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