

HÅKON CHRISTIE:

## Preservation of original Structures of Urnes Stave Church. Why, and how?



*Urnes stave church: Northside with wood-carvings from an earlier building.  
L'église d'Urnes: partie nord et sculptures provenant d'un édifice antérieur.  
Photo Rikantikvaren 1972*

What would we lose if Urnes stave church were to be replaced by a copy? Everybody will agree that we should lose a great deal, and I shall simply mention some of the evidence the buildings's original parts can provide for those engaged in research.

The building materials tell us something about the demands builders made on the wood and what kinds of tree they chose. The materials can also provide evidence of how the building timber was treated before it reached the construction site.

Every single piece of wood used in the church reveals how the builder shaped it and how joints with other parts were formed. Here we can study the builder's insight into statics and structure, and his ability to shape wood for the various purposes.

The building materials often have cuts, scratches or other marks which provide evidence of the way in which builders measured the individual elements. These marks open the door to an understanding of how the building was proportioned and composed.

In the shaping of the individual elements and not least in the way in which they are joined, master builders often betray something of their training. We can learn to distinguish individual master builders, associations of builders and schools of building. As we are gradually able to determine which churches the various associations of builders constructed, we shall get a clearer picture of how church building was organised in this country in the 12th and 13th centuries.

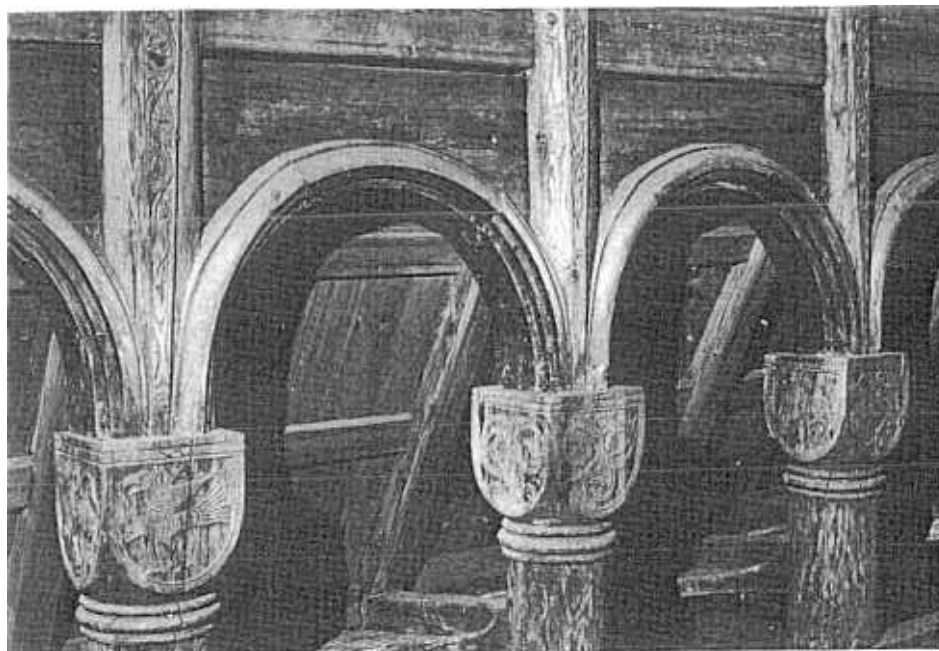
The buildings also have marks which say something about the construction process. All the materials were first prepared and laid out on the building site, then the building was erected as the parts were put together. The first step was to assemble the 4 walls of the nave lying on the ground. The walls were then raised and joined together. Subsequently the aisle walls were erected and bound to the nave, the roofs were mounted and the floors laid. For the erecting of the high walls of the nave special structures were used which were removed after the building was completed. The materials in the church also show that various adjustments were made to the ready hewn materials during the erecting of the building.

The stave churches contain a wealth of information which only they can provide. Research therefore demands that old buildings must be preserved with all their old materials untouched. This raises a challenging question: Is it possible to preserve an old building, in casu Urnes stave church, as it stands today from now until the end of time? We have answered «yes» to this question. It is possible to meet the destructive forces which threaten this church and other old wooden buildings with effective counter-measures. Let me say something about the way in which we are working to safeguard the stave churches.

Fire can be prevented if we take precautions such as removing inflammable things around the walls of the church and forbidding smoking inside and outside the building. We can also install automatic fire extinguishers, but the system must be so constructed that it does not damage or spoil the building.

Harmful insects are not a problem in this country thanks to our climate. However, Urnes lies in a area where we find the longhorned beetle (*hylotrupes bajulus*), and the church was prepared against attack roughly 20 years ago.

Rot is the greatest threat to our wooden buildings. We meet the most severe problems on the underside of the base structure, and here most old wooden buildings will have suffered damage from rot. However, the attacks stop where the wood is sufficiently dry. It is therefore necessary to drain all water away and make sure that there is plenty of space between woodwork and terrain. Furthermore care must be taken to ensure sufficient circulation of air under the floors. We have also impregnated exposed parts with fungicides.



*Northside in the nave with carved capitals.  
Partie nord de la nef avec chapiteaux sculptés.  
Photo Riksantikvaren 1972.*

Most structural elements in a stave church have such massive dimensions that even considerable damage will not make it necessary to use reinforcement. However, if reinforcement is considered to be essential, we try to put in auxiliary structures in preference to replacing old damaged parts by new ones. It is possible to strength wood that has been damaged by rot by injecting chemicals, although we have adopted a restrictive attitude in this connection. On certain occasions we have put in new wood in damaged parts in order to prevent the damage from spreading.

We cannot protect old wooden buildings against the effects of the climate unless we cover them or build a protective structure around them, and this we are loath to do. Woodwork disintegrates when it is exposed to strong light, changes in temperature and rain. We have had to cover certain very exposed parts with planks. The shingles used to cover the roofs have had to be replaced at various times, and original shingle roofing outside is no longer to be found. We feel we are justified in continuing the tradition of replacing shingles in an advanced stage of crumbling. Right from the time when the stave churches were built, they have been coated with wood tar on the outside, and we are also continuing with this tradition. We hope that it will be possible to preserve the stave churches and our other old wooden buildings with the help of experience and the aid we can get from new technology and new research.



*Mr. Longépé climbing to the roof.  
M. Longépé grim pant vers les combles.  
Photo Sverre Mo, Bergens Tidende 1983.*

## *Résumé*

### *Conserver l'authenticité des matériaux à Urnes*

#### *Pourquoi? et comment?*

Que perdriions nous si l'église d'Urnes était remplacée par une copie? Probablement bien plus qu'une source inépuisable de renseignements précieux pour les spécialistes de l'architecture en bois. Nous nous en tiendrons cependant au côté strictement documentaire du problème.

Déjà le choix et la qualité des matériaux donne une indication sur l'exigence du maître d'œuvre. L'étude de ces matériaux nous prouve aussi qu'ils ont été taillés avant d'arriver sur le chantier.

Les matériaux portent souvent des marques de mesure, indiquant comment l'édifice a été conçu.

La forme des assemblages révèle la dextérité de l'ouvrier. Nous avons appris à distinguer différentes équipes, différentes écoles, dont nous retrouvons les traces dans d'autres églises. Ceci nous permet de reconstruire petit à petit l'histoire des bâtisseurs d'églises dans la Norvège médiévale.

Cette source de renseignements ne peut se trouver nulle part ailleurs, elle fait partie intégrante du matériau. Est-il possible d'en assurer la survie? Nous prétendons que oui. L'incendie peut être évité grâce à de simples mesures préventives: débroussaillage des alentours de l'édifice, interdiction totale de fumer et installation de systèmes d'extinction appropriés. Ces derniers ne doivent en aucun cas défigurer le bâtiment.

Un traitement insecticide doit être renouvelé régulièrement. Il y a une vingtaine d'années déjà qu'un tel traitement a été administré à Urnes, contre une larve (*hylotrupes bajulus*) spéciale à cette région.

L'humidité est le fléau le plus redoutable. Il est important de drainer le terrain et d'assurer la bonne ventilation des parties basses spécialement exposées, même de les imprégner d'un liquide fongicide.

Les structures d'une telle église sont en général de dimension massive. Même dégradées, elles ne demandent pas nécessairement à être renforcées. Quand une réparation est inéluctable, nous choisissons d'étayer plutôt que de remplacer un élément. Nous gardons une attitude assez restrictive vis à vis des injections de produits chimiques.

Le bois se décompose au contact du soleil, des sautes de température et de la pluie. Il a donc été nécessaire de recouvrir certaines parties spécialement exposées aux intempéries.

Les parties dégradées de la couverture ont toujours été renouvelées au cours des temps, si bien qu'on ne trouve nulle part les matériaux d'origine. Nous pouvons donc en toute conscience perpétuer cette tradition.

L'enduit au goudron est également de tradition depuis toujours et a fait ses preuves.

Nous espérons ainsi que l'expérience acquise au cours des siècles, conciliée avec la technique moderne, nous permettra de conserver les structures en bois originales.