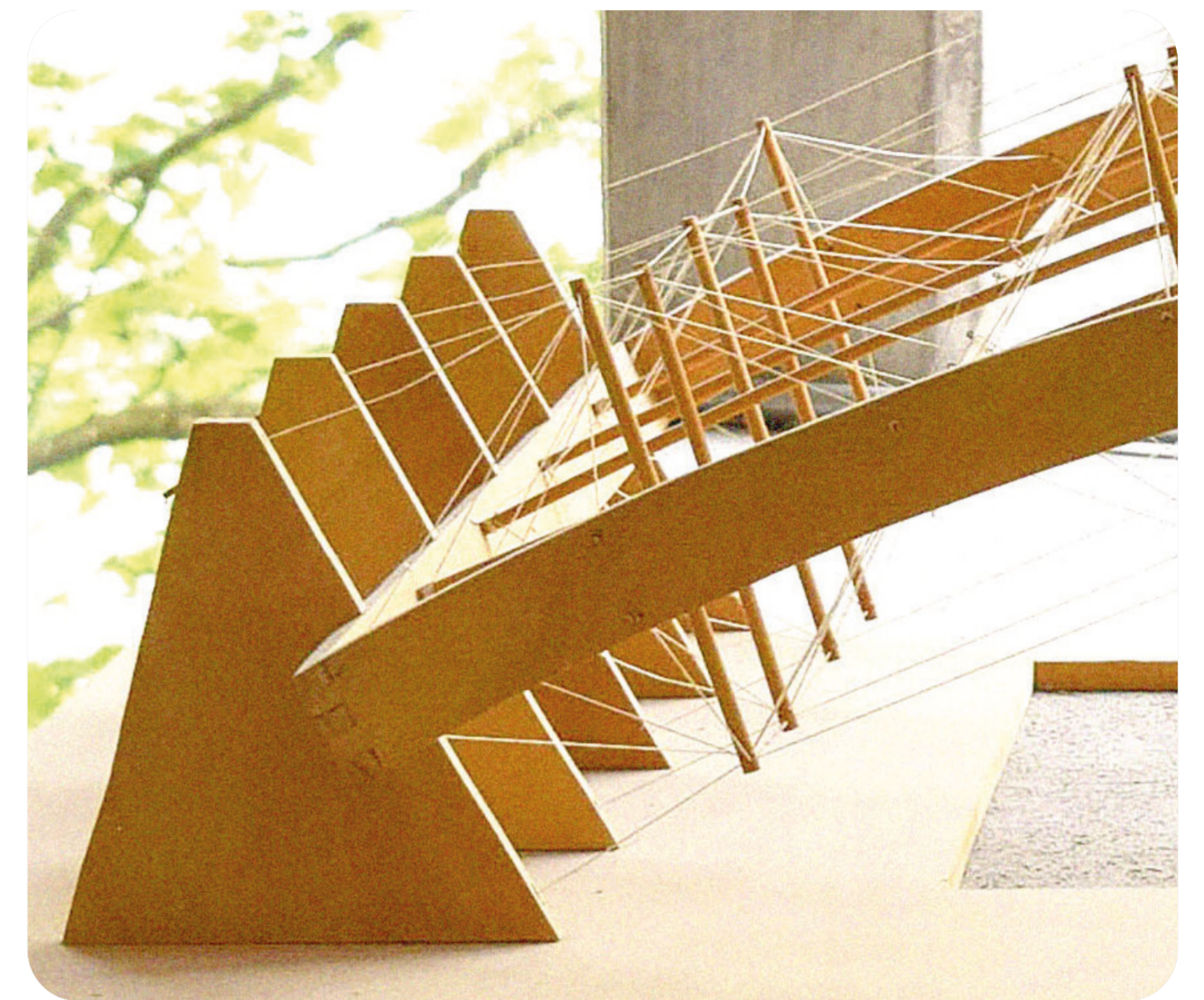


TRIER INTERNATIONAL PROJECT GRANTS

GREEN OAK BUILDING CONCEPTS WITH HIGH-TECH METHODS



RESULT REPORT

A research trip to the University of Bath was aimed at the scientific exchange with colleagues from the Department of Architecture and Civil Engineering. The focus was on topics of sustainable construction, wood material research and resource minimization.

The trip took place from 20 to 25 May 2022 together with our research partner from Mainz University of Applied Sciences. The trip was part of a 39-month research project at Trier University of Applied Sciences entitled "Development of a new load-bearing system made of weak hardwood," funded by the Agency for Renewable Resources (FNR).

The concept for the cooperation with the Department of Architecture and Civil Engineering initially came from a student exchange within the framework of a cooperative doctorate and could now be continued and intensified through the funding within the project "Trier University of Applied Sciences International: Global Innovation for Sustainable Futures."

One of the Trier Wood Competence Centre (HKT) research objectives is to show standardised timber construction methods in their production, construction and application. We also aim to develop new concepts for ecological and efficient timber load-bearing structures, primarily from naturally dried oak logs. In particular, the weak oak wood frequently found in the Palatinate Forest is available in large quantities as raw material and has been used only for firewood or as "precarious assortments" so far.

The inspiration for this research is the traditional timber construction culture in Great Britain. There, a so-called "Green Oak Building" exists, which, however, is largely based on handicraft tradition and requires complex timber joints made by hand. The object of the research presented below is to transfer such construction methods - with oak wood at wood moisture contents of over 20 % - into a contemporary technology with the help of 3D scanning methods, strength tests and databases developed specifically for this purpose. This means that weak oak timber, previously considered to be of inferior quality, can be used for eco-efficient smaller engineering structures such as vehicle sheds, stables, carparks, production and storage facilities.

The University of Bath is one of the leading architecture and engineering faculties in the UK and is conducting more research in the field of timber construction. The working groups can draw on the experience of the historic "Green Oak Building" in England. A shared interest in a scientific exchange on this topic emerged in advance of its establishment.

TITLE
Green Oak Building Concepts with High-Tech Methods

DEPARTMENT
Architecture and Civil Engineering

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