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# Spatial and material qualities of bamboo constructions

## A cross-cultural case study investigated through three built constructions

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### **Abstract**

Keywords: Architecture, materiality, bamboo, space, climate responsive

The aim of the project called COCOON is to investigate architectural qualities in constructions made out of split bamboo from a sustainable low-key point of view, but with an experimental approach to climate, material, form, construction, space and function. It also includes the involvement of architects and architectural students from different places and cultures with their unique individual backgrounds. The project consists of three different built case studies 1:1. The first in South India, the second in Italy and the third in South Korea, which all explore the quality of how to use split bamboo constructions with arbitrary double curved forms in relation to various material, space and site combinations. COCOON I is a climate responsive building in local materials, which has a function as an alternative learning centre for none educated farmers in South India (Figure 1, 2). Cocoon II is a mobile and folding construction used as a pavilion at the Milan design week 2015 in Italy. COCOON III is constructed as a doubled curved installation in set pieces, that can be assembled in various combinations to adapt to different interior and exterior spatial situations in South Korea. The results show a unique approach of how to combine different split bamboo constructions with local materials and space variations. It also shows how new digital computer design techniques can be merged with a craftsman's understanding of materiality. The project proves it is possible in the future to use the potentials of split bamboo with various materials for new sustainable architectural solutions.

#### Literature

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Fig 1: COCOON I. Bamboo building with shingle roof in bark



Fig 2: COCOON I. Interior with split bamboo construction