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Bamboo construction generated by cocoon contours

Ecological perspectives on a new use of traditional materials in buildings

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Abstract

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This experimental building project is called COCOON, from which the idea of the overall design has taken its starting point. The aim of the project has been to investigate architectural qualities in a construction made out of woven split bamboo and local materials from a sustainable low-key point of view, but with an experimental and sustainable approach to climate, material, form, construction, space and function. The project also includes the involvement of architects, architectural students and craftsmen from different places and cultures with their unique individual backgrounds and skills. COCOON is a climate responsive building in local materials, which has a function as an alternative learning centre for none educated farmers in South India. One of the activities at the learning centre is to educate in the cultivation of silk worms, hence the title, form and tectonics of the main part of the project (Figure 1, 2). Several other factors have also influenced the design process. The natural flow of air through space in the harsh hot climate has shaped the physical transparency of the construction, and the movement of people throughout the day according to the comfort of cooling shade created by the building has determined proportions and directions of building volumes. The aspect of functionality has determined the unique organic forms from where new approaches to pedagogical methods can take place and finally an ecological toilet with a purifying bed of root cleaning plants is integrated for educational purposes.

The result of the complex process shows an approach of how to combine different local materials into a composition of unique shapes with close relation to nature. The project proves it is possible in the future to use the potentials of split bamboo with various local materials for new sustainable architectural solutions.

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Fig 1: Building part of bamboo and granite with shingle roof in bark. Fig 2: Interior of split bamboo construction and woven column.