EXPERIMENTING WITH HYBRID CONSTRUCTION - GUADUA BAMBOO AND ADOBE - FOR HOUSING IN RURAL COLOMBIA

Karim Hadjri
Department of Architectural Engineering
United Arab Emirates University
Al Ain, UAE

ABSTRACT

Guadua Bamboo and Earth are two ancient building materials which have been used for centuries in many parts of the world due to their wide availability and basic skills required in their use. These two materials are nowadays perceived as the construction materials of the poor. In this respect, more efforts are needed to promote these readily available building materials and their construction techniques, at a time when millions of people are homeless. Guadua Bamboo has excellent structural qualities. It is flexible and earthquake-resistant, and is a fast growing plant that is abundant in many parts of Colombia. On the other hand, Earth is readily available, environmentally friendly, fire resistant, and has good thermal and sound properties.

This paper presents a hands-on experience that combined these two useful low-cost indigenous construction materials which are widely used in rural Colombia, namely Guadua bamboo (Guadua Angustifolia), and earth. Participants in the workshop were architects and builders from Colombia, and architectural students from Colombian and UK universities (Oxford Brookes University in Oxford and the Mackintosh School of Architecture in Glasgow).

The workshop was organized by the Centro de Investigaciones de la Facultad de Arquitectura of Los Andes University in Bogotá, Colombia. The author of this paper was the director of this center at the time of the implementation of the workshop.

The aim of the workshop was to introduce hybrid construction, and to experiment with these two important building materials, one as a structural element - Guadua, and Adobe as an infill or wall component. Simon Velez, a prominent Colombian architect who specializes in bamboo construction contributed to the design and construction of the roof structure, while Dr. Bousmaha Baiche, a research fellow at Oxford Brookes University and expert in earth construction, supervised the use of Adobe. The construction of the single-storey house lasted three weeks during which the roof structure, all walls and floors were completed. Lessons learnt from this experience related to the selection, handling and use of both Guadua and adobe and their combination in a single construction. It should be noted that in a few parts of the building, conventional materials such as cements, reinforcement steel bars and bricks were used, but relying only on basic building tools.

Keywords: Guadua bamboo; Earth; Adobe; Hybrid construction; Housing; Rural Colombia.