Parametric modeling of bamboo pole joints

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Abstract. This paper describes the development of a parametric modeling system that enables the design of customized bamboo pole joints, where the geometry of each bamboo piece becomes the main design constraint. Rules of design are identified in traditional bamboo-jointing practice through the analysis of a bamboo catalogue. This knowledge informs the constructive principles of the system. Output data of the system successfully formulates the design of a customized bamboo jointing system. The effort of this paper suggests that further development of an application or software to facilitate the design of parametric bamboo joints is a feasible project that could help bamboo to have a solid presence in modern building industry. Lastly, the paper hints that transference of parametric technology is a promising domain that could potentially be applied to streamline the use of other natural materials.

Keywords: Bamboo, pole joints, design rules, parametric modeling.