

ABSTRACT

Design of contemporary residential architecture of Kerala, India, continues to be based on indigenous principles, popularly known as *Vastu*, to a large extent. Essentially, these principles are a combination of mathematical rules, including factors like proportions and dimensions and syntactical systems including adjacency and orientation. Primarily, *Vastu* was developed in response to traditional building technology and lifestyle. Thus, they often need modification and adaptation to suit contemporary functional requirements. However, there is a lacuna in understanding and interpreting these traditional principles in a modern context, and their employment is not systematic. Evidently, then, there is a need to establish the explicit and systematic links between the generative principles of traditional forms and present day considerations. Here, it is important to note that a particular house type, known as *chatushala*, in Kerala has been considered for the present study.

The present research demonstrates a methodology to objectively analyse and extract those principles and norms which are still relevant for the design of *chatushala*, through specific measurable attributes. This methodology involves a scaling system for measuring and translating the characteristics of space into attributes of the physical environment, followed by identification and incorporation of the canonized principles, practical conventional norms, their deviations and redundancies, and new components to meet present requirements. Thereby, it helps in evolving a format to understand the development of indigenous house forms.

Moreover, by translating the relevant principles in to a shape grammar that is comprehensible to practicing architects, this methodology resulted in the development of a design interface that demonstrates the generation of alternative layouts for a given context.

Finally, a method for evaluating the generated layouts is proposed and demonstrated using the spatial requirements of sample houses from case study.

Keywords: shape grammar, traditional architectural principles, residential design, spatial attributes, space establishing elements, indigenous houses.