

A Study on Thermodynamic Prototype for Vernacular Dwellings in Perspective of Bioclimatic Architecture

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Abstract : As major human activity places, buildings consume a large amount of energy, and residential buildings are very important part of it. An extensive research work had been conducted to research how to achieve low energy goals, vernacular dwellings and contemporary technologies are two prime parameters among them. On one hand, some researchers concentrated on vernacular dwellings which were climate-response design and could offer a better living condition without mechanic application. On the other hand, a series concepts appeared based on modern technologies, surplus energy house, bioclimatic architecture, etc. especially thermodynamic architecture which integrates the micro-climate, human activity, thermal comfort, and energy efficiency into design. How to blend the two parameters is the key research topic now, which would act as the key to how to integrate the ancient design wise and contemporary new technologies. By several cases study, this paper will represent the evolution of thermodynamic architecture and then try to develop one methodology about how to produce a typical thermodynamic prototype for one area by blending the ancient building wise and contemporary concepts to achieve both low energy consumption and surplus energy.

Keywords : vernacular dwelling, thermodynamic architecture, bioclimatic architecture, thermodynamic prototype, surplus energy

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