# ARCHITECTURE AND THE ESSENCE OF MATERIALS

WITH SPECIAL REFERENCE TO THE RELATIONSHIP BETWEEN THE ESSENCE OF MATERIALS AND SPIRIT OF PLACE

> A DISSERTATION PRESENTED TO THE FACULTY OF ARCHITECTURE OF THE UNIVERSITY OF MORATUWA



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#### ARCHITECTURE AND THE ESSENCE OF MATERIALS

#### Abstract

Architecture is the composition of material in creating built form. The material component of a building creates forms and spaces desired by the architect. The nature of the material in use of transforming idea into matter is two fold.

The physical nature of a material used in a building is its strength, texture, surface and colour. The selection of a material for its finish, texture and colour stimulate an emotional response. The physical nature of a material evokes a sensory experience for we can touch, smell, see and feel the space created. It makes architecture solid and tangible.

The second nature of a material is its essence. Any material has a characteristic woven around its being. This signifies the traits and peculiarities original to the material. This essence of material contributes to its physical nature. It also gives rise to understanding the built form at a deeper level triggering connotations and symbols. The essence of a material unites the materials to give meaning to the building. The essence of material becomes a medium of expression in architecture. "Every building is born in the mind of its creator reflects how the elusive qualities of human consciousness are poured into places of dwelling." 1

Materials create an enclosed space. This space is placed on a site that lends its quality or spirit of place to the built form. It is necessary to understand the generators of the site, site condition and material composition of the site. The architectural response should enhance the spirit of place of the site. To enhance the spirit of place the architectural response should harness the essence of the material along with its physical qualities. The essence of materials should be related with the spirit of place. Architecture then becomes a sensory experience. It awakens a deeper level of understanding of the nature of being. The science of understanding the nature of being through the

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fundamentals, the essentials, the intangible and spiritual nature is known as the Metaphysics. The essence of materials in relation with the spirit of place makes one experience the metaphysical level of being and thereby a unity in architectural experience can be achieved.



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1. Lawlor, Anthony.

#### The temple in the house.

P. Putnam Books. 1994. Page.4

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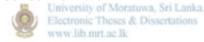
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