

A STUDY OF SOCIAL ASPECTS WITHIN AN ENVIRONMENTAL ETHIC IN ARCHITECTURE

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Sustainability is the joint consideration of environmental, economic and social factors. While there is already a methodological corpus on environmental and economic aspects, research on social aspects is still lacking, especially in the field of construction. These social matters as applied to the world of sustainable construction need to be specified: the group of social issues is too vague. Therefore, a basis on which to act is to be found and needs to be defined. This involves an understanding of the aspects which must be specifically treated within the framework of social relations and behaviours in sustainable architecture.

In order to achieve this, we have begun by compiling all the already existent basic definitions that hold the theoretical base of a sustainable building. For example, what the social aspects are, strictly speaking, and what their positions are, if any, in the field of environmental ethics. These basic definitions are then developed in more specific aims, framing the field of study and marking out fields on which to act as the basis for defining indicators.

Secondly, the fields of study within a social understanding have been extracted from the different existing evaluation methods for buildings environmental behaviour (for example, analysing in what general fields the applicable indicators are defined: those relative to user's health, mobility, etc.).

These indicators have then been studied in terms of their range, universal scope and field of action, and later compared with the basic definitions. This has helped to determine if the indicators are adequate, sufficient, and adjusted to ensure compliance with the social aspects that conform a sustainable building.

With the observation and analysis of these criteria, the empty fields, lacks and deficiencies that must be overcome in environmental evaluation methods, in order to holistically understand sustainable buildings have been stated: this holistic understanding is one of the necessary steps for obtaining an environmental ethic.

ANALYSIS OF PASSIVE COOLING EFFECT OF VEGETATION AND A CANOPY THROUGH FIELD OBSERVATIONS IN THE SUMMER

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The tree is regarded as an sustainable architectural outdoor design element which reduce urban heat island effect by its solar shading and evapotranspiration. This study is to investigate the passive cooling effect of tree and membrane parasol made of artificial materials in summer. This study carried out field observations of measuring thermal environment of selected tree, membrane parasol and its ambience to determine passive cooling effects. This real-time observation experiment can also make it possible to gain fundamental data for the quantification of the effects to control the rise of urban temperature, and to promote urban amenities. Results from the field observations are as below; Tree-shading effect to the thermal environment can not be properly evaluated by merely measuring air temperature differences between tree-shaded space and unshaded space for the maximum temperature difference is less than 1.5°C. The differences of longwave radiation and shortwave radiation between tree-shaded space and unshaded space are measured. Shortwave radiation is considered as a main thermal comfort determining factor for the difference of the shortwave radiation is much bigger than that of longwave radiation. By thermal infrared image analysis, the surface temperature of the tree under strong solar radiation is measured same as ambient air temperature. By which the evapotranspiration is considered to retard tree surface temperature raising effectively. It is verified that the tree played more effective role better than membrane parasol in controlling the rise of temperature under each object.

(1) Analysis of Passive Cooling Effect of the Tree by Field Observations in the Summer