

Constructional materialism from the healthy building viewpoint

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ABSTRACT

State-of-the-art, the building discourse on the materials and techniques for healthy buildings were found make more efforts on the exploration of novel construction and equipment. From this aspect, it was caused the appearance of ‘technical decisivalism’, such as the movement of ‘hi-tech building’, ‘formalism’ and ‘vernacular architecture’, etc. In fact, to argue the holistic meaning of the healthy building, it is necessary to get the issues on the healthy and ecological environment back to the constitution of ‘built matter’.

INDEX TERMS

Material; Tectonics; Hapticity; Constitutive ethics

INTRODUCTION

As a result of the fact that the visual sensation is the most authoritative of all sensations in recent years, it seems that building design has become a movement on pursuing visual-art appearance. This trend has caused the built environment to be formed by the predictably mechanized structure. It also embroiled the lack of architectural perceptions. Furthermore, the needs to have buildings begin in constructing a space-enclosure to shelter from dangers, as shown in Figure 1. From the viewpoint of ensuring the occupants’ health, the contents of the building formation should be involved in the field of material basis, which is the practical element in buildings. More exactly, the healthy building can not only be made from the assembly of the building materials and components, but also from tectonic constitution of building elements. Some discourses corresponding to the tectonics of healthy buildings are illustrated in this paper.



Figure 1 Aboriginal thatched cottage: priority of whole system is to support the roof well, the following is to integrate other components (Viollet-le-Duc, 1995: 26).

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MATERIALITY FOR HEALTHY BUILDING

It is necessary to utilize the suitable materials corresponded to the function and the environment to construct a healthy building. For this reason, healthy building as a body to be discoursed upon the constructional knowledge is a key feature of its producers' will (Eugène-Emmanuel Viollet-le-Duc, 'Construction', *The Foundation of Architecture: Selections from the Dictionnaire raisonné*, pp.105–106, trans. by Kenneth, D., 1990). These autonomic values also predominate the building form. For example, the picture in Figure 2 shows a pavilion construction that was built by the proposal of 'Space Legend Festival'. It can be found that the activities of the construction are not only to select some stuff for the building materials but also to recognize the matter as their own characteristics in the constitution relationship. The selection of healthy-building materials should depend on the consideration of material properties.



Figure 2 Photograph of a new pavilion in Zhen-ban village, Ping-tong County, Taiwan, referred to the art of composition from structural frame made of bamboo, which was used by aboriginal Shao tribes.

Furthermore, from the conceptual reflection of the thing-in-itself, it is also considerable that the humans who live in the construction enclosure act as the basic references in the measurement of the various material properties. To some extent, the human body can adapt to harmonize with its surroundings and matters (Leatherbarrow, 1993: 212). Obviously, the notion of 'thing-in-itself of materials' should be replaced with the notion of 'thing-in-itself of human nature'. The materiality of selected material should be determined by involving in the constructors' perception in the whole constructional process.

HAPTICITY OF HEALTHY BUILDING

The awakening to needs of healthy building enhances the sensitivity on the environmental concern, it is much like a counterattack against the dehumanizing power arising from the recent environment. It means that the architectonic development reserves some motive power to resist an unconscious construction, which especially is fairly obvious in an aspect of hapticity. The perception for modern architecture that we currently have is transforming gradually from the male-dominated visualization into the tactile sense with female speciality. It can also be illustrated that our feelings on buildings affected from the outer visual-control are replaced with the inner tactile-contact.

Figure 3 shows the material speciality with high contact to human body and skin by using the native matters, such as clay, mortar and corallite. Not only are these materials pleasing via the surface texture, but their porous constituents can also relieve influence of outdoor climate on indoor environment. Although geometric structure seems to be a stuff to halt time-flow, hapticity and multi-consciousness may be the key elements of healthy building to have the pleasurable experience and curative effect.



Figure 3 Photograph of a traditional brick house in Chi-mei, Pang-hu, Taiwan. The degree of efflorescence of the outer wall depends on the weather and time, and then it reflects a continuous experience on the tactile sense and multi-consciousness.

The speciality of hapticity can be represented as a continuous perception in touching stridden across the time motion. This perception may last during continuing transformation or decay of building material. For this reason, the concerns of healthy building are not merely on the outward appearance to satisfy the visual sensation, but also to create an expectant and tangible environment corresponding to the whole sense organs.

TECTONICS FOR HEALTHY BUILDING

To analyse the constitution of a healthy building, hapticity is the dominant character for the materials, and the tectonics is the innate character. As far back as ancient times, tectonics is regarded as the ontology of construction (Porphyrios, 1982: 56). As the first philosophy for healthy buildings, tectonics is visible part of making behaviour. This is the reason that a healthy building also represents the poetics of construction.

The ontology of the above poetics of construction is based on the technical experience, and can be approached through skills (Semper, 1989: 131). For example, Figure 4 shows the self-made home, which reserves the various daily activities to fulfil their own requirements. For this healthy construction, the habitants are no longer concerned about the shapes, but concerned more about the quality of life. Due to this practical reason, healthy building will lead to cultural secularization.



Figure 4 Photograph of a rebuilt house of the Thao tribe in Brawbaw village, Nan-tao County, Taiwan, which was reconstructed by owner's needs. This self-made housing reflects the everyday activities.

CONSTITUTIONAL ETHICS

Owing to the constructional process and the fact that products are based on comprehension of the practical materials, in the construction of a healthy building it can be found that the function follows the same principle and the appearance shows the trend toward integration with the minimum articulations (Chen, 2002: 53). Figure 5 shows a public kitchen rebuilt by the residents, which used the everyday materials around their living environment. Further, every material was arranged in the right situation, such as the rock brick was put up as the foundation and the bamboo weaving was set up as the roof. This constructional ethics, which rules the relationship on where to set the component or how to join the different components, is also meaningful for us to explore the healthy building.



Figure 5 Photograph of a rebuilt public kitchen of the Thao tribe in Brawbaw village, Nan-tao County, Taiwan, which was reconstructed by bamboo-weaving roof, rib-frame structure, bamboo-weaving wall and rock-brick foundation.

CONCLUSION AND IMPLICATIONS

This paper discoursed on the explosion of the healthy building researches. We can draw the some approach strategies for the built environment toward the healthy building, which are: a building construction should be based on providing communication with human body, a building should be a part of the community and should represent the meaningful appearance, and the researchers should pay more attentions on the architectural discourse for the renewal significance of the existing building. Building as the power of social civilization needs to act as a role of sanctuary.

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