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SUSTAINABILITY INVOLVES EMOTION: AN INTERPRETATION ON THE EMOTIONAL CHARACTERISTICS OF SUSTAINABLE ARCHITECTURE

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ABSTRACT

Based on the theoretical foundation of emotion research in architecture and design, this study starts with design experience and practical cases. Taking form, space and feeling as the analysis elements, this paper explores the emotional attributes of sustainable architectural design strategies and space ontology from the four dimensions of aesthetic appreciation, psychological satisfaction, emotional care and spatial experience. This study found that, in diversified buildings design and sustainable strategies, the expression of emotion can be immediate, continuous and diversified. In the future, as the maturity of sustainable architectural design methods and technologies, people's attention will turn to the emotional perspective full of humanistic care. Paying attention to the integration of ecology and humane motion in architectural design and exploring its possibility will be another key point for the popularization and development of sustainable architecture.

Key words: sustainability; architecture; emotion

1. INTRODUCTION

Our reversion today to embark on the road of sustainability, which will inevitably bring about the new architecture movement and influence the development of architecture in the following century, including dramatically enriching the content of architectural science and technology and correspondingly developing and changing the artistic creation of architecture. (Wu, 1998) There is a certain dependence of psychological function on utility function in the integrity of sustainable architecture technology and art, which indicate the development orientation of sustainable architecture in the humanistic layer from the material and spiritual angles, namely that the integration of constantly developing sustainability technology into architecture will cause the change of "artistic creation" to architectural environment in terms of aesthetics, psychic satisfaction, emotional caring and spatial experience. Therefore, ecological aesthetics that mutually integrates and harmonizes with ecological technology has naturally turned into a theoretical basis of the artistic creation for sustainable architecture at present. The integration of all kinds of ecological technologies and sustainable strategies into sustainable architecture design will generate many of new architectural and spatial forms and develop new spatial spirit and environmental image. In addition to maintaining the human caring of traditionally architectural environment, sustainable architecture also displays new attributes of emotional connotation and manifestation mode by subsuming, restructuring and remodeling traditional architecture in the process of reflection on the nature.

2. EMOTION OF FORM: AESTHETIC FORM OF VISUAL PLEASURE

The sustainable function of six-sided shape can maintain the formal beauty in sustainable architecture just as the traditional one. The ecological metaphor and the deep-seated formal structure of natural environment lead the spatial environment to be immersed in the breath of natural ecology. Zong Baihua wrote in his *After Appreciating Rodin's Sculptures* that "the nature has an inconceivable vitality, which is the source of all of 'beautiful things'. The nature is always beautiful anywhere." (Zong, 2011) The emergence of the emotional field interacted between human's instinctive pursuit of visual pleasure and the saying of "the false thing is inferior to the real appearance and the false scenery is inferior to the nature" will be the simple beauty, ecological beauty and natural beauty of spatial environment, an artistic work of the "humanized nature".

The number of ecological materials, as the main material carriers to transform emotion formally, is not much, compared to traditional materials. However, ecologic materials can endow the aesthetics of natural ecology with better appearance in terms of color, texture, quality and form superior to those endowed by modern industrial materials, because of its quality of "shaping up based on objects". For example, the form and quality of soil, bamboo, crop fiber and reed are featured by the natural and wild artistic images, such aesthetic attributes are way beyond those rational and indifferent materials, such as stainless steel, iron, cement and plastics. Even more, the vivid effect of processed ecological materials is not second to that of natural materials.

Sustainable technology displayed and hid in spatial entities plays as the driving force and a catalyst to promote the generation and evolution of new forms. The so-called beauty lies in natural objects themselves and beauty is the attribute of objective matter. The moment of technology maturity marks the starting point of free release of beauty-pursuing consciousness and the emergence of spatial form with visual aesthetics. Modest, gentle, low-key and simple feelings can usually be sensed in the forms with low technology, showing the traditional and ecological beauty with the rural taste, the time precipitation and the integration into the nature. The infinity of high technology can endow forms with degree of freedom and novel creativity; and the image of modernity can demonstrate the fashionable and trendy beauty. The complicated structure of high technology can also demonstrate the beauty of spatial environment. For example, the dynamic beauty of pretension in cable-membrane structure and the formal beauty in the stability and power of steel structure; and the visual image of strength, stability and orderliness reflects the pleasure of technological formal beauty.

Due to difference of climatic regions and conditions, many beautiful architectural forms are generated in the contradiction and harmonization of climate and architecture. There is transparent and crystal beauty and thick-wall beauty in the glass-made greenhouses in cold regions, the artistic beauty of ventilation structure in dry and hot regions, the light and pass-through beauty of architectural structures in wet and hot regions and the formal beauty integrating heat preservation, sun shading and ventilation in the temperate regions. Architectural pattern language of traditional and geographical culture, including spatial form, feature component, ornament and pattern, is not only featured by the inexpensive cost, but also endowing architecture with the great visual expressive force. The so-called beauty is sourced from culture praise; therefore, designers are usually used to find out the dependence of geographic tradition on modernity and to utilize modelling language as the ideographic system in the transmission media of traditional culture.

The development of traditional low technology is usually controlled by geographically cultural genes; newborn technology is usually featured by the strong infiltration economically and socially; while low technology is a continuous expression of the uniformity of geographic tradition and modern culture. The application of low technology and construction materials of local tradition by designers can naturally demonstrate the beauty of traditional culture geographically.

3. EMOTION OF OBJECT: EMOTIONAL SUSTENANCE OF PERSONAL MEMORY

Old buildings are the features of history visible to human, as an emotional place of "lasting spirit". Günter Nitschke believed that place is the product of life space-time. (Nitschke, 1993) Old houses are not only connected with us materially in the biological sense, but also the emotional construction internalized in significance of life. Historical value (especially the geographic tradition) is the extending significance of trying to maintain the original architectural form and structure in the process of sustainable architectural reconstruction; the complicated and multiple emotional representation can waken up human's emotional memory subsided in the unrestrained old times. Witnessing a richer world also means to witness oneself more completely; such a spiritual caring can serve as a temporary harbor of refuge for human, for the sense of relaxation, comfort and warmth. For the purpose of ecologicalization and cultural spread, sustainable architectural design will also follow the forms and characteristics of traditional and geographic cultural architecture, in which the sense of recognition can directly or abstractly strengthen the emotional caring of spatial environment. Taking the so-called "family shrine" in front of the fireplace called by Bryan Lawson as the most central public space in the domestic realm as an instance, the warm and harmonious character of space is usually utilized at present.

What can generate richer emotion of personal exclusion than tradition and culture shall be self-built houses, which compose the important sustainable strategy with social ethical significance. According to Christian Norberg-Schulz, the most concrete explanation of environment shall be place, generally speaking, the occurrence of behaviors and events. (Norberg-Schulz, 1979) The behavior and event of building houses by oneself, as the process of creating the place of survival environment, can realize the emotional value expectation of "being" in the satisfaction of the objectively rational value of human survival. When someone makes great efforts to complete his/her own dwelling environment and integrates his/her own interests and habits into it, then this artificial environment can profoundly gather human's life, spirit and emotion and express the corresponding lifestyle authentically and concretely. The objectified self-realization of human's life value will give rise to the sense of satisfaction, achievement and pride; such a relationship is the foundation for human survival.

Small space, generated under the concept of resource conservation and efficiency, is another kind of place for exclusive emotional sustenance. As Rudolf Schwarz explained: a certain field can't be home unless it is on a smaller scale. Therefore, the size of the construction site must be restricted within the imaginable scope to become a home. (Norberg-Schulz, 1971) The charm of a small space lies in its spatial sheltering to the maximum extent for the sense of safe territory. The distinct envelope quality of a small space enables our personal space bubbles to touch each corner, to respond to our psychologically emotional diffraction, to isolate us from sight and noise outside, and to control and choose to exchange information with others. The separate dialog between human and indoor environment demonstrates certain absolute degree of freedom of emotional expression and the sense of center feeling of the place. The emotional connection between spatial environment and human can be built up rapidly in this everlasting experience; and the building up of this emotion will provide us with tranquility and the sense of belonging for being sheltered.

4. EMOTION OF MEANING: PSYCHOLOGICAL PLEASURE OF FRIENDLY ENVIRONMENT

David Hume indicated that the sight of "convenience" will give you the pleasant sensation, because convenience is a kind of beauty. (Zhu, 1979) "Convenience" can offer psychological comfort because of its ethical beauty of humanistic concern. Sustainable strategy has started resetting a potential mechanism of psychological pleasure on us under the premise of perceptive "precomposed sedimentation", when implementing the practical function. A comfortable state of good mood is the basic psychological feeling brought about by the naturalization of sustainable architecture. Similarly, comfortable sustainable architecture can also lead to the sense of novelty and freshness. Its totally natural interest and charm distinctively can create humorous, dramatic or surprising psychological experience elements in the environment; while interesting space of in-depth interesting connotation can make people unable to bear laughing or smiling inside.

Exaggerated, twisted, illusory and compound form and environment will take shape the triggering center for psychologically emotion experience; and experience effect with outstanding performance will leave a memorably emotional impression. As psychological experience gets richer and more impressively, impression and association can promote the development and deepening of psychological aesthetic emotion more actively.

The unreal effect and mystery generated in the specious information confirmation will lift up the internal pleasure and this is another reason for psychological pleasure generated in architecture sustainability. Visional and mysterious illusion is the same as a beautiful fairy tale essentially; the elusively unreal feeling is the matter understood by us flying in the mind, recreated from the objects perceived in the space. Such complicated and confusing image generated from the determinate and known space will give us a great pleasure; while illusion can create the sense of mystery in spatial environment, which can cause the associative effect greatly and drive us to explore the future, think about the past and upgrade from experiencing the world to transcend the world. Cognitive schema, which is unable to be generated from the rational sublimation of emotional aesthetics will call forth human's sense of pleasure about tasting the unknown. For instance, the slightly transparent chiffon weaved obliquely decorated on the reverse side of

the stage applied in Casa da Música of Rem Koolhaas is the model of such pleasing effect. (Heybroek, 2014)

Compared to divertingness and mystery, the psychological pleasure in the deeper layer of sustainable architecture is usually originated from the synesthesia product of the dominant position of the object over the subject, namely a kind of seductively overwhelming beauty of shock hidden in the strength of sustainable high-tech. First, it is certain fear or pain under the convergence of natural force and manpower, which is transferred by the "pouring", "enriching" and "upgrading" value included in the non-existing confirmation of threats. This traction of sustainable architectural technology to human transforms the sense of terror and pain into the sensation of pleasure, expressed in the turbulent, dynamic, rugged, vigorous and majestic form with the soul-stirring aesthetic feeling. Along with our more thorough understanding of the nature and human strength, we will have a stronger and deeper psychological and emotional pleasure.

5. EMOTION OF ENVIRONMENT: LIFE EXPERIENCE OF NATURAL INTEGRATION

The traditional architecture, featured by multiple barriers linking to the nature, fails to lead human up to a higher level is the reason that life experience offered by sustainable architecture different from and transcending that offered by traditional architecture. The psychological explanation of space image full of vitality and significance has activated our natural attributes and built up a more extensive life and emotional realm. Sustainable architectural design, based on the natural community, puts human back to the larger integrity of earth, nature and universe to conceive and narrate the stories of human. Architecture concretely displays the orderly and harmonious interrelationship between human and surrounding environment; and the habitat for human and the nature home have become into one. For instance, Tadao Ando usually takes slate, cement, wood, steel and glass as the materials and applies fog, rain, wind, sunshine and other design elements ingeniously beyond description to express the integrity harmony between indoor environment and the nature. Based on our experience and connection with the nature, this integral feeling will enable us to profoundly realize the fact that we are surrounded by our life environment and we are unable to be out of the nature. Only incorporation into the nature can be the authentic attribute of real life. The uniform construction between human and nature at a higher level transcending subjectivity and space will help us acquire the sense of belonging and integrity of life feeling.

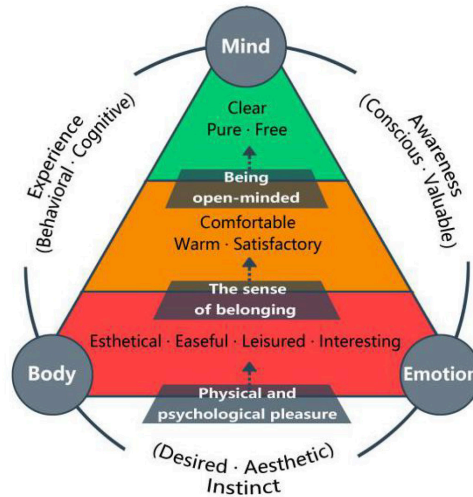
The moment of understanding one's survival basis shall be the moment to wake up the awareness that degree of freedom only exists in respecting and protecting the nature and that we can only release our natural instincts in harmony and orderliness. Meanwhile, sustainable architecture has thoroughly demonstrated the free quality of the nature. Large glass, expanding surface and high parvis can express the natural conception of infinite space integrated into the nature, offering the free and unfettered roaming situation to shake off us from various ideological burden and concern first, to expand our conception of consciousness boundary by the free and liberal feeling and to maintain our freedom and infinity. "Facing upwards to the blue sky, we behold the vast immensity of the universe; when bowing our heads towards the ground, we again satisfy ourselves with the diversity of species. Thereby we can refresh our views and let free our souls, with luxuriant satisfaction done to both ears and eyes. How infinite the cheer is !" (Preface to the Poems Collected from the Orchid Pavilion) You will realize the simple existence; and your feeling and spirit will be integrated into the nature to fly around freely; all of objects in the world will be included in your mind, the authentic human instinct of freedom will rest in the nature, and human's life and life consciousness will be upgraded in the aesthetic sublimity of freedom.

What opened in the conception of psychological freedom is the internal clarity. Human longing for perfection starts to use the lofty divine scale to deny the worldly scale; to detach from the falling during doubting and examining "being" voluntarily to reappear beautiful things in human instincts, to transcend the limit of human, to reach a clear and bright world with the coexistence of "heaven, earth, human and divine", and to feel the bright, ordinary and calm existence status of the essence of human survival. In addition, sustainable architecture can also provide the sense of clarity and quietness. The parvis with glass ceiling, the sunshine full of vitality and holiness, the openness of space, and the infiltration of natural scenery and taste.....are generated in the authentic function and the virtuous technology, to express the clear, orderly, light and transparent space image. Space with purity can offer the disenchantment experience infinitely tending to the nature and divine loftiness, releasing human from internal pressure to openness with certain influences physically, emotionally and spiritually. Such a clarified openness can maintain each object in quietness and integrity, acting as the strength symbol to affect, [Figure 1] Emotional attribute of sustainable architecture cleanse, mobilize, excite and transform the spirit, revealing the truth of "being". As a result, human in the spatial environment can look up to the sky while being based on the land. This space of looking up penetrating the sky and the land is distributed to human, shaping up the clarified and roaming circumstance of human freedom. Consequently, human's inward world starts to be bright and clear; human reaches the realm of clarification in the light of automatic aletheia; and the natural glow of human survival starts to light up gradually.

6. THE RELATIONSHIP OF FOUR EMOTION TYPES

The use function of sustainability and the emotional expression of visualization are the mutual penetrating contents of sustainable architecture materially and spiritually. Spatial environment displays human's lifestyle, spiritual

personality and aesthetic concept, which directly exist in the relation construction between spatial experience and environment feeling; and this is the special "agreement" between emotion and sustainable architecture. As the object of human experience in a special mood, it has a subtle and huge scale to have a closer or farther look; it can not only be touched, but also entered; and it can also put the heaven and earth as the background and incorporate them into one. The meaning form displayed in the brand-new place spirit provides us with a wide, profound and heart-warming experience of natural beauty and human beauty. Sustainable architecture, based on its emotional characteristics of beautiful form, emotional sustenance, psychological pleasure and profound perception, displays the new conno-



tation of its emotional quality, making people accept and realize its emotional care at the physical, emotional and psychological levels (figure 1).

[Figure 1] Emotional attribute of sustainable architecture

First, sustainable architecture displays the beautiful form and pleasant spatial environment in terms of ecology, technology and geographic tradition, offering us the visual beauty and pleasant feeling; meanwhile, the humorous, interesting, illusory, mysterious and shocking spatial environment of interest and charm endows us with the pleasant emotion and psychologically pleasant sensation, which are the emotional representation of physical and psychological pleasure. Second, sustainable architecture implies human emotion in various ways, offers the sense of "home returning", this sense of belonging enables us to experience the warmth, comfort and freedom. The introduction of nature into spatial environment helps human realize that ascity is a part of the wholeness of earth and nature; the sense of belonging to nature helps human experience the integrity and completeness of life, which is the emotional representation of the sense of belonging. Third, the natural taste and quality of sustainable architecture always cleanse our souls and provide us with the highest life experience in the free and clarified spatial environment. This is extremely different from the spiritual openness and temperamental liberation in the past. The new cognition of life and emotion enables our mind to perceive, understand and experience certain lofty and clarified realm with the sense of holiness, displaying and demonstrating the detached and big-hearted situation of human, which is the emotional representation of being open minded.

The emotional attribute offered by sustainable architecture covers from the "reality" of outside form to "illusion" of psychological emotion and to the "truth" of life experience, from the sensory representation outside to the spiritual comprehending inside and from the physical experience to the mind world evolutionarily, to lead human to the connotation of spatial language from the externalized image step by step, based on the emotional perception mechanism of instinct (desired and aesthetic), experience (behavioral and cognitive) and awareness (conscious and valuable), to access into a brand-new experience situation in the re-recognition of ascity. There are abundant and profound psychological situation and development of various experience and feelings in spatial environment, which enable us to experience the more complete life emotion, to reach the situation of integrating comfort, completeness and spiritual sublimation into one in ordinary life and to be much closer to the ideal of sustainable habitation of poetic dwelling.

7. CONCLUSION

The seemingly beautiful life created by industrialization and technologies is lack of authentically humanistic care, but turning each of us into the so-called "one-dimensional man" proposed by philosopher Herbert Marcuse, who only pursues cake and ale but losing the spiritual and emotional pursuit. Gradually, human sinks into the "materialized" existence who yields to the reality instead of criticizing it, and will never go after (or be able to imagine) the scene of a better life. As the expansion of instrumental reason, we have hardly lost the sense of recognition and direction in the increasingly barren homeland. The lack and crisis of emotional significance suffered by human as well as the problems to be solved urgently are very obvious.

The discussion above has suggested that sustainable architecture enjoying the prosperous development at present can actively answer those questions. For architecture as an important carrier and major way of storytelling and emotional expression, its sustainable development and emotional inclusion can't be isolated and separated. Sustainability is featured by some attributes of emotional expression, which can be added and integrated consciously. There can be a unitary interweaving relation; those externalized, ecological technological and index content and internalized, emotional, quality and feeling content can be found in the organic unity of use function and integral form. Designers shall pay attention to the practice of sustainable architecture design to strengthen the emotional relationship between human and spatial environment; and our sustainable schemes shall try to look for the greatest common divisor of nature and human, to realize the emotional spatial environment in the invitation from nature to habitat, and to create more integral poetic and emotional scenes based on the essential connotation of sustainable humanization.

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