Emotional Architecture - A Study of Tadao Ando’s Genius Loci Design Philosophy and Design Syntax

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Abstract—Tadao Ando’s design presents the concept of the spirit of place and establishes the nature and soul of architecture. The creation of a situation is to enlighten people and enable them to understand the potential meaning, revealing a state of awareness. Tadao Ando enables people to relate to his emotional design situation that reflects the Zen state of mind inherent in traditional Japanese culture, which is characterized as being quiet, distant, clear, and poetic. In this study, literature reviews and field investigations have been used to observe and analyze the detail composition syntax created in Tadao Ando’s spatial situation for summarizing the composing mode and design method of its detail aesthetics. The analysis on the composing method of Tadao Ando’s design syntax was carried out according to Norberg Schulz’s "Genius Loci" theory and Donald A. Norman’s "emotional design" theory. The research results reveal that Tadao Ando applied the architectural features of building materials and geometric design language to incorporate several natural elements such as light, wind, water, and so on into building designs, engendering poetic detail aesthetic characteristics comprising artistic situations involving water and interweaving of lights and shadows in combination with smooth glass, tranquil and beautiful iron members, and fine concrete.

Keywords—Tadao Ando; Genius Loci; Zen Aesthetics; Spatial Situation; Emotional Experience.

I. INTRODUCTION

TADAO Ando’s designs have ushered accurate and moving design concepts and themes by emulating delightful and moving feelings, which provide people with a good poetic experience in such spatial structures. These designs are a combination of modernistic and post-modern text connotations based on a comprehensive consideration of spatial themes. Tadao Ando has predominantly used space prototypes of different geometries in terms of space constitutions. In the church design series, the spatial structures and ambience are presented via a precise religious language. In the “Church of the Light” design, a cross-shaped wall is made on the forward side of the rectangular space, allowing light to enter through a cross-shaped opening; this enabled people to appreciate the religious setting and connotation. In the “Church of the Wind” design, the arrangement of a space opening in the lateral rectangular wall provided visual access from the indoor to the outdoor rectangular wall provided visual access from the indoor to the outdoor gardens having vegetation, revealing the rhythmic flow of the wind blowing through the treetops: this provided an easy and comfortable spatial dimension and ambience. In the “Church of the Water” design, the indoor rectangular forward wall is completely opened, extending the vision outward toward the pool: this presented a kind, gentle, and natural religious ambience. In the “Church of the Sea” design, the cross-shaped opening in the roof slab of the church reflected light onto the forward indoor wall, which diffused a gentle shadow of the cross-shaped light. In these church design series, Tadao Ando has incorporated a variety of dramatic spatial effects via rectangular openings formed using simple cutting processes, accurately and neatly revealing a grand appearance: this religious atmosphere inspires people’s emotions by exciting the five human senses. By converting an intangible religious spirit into a poetic space that can be appreciated by people, Ando’s designs present the concept of place spirit, shape the nature and soul of architecture, and create a specific situation to enlighten people and make them experience a realm of awareness. In this study, the detail composition syntaxes created in Tadao Ando’s spatial scenario are observed and analyzed to summarize the composing mode and design method of their detail aesthetics and explore the construction of the design philosophy and characteristics of the detail aesthetics. A poem is composed of paragraphs and sentences; a pretty poem, of moving sentences; a piece of beautiful symphony, of the harmonious resonance of different instruments. Further, Ando makes people feel the unique atmosphere of space and aesthetic characteristics by using a detailed design language and providing the ambience of architectural space.

II. STUDY THEORIES AND METHODS

When Tadao Ando traveled in Rome during youth, he realized that the actual significance of architecture lies in the feeling and affection it engenders in people (Tadao Ando, 2012). In 1995, when Tadao Ando won the Pritzker Architecture Prize, the jury pointed out the following in its citation: Ando’s architecture is an assemblage of artistically composed surprises in space and form. There is never a predictable moment as one moves through his buildings. He refuses to be bound by convention. Originality is his medium and his personal view of the world is his source of inspiration. With regard to
architecture, Tadao Ando states that “architecture should be experienced with one’s senses rather than through the media, which is of overriding importance” (Tadao Ando, 2003). In today’s information age, designs are moving toward the emotional age, wherein a design with functions instead of aesthetics will no longer be attractive; further, a rigid argument sans the storytelling ability will no longer be persuasive. Moving stories and feeling consonances are emphasized in design (Li, Ming-Chian, 2013). Therefore, Tadao Ando integrated art with rational inspiration to design his architecture and endow the architectural space with genuine feelings. In this study, literature reviews and field investigations have been used to interpret and analyze the composition philosophy of Tadao Ando’s architectural works to explore the nature and specialty of his architectural design. Further, they were used to capture the soul of the architecture and design methods according to Norberg Schulz’s “Genius Loci” theory and Donald A. Norman’s emotional design theory, postmodern narrative theory and the Zen theory to analyze the structure and composition specialty of his detail aesthetic characteristics.

A. Norberg Schulz’s “Genius Loci” theory

German philosopher Edmund Husserl from phenomenology perspective on existence, opening the door to rationalism epistemology era, M. Heidegger to further expand the return of the thing itself phenomenological theory. Norwegian architectural theorist Christian Norberg-Schulz places phenomenological basis for philosophical reflection, in order to return to things themselves thinking, to discuss the construction of the essence, the spirit of place (Genius Loci) comes down to the core content for the construction of phenomenology, reveal the nature of the relationship between human existence and creation of architectural space. Place is a combination of natural and man-made environment, it is a meaningful sense of space, making people can read message and significance. Spirit of place (Genius Loci) concept come from ancient Rome, and it expresses the place has its own unique spirit and character. It not only has the form of architectural entities, but also has a spiritual meaning, which as a meaningful sense of space. Architecture's task is to create a meaningful place to help people inhabit. Only when the abstract space become a human emotional space, to become a true meaning of architecture. In the design of architecture, in addition to considering about the function, structure, and appearance-oriented economy think, but at the same time should to consider the experience of people, people's perception, consciousness and other spiritual level, in order to establish an ideal space construction method and meaning.

B. Emotional Design Theory

Donald Norman’s emotional design theory emphasizes that designs shall focus on people’s emotional feelings and experiences and yield a contextual interaction between people and design, creating an “emotional design” that allows people to enjoy good emotional design characteristics that is full of fun and beauty (Donald Norman, 2004). The perception of most people is primarily based on visual inputs, wherein 80% of them “touch” and experience the environment with their eyes and neglect the importance of the spatial experience provided by the other senses. There are many senses using which our environment can be experienced, such as vision, hearing, touch, smell, taste, and telepathy. People can enjoy a mutual sensory experience with the environment (light environment, sound environment, warm environment, social environment, etc.) in which they are staying by using these six physiological and psychological senses. The physiological and psychological sense organs in the body can directly feel the corresponding physiological and psychological responses generated by these environmental factors, consequently forming human perception patterns and cultural experiences. Such experiences have their basis in the human body and operate in a real environment via the body's feelings, wherein a user-friendly design mode can be achieved by considering the relationship between the design form and the human being.

C. Postmodernism and Narrative Theory of Zen

According to the postmodernism theory of Charles Jencks, a British architectural theorist, contextualism and allusionism have been theoretically proposed. They emphasize the relationship between architecture, history, and environmental text; focus on the symbolic significance of architecture; relate the external images of buildings and people’s psychological feelings and effects induced by them; and pursue the metaphorization of buildings (Charles Jencks, 1989). In the study on the relationship between the “referring” and the “being referred,” the linguist Saussure indicated that each language symbol itself is independent of the object that it refers to in the particular context. However, various symbols form a network corresponding to the world through their differences. The details of buildings are also based on a similar concept. The significance of each detail is generated by the difference with the other details, and therefore, the details form a system of linkages, like that in the language system. The thoughts of the oriental Zen enable people to have natural experiences in their minds and bodies, thereby creating a thoroughly clear scenario to realize the deeper meaning of Zen. It tries to express additional meanings with the minimum number of elements, showing the pursuit for silence, quietness, and extinguishment of Zen thoughts. This idea is specifically reflected in the creation of a space atmosphere that enables people to enjoy the beauty of nature via migratory moving experiences to complete the experience on the cultivation of their personal beliefs, consequently providing the enlightenment of Zen.

D. Summary

According to the theory and literature review described above, a good space design should instill a wonderful sensory experience in people by creating a space situation. Tadao Ando has developed the Ando space language by skillfully blending the traditional Japanese Zen with modern minimalist elements and presented overpowering space objects and narrative essay by applying the text theory and connotation of “Genius Loci.” This enabled people to enjoy a reasonable five-senses experience of the emotional design in terms of detail composition. This study interprets the syntax of Tadao Ando’s detail design and composition aesthetic characteristics by means
of the framework of emotional design and narrative theory, where these theories are used for guidance.

III. TADAO ANDO’S DESIGN PHILOSOPHY AND DESIGN SYNTAX MODES

Tadao Ando’s works enabled people to experience a journey involving gestation, awareness, and thinking by means of the practiced arrangement of path sequences such that the strength of metaphysical philosophical thinking could be experienced. The study interprets the syntax of Tadao Ando’s place spirit design and the composition of aesthetics based on his experience in the construction of the Kansai region of Japan; further, this study summarizes the composition syntax of his design as well as the performance modes of his design aesthetics to capture the value and significance of his design aesthetics. In this study, the following analytical dimensions are used to explain Ando’s detail design mode to analyze, discuss, and establish the development vein and composition characteristics: (1) Composition situation and spirit of place; (2) Composition syntax with “water” element; (3) Composition syntax with “light” element; and (4) Material characteristics and the composition syntax of detail aesthetics.

A. Water Temple of Benfusi

1 Composition Situation and Spirit of Place

Ando uses simple and low-key lines to form an image of an entrance by using a 3-meter rectangular fair-faced concrete wall (Fig. 1). Following this wall, there is a circular as-cast-finish mold curved wall, constituting the beautiful arcs of the square and curved walls. By walking along the curved wall, one’s vision is suddenly widened at the turning point of the wall by an oval elegant lotus pond having a length of 40 m and width of 30 m (Fig. 2). At the center of the lotus pond, there is a line of stairs leading to an underground temple, which divides the pond into two areas. After entering into this divided water body and reaching the stairs, we reach the imperial red corridors, where the temple hall is colored in red that replicates the space situation and atmosphere of the Western Paradise Pure Land (Fig. 3).

2 Composition Syntax with “Water” Elements

In the Water Temple, the lotus pond forms the roof. The oval lotus pond symbolizes birth and regeneration. The calm and elegant surface of the pond relaxes people’s minds, enabling them to experience a deeper meaning of religion and providing them with profound inspiration in their souls.

3 Composition Syntax with “Light” Elements

After entering into the Buddhist temple, one can see the light-flowing image created by Ando. People’s minds are purified by the ordinary world evinced by the white wall, leading into the ethereal world of the pond. The lights gradually become weak and dim as one walks down the stairs. However, when entering the temple, one is awakened by the light crimson hues in the hall. This journey in the light is a symbol of purification, death, and rebirth. By taking advantage of the underground patio, the lateral lighting allows the space to be dyed with a soft red color, creating a realm of scarlet that resonates the idea of the Western Pure Land.

4 Material Characteristics and Composition Syntax of Detail Aesthetics

The space sequence of the Water Temple is rich in dramatic effects, where the design technique of the “First Inflection” and “Then Modulation” challenges the senses of the human organs. They constitute the characteristics by virtue of the following detail syntax and detail material composition: (1) Image of the rectangular fair-faced concrete wall entrance: the entrance channel has square and round walls on either side, having white sand and fine gravels as the background; the levels are portrayed in space using blanks. The anteroom full of white sand extends toward the Water Temple; people can experience a
dramatic situation when they hear the sounds created by stepping on the gravels.

(2) Waterscape of the lotus pond: the oval lotus pond is divided into two sections with centrally arranged steps extending into the basement. In addition to functioning as handrails, the blue-gray iron railings in the form of simple lines increase the safety of the pool. These simple detail composition forms constitute a natural poetic image, forming beautiful scenery comprising both manmade and natural elements.

B. Ryotaro Shiba Memorial Museum

1 Composition Situation and Spirit of Place

In the Japanese-style residential area of Osaka, when one is walking into a small garden, going through a plant-filled trail, or passing a curved glass promenade with a sense of rhythm (Fig. 4 and Fig. 5), it appears as if one is experiencing a section of a time-tunnel-like space sequence. It gives people a chance to get far away from secular blocks and enter into Ryotaro Shiba’s spiritual world. After entering the memorial museum, a slab can be seen extending from the floor to the roof: the four sides constitute huge walls surrounded by books. The two-storey towering shelf creates a near-sacred space atmosphere, making people feel that they are standing in a temple in which a sea of books and shadows of lights are dancing in unison. In such a quiet and holy atmosphere, people can appreciate the vastness, feast on the available knowledge, and get infected by the Ryotaro Shiba–featured scholarly situation and flavor.

2 Composition Syntax with Garden Elements of “Sky, Light, and Plants”

The memorial museum is located in a natural garden. Ando uses flowers and trees to create an atmosphere of outdoor space with tall green trees as well as rape flowers (Ryotaro Shiba’s favorite) planted in the surroundings. This creates a space allowing people to transcend into meditation. People can smell the sweetness of flowers, listen to the singing of birds, feel the movement of gentle breezes, and appreciate the sky and white clouds while sitting on the long bench made of as-cast-finish molds or walk back and forth along the path to quietly enjoy the wispy rhythm and serene ambience.

3 Composition Syntax with “Light” Elements

Ando uses the design of glass windows, allowing people to see the garden of Ryotaro Shiba’s house from the outside of the memorial museum(Fig. 6). Meanwhile, the bookshelf is illuminated by the light passing through the opening of colored windows. Such a secluded lighting design produces a serene and holy atmosphere, similar to the light of hope that emanated from Ryotaro Shiba(Fig. 7).

4 Material Characteristics and Composition Syntax of Detail Aesthetics

The detailed dialogue syntax composed of glass and fair-faced concrete makes people feel the vastness and greatness
of knowledge in a serene and holy atmosphere (Fig. 8). The curved corridor design at the entrance is like a space prelude having a beautiful rhythm of concrete walls and glass textures, as well as the delicate aesthetics of lights and shadows. The detail composition of the ramp at the indoor entrance has the perfect ratio— the glass windows are made using various types of old glass; in addition, the water-ripped handmade glass is combined with low-key as-cast-finish molds. This combination forms a transparent corner side view, which presents a detail aesthetic pattern based on a glass collage (Fig. 9).

**C. Awaji Dream Stage**

1 *Composition Situation and Spirit of Place*

The Awaji Dream Stage consists of several facilities such as the oval square, circular plaza, plant house (wonder star of the greenhouse), hyakudan-en garden, flower court, shell shore, outdoor theater, etc., which create a space situation and art atmosphere comprising mathematical and philosophical concepts (Fig. 10). This architecture provides people with the opportunity to meditate and think about the value and meaning of life while walking along these paths, similar to being in the vast universe. On the fair-faced concrete wall of the circular theater, the shadow length of the sundial changes at different times in the day, indicating the time as the sun moves (Fig. 11). With a gentle breeze, soft lights and shadows, as well as the soft shadows in the water, people can appreciate the meaning of space and time in their lives.

2 *Constitution Syntax with “Water” Elements*

Ando creates the space situation and conversion by using dynamic curtain waterfalls and quiet waterscapes. In the hyakudanen garden, the multis-tep like running waterfall and the stair pool paved with shells reveals a beautiful image between the mountain and water, where people can listen to the sound of venting water and feel the passage of time (Fig. 12). The Roman baths at the mountain corridor attract people to stop and contemplate with their quiet and sacred waterscape. The “Church of the Sea” space is concealed under the mirror pool of the roof, and the mirror waterscape connects the upper and lower spaces, forming an image of a sea that allows the daylight to pass through the walls via the reflection interface of the water; this constructs graceful cross-shaped lights and shadows for the “Church of the Sea.”
and shadows. During daytime, the sundial on the fair-faced concrete wall reveals aesthetic changes in the lights and shadows.

**Fig. 13 The Lights through the Pool Reflecting onto the Wall.**

### 4 Material Characteristics and Composition Syntax of Detail Aesthetics

In the space detail design, fair-faced concrete, glass, granite, and steel plates are used as the primary material to create simplicity and modesty. The shellfish shore is a shell pool paved with shells of 1 million hotates. Further, the mountain corridor is filled with shadows formed by opaque frosted glass. The oval square building comprises simple and rich straight lines and arcs. The detail design syntax provides a mathematical and philosophical experience situation through the use of cubes, cuboids, pyramids, cylinders, cones, spheres, and oval egg-shaped concrete walls combined with cylindrical cast-iron railings and floor coverings surfaced using stone chisels.

### D. Chichu Art Museum

#### 1 Composition Situation and Spirit of Place

The Chichu art museum is constructed by keeping the earth and nature in mind, similar to a building embedded in the earth (Fig. 14). Further, it is perfectly arranged with various types of large-scale works corresponding with the natural environment. Artworks and buildings are usually constructed based on the use of the fields provided by the natural ambience. The entrance part is a channel constituted by two as-cast-finish mold walls. By entering the room, one can experience a cool feeling. Most of the buildings of the art museum are constructed underground, where natural lighting is used to illuminate the indoor works. In the museum, square, triangular, and rectangular as-cast finish concrete geometric walls are employed in combination with the use of large rocks and boulders that are either rough or smooth, stimulating people’s visual and sensory experiences. The space situation of the Chichu art museum is similar to a large underground air-raid shelter space (Fig. 15) with a long and narrow channel leading to an underground space that ends in a concrete space with walls. On the concrete wall, there is a square opening used as a sunroof through which people can look up at the blue sky from the interior and appreciate the sun, blue sky, and white clouds, as well as the quiet ambience. For the Monet lotus room in the museum, Ando has created a calm atmosphere for appreciating pictures. There is a showroom sans any artificial lighting, leading the visitors into a world of Monet’s impression paintings with a gradually brightening halo. The space and artistic experiences in the Chichu art museum overwhelm the visual, auditory, and tactile senses, creating an endless imagination and engendering amazement in people.

**Fig. 14 Chichu Art Museum. (This photo quoted from the post card of Chichu Art Museum.)**

**Fig. 15 Chichu Art Museum Like a Large Underground Air-Raid Shelter Space. (This photo quoted from the post card of Chichu Art Museum.)**

#### 2 Composition Syntax with “Water” Element

Between the ticket service center to the Chichu art museum, there is a pond in the Monet’s garden where one can appreciate the lotus in Monet’s painting and feel the space–time atmosphere in which the painter was living. The waterscape in the pond reveals different features with the changing seasons. The horizontal belt-shaped window in the Chichu café house is shaped to imitate the effects of the sky and sea views. After walking out of the café house, the blue sky and white clouds are reflected in the sea, suddenly widening one’s vision.

#### 3 Composition Syntax with “Light” Element

In Monet’s water lily galley, Tadao Ando creates a quiet artistic atmosphere so that the paintings can be appreciated. The darkroom space without any form of lighting takes visitors into the world of Monet’s impression paintings. The uniform and soft natural lights pour down from the zenith, evoking frustration and equanimity. This shows that Ando is also an accomplished artist capable of capturing lights and shadows, similar to that done by Monet. With regard to the composition of lights and shadows in Monet’s “Water Lily” series, Walter De Maria’s “Time/Timeless/No Time,” and James Turrell’s “Open Sky” and “Open Field,” even Ando uses natural lighting for art exhibition, making people shuttle back and forth between underground and open spaces and enabling them to appreciate the changes in lighting and aesthetics in buildings.
4 Material Characteristics and Composition Syntax of Detail Aesthetics

For reinforcing the fair-faced concrete structure in the Chichu art museum, numerous lights and shadows are employed in the three-story underground space to create a quiet artistic atmosphere. The thick concrete walls make people reminisce living in underground caves; the sound of moving steps is audible while walking through it. The huge as-cast-finish mold triangular high walls and rock gardens are Ando’s modern interpretation of Japan’s dry landscapes; the oblique line-like opening lighting the ramp creates a mysterious atmosphere; the pure white wall surface and white small squared marble floor in Monet’s gallery enable the creation of gentle lights and shadows based on the use of the lights refracted and reflected through the walls. People can appreciate Monet’s water lily paintings from the impression series. The migratory moving line system is employed in the closed concrete space as people pass through the walkway, ramp, or stairs with their bodies against the wall, relying on feedback from their bodies. In this enclosed space, one cannot take any entrance even though they are available everywhere. The lights and shadows that intermittently appear in the concrete wall are arranged so as to guide people that enter a maze-like space, creating an interesting experience for the visitors regarding the virtual and actual changes in space.

IV. CONCLUSION—TADAo ANDo’S GENIUS LOCI AND DESIGN SYNTAX CHARACTERISTICS

Ando’s design presents the concept of the spirit of place and establishes the nature and soul of architecture. The creation of a situation is to enlighten people and enable them to understand the potential meaning, revealing a state of awareness. Ando’s poetic space comprises a far-reaching clean and quiet meaning of Zen, providing people with a profound and moving experience. By simplifying all the complex elements, it intends to express several meanings with fewer composition elements, ensuring that the people’s experience is not diminished. The space is composed of inanimate materials, but it is full of vigor and vitality; this allows people to have resonance in their minds and conduct an emotional dialogue. Ando writes his design concepts into a poem using paragraphs, sentences, and chapters by means of space, as well as the natural and cultural pursuits according to the base analyses. A combination of geometric spaces is employed that forms the artistic conception based on detail proportion, scale, color, texture, and other elements, which enables people to experience resonating feelings and art space images. Different space atmospheres and environmental characteristics are created, allowing people to become aware of the design philosophy and the beautiful moving space that he attempted to convey. With simple richness in details, Tadao Ando presented the oriental traditional spacing aesthetics with concrete—a seemingly ordinary and simple material—as the primary material in the construction of these spaces and presented rich life emotions and space expressions in detail design by overcoming space constraints using the elements of water, plants, and natural shadows. This enabled people to feel the architecture from the bottom of their hearts and experience the mental consonance and inspiration between one’s spirit and the architecture. Tadao Ando presented space exquisiteness as a form having no shape with simple shape details and a simplistic method of construction, which formed the features of the place atmosphere and space aesthetics. In this study, Tadao Ando’s design syntax and composition characteristics can be summarized as follows:

A. Five-Senses Design Mode

The building space design by Ando is so concise that the interaction among several geometric shapes can invoke the thoughts of Zen among people. The essences of nature, geometry, and materials are employed to let people use different sense organs to feel the beauty of the building space via vision, hearing, touch, smell, and taste. The presentation of concise aesthetic implications enables people to produce associations based on the ambient atmosphere, letting them focus on thinking and the emotional power of the spirit. Tadao Ando’s space design resembles a three-dimensional painting. In the geometric oriental garden space, the rhythm of the space is expressed by changes in time, allowing people to appreciate the space–time changes and aesthetics.

B. Minimal Design Syntax Mode

Tadao Ando’s design presents a quiet, poetic world with clear geometric space planes. In the minimal design mode, straight lines, squares, and circular geometries are used and interweaved into the space situation and language in his works. The detail compositions with concrete have no tedious architrave ornament and avoid superfluous decorations and symbols so that the buildings can reveal their geometric sculpture prototypes. In the natural situation full of vigor, the geometric sculpture buildings are constructed to express the thoughts of Japanese Zen, as well as scenarios involving desolate, lonely, and calm spirit; the natural scene is combined with earthy tones of concrete, showcasing intangible spaces and simple detail aesthetics.

C. Detail Composition Syntax with Sky, Light, and Water

Artistic conception is the important aesthetic principle of ancient oriental art creation that involves the expression of an environment with certain meaning. The thoughts and emotions rest in a physical spatial object that raises common feelings among people. Ando uses the detail composition syntax with sky, light, and water to let people feel the power of space and the poetic performance of lights and shadows on the concrete wall. Sky, light, water, wind, plants, and other natural elements are incorporated into building designs to create a space place and atmosphere with oriental aesthetic conceptions by virtue of the water situation as well as light and shadow performances.

Ando establishes the links of spatial experiences by combining the composition of building materials and space shapes that evoke links and experiences in people’s consciences, revealing aesthetic characteristics in concrete with sensual, soft, and rigid power. Ando uses the well-developed unique construction method in which a layer of smooth texture is added onto the concrete surface such that the concrete reveals softness from its roughness and delicate beauty from its coarseness. This reflects a fusion of the traditional and modern senses of aesthetics. By using concrete, Ando uses the design
aesthetics details of other materials—namely, iron, bricks, stones, glass, etc.—to achieve different decorative performances. He adopts the natural textures of materials in his design, revealing a simple and rich detail form. Soft glass, quiet and pretty iron pieces, and fine concrete groups comprising simple and neatly proportioned aesthetics create poetic detail design syntaxes and aesthetic characteristics.

REFERENCES