The philosophy of architectural ordering principles

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Abstract

Architectural ordering principles were always discussed by academics and architectural practitioners. Until now no one had sharply and specifically analyzed the architectural ordering principles. There was also no one had put forward the philoso-phy, theory that underlied the architectural ordering principle. Thus, architectural ordering principle became an important issue to be studied in depth. This theoretical research aimed to reveal the whole relation between architectural ordering principles with the concept, theory, philosophy that was supported it. The study analyzed three architectural theories that prioritized ordering principles. These three theories applied as case studies. This research succeeded in putting forward a new framework of relatively complete architectural ordering principles ranging from the philosophical, theoretical, to the underlying concepts. The result of the research was expected to be useful as a new reading tool of architectural ordering principles. Similarly, it was expected to be useful to be used as a relatively complete architectural design teaching tool. The results of this study is open to be elaborated and developed continuously.

Keywords: *Philosophy; Theory; Concept; Ordering Principle.*

1. Introduction

Currently the architectural form that produced by the architects is very diverse. It is known that the advancement of communication technology [1]–[4] led to the creation of unique, strange architectural forms and completely different from the existing normal architectural forms.

The onslaught of existing information resulted in information pollution in the field of architecture. Users, observers and architects found it difficult to assess which form was right or wrong, good or bad. Users, observers and architects had not enough time to understand what kind of good architectural form, then suddenly a new form of architecture had emerged.

Information pollution on this new form of architecture could be a good alternative input, but it could also be a problem. This new architectural form could had a negative impact on the natural environment and its surroundings. Therefore, this problem must be addressed wisely by deepening the understanding [5] of what is a good architectural form. Especially the understanding should be adressed to the academics and the practitioners of architecture.

It is known that the highest achievement of a design is form [6]–[9]. The form in architecture became one of the important aspects besides its function and meaning [10], [11]. On the one hand there were opinions saying that the architectural form aimed to accommodate the function as well as expressed its function. On the other hand there were also opinions saying that form was necessary accommodated a function but not necessarily expressed its function [12]–[14]. While there was also the opinion saying that the form of architecture was a form of logical consequence of the activities that accommodated, as well as expressed the traditions and ideology of its users [15], [16].

The design of the form became a central issue in teaching architecture and professing architecture [17]. The form of architecture was the first thing observers saw before using the architectural

facilities. The architectural form should also be able to filter out the adverse effects of the climate in which it was located[18]–[20]. Existing publications on the analysis of architectural forms had been considerable. However, there was a lack of publication of the philosophical description of architectural ordering principles. Therefore, the study of the completed issues of architectural ordering principles (including its theory and its operations) became an issue that is always important and open for further review.

This theoretical research put forward a new architectural ordering principle framework that could be used to read architectural form. In addition, within this new framework was composed of philosophy, theory and operationalization in detail.

The purpose of this theoretical research was to open all aspects that exist in the architectural ordering principle. Then arranged it in a new conceptual framework. While the benefits of research results were first as a new reference to interpret the existing architectural formation. Another benefit was as a reference to theoretically designing the architectural form because the proposed framework had been compiled in a full with its operational methods. The results of this study was expected to be used as the initial foundation to conduct further research on the issue of architectural ordering principle.

2. Material and methods

This theoretical research raised the issue of architectural ordering principle. Departing from this issue, research determined the theories that were often used as a reference in architectural design. Theories that were applied as case studies were selected purposively. The criteria were : firstly, the theories emphasized the issue of architectural ordering principles. Secondly, these theories were written in widely published books. So, it was not an article in a potpourri that contained theories with other issues. Thirdly, these theories must be supplemented by concepts in the form of sketches or diagrams and the application of architectural

ordering principles. Fourthly, the statements and arguments presented in this written book were relatively considered complete enough to be studied and analyzed in depth.

This study chosen three theories to be used as case studies. In addition to having met the above criteria, these three theories were also always used as references in the teaching of architectural design and architectural thesis in the leading architecture schools in Indonesia. First case study: Francis DK Ching's Theory. The book written in 1979 was titled Form Space and Order. Almost all architecture schools in Indonesia knew and used this book as a reference in architectural design studio. Second case study: the theory of Thomas Thiis-Evensen. He wrote a book entitled Archetype in Architecture in 1987. This book was often used in some of Indonesia's leading architecture schools as a guide in the preparation of an architectural thesis. Third case study: Don Hanlon's theory. The book, released in 2009 was titled Composition in Architecture. This book was also often used as a reference in the early stages of teaching studio design and lectures at some of Indonesia's leading architecture schools.

2.1. Recent theories in architectural ordering principles

The three theories that had been determined as case studies were compared based on the aspects and elements that existed in the concept. Subsequently, a thorough review was conducted.

The philosophy behind the thought was also carefully searched. Based on the analysis and argumentative discussions that had been conducted, this research put forward a new concept in the form of a framework regarding the concept of property and the composition of elements in Architectural ordering principles. The essence and position of this concept was then explained in detail at the level of philosophy, theory and concept.

The issue of ordering principle in architecture was originally put forward by Francis DK Ching in his book entitled Architecture Form Space and Order [21]. Initially he was a practitioner who later became a professor at Wisconsin-Milwaukee. The contents of this book were dominated by architectural free-hand sketch drawings. No wonder, because he did teach in the course how to draw. The skill of the architectural drawing was very high. His book contained a description of : Primary Elements, form, form and space, organization, circulation, proportion & scale and principles. At the end of this book he proposed the Ordering Principles which was consisted of important aspects, such as : Axis, Symmetry, Hierarchy, Rhythm, Datum and Transformation. Narrative descriptions of these aspects were relatively few. Ching explained these aspects only through examples of diagrams that were then applied to the architecture. The relation between each aspect and the origin of the emergence of these aspects was not explained by Ching. These aspects of Ordering Principles seemed to come out of nowhere suddenly. However, Ching's book was almost always used as a reference in the teaching of architectural studios.

Thomas Thiis Evensen, a professor from Lund University, also put forward the elements of architectural ordering principle in his book entitled Archetype in Architecture [22]. His way of thinking had gained lots of inspiration from Christian Norberg Schulz's thought. No wonder his way of thinking was very much based on phenomenology. He argued that the elements of the enclosured of space were crucial for creating the expression of the building. Although in reality architecture had different forms, but it was believed there was a composition of elements that can be used as a grammar of architecture.

The basic form of the elements experienced by the observer was called the archetype of architecture. The basic form of these elements could also be considered to represent the common language experienced by users and observers in architecture. He further pointed out that there were three important elements that enclosed the interior space within the building. First was the elements of the floor, the second was elements of the wall, the third was elements of the roof. The degree of closeness and openness of the three

elements was what determined the quality of the relationship between the interior with the surrounding environment.

The description of Evensen was based on human experience of each elements. Through certain experiences and themes Evensen put forward the concept of materiality or property of the spatial elements in a building. The quality of these three concepts was believed to be an existential expression of the building. This concept was a very interesting thought. As in Ching's book, Evensen's book was also filled with sketches of building elements. Unfortunately there was no detailed explanation of the three concepts that had been put forward.

Don Hanlon, an architect and a professor from Wisconsin, put forward five formal properties of composition. In his book entitled Composition in architecture he put forward a thesis on ordering principle in the concept of composition[23]. Five concepts were based on patterns. According to him every architectural design from the scope of form to the scope of detail was always based on the concept of pattern. The ordering principle of each pattern had five related properties. Namely: number, geometry, proportion, hierarchy, and orientation

The description that written at the beginning of this book was very interesting. The five aspects of Hanlon's concept considered as an important aspect of architectural ordering principles. Unfortunately the rationale for the emergence of these five concepts was not found. Likewise, the order of relations and dominance between one aspect with other aspects was not explained.

3. Results and discussion

3.1. The idea of balance in architecture

Humans were the only intelligent creatures that lived in the world. Trends that exist in humans from the past until now was that humans had always externalized the concept of his body. Man saw his body as the initial foundation of externalization action. Humans then understood that there was always a balance between every parts of the body and the balance of the body itself. Humans believed that a fundamental idea or a philosophy of balance was essential to the body. If there were humans whose body condition was incomplete, then that humans were considered anomalous because there was no balanced.

In the course of the life of humans thought until now, the concept of balance was no longer understood only as parts of the physical aspects of the body alone. The concept of equilibrium began to be realized also in the human brain. So the physical and spiritual conditions must be balanced. If happened to be unbalanced condition there would be a catastrophe. In addition, made humans no longer be a complete human being.

The idea of a body balance gave birth to a fundamental idea of a parts-whole philosophy inside a body itself and the parts-whole philosophy between one's body and the other body. This idea stated that if there were no parts of human body then there would be no completely human body existed. Likewise, vice versa, if there was no whole human body then there would be no parts of the human body. The idea or philosophy of parts-whole applied also between one's human body and the other human bodies. If there were no other human bodies, then one's human body would had no reference.

A fundamental idea or a parts-whole philosophy in the body actually arose at once with fundamental ideas or hierarchical philosophy. In reality, the human body could be distinguished between parts with whole. Head, body, hands, feet were part of the completely human body. Likewise, the fingers were part of the human hand. Every part of the human body mutually supported the creation of the ideal body. At the same time, every part of the human body had a different value to the human body depending on its specific importance. This was the fundamental idea of hierarchy in the human body. Therefore, the basic idea of parts-whole cannot be separated by the fundamental idea of hierarchy. If the body was

analogous to a coin, one side was a parts-whole philosophy and the other part was a hierarchy philosophy.

If the fundamental idea of parts-whole was observed in depth, this idea actually arised from the theory of identification that existed in humans. Identification theory could be understood as a subconscious process in which an individual modelled thoughts, feelings, and actions associated with an object. Then the individual put it into a mental image. The meaning of the word Identification itself was the orientation of human psychology to something. It could be read that the word identification was closely related to the word orientation.

This was in line with the results of the in-depth observation of the fundamental idea of the hierarchy. The Idea of hierarchy actually emerged from the theory of orientation that existed in humans. The words of Orientation could be understood as the physical position or direction of an object against another object, or from a human being against another human being. The word of orientation itself contained the act of identification of one human with other humans, or it could be between one object with another. It can be concluded that Identification theory was closely related to the orientation theory. If the theory of identification supported the parts-whole basic idea, then the theory of orientation supported the basic idea of hierarchy.

3.2. The concept of property and composition in architectural ordering principles

The theory of identification tended to apply to the physical aspects of the body or the physical aspects of things. This theory applied to the attributes, qualities, or physical characteristics of a person or things. Attributes, qualities, and characters, were actually the concept of property of human body and things. Thus, the theory of identification raised the concept of property on the human body and things.

The concept of property itself was separated into two qualities. Namely: internal properties and external properties. The internal properties consisted of basic physical form; physical solidity; physical size or volume; physical motion of images of the earth. External properties consisted of color; texture; transparency. While architectural ordering principles that appeared on the internal properties were principles of axis-datum and principle of repe-

tition-rhythm. These principles were interrelated, because when talked about principle of axis there was always present a principle of datum. Similarly, when discussed the principle of repetition there was always present a principle of rhythm.

Because the theory of identification was closely related to the theory orientation, so, the theory of orientation also tended to apply to the physical aspects of the body or the physical aspects of things. This theory applied to positions or directions that existed in humans or existed in a thing. This position and direction was towards other humans as well as toward other objects. The prefix word in (for example, placed in front of the word above), indicated the position of a person or the position of an object against other human or another object. While the prefix word to (for example: placed in front of the word above) showed the direction of human motion or direction of objects motion against other humans or other objects. Position and direction was an arrangement or composition. Thus the theory of identification could be said applied to the concept of composition. The concept of composition could generally be separated based on the position or direction of an object such as above-below, front-back, right-left, far near. The concept of composition could also be separated through arrangements between objects such as radial, centralized, linear, clustered, grid.

The concept of property and composition always existed in architectural artifacts as well as in the act of designing architecture. In architecture, these two concepts were (the concept of property and the concept of composition) always together and always supported each other. In architectural artifacts the relationship between the concept of property and the concept of composition could be traced whether the two dominated each other or just balanced. Certainly, these two concepts always run together but in a certain context the emphasized of the two concept could be very different. Both of these concepts brought up certain principles that always exist in every work of architecture and at the same time used in the process of architectural design. Those principles were mentioned above, called architectural ordering principles. This theoretical research succeeded in formulating a new diagram. This diagram illustrated the whole relationship that started from philosophy, theory, concept to architectural ordering principles.
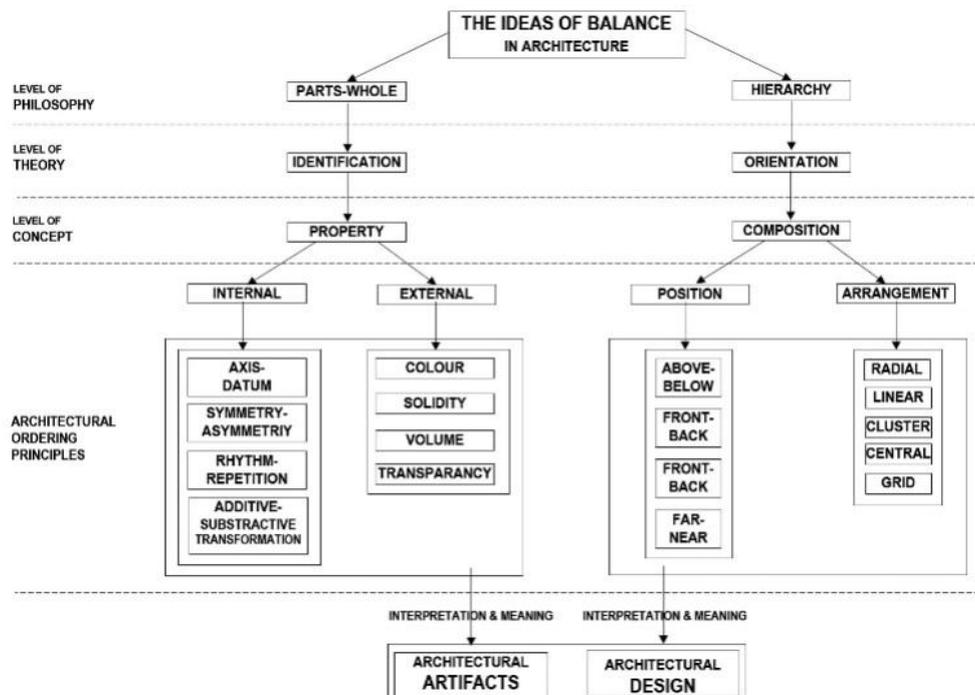

Fig.1: The Complete Diagram of Architectural Ordering Principles.

4. Conclusion

Firstly, the main idea of architectural ordering principles was the idea of balance. Without the idea of balance, there would be no order in architecture. The idea of balance could be said to be the main philosophy of architectural creation. Thus the idea of balance could be analogous the very essence of architectural ordering principles.

Secondly, from the fundamental idea of balance, it could be formulated a new framework that described all aspects and elements completely. This new framework was organized into different levels of thinking. The framework started from a philosophical level such as the philosophy of parts-whole and the philosophy of hierarchy. At the level of theory emerged the theory of identification and the theory of orientation. At the level of concept emerged the concept of architectural property and the concept of architectural composition. At the level of principles arised architectural ordering principles consisted of principles of : axis-datum, rythm-repetititon, symmetry-asymmetry, additive-substractive transformation, above-below, front-back, right-left, far-near, radial, centralised, linear, cluster and grid.

In this new framework could be seen that the philosophy of parts-whole and philosophy of hierarchy had a very close relationship. This very close relationship was also applied to the level of theory, level of concepts and level of principles (architectural ordering principles).

Third, the new framework could be used to read architectural works as well as could be used to design architecture. The outline of each level was relatively complete. The completeness of this description was expected to facilitate the understanding and the teaching of architectural ordering principles

Fourth, the new framework opened the possibility to be used as the basis for further research. Thus continuous elaboration was expected to be able to develop new architectural theories. This novelty was indispensable in the development of science in general and in the field of architecture in particular.

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