

論文の内容の要旨

Positivity of VOID in Built Form –Void in Tadao Ando’s Architecture– (ヴォイド空間のポジティビティ –安藤忠雄の建築作品におけるヴォイド–)

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■Introduction

-Problem Statement: Necessity of Void in Built Form

In the city, as vacant lots become volumes, they consequently increase in mass density of urban areas. This fact raises the necessity for reconsiderations in importance of voids in the scale of individual building site, not as leftover spaces, but positively designed territories. On the other hand, as Alexander indicates, void is one of the features in a living system. A living structure cannot be all detail. The buzz finally diffuses itself, and destroys its own structure. Therefore, void is needed to alleviate the buzz.

-Aim and Methodology

In this regard, this study is focused on the void spaces in Tadao Ando’s architecture in which regardless to their scale or function, void exists as a conceptual unit. The aims of the study is to discuss a theoretical framework for void in built form, clarify *'features of positivity'* which define the architectural space of void in Ando’s architecture, clarify *typology* and *Prototypes* of voids in his architecture according to these features. Through a theoretical review on characteristics of void in built environment, a set of *'dimensions in positivity'* of void will be clarified. According to each dimension, representative characteristics in Ando’s voids will be clarified referred to as *'features of positivity'*. Each void in his architecture expresses at least one or more of these features. According to the types of combination of the features in the selected examples, *typology* of voids is clarified. Then, through re-evaluating the analyzed features, original patterns in Tadao Ando’s voids referred to as *'prototype'*.

■Theorization of VOID in Built Form

In this study ground is considered as a non-volumetric leftover open space, and figure is a volumetric built indoor space. And, void is defined as a volumetric built open space between conditions of figure and ground. Void in relation to the figure and ground, has some level of enclosure. An enclosure needs boundary to get close to the figure condition. The boundary gives the potential to the void to find an identity as a place or, in other words, a sense of a center distinguishable from its surroundings. And, is a unit which belongs to the order of a built composition. In a larger scale, void is articulated with surrounding figures, so that it belongs to the order of a built composition and consequently can be considered as a unit of the composition.

Therefore, positivity of void is discussed within three themes: boundary of void, sense of a center in void, and void as a unit of a composition. Dimensions of positivity in void include: position of void, comparative size of void and adjacent units, spatial form of void, accessibility of void, visibility of void, materiality of void

■Void in Tadao Ando's Architecture

Among contemporary architects, Tadao Ando intended to return to the origin of architecture in terms of its relationship to the environment, emphasizing on importance of the surrounding context as the measure of value for architectural design. Even though his architecture has harmony with surrounding, he states that he does not aim to maintain the existing condition spatially nature but rather his architecture changes and redefines the landscape. Ando refers to his technique of treating an entire plot in three dimensions as "Site-craft." He models a three-dimensional sculpture out of thin air. Site-craft even renders blank space (void) dimensionally. Through this process, the sky becomes the most vivid, closest aspect of nature. The interlocking relationship between site, structure and empty space provides a formula for bringing a confined area to life. As Masao Furuyama explains two basic expressions exist in Ando's architecture, in this study referred to as "existential expression". These expressions are seen in his voids as important spatial units of his architecture. The first existential expression is "concentration" which is result of attraction to a center by what he calls 'architecture of negation'. In the buildings which introverted character, this powerful centripetal force grips our consciousness and our movement, locking us within the architecture's simple form. When caught in space produced by architecture of negation, people become prisoners of their own consciousness. The architecture impounds inner nature and becomes a jail. The other existential expression is "expandability" of architectural space which is the result of outward tendency by what he calls 'architecture of negation of negation'. It is the restoration of freedom by negating his negation. Space of closed centripetal character converts to space of liberated centrifugal character. The visual properties of the architecture changes with space of light and shadow, becoming space of pure illumination. Regardless of function or size of the building, there exist basic common physical qualities which represent the above-mentioned 'dimensions of positivity' in Ando's voids referred to as 'features of positivity'. Features which physically lead to the center of the void express concentration, and features which the physically lead toward is toward the boundaries of the void express expandability. The features, according to the dimensions of positivity in his voids are as follows:

-DIMENSION 1: Position of void - F1: Axial Arrangement of Void

-DIMENSION 2: Comparative size of void and adjacent units - F2: Set of Equal Sizes, F3: Set of Wide & Pressed Space

-DIMENSION 3: Spatial form of void - F4: Complete/Incomplete Form, F5: Layered Form, F6: Terrace Form,

-DIMENSION 4: Accessibility of void - F7: Angled Threshold, F8: Attached Access and Wall

-DIMENSION 5: Visibility of void - F9: Visual Filtering,

-DIMENSION 6: Materiality of void - F10: Re-fluxing Material, F11: Reflecting Material

■ Typology of Tadao Ando's Voids

According to the types of features in the examples, the following types are distinguished:

1) **Expandable Void** is a void that only the features which only express expandability exist. In an expandable void is centrifugal character of void is very stronger. Majority of the voids which have connection to the ground belong to this category. Expandable voids create open-ended and incomplete spatial units in architectural composition.

2) **Concentrative Void** is a void that only the features which only express concentration exist. In comparison with other two types of voids, concentrative void is closer to the condition of figure. Void expresses strong centripetal character. In most cases, the concentrative void is surrounded by figure. Voids which are closed from all sides, particularly those located underground, are from this type.

3) **Hybrid Void** is a void that both features of expandability and concentration simultaneously exist. In the spectrum from ground to figure, hybrid void is positioned between expandable and concentrative voids. Hybrid void has complex dual character. Two identities of expandable and concentrative types are overlapped.

■ Prototypes in Tadao Ando's Voids

Through re-evaluation of the analyzed features of positivity in Ando's voids in previous stage, we will discuss distinctive qualities in architectural space of voids which are continuously repeated in his design referred to as "*prototype*". The major difference between a leftover open space and a void is that in void one can see some levels of human control on space. Two distinctive categories of "control" are continuously repeated in spatial formation of Ando's voids. One is related to the control of human movement in void through design of linear elements including narrow stairways, ramps, corridors and bridges. The other is related to the control of view in void through expansion, contraction and blocking of view inside void and in its relation to the surrounding spaces.

-Linear Elements in Void

● **Corridors in Void:** Narrow corridors exist in numerous cases of Ando's voids. They include two types of corridors. Attached corridors are along the boundary of void. In many cases, the attached corridors is wrapped around the void or the adjacent figure. The other type of corridor

is floating corridor. Floating corridors pass the middle of the void and connect indoor spaces in two opposite side of the void.

●**Overlap of Linear Elements in Void:** A curvilinear corridor or ramp is passing under a floating bridge. In this case two narrow linear elements overlap each other. This prototype only exists in hybrid voids.

●**Attached Access in Terraced Void:** Narrow stairway or ramp is attached to the wall in the middle of the terraced void with where the level is changing. This prototype can only be seen in hybrid voids.

-Opening and Closing of View in Void

●**Framing Sky in a Set of Main and Sub-void:** Sub-void acts as an expanded skin which is a narrow corridor, connecting the ground to the main void. These expanded skins mostly have free standing walls extended toward the ground. In most of the cases, the expanded skin acts as an entrance to the building. In the majority of the cases, the main void is accessible through this expanded skin. In few cases, this expanded skin is merely an open staircase adjacent to the main void. Sub-voids have incomplete spatial forms. In expandable voids, the main void has also incomplete spatial form, and in hybrid voids, the majority of main voids have complete form.

●**Expansion of View from an Angled Threshold:** In a number of expandable voids, one can enter the void from a narrow angled threshold. In the voids with long approaches, the wall blocks the view to the void and one should move along the wall to enter the void. Expandable voids have incomplete form are partially open to the ground, and this physical openness creates visual openness as well. After turning and entering into the void from the angled threshold, one can see a wider opening at the boundary of the other side of the void.

●**Sequence of View inside Void:** Inside some expandable voids, there is a series of changes in size and direction of openings. This effect creates a sequence of view inside an incomplete form of an expandable void. In the case of hybrid voids, the sequence is mostly extended from a sub-void into the main void. The main void has a complete form, and the sub-void has an incomplete form. In some other hybrid voids, integrated walls inside a large void create the sequence of view.

●**Blocking View in Void:** Blocking view can be seen in concentrative voids and hybrid voids. The horizontal view is intentionally prisoned in the void. In one side, there is a large opening, but on the other side, the wall is completely blocked. These voids are not spaces for passing, but spaces to be observed. The compact view to the sky in these voids is the result of the three-dimensional cut of the landscape, the method which Ando calls “site-craft”. All of these voids have complete closed form. Many of the voids with blocked view are located underground. In the case of a number of hybrid voids with blocking view, the void is the lower level of a terraced void.