

論文 / 著書情報
Article / Book Information

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種別(和文)	論文要旨
Type(English)	Summary

論文要旨

THESIS SUMMARY

系・コース： Department of, Graduate major in	Architecture and Building Engineering	系 コース	申請学位（専攻分野）： Academic Degree Requested	博士 Doctor of	（工学）
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要旨（英文 800 語程度）

Thesis Summary (approx.800 English Words)

This thesis titled "The Overlapping Elements Breaking the Indoor-Outdoor Enclosure in Contemporary Japanese Urban Houses" comprises six chapters.

Chapter 1, "Introduction," outlines the background and aim of the research, the research objects and methods employed, connections to previous studies, and the overall structure of the paper. It begins by discussing the origins of the concepts of interior and exterior spaces in architecture, highlighting the significant differences between Eastern and Western cultures. The focus then shifts to the relationships between interior and exterior spaces in houses, explaining how urbanization and changes in lifestyle and social relationships have influenced the design trend in houses from closed to open. This transition has also brought the potential for overlapping interior and exterior spaces in houses. The chapter clarifies the research aim: to identify the patterns of spatial overlapping created by various architectural elements that break the indoor-outdoor enclosure and to explore the potential for houses in high-density urban environments to transcend the physical boundaries and connect with the urban context. Additionally, by comparing this research with previous related studies, the chapter emphasizes the uniqueness of this thesis.

Chapter 2, "The Overlapping by Additional Elements," elucidates the spatial overlapping generated by additional elements that break the indoor-outdoor enclosure. In this chapter, the spatial composition of Ea (additional elements) in each case is analyzed from both plan and section perspectives, resulting in the identification of 12 distinct overlapping types. Subsequently, considering the intended human behaviors occurring between the interior and exterior, this chapter clarifies the overlapping from two key aspects: human postures and the usage of spaces around Ea. Five patterns of internal and external behaviors are established: "Consistency," "Juxtaposition," "Integration (posture)," "Integration (usage)," and "Integration (posture + usage)." Next, the correlation between the spatial composition of each type and the corresponding behavioral pattern is summarized, leading to the following conclusions: when Ea is arranged vertically to the boundary in the plan, it tends to create opposition in visual continuity while maintaining usage continuity in the section, resulting in consistent behavior between the inside and outside. Conversely, when Ea is arranged parallel to the boundary, it tends to unify the two continuities, leading to a juxtaposition or integration of diverse behaviors.

Chapter 3, "The Overlapping by Arrangement of Linear Elements," examines the overlapping of indoor and outdoor areas generated by the arrangement of linear elements. This chapter analyzes the spatial composition of Al (area of linear elements) and Ae (externalized internal area) from both plan and section perspectives. The characteristics of the boundary traversed by Al are clarified through three key aspects: the relationship between boundary shape and arrangement, the connections within circulation paths and sightlines, and the form of beams. Subsequently, 13 overlapping types are extracted by comprehensive analysis, and their relative independence is

revealed. The following four patterns of independence are identified: "Intensification," "Contrast (horizontal-vertical)," "Contrast (up-down)," and "None." Finally, the relationship between the independence of each type and its chronological distribution trend is summarized. From 1970 to 2019, the cases of overlapping types with high independence between Ae and Al tend to cluster in a specific historical period, while the cases with low independence tend to disperse over a long period.

Chapter 4, "The Overlapping by Surface Elements," clarifies the spatial overlapping generated by surface elements that break the indoor-outdoor enclosure. In this chapter, the spatial composition between Es (surface elements) and Ae (externalized internal area) is analyzed from four perspectives: the cross-sectional form of Es, the sectional relationship in the normal direction, the relationship between the boundary of Ae and the arrangement of Es, and the articulation of exterior spaces. Then, considering human perception of Es, the overlapping is clarified from two aspects: the visual and movement connections and the continuity of finishing materials. Based on the analysis of spatial composition and perceived continuity, 11 types of overlapping are identified, and four patterns of perceived continuity are summarized: "Unification," "Contrast (physical-conscious)," "Contrast (crossing-separation)," and "None." Finally, the correlation between spatial composition and continuity patterns is established: surface elements that cross a single side or two opposite sides in one direction tend to unify physical and conscious continuity. In contrast, those that cross edges and corners in multiple directions tend to contrast in these two dimensions of continuity or exhibit no continuity.

Chapter 5, "The Overlapping Formed by Three Kinds of Elements Breaking the Indoor-Outdoor Enclosure and Chronological Tendency," comprehensively clarifies the chronological distribution of additional, linear, and surface elements, reflecting the development of urban houses with the background of the Japanese architectural industry, culture, economy, and society. The common tendency in the timeline is summarized. Analyzing works with two types of elements reveals the trends in how architects design spatial overlapping by various elements breaking the indoor-outdoor enclosure. In addition, this chapter also summarizes the characteristics of the overlapping in two periods from the following aspects: the composition of elements that break enclosure, the relationship between these elements and the urban environment, and the overall features of overlapping patterns. It concludes a gradual transition in the overlapping characteristics of contemporary Japanese urban houses across two periods.

Chapter 6, "Conclusion," summarizes the findings from Chapters 2 to 5.

In conclusion, this paper demonstrates that the arrangement and combination of different architectural elements can effectively blur physical boundaries and extend human perception. By rethinking fundamental issues about the interior and exterior in high-density urban environments, this study reveals the potential for houses to transcend physical boundaries and connect with the broader urban context, fostering a more dynamic and integrated living environment.

備考：論文要旨は、和文 2000 字と英文 300 語を 1 部ずつ提出するか、もしくは英文 800 語を 1 部提出してください。

Note: Thesis Summary should be submitted in either a copy of 2000 Japanese Characters and 300 Words (English) or 1 copy of 800 Words (English).

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