MOBILE ARCHITECTURE
—Furniture, Architecture, and Going Beyond Boundaries—
モバイル・アーキテクチャー／家具と建築の境界を越えて

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筆者は、インテリアデザインの教育が、プロダクトデザインコースで行われているのはなぜかという問いから、デザインとは何か、建築とは何かということを改めて考えた。環境を、都市の階層、建築の階層そしてインテリアの階層という３つの階層に分けて、それぞれが階層横断的に連続していること。その相互に関わり合う関係性から以下のような答えにたどり着いた。

アーバンデザインが、都市的な視点からの建築のデザインであるように、インテリアデザインは、空間的な視点からのプロダクトのデザインである。このような家具と建築の中間のような、空間的なプロダクトのデザインこそインテリアデザインのひとつの方向性を明示している。筆者は、空間概念をモバイルアークテクチャーと定義し、様々な空間デザインに応用している。

1. Background and purpose

I teach interior design in the product design course at Tohoku University of Art and Design. Taking this opportunity, I have started to consider the essence of design and architecture. In our university, the "education of interior design" is included in the department of product design. However, in general, interior design also belongs to the category of architecture. What is the difference between interior design and architecture? In this regard, I have thought of the concept of an "open building system," i.e., an intermediate spatial product between the interiors and architecture. that can determine the user's convenience; furthermore, the product retains

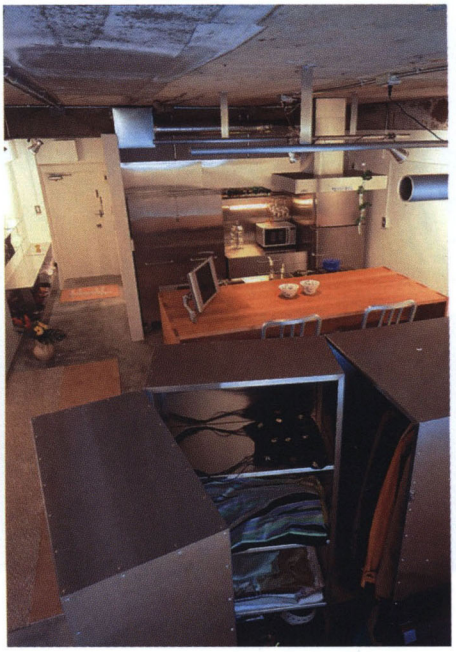


Figure 1: view from bedside to kitchen.

the architecture and cityscape. I have obtained the answer from the hierarchies of the product, architecture, and city. Given that urban design is the architecture design from the viewpoint of the cityscape, it is reasonable to assume that the interior design is the product design from the viewpoint of the spatial view. In other words, the cityscape comprises the architecture, and the interiors comprise products. Therefore, I have understood why the interior design is a part of the product design.

In this paper, I first describe the renovation of a housing unit termed "in-fill/flexible unit." Next, I introduce the project "atelier in the mountain," which is based on the concept of "mobile architecture." Therefore, the project includes the plan and the new method of construction. Finally, I desire to examine the importance of the comprehensive aspect that crosses the borders of the product, architecture, and city.

Figure 2: spatial products.

2. In-fill/flexible unit

From the viewpoint of the intermediate spatial product between the interiors and architecture, I demonstrate the project "in-fill/flexible unit."

In this project, I have suggested my perception of the terminology "in-fill" by proposing a flexible or adaptive environment that revolves around the changes in the lifestyle and necessities of a tenant with time. This notion may be interpreted as facilities and environments that are as flexible and adaptive as furniture. There are many elements that suggest the notion of "intermediate products between the furniture and architecture" in this suggestion of "in-fill."

This project involves the renovation of a unit in a 25-year-old mansion located in the center of the city. The requirement of this project was to create a one-room studio with the kitchen space as its center. The interchangeability of the characteristics was another requirement. The space was to provide a homely

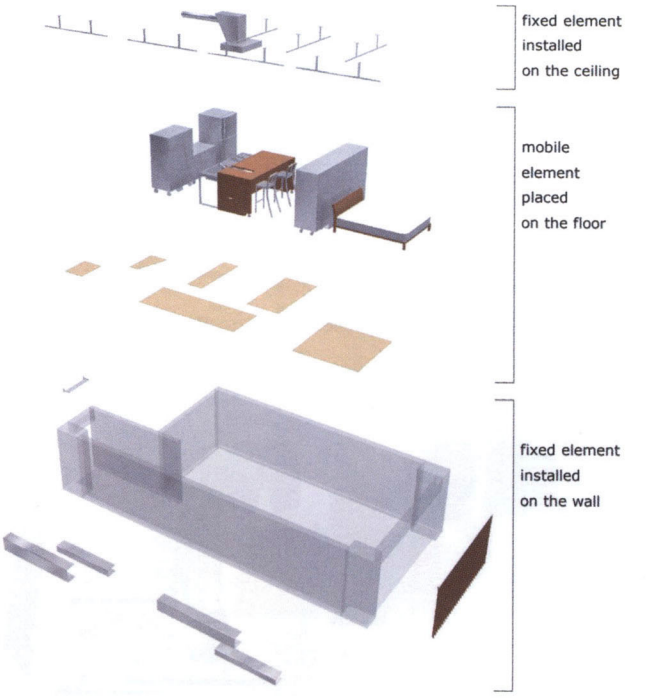


Figure 3: location of spatial products.

environment and occasionally used for evening gatherings.

The steps involved in the renovation were very simple and straight forward. The first step was to remove all existing partitioning walls and the sealing of the unit. This resulted in the unit being transformed into an empty one-room unit. Next, the intermediate products between the furniture and architecture were placed within the studio space. All these spatial products were prefabricated in the factory and delivered directly to the site. Thus, the duration of the renovation was very short and the process was efficient. The main characteristics of the spatial products are their mobility and interchangeability. For example, a kitchen unit in stainless steel comprises a large white-oak sliding table. When the kitchen is not in use, this oak table slides and covers the kitchen top. Closets comprise 5 stainless steel boxes that can be linked together. They may be placed together to serve as a partitioning wall system between the kitchen space and bedroom; or else, they can simply be shifted to the side to create a one-room studio.

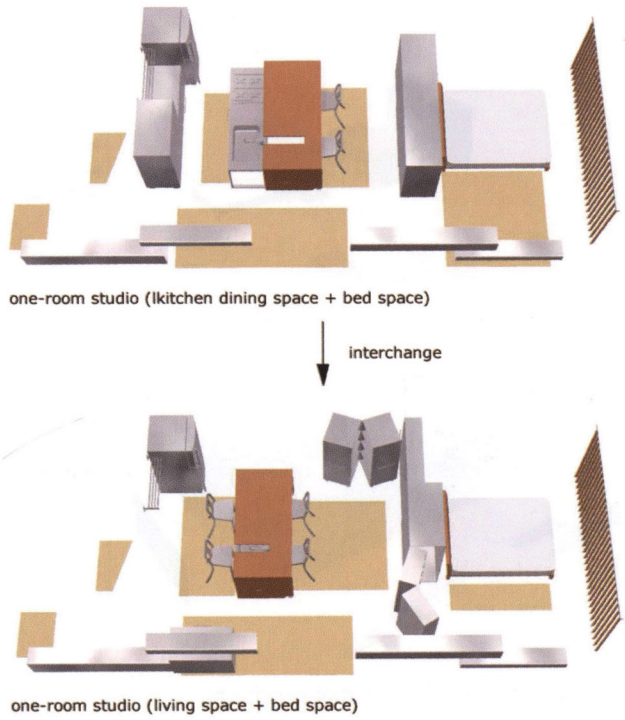


Figure 4: example of interchange.

All the abovementioned elements are mobile or remountable. They can adapt themselves to suit the changing lifestyle and necessity of the tenant. Even if the tenant moves to a larger skeleton housing, these intermediate products between the furniture and architecture can easily be delivered and reassembled and do not leave behind any waste. Thus, this mobility of the space orientation contributes to its dependability and plays an important role in the sustainability of the environment.

3. Atelier in a mountain/mobile architecture

Through the in-fill/flexible unit project, it is known that the spatial product can be a product-like space. This experiment has revealed that a border between the furniture and architecture can be merged into one object. I have defined this object as the mobile architecture. This type of architecture occasionally functions as a moving product and occasionally as a movable building. It is not necessary to distinguish the size of the object because specific objects create a space around them and change the atmosphere of the space. The purpose of this application is to demonstrate the possibility of the sustainability and mobility. The requirements of the mobile architecture are that it should be movable, changeable, and easy to dismantle and assemble.

Therefore, I conclude that "the architecture that can easily be dismantled contributes to the sustainability of the environment." The project "atelier in the mountain" was implemented based on this concept and planning. This building is a typical mobile architecture.

This project comprises two main units that create a maneuverable ambience. The main unit is termed "shelter" and the second unit that serves the shelter is the "air stream*." These units complement each other and together create the maneuverable ambience. Both the shelter and air stream are portable and can easily

be dismantled and assembled.

Currently, the shelter comprises the so-an/mobile CHANOYU room, mobile HANJO, and mobile ICHIJO. Due to these elements, the shelter acts as and produces a temporary ambience for tea ceremonies. Thus, the air stream functions as the complement of the shelter, i.e., as a "Mizuya/ preparation room." The combination of the shelter and air stream is an independent project termed atelier in a mountain, and it is now the secondary base of many studies and activities.

3-1. So-an/mobile tea room

A tea room, decorated in an aluminum honeycomb panel, can easily be dismantled and assembled; further, it is lightweight and mobile. The combination of the tea room aesthetics and the pure and slick quality of aluminum was introduced in an inspiring development of the WASHI honeycomb, which is a novel experimental rice paper with an internal aluminum honeycomb structure.

Once the tea room is assembled, 2 tatami-sized tea rooms are formed. The overall tea room is a 2 m cube that is offset 30 cm above the ground level. The entire interior is a 1.8 m cube. The interiors of this cube are decorated with 60 × 60 cm square-shaped WASHI honeycomb panels. Within the WASHI and aluminum panel layers, there exist programmed illuminations that are installed for the ambient lighting of the room. Every component comes with individual carry bags for the ease of the dismantling and transportation of the system.

3-2. Mobile ICHIJO

Mobile ICHIJO is the smallest architecture. Once the 12 cm thick aluminum box is opened, it instantly transforms into an "ICHIJO/one-tatami-sized" tea ceremony room. The floor comprises a 3/4 size tatami with an aluminum table top for the tea. This table top is retractable, and it can easily transform into a tea table of an appropriate height.

Figure 5: overall view.

Figure 6

Figure 7

Figure 8: construction.

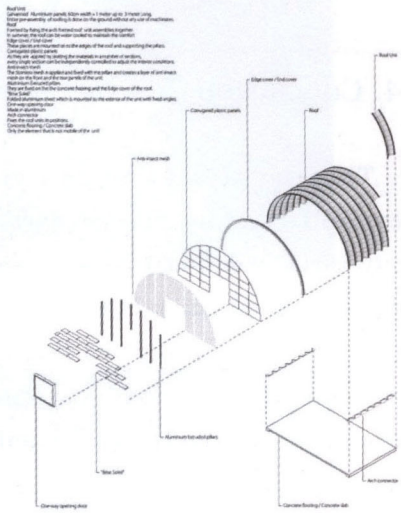


Figure 9: composition.

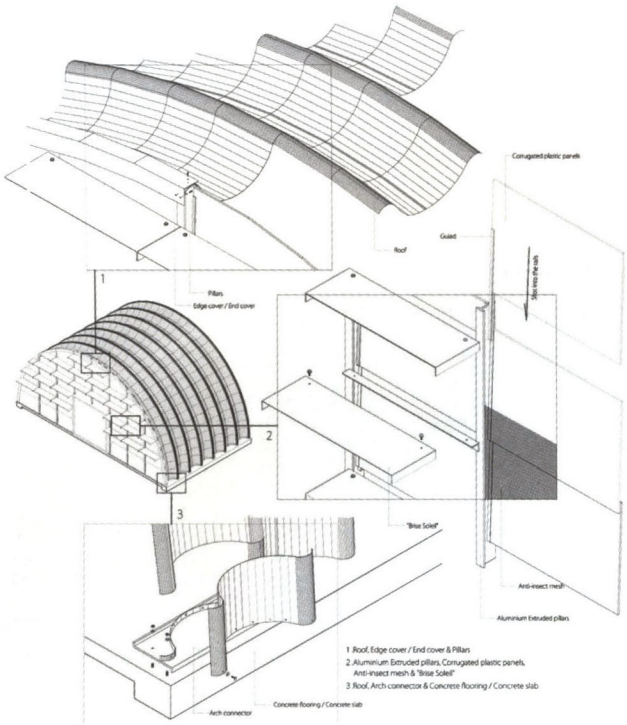


Figure 10: detailed composition.

A white ceiling is simultaneously suspended above it via the tensegrity of the construction system, which was devised by Buckminster Fuller.

3-3. Mobile HANJO

Mobile HANJO is a HANJYO/unit that is half the size of a tatami that slides out from a mobile low table. Once the HANJYO is pulled out of the table, the combination of the tatami and the table imitate the space of the tea making ceremony.

4. Conclusion

Thus far, I have presented the successive connection between the product, architecture, and city. Henceforth, I may proceed to an even more cross-pointed examination of the architecture. I suggest that the sustainability and long life of the buildings should be achieved by the architecture. Then, it is necessary to consider the flexibility of the product and interior design for obtaining a variable plan in the future. Moreover, the interiors industry will play a more important role in the architecture industry. For this estimation, I have proposed the mobile architecture and sustainability from the viewpoints of the product, architecture, and environment. I would like to emphasize the usefulness of this approach to next-generation architects.

I would like to proceed further to develop these theories by extending my viewpoint from the interiors to the architecture. The observation of the spatial products that are included in the interiors and architecture will provide some new perspectives on next-generation architecture and sustainability.

***References**

*Air stream is a type of camping caravan that was produced in the USA in the 1930s. It is commonly known for its streamline design and aluminum body. This particular one is a vintage model produced in 1963, termed "globe trotter."

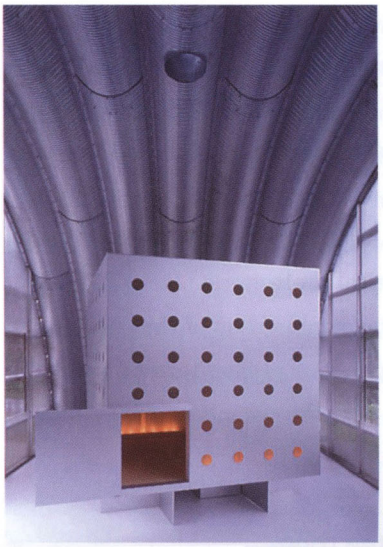


Figure 11: exterior view of so-an.

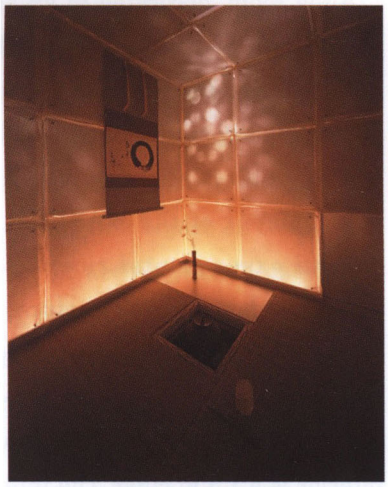
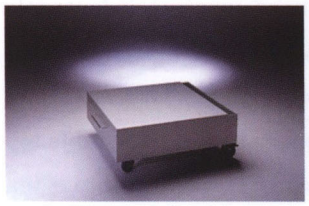


Figure 12: interior view of so-an.

Figures 13, 14: mobile ICHIJO.



Figures 15, 16: mobile HANJO.

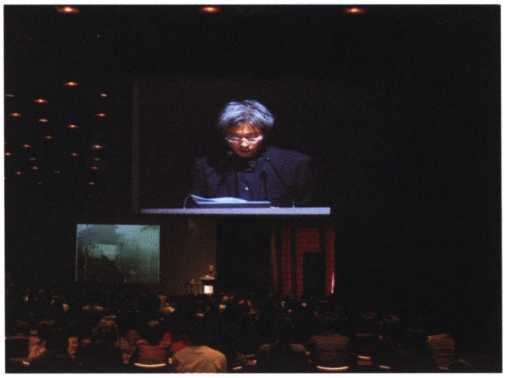
第４回AIDIA学術大会（ソウル）に参加して

2004年の東京大会の実行委員として大会運営の難しさを実感した筆者にとって、本大会のその巧みさには目を見張るものがあった。本稿では、代表講演の内容を報告するとともに、次回東京大会に向けて、本大会から学ぶべきと感じた点について簡単にまとめてみたい。

代表講演は、大会テーマ「間、In Between Beyond the Boundary」を受けて、韓国からは、Kil Yong Park氏による「In Between. Entity and Phenomena」、中国からは、Wang Qiong氏による「In Between. Commercialism and Culturism in Design」、そして日本からは筆者の「In Between. Furniture and Architecture」というテーマプレゼンテーションとなった。筆者は、その中で、「インフィル／動く家」、「山のアトリエ」という２つの拙作を紹介しながら、また持ち運べる２畳の空間である「mobile 2JO」を実際に会場に持ち込み、「家具と建築の中間のような空間的なプロダクト（筆者はモバイルアーキテクチャーと定義）が、インテリアの使い勝手の自由度を高め、建築の寿命を維持し、都市景観の保全に貢献する」という自論を展開した。プロダクト、建築そして都市を横断する階層的な視点の提案が本論の趣旨である。

大会に参加した感想としては、その構成が、前半の大会宣言、ゲストスピーチ、代表講演およびレセプションに重点が置かれ、後半の研究発表は比較的淡々と行われていた印象が強い。それは、企業広告が大半を占める前半だけの豪華なイベントプログラム冊子が用意されていたことからも明らかであった。ゲストスピーカーには今注目のオランダの若手建築家集MVRDVと、アメリカの著名デザイナーのカリム・ラシッド氏が招かれていた。大物デザイナー２人を招聘して盛大なレセプションが執り行われた背景には、協賛企業からの実行予算の確保が周到に行われたことを伺い知ることができる。国際学会における論文発表を責務としている中国、韓国の大学研究者にとって本大会はますますその存在意義を高めていくだろう。日本も、大会運営の手腕を問われる時が、４年後に待ち受けている。学者と豪腕興行主の二つ顔を持つことが求められるだろう。

大会の翌日には、韓国崇實大学（Soongsil Univ.）に招かれ、建築学部室内建築専攻の学生を前に「モバイルアーキテクチャー」をテーマに特別講演を行った。「mobile 2JO」も持込み、写真と実作に対する韓国の学生のエネルギッシュな生の反応を聞けたことはきわめて有意義であった。今回の、AIDIA学術大会（ソウル）への参加は、アジアの勢いのあるデザインの未来を改めて考えさせられる良い機会となった。



AIDIA、講演風景

AIDIA、展示風景

韓国崇實大学、展示風景

付　記

本稿は、第４回アジアインテリア学会（2006年11月１日(水)～３日(金)韓国・ソウル大会）にて講演した内容（MOBILE ARCHITECTURE/Furniture, Architecture, and Going Beyond Boundaries）およびインテリア学会会報JASISNEWS No.38掲載文を再録（写真を追加）したものである。尚、筆者は2007年４月より、首都大学東京システムデザイン学部准教授。

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