

ARCH 384: Competition:

Pre-fabricated Living Unit

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"The works of the past always influence us, whether or not we care to admit it, or to structure and understanding of how that influence occurs. The past is not just that which we know, it is that which we use, in a variety of ways, in the making of new work....The typology argument today asserts that despite the diversity of our culture there are still roots of this kind which allow us to speak of the idea of a library, a museum, a city hall or a house. The continuity of these ideas of type such as they are, and the esteemed examples which have established their identity and assured their continued cultural resonance, constitute an established line of inquiry in which new work may be effectively grounded." The Harvard Architectural Review. Volume 5. Precedent and Invention. Between History and Tradition: Notes Toward a Theory of Precedent. John E Hancock.

The idea of prefabricated architecture, commonly known as 'pre-fab' has taken on a specific type in present day. 'Pre-fab' architecture encompasses a range of definitions however the common vein being lightweight structures composed of cost-effective and innovative materials, and mobility. The design of our living unit has drawn from many international precedents. Each of these precedents is composed in a modern and minimal style, which is address issues of materiality, building type, efficient usage of space, programme, and site. The main projects that influenced our design and choice of material are the Loft cube by Werner Aisslinger, the Pavilion of Yamaguchi by Katsufumi Kubota, and Hotel Q! by Graft Architects. From the Loft cube, we employed the idea of an elevated unit, the Pavilion of Yamagucci, gave us insight on innovative materials and assembly, and from the Hotel Q we tired to incorporate many basic deign principles, organizing elements and interior finishes.

Our unit is specifically unique because it utilizes an existing structure as a basis to sustain itself. This type of architecture is known as 'parasitic'. According to *Parasite Paradise*, 'parasites' are flexible and temporary structures that feed off existing infrastructure. They respond on their own term to new and unforeseen demands addressing larger issues of urbanity and social relationships. In keeping with our intention for the design, we sought to densify suitable urban areas that are currently underused with lightweight, prefabricated living units. In the city of Toronto, and entire network of laneways exists with the full infrastructure of residential neighborhoods located just off the main streets. Our design attempts to re-inhibit these laneways by placing units on top of the garages and creating new residential districts by established communities, thus addressing greater issues of urbanity.

The first precedent is the Loftcube- 'a contemporary minimalist domicile'. We chose this precedent, mainly due to its site, function and building type. Created originally in the city of Berlin in 2003, the intention for this prefabricated structure was to exist on the tops of roofs in the city, where real estate was scarce, and one could experience all the great views from the comfort of their home. The Loft cube's precedents drew from 'experimental hippie colonies', like the dropout commune in Colorado, aptly named the Drop City, which came into being in 1965, to the geodesic domes of Buckminster Fuller. Le Corbusier 'cité radieuses in Marseille'- more loosely structured, more transient, a sort of cosmic rooftop community. After comparing this project and its ambitions, to our own ambitions, we preferred to have a permanent type of unit, in a neighborhood setting within the city rather than on skyscrapers or tall buildings. We thought that the views would still be reasonable, but the sense of community and the versatility of having the unit elevated only one story off the ground was of greater importance. This allowed for the unit to be hoisted with a crane and transported by truck rather than helicopter. The Loft cube precedent also assisted us in dimensioning our unit for transportability and space planning. The Loft cube's structural body is 7.25 m x 7.25 m the height 3.50 m and distance to the ground is 1.20 m and the total amount of interior space is 45 m². The shipping is done in a standard 40 ft container plus oversize self-construction kit. The Loft cube's structure makes use of movable blinds, glass elements and either solid or perforated materials; the degree of translucence can be adjusted to suit personal taste. Indoor spaces are completely transformable using sliding partitions to adapt to the type of living spaces the user requires. The interior fixtures and furnishings are dual usage - where washrooms sink doubles as a kitchen sink, or a showerhead can flip around to water plants on the opposite side. These elements all help to maximize space, by not repeating elements. Programmatically, we adopted the Loft cube's versatility when it came to creating the plan of our unit. Although the Loft cube caters to a specific clientele we had to insure that our units were extremely versatile and suitable for numerous lifestyles. The plan accommodates these different styles by allowing the resident a choice of either a plan with a generous kitchen as the main living space or one with a comfortable living space adjacent to a functional kitchen that can easily be closed from view. The amount of private space is also flexible. Residents can choose

from a one-bedroom shell with study and couples-oriented bathroom, or a two-bedroom unit with family washroom. These different living possibilities can be combined in any manner, and even changed later on should the resident desire it. Sliding partitions and dual usage elements were also implemented to make efficient use of space.

The Yamaguchi Prefecture Pavilion, built in 2001, was the second precedent studied, where we implemented a similar exterior material palette and architectural style. The clear and uniform reading of the structure was particularly appealing to us along with the pavilion's design, which includes a system to dismantle the building piece by piece. Being the semi-permanent nature of the structure, the system had to be portable so that it could be transported to other sites and reconstructed and reused for new activities. Although our structure is meant to be permanent once assembled, we adopted the principle to ease transportability with lightweight materials. We implemented a building system on which the finished edifice will be constructed partially or completely assembled on site. For our structure the exterior shell comes pre-assembled and is erected first, and the interior built-in elements are installed separately. The material palette that composes the pavilion is rough textured cement, galvanized steel and polycarbonate material for the facings. Similarly our 'shell' consists of two individual triple-layer sections of translucent polycarbonate, which is extremely economical as well as possessing excellent insulation and structural qualities. Co-extruded Thermoglazing, by Marcolux, is perfect for applications requiring a lightweight product with high light transmission, excellent thermal insulation qualities, and high strength and impact resistance. This Polycarbonate multilwall provides a strong, flexible & energy efficient glazing. Macrolux Wall Series sheets are superior to standard polycarbonate products due to their strong, multi-layer construction. These layers provide increased thermal insulation and strength without significantly decreasing light transmission.

Selecting these materials allowed for a cost-effective unit without compromising formal expression.

Hotel Q!, by GRAFT was the third precedent where we applied similar interior materials and design principles. Hotel Q combines a skillful use of continuous surfaces, allowing

a merging and continuity between public and private spaces. Each gesture has an interactive, human justification. The basic idea of Hotel Q! was a "wave", from which an architectural landscape develops, where ground, wall and cover flow into one another merging the architecture and furniture with one another. Landings from the wall squeeze themselves and seat opportunities, niches out in the walls will become shelves, and the floor turns into flowing into the bed and this into a bathtub. The search for a material that would provide both technical and aesthetic qualities led architects to Marmoleum real 3127, a design from the new Marmoleum global 2 collections. Forbo Flooring is the company that supplies this highly functional and hardwearing material. Marmoleum is a unique renewable material made from linseed oil, pine rosins, limestone, jute, and economically responsible pigments. The material is extremely versatile and strong, allowing the interior forms to take curvilinear and irregular forms. From Hotel Q! we adopted a similar landscape of folds and crevices that emerge within the translucent and simple outer shell, enticing the user to enter. Once inside, the user may utilize the landscape as they consider fit – a fold here can act as a table, chair, or stool, while a rupture there reveals a sunken tub in the middle of the floor. We found that this allowed for a versatile and efficient use of space. We employed the same material that was used for their interior surfaces due to its environmental and durable properties. The interior of the unit is lined with Marmoleum, and is selectively left cut away in specific areas to create translucent skylights. By placing an opaque material inside a translucent shell, the residential unit will glow towards the exterior and create a series of lanterns atop the laneways.

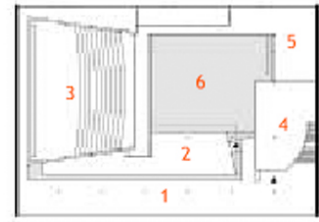
With 'pre-fab' architecture, the realm of building typologies that it encompasses is not as clear as a library or museum typology. Two of the precedents chosen, the Loft cube and the Yamaguchi Prefecture Pavilion are both considered 'pre-fab' but were entirely different in their program and use. The Loft cube was a living unit that was completely pre-fabricated off site, where as the Yamaguchi Prefecture Pavilion was a trade fair exhibition space that was assembled on site, possessing only pre-fabricated elements. Each of the selected precedents served to provide insight on the various elements that we felt were important to our design. Site, program, building type, materiality and

interior living spaces were areas we chose to focus on. When selecting products to fabricate our unit with we kept in mind the environment, and used local products that were recyclable, renewable and reusable. We also chose products that were affordable, lightweight and aesthetically pleasing. We used these precedents to assist in achieving our goals of not only creating a light weight pre-fabricated structure that occupies garages in neighborhoods within the city, but one that maximizes space and provides a flexible living environment as well.

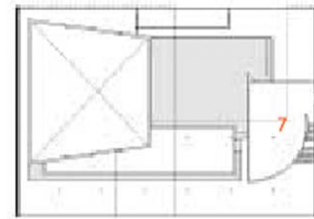
Loft Cube, Werner Aisslinger



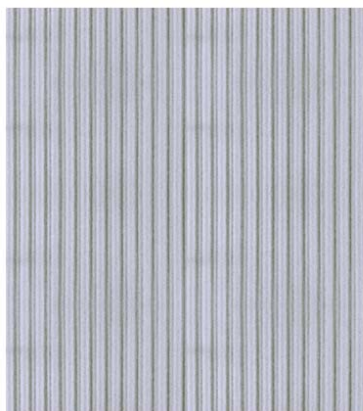
Yamaguchi Prefecture Pavillion, Kubota Architect Atelier



- 1. Foyer
- 2. Waiting hall
- 3. Theater
- 4. Gallery
- 5. Backyard
- 6. Pond



- 7. Sky terrace



Hotel Q!, GRAFT



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