

ARCH 384
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Shinkenchiku Residential Design Competition
HOUSE OF MULTIPLE DIMENSIONS

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One of the most effective methods of designing is by learning from the designs and ideas of previous works. Drawing from the influence of previous works and ideas provided the base for this residential design. Although the typology of single-family residential housing has been much explored in the past, especially during the suburban boom in the 80s, this design attempts to break past some of the more traditional barriers in hopes of tapping into a new energy.

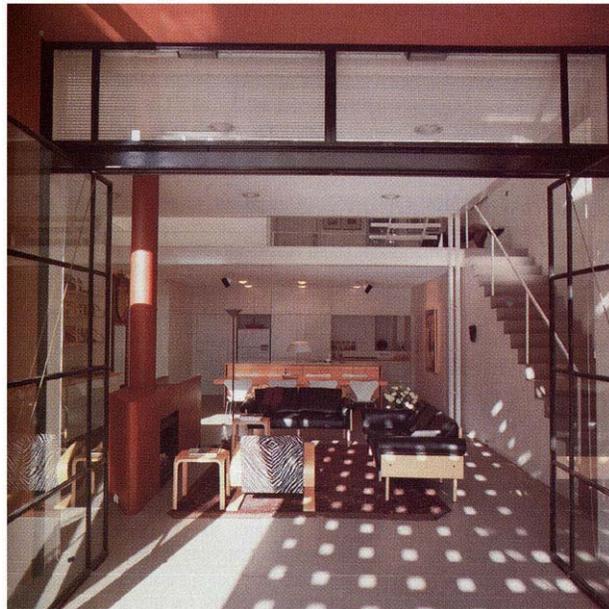


Figure 7.24 View of the interior of the Paddington House from the lower-level garden.
(Reiner Blunck)

Hildebrand, 373

Despite the fact that there are often many restrictions and limits that may seem to stiffen one's creative intentions, residential design, also offers great potential to truly experiment with the value and atmosphere that the spaces can create. The main theme behind this design competition is Steven Holl's description of "multiple dimensions", adapted greatly from the work of Brian Greene, author of The Elegant Universe. Inspiration was drawn from other architectural works, as well as writings on ideas of space, time and light. This house explores the experience of multiple dimensions through the materialization of time, directly within its architectural design. This house is intended to be a thought experiment, which

incorporates the dimension of time together with space, through the dynamic use of light in the design.

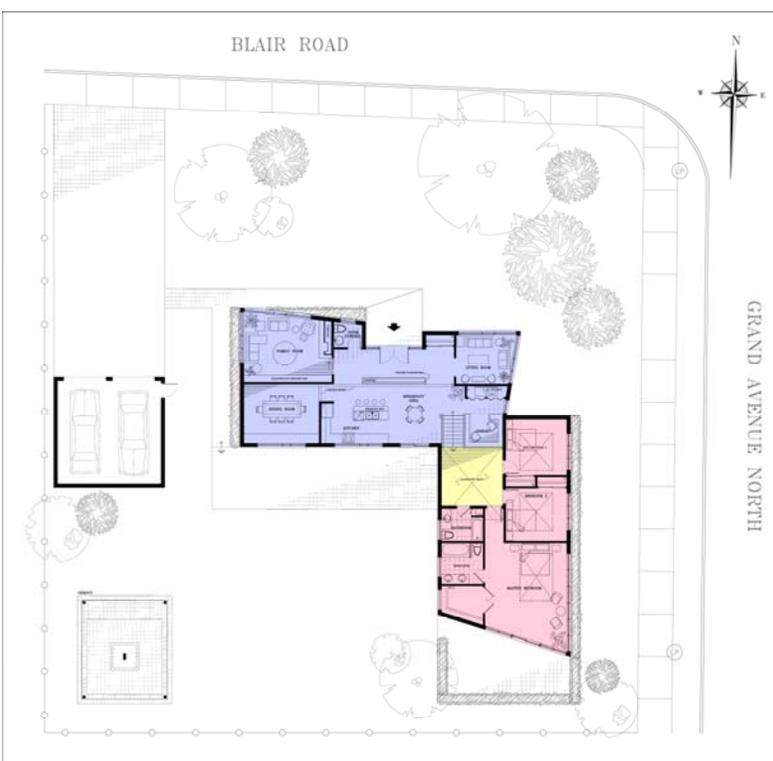


FIGURE 2-45A View of lighting fixtures in summer daylight in the Resurrection Chapel in Turku, Finland.

As one of the key elements in this design, light is used to actively create the notion of multiple dimensions within the spaces. Here, light is used to convey time, rather than relying on the more common, technological methods. The house acts as an instrument to indicate to the inhabitants the natural biological time, in its purest form, free of distractions from the outside world. In her book Light Revealing Architecture, author Marietta Millet offers insight into designing with light as a part of the building material.

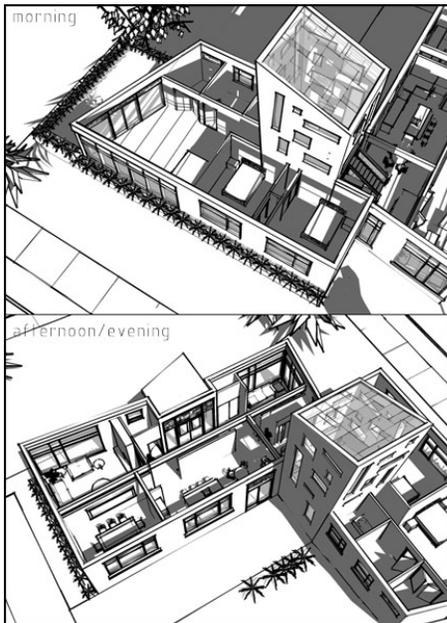
“Each particular place has its light. Light expressing place encompasses two distinct aspects: the place itself...how it differs from any other place; and the particular set of changes that take place within it over time, creating distinctive patterns of diurnal and seasonal changes,” (Millet 6). Situated in Canada, where

the experience of the seasons is clear, the house is located in Cambridge, in close proximity to the new school. Here, the idea was to maximize the inhabitants’ experience of the time of day, as well as time of year. By orienting the plan according to the sun patterns, it maximizes the use of natural light to



create both a more pleasing atmosphere, as well as being more energy efficient. For example, the pink represents the private areas; in the morning, these

bedrooms will be lit up by the morning light and in the evenings, the blue, more public areas will be lit up. The images below are taken during the summer solstice at 8am and 5pm. Although the effect will be significantly different in the winter, the basic idea of morning compared to evening light will maintain. Millet also emphasizes the importance of the specific qualities as well as quantities of light

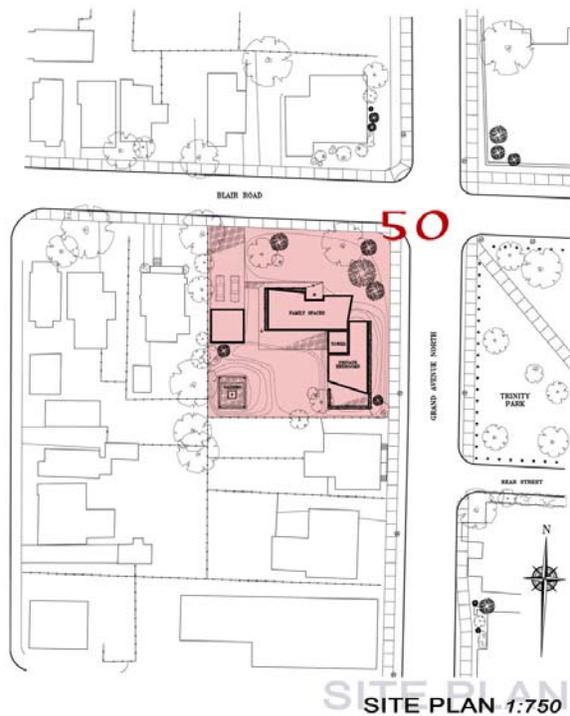


experienced (Millet 71). Within the series of projects that she explores in her book, different uses of light as a building material are illustrated. From there, the ones most suitable to this residential project acted as inspiration for the design. Although this design is an attempt at something unique, the ideas and inspiration of previous works was essential as it created the basis for the project's location and orientation, which in turn created a strong foundation by which to base the project's fundamental elements upon.

The experience of intimate spaces is explored in Gaston Bachelard's novel The Poetics of Space. "The house, quite obviously, a privilege entity for a phenomenological study of the intimate values of inside space, provided, of course, that we take in both its unity and its complexity, and endeavor to integrate all the special values in one fundamental value," (Bachelard 3). Once the basic framework for the site and plan orientation were set up, the design attempts to explore further into the spaces by creating places that is both comforting and welcoming to families. The size of the house is modest, sitting at approximately 245 square meters. Immediately this creates for a much more common type of housing, that offers the inhabiting family a warm and



cozy home, while not jeopardizing their privacy. Sited on a large corner lot, the house has large setbacks on either side offering privacy from pedestrians, the adjacent seniors' residence and church. The circulation space is minimized so as to make best use of available space, and care was taken to ensure that none of the spaces were *too big* so as to seem cold or empty. Bachelard encourages



people to look at a residential design as more than simply a house, but rather as a home. "For our house, is our corner of the world... If we look at it intimately, the humblest dwelling has beauty," (Bachelard 4). This aspect of beauty within the simplest of values adds again to this notion of multiple dimensions. By concentrating on the fundamental ideas in this design, rather than overloading it, the beauty within this house is found within the value of its spaces as dictated by the most influential building material; light. Everything about this house was

designed with natural light in mind. It works to create a retreat for the family, and provides a means for them to escape into a more relaxed natural atmosphere where light tells the time for your body, not a clock or watch. Here, your alarm clock is the light of the dawn streaming into your bedroom, and one can dine every evening to the natural sunset light. By adhering to Bachelard's principals of beauty within the simplicity and intimacy, the house was made to become a home, through the beauty and warmth of light.

Looking again at the methods that have, in the past, utilized light as an active building material, many various architectural elements were included into the design. In Grant Hildebrand's book, The Origins of Architectural



Figure 8.2 South trellis and shading devices on the south facade of the Real Goods Solar Living Center. (Margot Kelly McDonald)

Pleasures, some of the techniques that other architects have used are studied, successful or not. One of the case studies Hildebrand does is of the Real Goods Solar Living Center. “The building seems to reach out and gather light through its large, expressive layers of shading, reminding visitors of seasonal and climatic changes,” (402). Although these methods are very effective in this Solar Center, they must be altered and adapted to become more suitable to a residential environment. As previously mentioned, the design tries

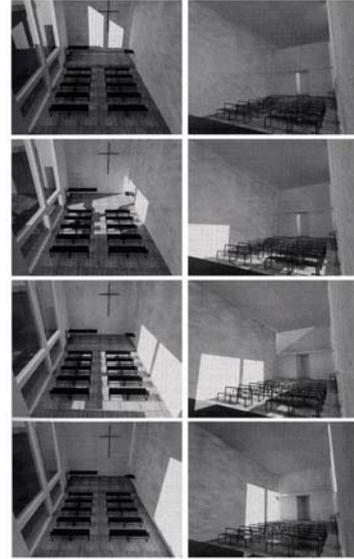


Figure 1.3 Lightscape renderings of the Chapel on Mount Rokko from morning to mid-afternoon during the winter solstice. (Lars Petersen and Tim Guyette)



to accommodate the seasonal, day

and climatic change in time. Although the approach is different, the intentions are similar. Looking back up at the floor plan, the highlighted yellow area represents the threshold between the public and the private areas. It is a chapel inspired, two and a half storey tower. It has a glazed skylight with punched windows in a masonry finish. It is the transfer moment within the house where, one can be truly isolated within the natural experience of the dimensions. The proportions offer an emphasized feeling of the specific space, while the windows, portraying drastically different effects, time dependant adds the notion of multiple dimensions into the experience. Much of this inspiration was drawn from the Hildebrand’s study of the Chapel of Mount Rokko and the experience of the change in

time that the users of this chapel experiences. The misfortune of this project was the lack of continuous use by a group of people. By incorporating this principal into a residential design, the change in time, through the natural light in a space will have the opportunity to be experienced to its full potential.

In The Elegant Universe, by Brian Greene, he discusses the String Theory, where the entire universe is brought back down to its rudimentary element, of one simple 'string'. In the string Theory, everything is essentially made up of tiny 'loops' which, act like elastic bands, moving and vibrating constantly. These neutrinos are so tiny that they pass through all matter undetected. In order for scientist to clearly understand them, they must have a space which is, of course still interacting with the earth, simultaneously isolated from outside influences and interferences. (Greene)

The goal of this house is to have it act in a similar way; where the experience of time and this neutrino experience will be embodied in atmosphere and experience that the inhabitant will undoubtedly meet through his or her daily life. The inhabitants will still be within a



“normal Canadian” setting, but possess the ability to retreat to a home that offers them an uncontaminated atmosphere to fully take advantage of the qualities of time that have been lost in the hustle and bustle of everyday life. Greene reminds readers that “They never stop. They never slow down, Light *a/ways* travels at light speed,” (Greene 24). By capturing the phenomena of light into a building material in the house, it creates an otherwise intangible element into something which can be interacted with. Harnessing the energy of such a powerful force is the guiding idea in this housing competition. The design of this residential home makes an attempt at creating a warm welcoming atmosphere, whose experience encompasses multiple dimensions of space, time, light, energy and beauty.

The concept of space and time are often considered to come hand in hand when an atmosphere is to be experienced at it's fullest. It is essential to consider beyond the simple three dimensions that we know to be space, into, and even beyond the fourth dimension of time. Millet offers guidance in many aspects of the



Millet, 154
Figure 4-27A. Interior view toward the deep south wall, Notre Dame du Haut at Ronchamp, France.

fundamentals and essentials when working with the building material of light. This comes hand in hand with the teachings of Millet, who emphasize the importance of intimacy and value within the quality of space, rather than the *glamour* of it. Hildebrand's studies have influenced this design directly in the use of architectural form and ideas. Lastly, the influence of Greene is the basis by which this entire project evolved. The string theory, states that this simple string is the basic building block by which the entire universe is composed. At the scale of this residential project, the experience of space and time, through the manifestation of light energy is the idea by which everything is to evolve from. The design still draws from the earth and allows exterior energies to pass through and influence it. Simultaneously, it creates a separate world where the natural elements are brought out in the purest for me light as a tangible life force. There are endless influences on ones life, it is up to the designer to create an environment which will create both a positive influence, and allow for a setting for positive experiences to occur. "Experience informs intuition... Experience sets the frame within which we analyze and interpret what we perceive," (Greene 184).



Works Cited

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