in response to

The Plan-less House
Shinkenchiku Residential Design Competition 2006

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September 18, 2006

Question

> Why have I become so skeptical with regard to the descriptive
> method of walls? It is because I feel a sense of unease with the
> division of lifestyle, and the corresponding methods of spatial
> division[1].
>
> Kengo Kuma,
> competition brief

For Kuma, division that inherently exists in a plan drawing and subsequently in a built form comes from the use of wall elements and thinking of these as elements of enclosure. This division prohibits freedom modern lifestyles necessitate. Not only are family make-ups and other relationships very varied but the passage of time itself requires flexibility not only daily but in the long term as well. A certain amount of changeability means also that the building does not outlive its use, since it can accommodate different functions over time.

The plan-less idea has been very powerful in the development of architecture since modernism and has influenced not only thinking about buildings but also about cities, as evident in work of Yona Friedman. Many architects have contemplated flexible layouts – this discussion will concentrate on Gerrit Rietvield, Le Corbuiser, and Mies Van der Rohe. As an alternative to flexibility is ambiguity in the layouts of traditional domestic Japanese architecture, which echoes in Kuma's own work in regards to questioning the meaning of walls.
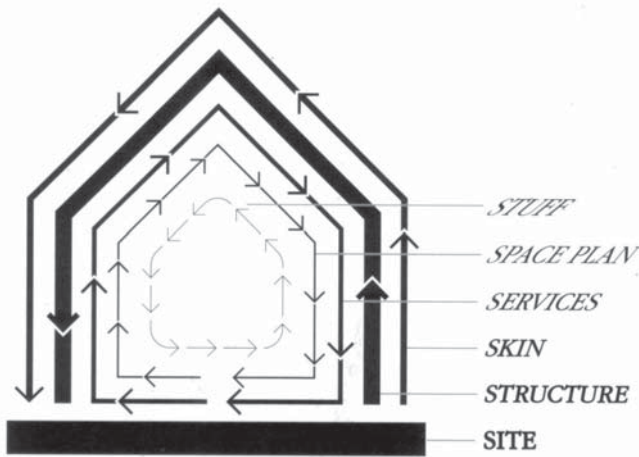
Investigation

A lack of plan or a free plan have an appeal because these foster closer relationship of the inhabitants and the house by directly engaging them in their surroundings (functionally as well as emotionally) and as a result extends the building's life by making it more adaptable and thus useful for many years. Since the inhabitants' lives change throughout the life span of a building, which in North America is about 35 years[2], not only can the owners of the house change multiple times, but so can the number of those in the family, and the family's make-up and internal relationships.

[1] Kuma, Kengo. "Shinkenchiku Residential Design Competition 2006: The Plan-less House". Competition Brief. http://www.japan-architect.co.jp/english/5info/index.html
[2] Brand, Stewart. 1994, *How Buildings Learn: What Happens After They are Built.* New York: Penguin Books. P.12.

Brand's layering diagram

As such, the interior partitions, e.i. walls, as well as other elements of the building must either accommodate or be abandoned in favour of a new building.

Buildings that cannot accommodate this kind of a change "misuse time"[3]. Precisely because buildings are designed to be permanent, they are not flexible, and so they are denied the longevity that comes from flexibility argues Stewart Brand. He argues for the design that is not just "whole in space but whole in time"[4]. This wholeness can be achieved through the potential of flexibility that can be approached from the view of a building as a series of layers that change throughout the lifespan of the house. These layers, shown in the diagram, have varied degree of permanence, with "site"(the thickest line in the diagram) being the most stable, and "stuff"(thinnest lines), which is furniture and other moveable property, having the least stability. Similarly, the rates of change differ, the structure taking the longest to change (as illustrated by the arrows) and the stuff yet the quickest, within a day or within months for larger items. Architects must consider, writes Jonathan Hughes, whether to think "of buildings as complete artifacts or perpetual works-in-progress"[5].

And so the elements that are most stable, the structure and the envelope, have the most longevity that the architectural design can offer. Yona Friedman seconded that structure "has to be the most rigid" and while for him the envelopes "are not necessarily rigid"[6]. Then, if one accepts the structure and skin as still the most permanent layers, what "can be changed most easily is the function map"[7]. And so he concludes: "functions can follow form"[8] in direct opposition to Louis Sullivan's "form must ever follow function"[9].

For Brand the quickest layers are more influenced by the slowest ones than in reverse. So the structure and outer perimeter walls will inevitably influence the organization of the interiors and furniture. This physical dependence of quickest on slowest necessitates points of potential contact or neutrality where stable and changing layers can come together. This Brand calls "slippage between the differentially placed systems"[10]. The perimeter of the house must be able to accommodate other layers and systems attaching and detaching to itself over time.

[3] Brand, 2.
[4] Brand, 2.
[5] Hughes, Jonathan. "Preface" in Non-Plan. 1999. Hughes, Jonathan and Sadler, Simon, eds. Oxford: Architectural Press. p.VIII.
[6] Friedman, Yona. "Functions follows Form" in Non-Plan. 1999. Hughes, Jonathan and Sadler, Simon, eds. Oxford: Architectural Press. 109.
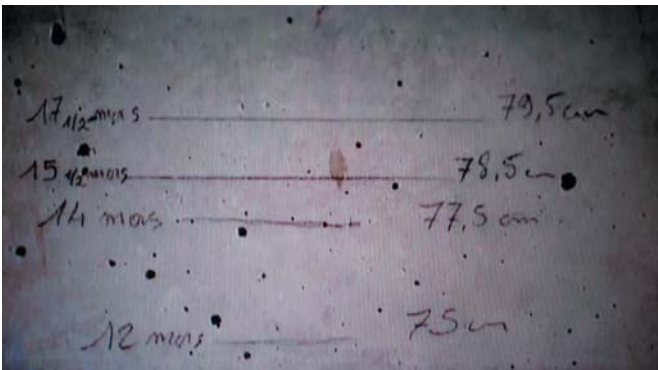[7] ibid
[8] ibid
[9] Brand, 3.
[10] Brand, 20.

Centraal Beheer

Interior walls in Nemausus 1

Ultimately, the adaptability engenders bonding between the occupants and the building through continuous physical involvement. Freedom within the layout of the building allows ways to alter it to one's own needs. Furthermore, when this means that initially there is a necessity to alter, for example, when there are no dividing partitions or finishes at all at the time of moving in, then the work required immediately creates a sense of ownership/appropriation/bonding within the dwellers. This led Herman Hertzberger to leave walls in his Centraal Beheer as unfinished concrete block[11]. Jean Nouvel went even further, having the construction workers re-draw the construction lines on the unfinished concrete walls in Nemausus housing in Nimes as to leave the walls definitely to be finished by the tenants[12]. Such an initial involvement in one's environment engages understanding that one's house can change as necessary.

If the design allows the necessary framework and freedom for the flexibility, then both the architect and the inhabitant share the creation of the space together, as it now begins to responds to living patterns and the flow of time. For Friedman, the building is allowed to develop as "both the technician (master of the structure) and the "artist" (user, in a way) who decide about form and function, cannot know the outcome in advance"[13]. Friedman, who has created many plan-less projects, saw the building as a self-generator:

> Later I came to believe that the complex system making a building
> decides everything for itself. Users, once the building exists, learn
> to play the game[14].

Friedman sees the plan as a "triggering of a long-wearing erratic dynamic process"[15]. As such the plan form is only a suggestion, an imprint of possibilities.

For Le Corbusier, plan is often misused as the end of design rather than a representational tool. While he refers to plans such as that of St. Peters and of Versailles, in his *Towards New Architecture* he raves against plans that appear to be for their own sake only. These and other similar are described by him as a "piece of paper on which black marks for walls and line axes play as a sort of mosaic (…) creating on optical illusion"[16]. This illusion is one "that kills architecture"[17] and. A plan is

[11] Frampton, Kenneth. 1992. *Modern Architecture: A Critical History*. London: Thames & Hudson. 299.
[12] Copans, Richard, and Neumann, Stan. 2001. *Architectures 1.* Edited by ARTE. DVD. Paris, France: ARTE.
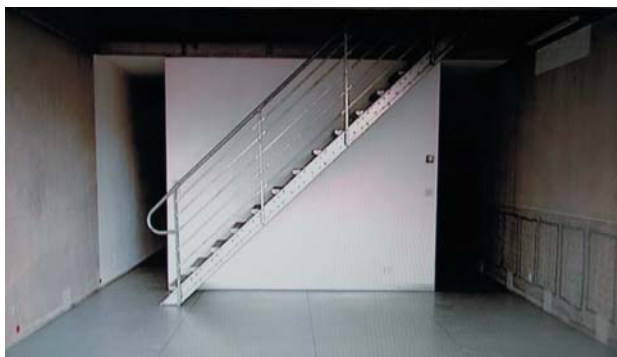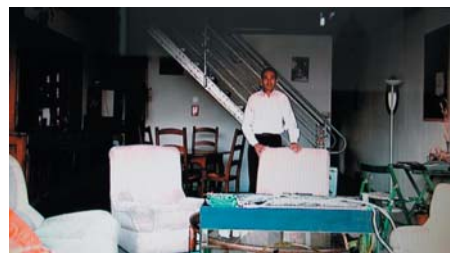[13] Friedman, 111.
[14] ibid
[15] ibid
[16] Le Corbusier. 1986. *Towards New Architecture*. 13th Ed. Frederick Etchells, translation. New York: Dover Publications. 180
[17] ibid

The blank unfinished walls of Nemausus 1 were finished by the tenants to their own tastes

meant to be "a cluster of ideas" as it can only represent the architectural intent. It can do no more, because fundamentally this is not how people perceive their surroundings:

> Man looks at the creation of architecture with his eyes, which are 5 feet 6 inches of from the ground. One can only consider aims which the eye can appreciate and intentions which take into account architectural elements[18].
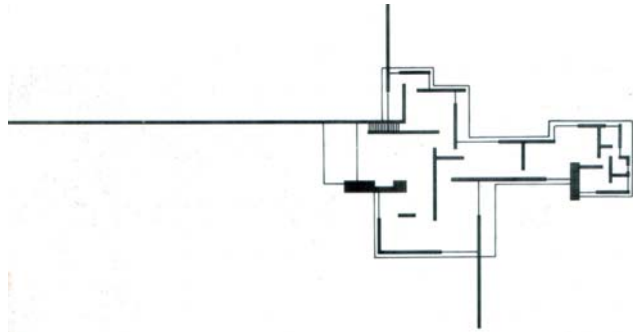
The experience of the building is so much more varied than the plan could illustrate, no drawings, sections included can represent the spatiality and the dynamic experience of moving through space. For Le Corbusier, "elements of architecture are light and shade, walls and space"[19] of which three elements cannot be easily represented in a drawing. Kuma's dissatisfaction with plans, where walls divide lifestyles, is different from Le Corbusier's yet both question this method of representation and its limitation. However, the plan will persist, what cannot persist is the limiting thinking that comes from designing for the sake of the plan rather than for the sake of inhabiting.

Just as Kuma, Le Corbusier found walls to be prohibiting to the freedom of the layout. In his case, however, he was rejecting the imposition of the load-bearing walls. To this extent he introduced the concept of *plan libre*, which was to become one of his infamous "Five Points", a free plan that was "achieved through the separation of the load-bearing columns from the walls subdividing the space"[20]. As such the structure of columns and slabs, as developed in his Domino proposal, allows not only free positioning of the partitions within itself, but also a free development of the façade, as the envelope is no longer load-bearing.
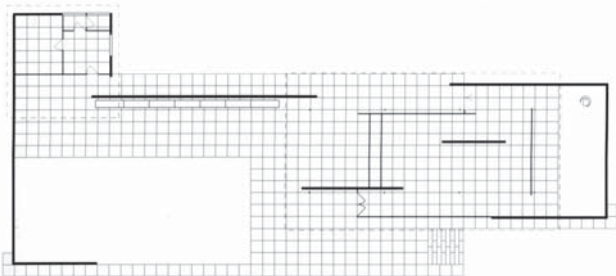
Mies Van der Rohe's project for a brick country house in 1923 uses walls to divide the space but does not go so far as to divide them off into rooms. Instead these suggest spatial divisions and set up relationships to the site from within. Similarly, for his Barcelona Pavilion of 1929, the walls are setting up views and suggesting spaces within, but they are not dividing space, in fact the whole pavilion is open-air. The roof is supported by the eight cruciform columns, but the walls are not structural – essentially Le Corbusier's *plan libre*. From there on he used open plan, that with hardly any dividing walls. The walls within sheltered necessary services such as kitchens and bathrooms. If these can be regarded as "a fixed core, then all other space can be partitioned off by

Van der Rohe's brick country villa of 1923

Barcelona pavilion

[18] Le Corbusier ,177.
[19] ibid
[20] Frampton, Kenneth. *Modern Architecture.* 157.

6

Lake Shore Drive Apartments

Upper wall of Schroder House:
above - closed screens
below - retracted screens

moveable walls"[21]. However, he did not use moveable walls in his projects. In his Lake Shore Drive apartments in Chicago he concentrated the services, kitchens, bathrooms, and entries, along the inner perimeter. Around these are the only partitions. Otherwise, the functions are denoted by the inhabitant's furniture arrangements. This arrangement has become a standard for many high-rise apartment buildings since Lake Shore.

Gerrit Rietvield inverted this relationship in his Schroder-Schrader House built in 1924 in Utrecht. Mainly all the services, the sinks, ten altogether, toilets, and a bathtub are positioned on the perimeter of the house. As well, on the second floor, along the perimeter, stub walls suggest spatial division visually. However, next to them are retracted sliding partitions, which when pulled out, divide the space into rooms. De Stijl members dubbed this "transformable plan"[22]. In the plan above, the rooms formed by the screens become designated when these screens are pulled out, but in the version of the plan on the bottom the whole floor becomes one space. As such, the space acquires more possibilities, compared to when the screens are closed, and so there is no one name to label it. Yet this design is not flexible on daily basis past the screens prescribed trajectories.

Many architects have attempted to incorporate moveable walls in their designs, some becoming wondrous puzzles. However, these walls provide only a certain amount of prescribed flexibility. If completely independent of the structure, the moveable walls become screens, essentially furniture. Most moveable walls and screens fail to provide acoustic and fire separation. Following Brand's layer diagram they now belong to the layer called "stuff", the most mobile and least lasting of the six layers he identifies.

If one's lifestyle changes daily or monthly or even less frequently then it becomes very difficult for the architectural systems to anticipate every possible permutation. It becomes foolhardy. Whereas, as Yona Friedman, one considers the inhabitants to be masters of their own life and artists of their own living arrangements then the designer needs to retreat. This retreat can allow the occupants to set up not only their own furniture and privacy screens, but also the interior partitions. The architect's role then is to create a vessel or an infrastructure to accommodate the space plan of the inhabitant. If, similar to Nouvel's unfinished walls in Nemausus residences, the level of completeness of the building is such that it immediately necessitates engaging in construction, then the understanding of the building as a receptacle empowers the user to understand himself as an artist of his own environment.
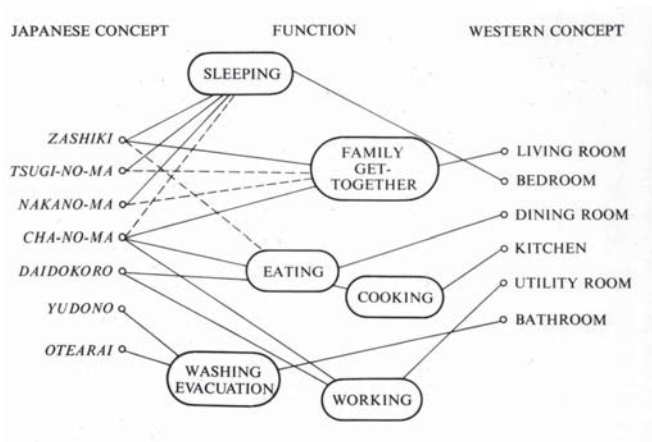
[21] Frampton, Kenneth. *Modern Architecture.* 164.
[22] Frampton, Kenneth. *Modern Architecture.* 145.
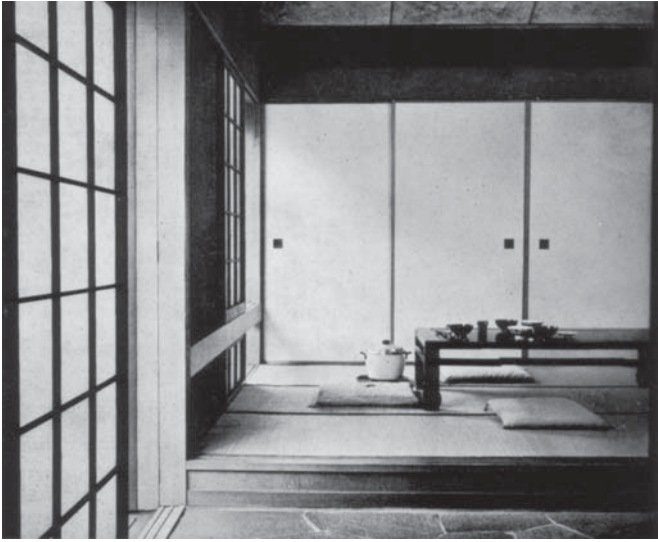
Typical Japanese room is set up for dining. On the floor are *tatami*, on the left are *shoji*, and in front are *fusuma* panels.

Nishihara's comparison diagram

Interestingly enough in Japan, the traditional housing takes on an entirely different attitude to spatial division and living patterns. While plan has the same meaning there as it does in the western architecture, the walls do not. In a typical shoji screened house, the rooms other than the service rooms such as kitchen, pantry and bathroom, have no one purpose. Within these the functions take on the meaning of the activity performed and their function changes with the change of the activity. Nishihara explains the difference in that from the beginning "the Westerner thinks in terms of function and makes his rooms accordingly, whereas the Japanese simply set up zones"[23]. When it is time for dining a portable table and brazier as well as the food are brought out; when working a writing desk and utensils are taken out; and when going to sleep, bedding that is typically stored in the cupboard is unrolled and it is rolled and stowed away in the morning. Essentially the rooms are purposeless and multi-purpose at once.

In plans of sprawling Imperial Villa Katsura in Kyoto many of the rooms are simply labeled as "room one", "room two", etc. Some are not labeled at all. What often becomes defining for these rooms are their positions and characteristics, which in turn serve to provide names for the spaces. Traditionally some of these names are *zashiki*, room farthest from the street and most elegant room; *nakanoma*, the middle room; and *cha-no-ma*, inner room[24].

A typical house's systems are very similar to Le Corbusier's ideal *plan libre*. However, while the structure is a post and beam and the façade is not a load-bearing one, the freedom of the interior partitions that Le Corbusier strived for is not realized in the Japanese house. The partitions align with the structure yet they are truly meaningless as architectural elements. These only function as visual privacy screens no more so than the curtains would.

The whole building is laid out according to typical measurements that correspond to the dimension of tatami mats and their multiples. The room sizes are measured in the number of the *tatami* mats, which also equal those of *shoji* screens and *fusuma* panels[25]. Since there is such an amount of regularity, many of the residential houses are designed by the future inhabitants themselves. However, these houses are not meant to last as long, they are cheap and quick to build and so have less of a life expectancy. Because of the earthquakes the houses were always treated as though

[23] Nishihara, Kiyoyuki. 1968. *Japanese Houses: Patterns for Living*. Tokyo: Japan Publications. 108
[24] Ibid
[25] Tatami is a typical straw floor mat measuring about three by six feet; shoji is a translucent exterior rice paper screen; and, fusuma is an opaque interior paper screen. (Nishihara, 115).

Closed(left) and open(right) fusuma panels in a typical traditional Japanese room.

Schroder House's screens are half-engaged(above) and retracted(below).

they were temporary shelter. In that sense the traditional domestic Japanese buildings parallel the Buddhist value of accepting the transience of life.

The outward orientation of the buildings to the landscape around it, by having operable screens all around the perimeter, further reinforces the house as shelter rather than a dwelling. In this sense, these houses resemble Mies's Barcelona pavilion more so than his Lake Shore Drive apartments, although the superficial reading of the plans points out many similarities. Unlike the flexibility and freedom sought out by the Western architects, traditional Japanese architecture seeks ambiguity within and continuity with its surroundings. It is possible then to surmise that the walls did not have the same connotation of divisiveness and of inflexibility. So while the evidence resembles each other, another example of that is the expansive and contracting spatiality of both typical Japanese house and Rietvield's Schroder House, the fundamental values appear to be different[26]. Furthermore, in Japanese houses the suggestion of this expansive spatiality is increased by using the same *fusuma* panels for both doors to rooms and to closets, which, when closed, hold possibility of spaces beyond.

However, Japanese living patterns of today have been drastically changed by arrival of Western values and technologies, as well as the change in economic conditions. The architecture too has been influenced by arrival of Western design practices as early as 1872 when British architect and planner Thomas planned a large section of Tokyo, now Ginzo, and a series of Neoclassical buildings[27]. International Style arrived in1923 when Antonin Raymond, one of Frank Lloyd Wrights architects exported to oversee the building of the Imperial Hotel in Tokyo 1922, built his own house there in International Style[28]. For a long time Japanese architecture remained under the Western influence and was at the same time weary of traditional styles espoused by conservative government.

Only later did a certain melding of two emerge, as evident in many architects' works, notably that of Tadao Ando, and as well as in Kuma's own work. In Fukusaki Hanging Garden, a multi-story playground for children, Kuma chose strips of transparent coloured vinyl as screens instead of interior partitions because " vinyl curtains are not like walls or doors, the whole curtain side can

[26] Another value that might come into play is the difference of the family relationships. Within the western family the members are often able to have privacy and individuality, but it was not so for Japanese where the patriarch oversaw everyone's lives within the clan living in the house.
[27] Jodidio, Philip. 2006. *Architecture in Japan*. London: Taschen. 8.
[28] Frampton, Kenneth. *Modern Architecture.* 257.

Vinyl curtain strips in Fukusaki Hanging Gardens.

serve as an entrance"[29]. Furthermore, when he says "the use of vinyl curtains means increasing the possibilities for new types of buildings"[30], he is re-imagining the walls as mental divisions rather than physical. In that, he returns to the traditional view of the interior partitions, that of walls as notional barriers that could easily be parted physically.

But with words of discomfort about "the division of lifestyle, and the corresponding methods of spatial division"[31], Kuma addresses not only an issue of interest in Japanese architecture, but also that of general interest to architects everywhere. However, when he mentions that "devices such as mobile phones, which invalidate spatial divisions" he questions not only physical notion of walls, and, consequently, plans and house layouts, but a more ephemeral meaning of walls. Physical walls become psychological obstruction to potential human relationships. Alternatively, future potential relationships and lifestyle changes can be encouraged by design that is physically suggestive of the changes that might result from changes in lifestyle. Similarly to Friedman's "triggering" plan, Kuma seems to say that the potential of change itself can be inscribed in the house:

> Because a person perhaps builds a house for somewhat distinct purposes, if this is investigated more thoroughly, the house, including every "thing," rather than being something made for some particular purpose could also be said to somehow become a manifestation of its era[32].

Then the walls, as well as fixed screens and other such elements, prevent the suggestion of potential of change in the house. As well, so does a plan.10

Design

To design a house of suggestion, the means of suggestion need to be created.

As the lifestyles of inhabitants change, whether because of economic change or change in family make up or under other circumstances, the need for a variety of spaces remains. Dwelling produces many activities, mundane and special, which have a scope or a scale as a required volume, and so can be imagined as architectural spaces. Typically furniture layouts suggest this spatiality by the size
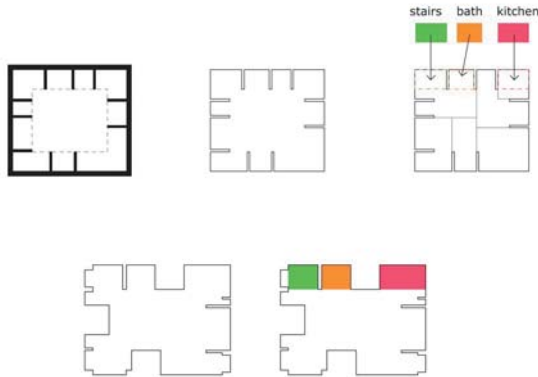
[29] Jodidio, 120
[30] Ibid.
[31] Kuma.
[32] Ibid.

Medium:
Sleeping
Dining
Cooking
Library
Exercise
Woodworking
Playing
TV watching
Office work
...

Small:
Study
Bathing
Washing
Music
Writing
Napping
Painting
Eating
Phoning
Crafts
Sitting
...

Large:
Party
Performance
Games/playing
Dancing
Running around
...

Scales of activity

Parti and schematic diagrams of perimeter approach

stairs   bath   kitchen

Combining additive and compressed layouts to arrive at an introverted method of planning
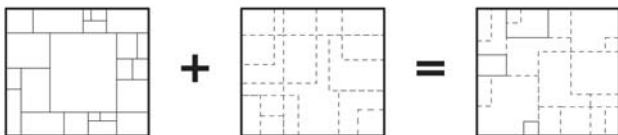
of their groupings within a space, as well, typically the room sizes often reflect that as a result of the furniture layouts. For example, when watching television a certain distance is needed between the set and the viewer, therefore there is a certain dimension associated for a living space that comes from this activity. However, this dependence on obvious activities and obvious furniture arrangement makes room layouts too constricting for more spontaneous activities, such as a game of tag or dancing, and spatial arrangements.

This leads to taking a cue from various activities and imagining the scope of these. On a scale of a residential home the spatial sizes of these can be simplified to a large, medium, and small. Large is a space that is bigger than a living room, it can be considered to be as large as an apartment so that the activities that usually feel cramped in the living room can now be accommodated in a more liberated layout. Medium is anywhere from typical living room to a den. Small is scale of nooks, closets, and niches.

When these spaces of different scales are freely arranged within a large space, there are many areas that allow expansion and contraction as well as in-between areas. However, since none of the spaces are labeled or conceived with a specified function, everything is indeterminate and full of possibility. Only the bathrooms, kitchens, stairs and entries are fixed, as these become more troublesome when not fixed in one spot. These fixed elements are grouped together and accommodated on the side of the building as to leave the central part free to become any of the scaled spaces it could potentially become.

The potential of this larger space to become any other configuration or a set of smaller spaces leads to a design with a set edge and free space within the boundary. By thickening this perimeter it is possible to accommodate the bar of services as well as set up architectural elements that can imply different scales of inhabitation. This is accomplished by stub walls, shallow walls, and lowering of the ceiling. The floor of the space plays against the wall perimeter by setting up its own imprint of potential scales. As far as imprinting and suggesting potential spatial arrangements, both the outer walls and the floor are thickened so that both could be inhabited.

The imprints and suggestions of scale hint at different activities and zones of inhabitation. The perimeter negotiates having a scale and environments designed by an architect and those created by the inhabitants themselves. Because no interior partitions are installed other than those that are around services, the tenants of the building if they need an divisions within the layout have to put these up right away themselves. By doing so they take charge not only of their current living situation but that of their future ones. The architectural imprints and elements take on a mental connotation.

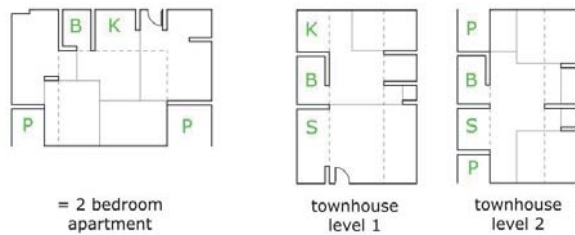## examples of massing that uses perimeter design approach
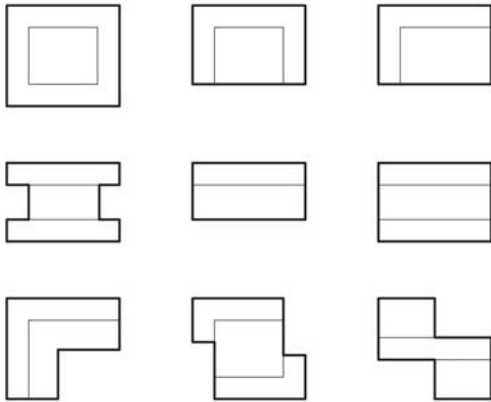
They become signs of future possibilities.

The variation of scales, the necessity to be directly involved in shaping of the spaces, and the understanding of the suggested possibilities foster a deeper relationship between the house and its inhabitants.

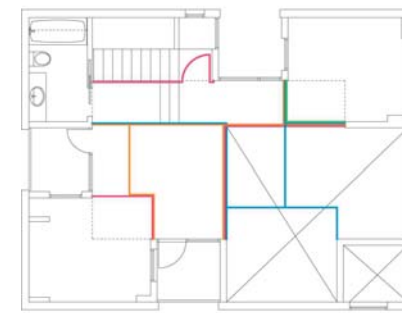## Applications of perimeter design approach

Legend: Bathroom   Kitchen   Stairs   Patio/Balcony

= 1 bedroom apartment

= 1 bedroom apartment

= 2 bedroom apartment

= 2 bedroom apartment

townhouse level 1

townhouse level 2

Some possible scenarios for the Perimeter House

ground floor

second floor

— workshop and storage enclosed

— gym and library + 3 bedrooms enclosed

— 2 apartments separated

— office + 3 bedrooms enclosed

12

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Nishihara, Kiyoyuki. 1968. *Japanese Houses: Patterns for Living*. Tokyo: Japan Publications.

The illustrations that are not noted below have been produced by the author.

p3.   Brand, Stewart. *How Buildings Learn: What Happens After They are Built.*
        Drawn by Donald Ryan.

p4.   above:
        Hertzberger, Herman. 1991. *Lessons for Students in Architecture*. Translated by Ina Rike.
        Rotterdam: Uitgeverij Publishers. p.22
        below:
        Copans, Richard, and Neumann, Stan. *Architectures 1.* "Nemausus 1"

p5.   Copans, Richard, and Neumann, Stan. *Architectures 1.* "Nemausus 1"

p6 .   above:
        Frampton, Kenneth. *Modern Architecture: A Critical History*. Illustration 147.
        below:
        Frampton, Kenneth. *Modern Architecture: A Critical History*. Illustration 148.

p7.   above:
        Frampton, Kenneth. *Modern Architecture: A Critical History*. Illustration 229.
        below:
        Frampton, Kenneth. *Modern Architecture: A Critical History*. Illustration 130.

p8.   above:
        Nishihara, Kiyoyuki. *Japanese Houses: Patterns for Living*. Illustration 93.
        below:
        Nishihara, Kiyoyuki. *Japanese Houses: Patterns for Living*. Illustration 97.

p9.   above:
        Nishihara, Kiyoyuki. *Japanese Houses: Patterns for Living*. Illustrations 98 & 101.
        below:
        Overy, Paul, ed. 1988. *Rietveld Schroder House*. Cambridge: MIT Press. p. 10 &11.

p10.   Jodidio, Philip. *Architecture in Japan*. p.123.