Megacity Skeleton

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We are living in the urbanized planet. More than half of the people live in urban areas. Cities themselves must have solutions to overcome global environmental problems. If not, our planet won’t be livable in the end.

Now in Asian and African large cities under rapid growth, the majority of citizens works in informal sector and lives in informal settlements. We should recognize that their informal lifestyle with relatively low environmental impact contributes to endure our planet.

If we aspire for real sustainable society, there is no other way than minimizing both global environmental impact and social divide. Therefore, the informal society must be an important actor.

Our practice field of kampung Cikini is an informal settlement with high density in the middle of Jakarta. Through three years of Cikini field experience we have believed more and more that the local knowledge prevailed in informal society could give us an important key to discover the possible way.

Our strategic approach of urban intervention is to work at super-micro scale and super-macro scale. We have attempted to sandwich the scales of conventional physical planning with both micro practice and long-term macro perspective. Our micro intervention practice, or urban acupuncture, has two principles: “respect actual urban tissue” and “first practice, general proposal later”. Our projects have been gradually accepted favorably not only by local people but also by professionals.

We have also never doubted the importance of macro vision. Without having visions of Jakarta wider region in long-term, the effect of our micro intervention practice will be limited in improving Cikini neighborhood and never could achieve acupuncture effect to turn saner the whole city of Jakarta, its wider region and furthermore our planet. The interaction between macro perspective and micro practice is the substance of our Cikini model.

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1. Project Outline

‘Megacity Skeleton’ is a housing prototype project aiming to improve the urban living environment. The site is kampung Cikini, which is a high density residential area located in the center of Jakarta Megacity. This kind of area is always facing to many problems such as hygienic environment of living space or risk of flood, but at the same time, you will notice the smiling faces everywhere in the good atmosphere of close community which has been fostered in long time.

Our challenge is to propose a new approach for sustainable urban regeneration by a series of macro intervention for environmental improvement respecting existing urban structure and community, which could be a strong alternative of modern urban development which we can see in many other asian countries now.
3. Multiple Cooperative Organization

The project have been developed within the framework of research project “Megacities and Global Environment”, Research Institute for Humanity and Nature in Japan, which aims to find the solutions of global and local environmental problems of Megacities by practical research methods. Japanese professionals and Indonesian professionals have discussed many times to design the housing prototype which meets global standard to ensure the safety of residents, and also respect local knowledge which was accumulated in long time.

To progress environmental improvement as the sustainable activity of local residents themselves, it is important that they take civic pride in their living environment. In this project, 3 Japanese students had stayed in the area and organized workshops or meetings many times. Through the long-term community engagement process, the residents’ sense of environmental value has been gradually educated. The construction funds were covered by the research expense of both RIHN and UI, because the primary purpose was to let community start thinking how to manage their living space by themselves. Of course we know that sustainable urban regeneration by local residents should be realized also in financial sense. For that purpose, we are now planning to create a funding mechanism on the next project in 2014.

Organization Diagram
4. Project Site

In 2012, we are requested to design a community building on a site which was long time vacant after a fire. Then we proposed to design ‘Megacity Skeleton’ as a new housing prototype for the area, not only as a public facility, to improve their living environment without losing the close atmosphere now and let the community residents start to think of their original sustainable space as an alternative of modernized urban space. We strongly believe that simple but strong idea which could be easily shared by the community will spread gradually to realize the sustainable urban regeneration.

Project site which was long time vacant after a fire

Shopping street ‘PASAR’

Typical alley space

Typical house is in foul living conditions
5. Design Concept

Typical house in kampung Cikini is extending each floor as wide as possible, and the interior space doesn’t get enough sunlight or wind in the result. To solve such environmental problems, Jakarta government have started to renovate existing houses by reducing 1 meter of front side to get the narrow alley wider (fig.1). This kind of remodel method is typically used in modern city, but it has the problem that the existing local atmosphere might be lost.

Our new method used in ‘Megacity Skeleton’ proposes to reduce back side of houses, as same volume as government’s method (fig.2). It is envionmentrally effective because of two direction openings, and showing that narrow void could works effectively in near-equatorial area like Jakarta where sunlight enters from straight above.

![fig.1 Government’s Policy](image)

![fig.2 Megacity Skeleton](image)

‘Megacity Skeleton’ = ‘Permanent Skeleton’ + ‘Flexible Skin’

‘Permanent Skeleton’ by reinforced concrete with ‘Environmental Void’ is firstly designed so that minimum living environment such as daylight or ventilation is ensured. On the other hand, ‘Flexible Skin’ by wooden local structure could be customized by residents depending on the situation. Then, the environmental improvement would be realized without breaking the intimate atmosphere of Cikini alley now.

![Diagram](image)

**Permanent Skeleton** (blue part)

By regurating flexibility of additional construction, the Skeleton ensures the living environment such as daylight or ventilation.

**Flexible Skin** (red part)

Flexible and temporary part which residents can freely customize, but ‘environmental void’ which is defined by ‘permanent skeleton’ could not be changed in any conditions.
6. Technical Drawings - Plan -

1st Floor Plan (Scale: 1/50)

Ground Floor Plan (Scale: 1/50)
6. Technical Drawings -Section-

- **Flexible Skin**
- **Permanent Skeleton**
- **Environmental Void**
7. Expansion through a wide area

We are pushing forward this project with strategic approach so that the environmental improvement expand in wider region by community residents themselves.

**Easy and acceptable idea**
Megacity Skeleton was designed with the elements which are understandable for everyone such as daylight or wind, and was simply composed so that community residents can learn the idea and apply it to their own practice.

**Community engagement**
Many times of workshops and meetings were held for community engagement in this project. For sustainable management of the building, it is important for community to think that they themselves did realize this building with pride.

**Construction technique**
Local construction technique was positively adopted so that the other construction could reference our project. On the other hand, concrete skeleton adopted international standards in size to enhance the construction level of the community.

**Coordination with the policy**
Government is welcoming local autonomous activities for the improvement of living environment. Through continuous presentation of micro activities to the government and monitoring of the trend of policy, we are trying to find the right timing of connecting bottom-up approach and top-down approach.
8. Process to date

We first entered the project area in 2011 for the international student workshop. Starting from the idea proposal of environmental improvement on that workshop, we have gradually developed the relationship with the community. Community engagement could not be realized in one day. Sustainable urban regeneration is possible by long-term approach and deep understanding of the community.

September 2011
**International Design Workshop 2011**
In the first workshop in 2011, more than 40 students from Japan and Indonesia proposed architectural ideas to improve the environment of Cikini-Ampiu.

September 2012
**International Design Workshop 2012**
To change the inhabitants’ sense to the river which is used as sewage, temporary play equipment (swing) for children was designed and constructed over the river.

October 2012
**AFP (After Fire Project) started.**
We were requested to design a community building on a site which was long time vacant after a fire. We thought of designing architecture which could be adopted as new housing prototype for high density residential area.

September 2012
**3 students started staying in the community.**
To make deep communication with the community, 3 Japanese students started staying at a rental room near the site. They lived in the close relationship with the community to make the project proceed smoothly.

December 2012
**Be Architect! WS for Children**
Let community children design their ideal building as architects to know what kind of function is needed.

January 2013
**Be Architect! WS for Women, for Men**
Men and Women were gathered separately to know what kind of function and how large they were expecting. The building was decided to be 2-story house for children education.
March 2013 -

**Combination of Bottom-up and Top-down approach**

For sustainable urban regeneration, it is important to advocate that good living environment could be achieved by residences themselves without government’s intervention. On the other hand, it is also necessary to comprehend the scenario on which the slum area could survive in the current government’s policy. Our design approach aims to sandwich the project between bottom-up approach and top-down approach to realize the practical effect beyond a charitable activity.

![Diagram showing top-down and bottom-up systems](image)

**Top-down system**
- Basic Infrastructure
- Legacy Infrastructure + Master plan by Government
- Strategic approach (Intervention)

**Bottom-up system**
- Spontaneous Infrastructure
- Regeneration of existing urban space + Private sector development
- Different future Scenario

March 2013 -

**Coordination of Global and Local standard**

The building standards were different between Japanese and Indonesian professionals and local carpenters. We discussed to find the best design as the new housing prototype which meets the complex needs from different backgrounds.

April 2013

**White Wall Workshop 1**

1 to 1 scale temporary model was constructed to confirm the efficacy of Void idea for interior illuminance. By sharing the real experience, community could strongly support our design proposal.

![Full scale model for sunlight experiment](image)

May 2013 -

**Design Fixed and Construction start**

Going through design development including many conflicts and agreements, finally the construction started.

![Check of the drawing sheet by local carpenter](image)
**July 2013**

**Completion of ‘Permanent Skeleton’**
Construction of ‘Permanent Skeleton’ was completed after getting through the rainy season and Ramadan month.

**August 2013**

**White Wall Workshop 2**
The narrow void installed in ‘Permanent Skeleton’ was painted in white by community children. The effect of sunlight reflection was amplified.

**August 2013**

**Design Survey of ‘Flexible Skin’**
‘Flexible skin’ should be made as a composing element of the existing atmosphere of Cikini area. Then we should have designed this part as if we are community inhabitants of Cikini. We did survey of the facades of local buildings to know the local knowledge and stock the design vocabulary, and design 3 different proposals to be chosen by community in next workshop.

**September 2013**

**‘Flexible Skin’ Design Workshop**
Students from Japan and Indonesia made proposals of ‘Flexible Skin’. 3 proposals were made through twice local meetings including many community opinions, and the best design was finally selected by vote from local residents.

**Pre-openning Ceremony**
Before all the ‘Flexible Skin’ was completed, pre-opening ceremony was held. Japanese traditional tea party was held to show the mutual friendship between Indonesia and Japan.

**November 2013**

**Completion of ‘Flexible Skin’**
Finally the whole building construction was completed. Interior wall was painted in black board paint so that community children could use for language study. Many private books were contributed to run as library for children.

**Management of building + Project of adjacent land**
Community have started managing the building. They also decided to start next project in adjacent land as ‘renral room’ for short stay tourists, which would make working capital, to realize ‘financially’ sustainable system.
9. Photos - Completion of Construction -
9. Photos  -Permanent Skeleton-
9. Photos -White Wall Workshop-
9. Photos  -Construction of Wooden part (Flexible Skin)-