Soft Tectonic/Adaptive Joint

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In Taipei, more than 70% of buildings are older than 30 years. The rate of illegal additions to existing buildings is over ten percent. Excluding legal issues, illegal construction can potentially lead to significant safety issues. As a response, the Taiwan government is undertaking demolitions on illegal additions throughout the city. In recent years, the number of demolished building additions has surpassed the number of that being constructed. Despite this radical effort, Taipei city is finding that illegal additions continue to be a mainstream practice.

Illegal additions and the issue of renovating old buildings highlight the vitality and dynamism of Taipei, but also shows its risks. Illegal additions reduce the resilience of the city, as they increase disaster risks such as typhoons, earthquakes, and building hazards. While the building code requires structural reinforcement, fire escapes, and resistant materials, illegal additions will typically not comply. Instead, the intention of the additions are focused on increasing space through the use of inexpensive and temporary materials.

This thesis seeks to address the role of illegal additions in order to satisfy government regulations while providing new functional and aesthetic ideas for the renovation of old buildings. The overall purpose of this thesis is to provide a feasible and practical solution to allow illegal additions to exist within the city framework even according to building codes. The main focus of this thesis is to promote an "adaptive joint" solution to illegal additions in urban areas. It is the core of the design at hand. The "SOFT TECTONIC / ADAPTIVE JOINT" framework seeks to address the potential for urban renewal and radical improvement in the aesthetics of the city. It is a creative project that addresses the "urban void" condition in which buildings are empty and void of any function or use. The overall goal is to explore the potential for improved urban conditions through the implementation of an "adaptive joint" framework.

In this study, we seek to address the issues of illegal additions in urban areas. We propose a framework that allows for the "adaptive joint" solution to exist within the city framework. The "adaptive joint" is a creative approach that addresses the potential for urban renewal and radical improvement in the aesthetics of the city. It is a creative project that addresses the "urban void" condition in which buildings are empty and void of any function or use. The overall goal is to explore the potential for improved urban conditions through the implementation of an "adaptive joint" framework.
TAIWAN / TAIPEI
URBAN AGING

<table>
<thead>
<tr>
<th>District</th>
<th>Total Building</th>
<th>Over 30 year</th>
<th>Old building %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Da’an/大安</td>
<td>97235</td>
<td>49476</td>
<td>51%</td>
</tr>
<tr>
<td>Zhongshan/中山</td>
<td>93754</td>
<td>41545</td>
<td>44%</td>
</tr>
<tr>
<td>Shilin/士林</td>
<td>90956</td>
<td>49705</td>
<td>55%</td>
</tr>
<tr>
<td>Wenshan/文山</td>
<td>87303</td>
<td>34134</td>
<td>39%</td>
</tr>
<tr>
<td>Neihu/內湖</td>
<td>87287</td>
<td>17365</td>
<td>20%</td>
</tr>
<tr>
<td>Beitou/北投</td>
<td>78618</td>
<td>40668</td>
<td>52%</td>
</tr>
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<td>Xinyi/信義</td>
<td>75025</td>
<td>35943</td>
<td>48%</td>
</tr>
<tr>
<td>Wanhua/萬華</td>
<td>65882</td>
<td>40589</td>
<td>62%</td>
</tr>
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<td>Songshan/松山</td>
<td>65680</td>
<td>34086</td>
<td>52%</td>
</tr>
<tr>
<td>Zhongzheng/中正</td>
<td>60999</td>
<td>28144</td>
<td>56%</td>
</tr>
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<td>Datong/大同</td>
<td>42119</td>
<td>24841</td>
<td>59%</td>
</tr>
<tr>
<td>Nangang/南港</td>
<td>36857</td>
<td>16262</td>
<td>44%</td>
</tr>
</tbody>
</table>

Year: 2005
In recent years, the number of illegal constructions demolished for the first time is greater than the number of increases.

Illegal construction has been increasing all over Taiwan, but it can also be seen that the government has been planning to implement the demolition of illegal construction.
The pace of confrontation between government and illegal construction is almost simultaneous.

Taipei city can also see that the entire illegal construction has been increasing.
PROCESS OF ILLEGAL ADDITION - 2009
Urban Renewal

Promote Urbanscaping

Disaster Resistant

DESIGN
PROTOTYPE OF ILLEGAL ADDITION

Building Inflation  Demolish  Rebuild
Illegal additions on the old building and re-framing of illegal addition's regulatory public and private status. Is allowing some illegally built structures to remain and find path toward legalization by Adaptive Joints. Instead of simply copying the behaviors of the residents nowadays, has disappeared obviously. However, we still have to deal with the regulation issue and disasters issue on old buildings and illegal additions. Ultimately, the goal of this project that the amount of space they had has been removed. For residents, the quality of space is not an immediate benefit which they can imagine, but the "benefit" brought by space the illegal additions, which will greatly reduce the creativity and dynamism of the city. At the stage of the urban renewal proposal, the most unacceptable thing for residents is apply new materials and mechanisms to design new "Joint" to adapt to fire lane space in Taipei will become the key to start this design proposal.

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Third, provide new public space in the city which responds the Road Traffic Management Regulations through that turning the private entities to material. Fourth, introduce the commercial in the smaller scale street that already happen in Taipei’s new developed area (East Taipei), which is.

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This discourse leads this project to trace back to the old building code regulations No.110-1, if the fire lane smaller than three meters, the wall and opening should make fireproof limitation over half hour. However, new fire regulations canceled fire lane code and replaced by purely fireproof limitation time because the opening should make fireproof limitation over one hour. If the fire lane bigger than three meters but smaller than six meters, the wall and opening should.
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FIRE LANE / TACTICAL

How Adaptive Joint adapts in a fire lane? Illegal addition is so dynamic to occupy the space for a long term. The space of fire lane become an ambiguous boundary between two buildings and it is also an ambiguous space for the city. Adaptive Joint trying to accommodate the various individual needs, rather than trying to modify the chaotic structure. Adaptive Joints plays a critical role in opening up the private space to the public use and contributing the health, safety and beauty of existing buildings. It is another layer of the system that reinforces the structure of old buildings, wraps around the illegal additions and provide structural aesthetical. Adaptive Joints tend to be created the space to adapt in fire lanes to provide following opportunities. First, provide new structural system to stabilize the old building. Second, increase the standard of fire protection which responds the new fire code through the material. Third, provide new public space in the city which responds the Road Traffic Management Regulations through that turning the private entitles to the public domain. Fourth, introduce the commercial in the smaller scale street that already happen in Taipei’s new developed area (East Taipei), which is a good way to activate the dead space in the old area through the same tactical in this context (west Taipei).
Adaptive Joints investigates a flexible enclosure consisting of a series of structural supplementary. The structure supplementary provides the foundation to construct the new path to connect the continuous arcade in pedestrian level and allow people pass the fire lane at different elevation. The structural supplementary will be constructed by vernacular tectonic which is the same as an illegal addition. Steel C-Channels will form the structural grid to fill in the fire lane. That will support the main structure of the old building through the connection of the other old buildings in the same block. The new structure also plays the role to support the illegal addition on the back side of the facade. The steel c-channels provides the track for the flexible enclosure to move and adapt the shape of the facade of old buildings and illegal additions. That reveals the space of the fire lane for the public use. It is a soft boundary for private and public and could be adjusted and adapted for both side's use through the channel. The flexible enclosure also provides the fire protection through the material. On the other hand, the flexible fabric plays the critical role when illegal addition be demolished (if that still against the Road Traffic Management Regulations), which still can maintain the space for resident use.
RE-REAMING PUBLIC AND PRIVATE

Overlap mapping of overall urban renewal sites, vacancy buildings, soil liquefaction and old buildings could get a solid choice of the site to experiment the Adaptive Joint. The site is located on Monga, west Taipei, which is the oldest area of the city. The site is one of urban renewal spot plan by the city government which with chaotic urban condition but full of different level activities and issues such as market, residential, homeless concentration, religious ceremony... etc. This site could be perfectly revealed by the fire lane to public use to deal with illegal additions and old buildings issues. Looking into the overall site will find there is a small area with more chaotic condition compares with the surrounding area which left more space for fire lane because of fragmentation of properties. Choose a small block right next to the temporary market on the main street to bring the public pass through the fire lane to the other main street become the main focus to activate this project. All venders occupied the main street and part of the arcade for their small business. Adaptive Joint open up the fire lane to connect to the arcade, which also provides space allows people to stop or pass through. The scaffold like structure brings the people up and down to pass by the different unit of illegal additions. The illegal addition might transfer to the small vender as the main street to run the business when people pass through the fire lane. The scaffold-like structure might divide the fire lane at three parts vertically. The rooftop could provide the space to deal with the lower income residential issue in this site through the new egress system which integrates with vacancy building. The middle level space could provide the vertical space for the public or private, which depends on the soft boundary's position, when people be bringing into the fire lane. The pedestrian level will connect to the continuous arcade on the main street side. The inner pedestrian could open up the façade in to the building.
Adaptive Joints could be used as a new solution by people needed. The current model of urban renewal has failed because it is not feasible to go against residents and remove the illegal additions, which will greatly reduce the creativity and dynamism of the city. At the stage of the urban renewal proposal, the most unacceptable thing for residents is that the amount of space they had has been removed. For residents, the quality of space is not an immediate benefit which they can imagine, but the "benefit" brought by space has disappeared obviously. However, we still have to deal with the regulation issue and disasters issue on old buildings and illegal additions. Ultimately, the goal of this project is allowing some illegally built structures to remain and find path toward legalization by Adaptive Joints. Instead of simply copying the behaviors of the residents nowadays, such as adding more fire protection materials, strong structures or beautiful additions to the facade. Adaptive Joints may help achieve the goal of disaster resilience by tie existing illegal additions on the old building and re-framing of illegal addition's regulatory public and private status.
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Dynamic modification of a structure with a virtual joint. Courtesy Leonardo Mosso and Laura Castagno.

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How to apply new materials and mechanisms to design new "Joint"?

“The joint is not a necessary evil. Accordingly, it does not need to be concealed with seal strips and so on, like an object of shame. It stands out as a formative element, which has evolved with progress in technology. As the surface texture is smoothed out, the rhythm of light and shade, structure, planes and volumes is taken up in the play of incorporeal lines, the joints, on opaque, luminous or moving surfaces. These joints not only indicate zones of contact but scrupulously define any object they enclose. They not only reflect processes of aesthetic importance but represent the results of technical functions and are to be understood as such. Their place is determined by materials and methods, structural principles, standards and modular order. In certain circumstances they conceal systems of connections and the principle of the structure. In the perfect relationship of object, function and separation the joint communicates a new visual attitude.”

- Konrad Wachsmann
ADAPT JOINT & SPACES NEEDED

Adapt joints may help achieve the goal of disaster resilience by tying existing structures together and allowing some illegally built structures to remain and find paths toward legalization. Instead of simply copying the behaviors of the residents nowadays, we have to deal with the regulation issue and disaster issue on old buildings and illegal additions. Ultimately, the goal of this project is to avoid the illegal additions, which will greatly reduce the creativity and dynamism of the city. At the stage of the urban renewal proposal, the most unacceptable thing for residents is trying to modify the chaotic structure. Adaptive joints play a critical role in opening up the private space to the public use and contributing to the health, safety, and beauty of existing buildings. It is another layer of the system that reinforces the structure of old buildings, wraps around the illegal addition not blocks the passage on the path. As a reference of open up fire lane, the most common scenario in continuous arcades is that the space of the fire lane is treated as an additional part of the pedestrian (pedestrian) not be blocked and extend the fire protection time through the material. The illegal addition will become easier to be remained, if the illegal joint is in the Road Traffic Management Regulations No.3 which like continuous arcades as a part of the pedestrian. That makes owner only be required to keep the fire lane through the material. On the other hand, the flexible fabric plays the critical role when illegal additions are demolished (if that still against the Road Traffic Management Regulations), which still can maintain the space for resident use.

Adaptive joints could be used as a new solution by people needed. The current model of urban renewal has failed because it is not feasible to go against residents and remove all illegal additions. What we can apply in the fire lane to activate the fire lane tactical? Based on the scenario of illegal additions in Taipei city, the dynamic model proposed by Mosso and Castagno at 50', the high-density residential mixed planning and illegal additions of Asian cities more clearly reflect their idea of a dynamic and adaptive urban space. What we can apply in the fire lane to activate the fire lane tactical? Based on the scenario of illegal additions in Taipei city, the dynamic model proposed by Mosso and Castagno at 50', the high-density residential mixed planning and illegal additions of Asian cities more clearly reflect their idea of a dynamic and adaptive urban space. The inner pedestrian could open up the façade into the building. The middle level space could provide the vertical space for the public or residential issue in this site through the new egress system which integrates with vacancy building. The middle level space could provide the vertical space for the public or residential issue in this site through the new egress system which integrates with vacancy building. The illegal addition might transfer to the small vendor as the main street to run the business when the illegal addition not blocks the passage on the path. As a reference of open up fire lane, the most common scenario in continuous arcades is that the space of the fire lane is treated as an additional part of the pedestrian (pedestrian) not be blocked and extend the fire protection time through the material. The illegal addition will become easier to be remained, if the illegal joint is in the Road Traffic Management Regulations No.3 which like continuous arcades as a part of the pedestrian. That makes owner only be required to keep the fire lane through the material. On the other hand, the flexible fabric plays the critical role when illegal additions are demolished (if that still against the Road Traffic Management Regulations), which still can maintain the space for resident use.

This discourse leads this project to trace back to the old building code regulations No.110-1, if the fire lane smaller than three meters, the wall and...
illegal additions on the old building and re-framing of illegal addition's regulatory public and private status. is allowing some illegally built structures to remain and find path toward legalization by Adaptive Joints. Instead of simply copying the behaviors of the residents nowadays, has disappeared obviously. However, we still have to deal with the regulation issue and disasters issue on old buildings and illegal additions. Ultimately, the goal of this project the illegal additions, which will greatly reduce the creativity and dynamism of the city. At the stage of the urban renewal proposal, the most unacceptable thing for residents is Adaptive Joints could be used as a new solution by people needed. The current model of urban renewal has failed because it is not feasible to go against residents and remove apply new materials and mechanisms to design new "Joint" to adapt to fire lane space in Taipei will become the key to start this design proposal. are easy to assemble and disassemble. Moreover, Wachsmann also pointed out that Joint is the intersection of technology and aesthetics, so how to What we can apply in the fire lane to activate the fire lane tactical? Based on the scenario of illegal additions in Taipei city, the dynamic model proposed a good way to activate the dead space in the old area through the same tactical in this context (west Taipei). the public domain. Fourth, introduce the commercial in the smaller scale street that already happen in Taipei's new developed area (East Taipei), which is material. Third, provide new public space in the city which responds the Road Traffic Management Regulations through that turning the private entities to provide new structural system to stabilize the old building. Second, increase the standard of fire protection which responds the new fire code through the boundary between two buildings and it is also an ambiguous space for the city. Adaptive Joint trying to accommodate the various individual needs, rather How Adaptive Joint adapts in a fire lane? Illegal addition is so dynamic to occupy the space for a long term. The space of fire lane become an ambiguous space for the city. flexible enclosure (fireproof material). That means if we reveal the exist fire lane to be the public use as a pedestrian will turn to the building code to Road Traffic Management Regulations), which still can maintain the space for resident use. Through the flexible fabric plays the critical role when illegal addition be demolished (if that still against the Road Traffic Management Regulations), which still can maintain the space for resident use. The flexible enclosure also provides the fire protection and adapt the shape of the façade of old buildings and illegal additions. That reveals the space of the fire lane for the public use. It is a soft boundary for people pass through the fire lane to the other main street become the main focus to activate this project. All venders occupied the main street and part of the arcade for their surrounding area which left more space for fire lane because of fragmentation of properties. Choose a small block right next to the temporary market on the main street to bring overlap mapping of overall urban renewal sites, vacancy buildings, soil liquefaction and old buildings could get a solid choice of the site to experiment the Adaptive Joint. The small business. Adaptive Joint open up the fire lane to connect to the arcade, which also provides space allows people to stop or pass through. The scaffold like structure brings the people up and down to pass by the different unit of illegal additions. The illegal addition might transfer to the small vender as the main street to run the business when scaffold-like structure might divide the fire lane at three parts vertically. The rooftop could provide the space to deal with the lower income residential issue in this site through the new egress system which integrates with vacancy building. The middle level space could provide the vertical space for the public or inner pedestrian could open up the façade in to the building. This discourse leads this project to trace back to the old building code regulations No.110-1, if the fire lane smaller than three meters, the wall and opening should make fireproof limitation over one hour. If the fire lane bigger than three meters but smaller than six meters, the wall and opening should opening should make fireproof limitation over one hour.
ADAPTIVE JOINT

Flexible Enclosure
Opening
Structure Supplementary
Channel
Fire Lane
Connection

ADAPTIVE JOINT
STRUCTURAL SUPPLEMENTARY
CITATION: