GRADUATION PROJECT

AGRICULTURAL COLLEGE DESIGN
SHU XIA 4223349
Problematic and Potential South Chicago

About South Chicago
Area: 1764 acres
Population: 31198
Density: 10,875 people per square mile
Crime index 0.86 ranking 10 / 77 in Chicago
Households below poverty level 28.0% (Chicago 18.7%)
No high school diploma 28.2% (Chicago 20.6%)
Unemployed 17.7% (Chicago 11.1%)

From the 1940s until the 1970s, the steel industry remained one of the Chicago area’s leading economic sectors. Immediately after World War II, the United States was making over half the world’s steel.
Main Issues in South Chicago

SOCIAL
- Crime
- No free time activities
- Bad image
- Weak community / no pride
- Segregation
- Single parent families

SPATIAL
- Vacant plots
- Food desert
- Connectivity / Infrastructure
- Mono functional areas
- Gang zones
- No access to lakeside

ECONOMIC
- Unemployment
- No economical possibilities
- No housing market
- Low income households

BAD IMAGE
- Empty & Nice view

ARGUMENT
Neighborhood
Research
Strategy
Specific Design
Proposed Strategy for the Site

Urban Farming in South Chicago

Urban farming can be the catalyst to improve the condition of the neighborhood as it is low cost, easy to do and sustainable. In addition, Mayor Emanuel of Chicago have launched the new “Farmers for Chicago” network for Chicago urban farmers, which encourages citizens to grow their own food.

Growing City

Growing is reflected via the transformation between urban expansion and agricultural production. Using urban farming as a tool to improve the neighborhood condition makes it possible for the further development of the site.
Mode of Development

Existing infrastructure in the neighborhood is extended to the site as the connection of both sides. In between these connections, linear farm and landscape stripes are created to cover the empty site as the preparation of further development and also attract people to the beautiful lakeside. Further development will start from decentralized seeds.
Phasing of Development

The urban development starts from the seeds which appear in different steps. Community center supports the urban farming in the neighborhood. Market/museum and research station collaborate to support the farming on the site and get prepared for supporting research and education campus. Lakeside housing exploit the lakeside view to attract people. Water treatment plant is the foundation of the technology campus. After about 40 years, the site will be fully developed.
Central Farming District

As the ore walls establish a strong identity, they are used to strengthen the urban farming strategy. Even if the whole site is highly developed in the future, this area will still be kept as a low-density farming theme park. The space between the ore walls are defined as enclosed farm for research and education use and the experience farm for people to grow their own crops.
Studying, Growing and Living

Urban farming provides the society not only fresh and sustainable food supply, but also the opportunity for research and education. All of these advantages will help to form a better living condition for the new and old neighborhood.

Architectural Proposal

Inspiration

Of all the industrial facilities in southworks, the cranes hovered above the walls not only transport the ores from the ship to the space between the walls but also establish a strong identity that people can see them from distance. The image of the huge crane has been embedded in the memory of the local people.
Bridge

Nowadays the space between the walls is for visitors to see and experience. Hence providing the routing for people through different zones created by the walls is crucial in terms of the masterplan, connecting the north and the south. The exact location of the building is the place where links the bridge on the slip and the road in the south part of the masterplan.

Program

The research station, which is one of the seeds of the overall urban development, and the enclosed farmland between the walls offer the appropriate area for an agricultural educational campus. My project is an agricultural college in this campus. Whoever gets into the building are welcome to learn and broaden their knowledge in terms of agriculture.
Conceptual Diagram
Taking the advantage of the nice panorama would increase the quality of the routing through the building, which means the peripheral of the building is good to be opened as continuous public space. A sculpture-like volumes embodies the programs of this building including the vertical circulation within a regular shape. The twisted edges of the volume create the intermediate lounge/gallery/cafe space, avoiding making the routing a long boring corridor.

Programmatic Diagram

- Auditorium
- Gym
- Workshop
- Office
- Entrance hall
- Canteen
- Cafe
- Lobby
- Workspace
- Gallery
Architectural Expression

As the building consists of two elements, the truss and the volume, it is important to allow people to see and feel them both inside and outside of the building. Thus, if the floorslab is of the same dimension of the truss, they will look like and work as one element. The volume seen strong from the outside is actually fragmental when people see it in the building, providing a kind of interesting comparison.

The transparency of the facade is required to make it possible to see the truss and volume. However, as the main direction of the building is from north to south, sun shading on east and west facades is necessary. What I proposed here is a kind of adjustable glass louver on the facade. When the sunlight is too strong, the semi-transparent louver will cover the facade and filter the light. The example product can be seen on the Office Kraanspoor in Amsterdam.
Structural Scheme and Facade Expression

Bubble deck floor system is a solution to realize the proposed expression, making the floorslab the same dimension as the truss, so that people stand in a two-storey space will not be disturbed by the slab. While the top and bottom part of the building need something to attach the truss to the cores. However, if the truss beam is too big, the trusses on the facade look like something between two thick slabs. Hence, when make the truss beam variable cross section, the trusses look as one element.
Climate System

The water of a stable temperature from the aquifer which is under the site is used to cool or heat the fresh air. Waterpipes on the floor will be filled in with hot or cold water to offering heating and cooling. The rainwater on the roof will be collected and used as the water in the toilet.

Heating and Cooling

To make people feel the slab is part of the truss element, there should not be any ceiling in the public hallway space. However, it does need climate control. The solution is to put all mechanic stuff in the ceiling of the volume and leave a small gap on top of the wall, people in the public hallway will have pleasant climate but without any mechanic feeling above head.
Waterfront Perspective

first floor plan

second floor plan

third floor plan
Entrance Hall Perspective

Facades and Sections
Reflection

The continued declined of the United State's Midwest regions, specifically the last decade, has not escaped Chicago. In this day of "Rapid Urbanization" and Mega Cities, Chicago seems to have missed the memo. Of the 15 largest cities in the United States in 2010, Chicago was the only city to see its population decrease. While New York and L.A.'s populations reached record highs in 2010, Chicago's population drops to a low not seen since 1910.

The question is not whether Chicago belongs to the highly appreciated jet set of global cities. Chicago is a global city. It has the appropriate combination of human resources, manufacturing business and world institutions. It is control point for eleven of the most successful corporations in the world. However, Chicago's lacks critical attributes associated with a true global city: a critical center of a significant industry. Perhaps this lack of definition, could very well serve to be its most strategic element. Keeping that as the methodical line, our studio, Complex Projects, have the ambition to help Chicago achieve its Global ambitions by exploring the Lakeside city.

The studio starts with the research of Chicago City of different scales and topics, ranging from state to metro area to city to neighborhood around the site, which was the site of U.S. South Works. It was first opened in 1882 as the North Chicago Railway Mill Company. Since then the site went through several name changes before becoming the U.S. Steel South Works. The neighborhood around the factory, South Chicago, was filled with immigrants of all types who came to the area for the well-paying jobs at the mill. In the 1970s The South Works began a long period of downsizing, before its final closure on 1992. Since then the site has been inactive. Several proposals have been introduced, but the basic idea remains, a mixture of industrial, commercial and residential with new parkland along the lakefront.

The most important attempt however, was made in 2010, designed by SOM. The masterplan includes a mix of proposed uses, including over 15,000 residential units and more than 15 million sq feet of retail, restaurants, commercial and institutional research and development facilities. However, SOM's proposal seems not work well as the developer have changed part of the scheme to make it more practical. For example the proposed retail program is more than what the neighborhood really needs. Hence, instead of that a lot of parking space can be seen in the new model of the masterplan. Besides, the shutdown of the factory in 1992 had devastating impacts on the communities of South Chicago as the neighborhood lost its economic backbone. Since then, South Chicago has become one of the most unpopular district in the city, which is always related to crime and unemployment. These bad images of the neighborhood have kept new population away from South Chicago and the inhabitants there actually cannot afford to improve their living condition. Having these information from the research, we came up with the method to improve the condition of the neighborhood first and get it ready for the future development on the vacant site. The catalyst we choose is urban farming, which is also encouraged by the Chicago government. By applying urban farming production and farming-related research and institutions, we can bring the blight South Chicago a new identity, which will help itself more attractive and global as the methodical line of the studio requires. The local people will benefit from the low-cost urban farming in the community. With the help of the organization like growing power, they can get trained and then work for some agricultural institution or have their own farm to sell what they harvest. The community will benefit from the fresh food production to tackle with the food desert issue. When people can find jobs and live on their own, there will be less criminal cases in that area. The kids can be kept from bad influence and the image of the neighborhood will gradually change.

Therefore we study the cases of the growing power and decide to establish a Central Farming District to strengthen the idea and make the development continuously transfer from the neighborhood to the site. The location of this Central Farming District is crucial and a place came to our mind immediately, the space around the ore walls. The ore walls are the only existing elements which have connections with the old days of South Works and the only memory which can remind the local people of the past. As a result, the area with ore walls, canal, and lakefront view are naturally more attractive to people, working like a park. However, for developers, the ore walls may not of much value, which leads to the demolition of most ore walls in SOM's master plan. Nevertheless, compared to demolishing them, exploiting these walls to make new-built buildings special can make the investment more worthy. The other way around, with clear and strong idea, the new-built building can also strengthen the identity of the walls. We choose this space as our Central Farming District for our personal projects to match the old identity with the new idea. It brings a complex situation within this area with different projects, however, that is what complex projects should do and with the appropriate spatial and programmatic relation, our projects can collaborate well together. Under this circumstance, my project is an agricultural college which spatially connects the area divided by ore walls, linking the Central Farming District to the north and the south area of the masterplan. The research station, which is one of the seeds of the overall urban development, and the enclosed farmland between the walls offer the appropriate area for an agricultural educational institution.

As to social context, of all the industrial facilities in South Works, the cranes hovered nowadays the space between the walls but also establish a strong identity that people can see them from distance. The image of the huge crane has been embedded in the memory of the local people. And nowadays the space between the walls is for visitors to see and experience. Hence the initial architectural idea of my project is to abstract this rooted image by making a floating building above the walls as a bridge, providing the routing for people through different zones created by the walls. And at the same time, it will be an important identity to the local people who once worked here, but also casts the positive attitude to the local district and tries to attract local people to visit it. It will be an open-to-public educational institution because farming can be a good tool for the education especially to the children, which is the future of the neighborhood. Whoever gets into the building are welcome to learn and broaden their knowledge in terms of agriculture. In addition to that, it will also attract students, teaching staff from other places, bring new residents for the new community, which also helps to activate the new community. The other way around, it provides education to the new residents as well as the local people.

For my project, I think the most important aspect is the architectural expression of it. As a kind of abstract metaphor of the crane, the shape of the building is a simple three-storey cuboid with refined truss on the facade. A sculpture-like volumes embodies the programs of this building including the vertical circulation within a regular shape. The twisted edges of the volume create the intermediate lounge/gallery/cafe space, avoiding making the routing a long boring corridor. The building comprises these two elements which have interesting contrast between them. The refined truss works as a frame to hold the floating part of the building steady while the strong sculpture volume which looks like structure from outside is actually fragmental inside of the building. The transparency of the facade enables people to see both of the two elements from outside.
As the only overarching construction in the whole Central Farming District, the building plays the role of a beacon tower as well as a bridge. It not only literally leads people from north to the south, from farm to the urban context, what's more, it metaphysically shows the overarching significance of education. It overlooks the wall and the farm, showing off the power of education, and makes people believe it is unique and it can change the community.

The whole design process is based on all the research and analysis work done during Msc3. Research helps us to build our own toolbox which consists of all the information we got of the site and context. Although not all of them is directly helpful for the design, it helps to figure out what is needed to be done, especially in architectural design phase. The research we did about spatial condition before P2 helps to sharp the idea of what kind of intervention should be taken and why it should happen in the place we choose. It helps to make the storyline coherent from the urban strategy to an architectural project. And only by these means, after figuring out what should be there, we architects can bring our personal emotion and feelings to the design process. The research can protect the design process from being arrogant and make it more convincing.