BRIDGING
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ABSTRACT

It all started with one of my deep memories -- when I was a child, and first saw QINGMING FESTIVAL, a masterpiece created by great painter, Zhang Zeduan, I was attracted by the riverside city scene of Song dynasty, and was surprised by the amiable atmosphere among citizens' social life and the comfortable sense of urban scale. This memory has deeply affected me.

In contrast, our Chinese newborn modern cities become dreadfully alike, with their monotonous expansion, and meanwhile, they gradually lost their intimate sense of scale and regional sense of identity that they once had.

Bridge, as one of Chinese infrastructural development, not only indicates the Chinese urban development in history, but its role and responsibilities go beyond its proper functions. No matter who we are, ancient Chinese or modern Chinese, their love for the bridge have beyond the practicability of the bridge itself. The bridge has a deep cultural heritage in a sense.

Since such issues have arisen in our contemporary cities, why not date back to the origins of Chinese cities development -- to reinterpret the function of bridges so that reshape the scale of entire city by using modern architectural language?
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The city has always been constantly evolving, at flux and ever-changing. It is not a static object in space, but a living organism in time. Historically humans built cities along the rivers for convenience of transportation and availability of resources. As time goes by, they find other ways to build across the rivers and mainland to meet their requirements. The city is in the process of reorganizing itself, redistributing density of buildings, population and activities. City prosperity, sense of scale and identity came from the daily growth and development.

Many metropolitan areas in China also experience this radical change. Many newborn cities rise over at yesterday's farmland in a very short time period. The architecture and urban planning make most cities dreadfully same, by pursuing broad roads and huge buildings. Numerous newborn cities lose the sense of scale and characteristic that grown places often offer. The current rapid growth of cities brings often a sense of discomfort instead of harmony.
Super wide roads and giant-scale buildings

Uncomfortable sense of scale

The monstrous expansion of modern Chinese cities with their super high-rise buildings and broad roads everywhere compress people's living spaces and social spaces. Citizens don't know where to go when they stand in the middle of broad crossroads.

When I walked in the street of Shanghai the first time, I was terrified by the super-wide roads and extremely huge buildings. The giant-scale buildings often make people feel small and depressed. Shanghai is, in this sense, a metropolis without identity.
Lack of pedestrian pathways and social interaction spaces

Social interaction spaces which a city once had are neglected in favor of broads roads and highways. Architecture is no longer integrated into the urban context, instead solitary buildings are like independent containers, no longer a part of the city. Spaces for recreation for the pedestrian are the traffic island.
The lack of pedestrian pathways is mostly due to the automobile-centric development. Social interaction spaces, pedestrian way and amiable atmosphere of a positive urban context disappear.
Pedestrian friendly and interaction inviting

Pedestrian friendly and interaction inviting
We need to re-examine the infrastructural development of our modern cities. One of key infrastructural development is the bridge. The bridge plays a very important role in the history of Chinese urban development. It not only serves a city as a connector if two banks, but also indicates the development of rivers’ sources and end.
Case study 1: Ponte Vecchio, Florence

The Ponte Vecchio in Florence is organized in four groups, with a passage in the center and the road. This organization creates a linear movement pattern along the bridge. The center space acts as plaza on the bridge where people can take a break to look from the bridge towards the river. Also, this configuration improves the interaction of space. It not only creates amiable atmosphere, but also contributes to a healthy urban scale.
Case study 2: Ponte Rialto, Venice

The bridge is organized by two parallel masses, split up by the inclined ramp in the center and also two parallel smaller ramps facing the canal on the edges. This organization also makes for a linear movement along the bridge, and the opening in the center cross connects the ramps.

The proportions of the bridge, in terms of its height and depth, are modest, because they tend to merge into the urban context, which means, it does not emphasize visual difference with the surroundings. However, the buildings on the bridge and main body of the bridge are separated so that it creates an identity to itself.
PRINCIPLES

Traditions in Chinese urban planning
The traditional Chinese city

Chinese modern cities gradually lost their intimate sense of scale and its regional sense of identity. As a future architect, I want to find a way to response the monotonous expansion of modern cities and strengthen the ties between architecture and city in order to reshape the urban sense of scale. Riverside scene from traditional Chinese cities provides a inspiration. This masterpiece was created by ancient Chinese painter called Zhang Zeduan. It depicts the prosperity of Song Dynasty. Behind his proficient skills, what attracts me is the amiable atmosphere among people's urban social life and the texture freely extends along riverside.
Compared to Chinese modern cities, there are no buildings with uncomfortable sense of scale and super wide roads which are just used for the movement of automobile vehicle, but instead of modest proportional shops, bazaars and residential. These buildings freely extend along the riverside and harmoniously scaled roads go through them. The pedestrian ways also provide a lot of social interaction spaces for citizens. In such a city scene, harmony atmosphere and intimate sense of proportion are dominant. Architecture is no longer a separated but a part of the whole urban context, creating a vibrant social corridor between the river barrier.

Based on the consideration above, I am attempting to make the architecture become a part of the whole urban context.
Inspired from the bridge in QINGMING FESTIVAL

The harmony, social life and intimate sense of urban scale which are depicted in this masterpiece are noteworthy. However, what interests me most is the bridge in QINGMING FESTIVAL. The bridge, one of key infrastructural development in our cities, allowing for a crossing, but its wider role as an urban artifact and generator of social interaction is equally important. Thus, the dividing line between bridge and architecture is blurred. The bridge not only support traffic movement but more importantly, it can operate as a social corridor for people to interact with each other.

The bridge not only melts into the whole urban context but also brings harmony and intimate sense of scale for the whole city.
In QINGMING FESTIVAL, we can find that the landing part not only offers a place for citizens to go up to the bridge's top, but also provides wide spaces for people to stop over, and to congregate. It is easier for people to enter into buildings on the bridge like shops and markets, while people can enjoy a beautiful view of the river. This kind of 'stop over' space actually improves the interaction between people and the bridge, which corresponds with issues of urban sense of scale. As mentioned before, the paucity of 'stop over' space and unconsidered walkways often lead to an uncomfortable sense of scale. Therefore, I am trying to extract and transform the design elements of the landing area to improve the interaction. These openings on the landing stairs provide entrances for citizens to get into the different areas of my bridge, and also support a wide space to interact with each other and enjoy the beautiful view of the river. 'S' shape ramps not only connect all of openings, but also divide the whole landing stairs into different parts as additional places for social interaction.
Interaction space

The bridge in QINGMING FESTIVAL is split up to two groups of buildings so that the traffic road is in the center. This organization creates a linear movement along the bridge. The two groups of buildings are shops, markets and traditional bars, which open to the center area of the bridge. Citizens heading into the center will be attracted by these commercial activities and meanwhile, they also carry out several simple trades between each other on the bridge. Thus, people will stay on the bridge for a longer time so that improve their interaction with each other. However, these commercial buildings are actually independent of the bridge, which merely offers a place for interaction rather than operating as a multi-functional architecture. My bridge is an architecture with different commercial functions in different layers. Vertical stairs go through every layers to foster people’s interaction.
Riverwalk space

The riverwalk space is also a kind of interaction space between the bottom part of the bridge and the river. It provides a congregation place for citizens’ social activities. The bridge in QINGMING FESTIVAL has a certain height difference from river surface. Traditional Chinese people use the giant pier structure to deliberately create a special interaction space to enjoy the harmony atmosphere of river activities. By extracting and translating this kind of approach, I hope that my riverwalk space could offer and better present the river. An oblique space is formed between the bridge landing when it makes contact with ground. The huge steel structure nodes are a tangible attraction to touch the bridge and form a dynamic space. When people stand on the intersection of horizontal space and vertical space, they will feel that the riverwalk space is going to extend to the center of river. This approach not only can provide a better platform for citizens to see water activities, but also can increase the interaction between citizens and the river.
The traditional Chinese opera is a very important ritual activity. Especially during some special festivals, bridges will become a crucial place for citizens to celebrate. Although Chinese modern opera gradually evolved into a commercial art performance, it is still an indispensable part of people's spiritual life. A theater in the bridge is formed with tensile members which connect with steel truss. The theater volume is suspended.
STRUCTURE AND SPACE

Inquries of structure and spatial test
Test and study for bridge structure

The proposed bridge includes three main parts: landing area, center part across the river and suspended opera stage. Several models test for structure and steel truss to build the main body of the bridge. Tensile members suspend the theater to make it float lightly across the river visually.
Bridge structure

The steel truss is conceived as an elegant bridge shape across the river. In order to keep the entire structure of the bridge stable, two diagonal steel beams are added in each steel truss frame, so that I can create a kind of centric framed spaces.

The truss is a structure that consists of two-force members only, where the members are organized so that the assemblage as a whole behaves as a single object. Trusses typically are comprised of five or more triangular units constructed with straight members whose ends are connected at joints referred to as nodes. A truss can create a very interesting moment with light and shadow.
Spatial study

The space which is consist of the steel truss, which offers different functions with the aim to foster the interaction between each. This mezzanine space is an intermediate floor in a building which is partly open to the double-height ceilinged floor below. Mezzanines offer a good view onto the lower space. Segmentation with geometrical proportion is attempting to provide a harmony of scale and of spatial experience.

Model for spatial study

Sketch study for space

"V" shape steel truss from outside
BRIDGING

The story of a special architecture and sense of scale and identity
The site lies between the old town of Zhujiajiao and new residential developments, between existing crossing of the Fangsheng Bridge (a landmark since 1571) and the Caoping Rd. Bridge (a low-key modern road bridge). Given that the bridge should establish a relation with the historical and calm surrounding, and its functions area inside also are supposed to be the supplements for the both sides of the river.

Four typical towns surrounding the site with more than 100 years history indicate that the significance of bridge on organizing the whole environment. Types of bridge are categorized into six conditions that corresponds to their scale, ways of construction and materiality relation to the surrounding contexts.
Site analysis III

My bridge is not only used as a connection of both side of river, but more important is that it will be a landmark, which can attract more people to come to this interaction space which is creative. Besides, by analyzing the local weather conditions, sun shade system is designed for avoiding too strong sunlight to get into the function area.
This view in general, is more about displaying that the relationship between my building and surroundings. The bridge, which is built by steel truss, spread from the north side to the south side. It not only well-follow the whole urban context, but support more interactive spaces for citizens as well. Just like the riverside scene at Qingming Festival, the bridge architecture provides the amiable atmosphere for people’s social life.
The cross-section is an homage to the upper floor of the Lyon Architecture School by Jourda Perraudin.
Shade
Shade panels provide 50% shading.
Physical model making gives me a chance to think more about the design, following the true process of construction and structure. From the main structure of the bridge, which is a steel truss, two I clearly built several different spaces by following the structure. I was inspired from the construction process, which time can I make structure to lead to the space and how can I make structure details connect with each other ideally.
CONCLUSION

The bridge, and its role in Chinese urban development, has shows numerous opportunities as an urban architectural ob-
ject. Chineses' love for bridges go beyond the practicability of
the bridge itself. The love for bridges is evident in many paint-
ings, most of all the QINGMING FESTIVAL.

I was deeply impressed by the sense of harmony and the in-
timate sense of urban scale in this painting, and also was su-
prised by the bridge's diversity and versatility.

Through the design language of modern architecture, I hope
to continue the tradition of urban bridges as a place-making
artifact.