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Reflection

The relationship between research and design

When talking about the design process in architecture, people may have a picture in mind that consists of a lot of sketches and models, site operation and completed building. But what I want to declare here is before all these steps, an important issue was already settled, namely the research about the project itself and the basic thoughts in an architect’s mind. The goal of the research process is to deepen understanding of an issue. This position paper is aimed to illustrate my thinking of architectural research method which is related to my graduation project in SADD studio.

The site of the project is in Manhattan, New York city. A new UN Environment council is needed. As shown in the assignment book, sustainable developments and measurements are being taken all over the world nowadays, in all sorts and kinds. The aim for this design task is to make UN Environmental Council be the home-base for this worldwide coordination of sustainable measurements. This determines that the UNEC should be designed in a sustainable way. The building could be in any style, no matter it is a high rise building or low blocks, but low tech is recommended. Considering the unique site location, the relationship to the urban fabric is also a starting point in this design. Manhattan has its own urban fabric with criss-cross style for the whole island, and on the island, except the famous central park, the green public space is quite limited. The green public area is highly needed in this project.

Considering the location of the site and the condition of the urban context, the design of the green roof related to my own design is introduced. My research question is: how the green roof contributes to good environment and public space in sustainable design, related to my UNEC project.

The relationship between the theme of the studio and the subject chosen by the student within this framework

To achieve the goal of designing a building in a sustainable way environmentally as well as spatially, at the same time making it fit the urban fabric and the contribute to green public space of the island, we first come up with an idea of the green platform master plan. In the master plan, along the whole east coast of the Manhattan Island, a green belt is built, and every several blocks, a green platform is shown. Our UNEC site is on one of these green platforms.

The roof is the fifth elevation for the building. If the roof is accessible, this elevation will be really important. The green layer is also a kind of material that gives people another sense of the space. The atmosphere of a public space will be perceived by people not only
physically but also emotionally. If concrete gives a feeling of cold, then the green plants will give a feeling of warm. A building like this will provide a welcome feeling for the people who even cannot get into it. An open and welcome public space on the roof is very common now. The dimensions and materials determine the quality of the public space, and this kind of space determines the quality of the site. If the slope roof is large, open, welcome and outstanding, the fifth elevation has its own highlight.

The relationship between the methodical line of approach of the studio and the method chosen by the student in this framework

Since I want to give back the green area to the city as much as possible, an idea of green roof is formed. Considering the benefits and typology of the green roof, it is quite suitable for this design concept. “Green” has always been the topic when we are talking about sustainable design. Green roof, green façade and green energy are used more and more often in our real design projects and work really in an effective way. Among these, green roof has existed for many years and been used widely.

How the green roof contributes to the environmental sustainable design? First, the climate of NY City is important. Climate determines the growth of the plants and it is the basic condition of the success of the green roof. The condition of the sun, rain and wind directly influence the performance of the vegetation layer. Green roof was originated from Western Europe, where the summer was warm with frequent rains as well as the winter was cold. This technique was also developed and tested there. NY City is in the northeast of America, which is sharing a more or less similar climate as Western Europe. The climate here is suitable for the green roof design.

Green roof helps with minimizing heat island effect of the NY City. Somehow urban green roof will reduce localized ambient temperature obviously. It can create a microclimate which does well to the surrounding area by cooling and humidifying the air, thus improving the climatic environment. Since the city is crowded and polluted on some level, green roof plants can filter out dust and smog significantly. Harmful materials can be absorbed by the green layer. Seeing the heavy traffic of NY City, the carbon emissions issue will be reduced by the summer cooling effect of the green roof, thus also reduces energy consumption like air conditioners. When it turns into the rainy days, green roof system can reduce the water runoff greatly. The drainage system can be designed as the collections for irrigation and energy reuse. In the future, the green roof can be used as recyclable products, thus saving valuable resources.

The building is on a green platform, and the slope green roof will be well merged with the surroundings. The roof itself provides natural climatic advantages for the whole building due to the benefits of the green roof.

Green roof provides natural bio-diverse habitats for both animals and plants, so the city is more welcome for the whole living beings. It gives people a good visional scenery and extra space to experience the grey space between building and outside. The combination
of the green roof and public space is a great starting point to introduce the green roof into public use. The public space can be set on the top floor of the building connecting the green space directly and let people enjoy the beautiful view easily. The roof life will be enriched by the green roof, thus offering people another city experience feelings, especially for the site location like UN area, the beautiful sea view together with the green garden on the roof is an uncommon practice. Also it will reduce the noise levels greatly. In a noisy city like NY City, the noise problem is always considered in a design process.

Since the roof is a huge slope directly connected with the ground, it provides more opportunities for citizen to go onto the roof to enjoy the wonderful roof life. In this way, the roof creates a new public space for the whole site as well as the building itself. The whole area of the site will be accessible for the people, which is the main goal of this design, namely giving back the green area to the city as much as possible.

Inside a building, we can define certain parts as public space functionally. While outside a building, a roof like this will also enrich the public space for the building. The building needs a good conversation with the surroundings, and the roof in this case will work quite well, being the bond between the building and the site.

**The relationship between the project and the wider social context**

Actually the concept of green roof is not a new topic. Early in 600 BC, the Babylonian shocked the world by their amazing “Garden in the air”, which was the classical model of the green roof. In northern Europe, some houses still keep the sod roof since hundreds of years ago to pass the lengthy cold weather. Modern green roof is invented by German in 19th century, as the waterproofing technology was highly developed. In recent years, architects, engineers and urban planners are trying their best to make green roof concept more and more feasible and widespread.

Green roof contributes to sustainable design concept in both environmental and spatial way. The site will give green area back to the city as much as possible. The use of the green roof is a good solution to help with the sustainable development of the building. The combination of the green roof system and other systems in the building can provide a better place for both spacial and climatic comfort for people. Related to the site, the green slope roof provides an interesting public space for the city and keeps the green area for the city. This fifth elevation is being most used by people.

Essentially, architecture is seemed as a physical space produced by people, but psychologically the quality of the space is determined by the dimension, material and other factors. The green roof issue I investigate here is not the only way to deal with the site of course, but it really somehow fit the design target and provide a good sustainable design result.