Graduation Project Reflection

Methods and Analysis Graduation Studio: Positions in Practice
Urban Collage Poem—Renovation project of
Belgrade Sugar Factory

Mohan Yuan
5008379

Introduction

Simmons, G. (1981). People in the Physical Environment: The Urban Ecology of Streets. Winterthur Portfolio, 16(4), 354–356. https://doi.org/10.1086/496056

Space is one of the most important elements of architecture. The interaction between users and space attracts me. The behaviors influenced by the physical environment describe the space from other perspective which involves the users and their sensory of space. As Stanford Anderson mentioned in his article ***People in the Physical Environment: The Urban Ecology of Streets***, it is important to consider that the use of space not simply follows the intention of the designer but also affected by the perception and understanding of the user. In this way, studying how users react to the built environment can help to understand the essential elements of the space and improve design language to make a clearer expression. The better we understand the target group's need and behavior intention the better strategy we can provide that meets the needs and use with biggest potential.

The recognition of the space, however, does not remain constant over time. The demands of space are adapting to the development of society. In general, the process of industrial revolution accelerated the rate of urban development and expansion. During this period, the central areas of cities also expanded rapidly, and industrial or military facilities that used to be located on the urban periphery or in the countryside were gradually embedded in the newly expanded urban areas. Large population flushed into the city to seek for better working positions in the factories and cause the short of the residential space and the rapid increase of the urban area land values. Driven by land prices, various planning policies and environmental protection purposes, a large number of factories and military bases have been relocated from urban centers to suburban areas or nearby satellite cities after dramatic urban expansion. For various reasons, a large number of buildings and facilities have not been utilized and have gradually become urban brown fields, abandoned sites or even ruins over time. These spaces have become deserted islands in the urban center. Spatially, they are cut off from the urban environment and lack connectivity and continuity. Functionally, they become a wasteland, city texture stops at those points. Although the abandoned buildings and sites can still, to some extent, hint at the vague appearance of the city in the past and some examples of the style and form of specific types of buildings from the industrial era, these spaces present a very negative and resistant attitude due to the lack of improvement and utilization adapted to the current urban needs.

In Belgrade urban area, there are a lot of abandoned plots that are isolated from their context and fragment the urban texture. Those abandoned areas mostly separated by the rapid development of highways and lack of proper management after the industry factory moved out from the central area which leaves the space to become the lost space and empty function area in the city. Under this condition, urban renewal and building renovation are effective methods to maintain the balance between protecting the urban context and adapting to new needs. Recognizing the spatial potential of those abandoned areas and generate new suitable use and form helps gather the fragments into one whole piece again. Thus, the research will be divided into several stages by answering the following questions:

1) What elements can help users recognize the space and take advantage of it.

2) How to identify the potential of the space.

3) How to implement the potential and transform the space to meet the present requirements.

Position of Theories

In the course of my previous research, I realized that user behavior and the characteristics of the space itself are inextricably linked. By identifying the scale of space, the combination of forms and boundaries, the user identifies and gives certain behavioral feedback to the space, which in turn leads to the formation of functions. This also confirms Stanford Anderson's idea that the function of architecture does not depend entirely on the designer, but more on how the people who use the space identify and use it. The deviation between the designer's preconception of the space and the user's potential perception of the space generates spatial latency, so it is necessary to analyze the user's experience and perception in the space, and this analysis can help architects understand how different spatial elements lead to different behaviors.

First of all, in the study of Kalenic Market, I found that spatial form has a significant influence on people's behavior; open or cramped, linear or nodal space, open or enclosed space will give users appropriate guidance and hints, and also bring different degrees of spatial potential, which will lead to more kinds of activities. In ***Genius Loci: Towards a Phenomenology of Architecture***, the author summarizes several different forms of landscapes and abstracts them into a symbolic combination of elements. In the process of summarization, the difference in the types of landscapes not only lies in the different or diverse combinations of spatial elements, but also in the spatial perceptions brought by the different categories of landscapes. This difference in perception gives the site a unique style, which in turn gives the place a personality and memorable characteristics. Although his summary of the patterns of the landscape is large in scope and scale compared to the individual cases of the buildings studied by the previous group, this abstraction into symbolic generalization can be continued. At the human scale, the horizontal and vertical elements that outline the boundaries of the space, and the persistent or temporary nature of the elements themselves, guide or limit people's behavior in the space. At the same time, research and study on a larger scale helps designers to understand the perceived characteristics of the place environment, which can be more harmoniously integrated with the urban context and even serve to reinforce the characteristics of the environment. In this way, the urban environment becomes more local and recognizable, avoiding the mechanical production of urban sprawl and the loss of cultural heritage. Combined with the composition of rhythm mentioned in Henri Lefebvre's ***Rhythmanalysis***: repetition and change, the rhythm is formed by the spatial sequence composed of multiple spatial elements. In spatial sequences, elements are connected and can be compared with each other, and people's perception of space becomes more diverse. The combination of spatial sequences or rhythmic variations brings more possibilities for users to perceive space and thus achieve a variety of uses of space.

Norberg-Schulz, C. (1979b). Genius Loci: Towards a Phenomenology of Architecture. Rizzoli.

Henri Lefebvre, & Lefebvre, H. (2004). Rhythmanalysis. Bloomsbury Academic.

Specifically, in urban renewal and building renovation, identifying the value of the existing environment and utilizing it is an important step. In the face of rapid urbanization, it is important and necessary to preserve local culture and spatial characteristics and to continue the cultural lineage. This is a necessary means to protect the value of the city and to prevent places with historical and cultural characteristics from being reduced to a uniform and patterned modern city without individual characteristics. At the same time, the protection of local characteristics is also a kind of attention and consideration for urban residents, and the vitality of the city comes from the active participation of users in urban life and the implicit mutual adaptation. Therefore, the subsequent personal design will continue to start from the user's perception and spatial experience, trying to reactivate the lost spaces in the city and return to the environment as an active part of the city.

All that is left
The factories sat vacant, to rust.
On the roof,
some of autumn past,
some of spring approaching fast,
They turn ducts to mazes, for moss swelling
elegance married To live in happier form again:
The artist refuse to abandon
summer winds Whispering in enamour'd tone
And pattering rain, and breathing dew,
silhouetted against the sky
High on the yellow silo,
like playgrounds for echoes of
the rain, melodies of birds
and the wind-swept vanished factories
To fill the hollow spaces with joy.
and their beauty.
"It looks like fun answers"
we wanted,
to stop for .

Original Resource：

252. To a Lady, with a Guitar. P. B. Shelley. *The Golden Treasury*. (2021). Bartleby. https://www.bartleby.com/106/252.html

Factories poems on. (n.d.). Hello Poetry. https://hellopoetry.com/words/factories/

Poets.org - Academy of American Poets. (n.d.). *Abandoned Block Factory, Arkansas*. Academy of American Poets. https://poets.org/poem/abandoned-block-factory-arkansas

Design Project

As for the individual project, I choose the old Sugar Factory in Čukarica as the site. The Sugar Factory was built in 1901, it was the first sugar factory in Serbia back to that time. In the 1980s, it was listed as an important work of industrial architecture and was included in the Topčider Spatial Cultural-Historical Unit of Exceptional Importance. This site is between the Sava riverside and the famous local racecourse Hippodrome but they are isolated by the city highway and tram track. On the east side of the plot there is an old oil refinery site left with train tracks extend into the sugar factory which considered to be used as transport track for materials and fuels back in time. As described in the article from ***the Calvert Journal***:" The building, once Yugoslavia's largest sugar refinery, stands proudly even as parts of its roof succumb to gravity and its red-brick walls gently bow in sympathy. One section of the building, however, remains intact: windows glazed, roof sealed, brickwork perpendicular. In winter, a small steel chimney emits a thin trail of smoke. In fact, this 50-metre stretch of The Sugar Factory houses a 450-seat avant-garde theatre, as well as a ballet hall, restaurant, bar, greenhouse, and a giant birdcage full of brightly-coloured parakeets. Its palatial spaces and cosy corners blend elements of an ancient temple with a Bond villain's lair: faux-Roman columns stand by glittering Egyptian arches; murals depict characters from Eastern mythology meeting those from European classics; a grand piano rests on a marble floor under a ceiling of shimmering LED stars, next to a wall of tube televisions." As for the history and culture values besides the factory itself, in the site where in the center part near to the Sava riverside there is a remain Bust of Dimitrije Tucović and a monument to the killed strikers and warriors during the National Liberation War.

Balakjian, A. (n.d.). Meet the man who built Belgrade's theatre of broken dreams, where the Yugoslav ideal lived and died. The Calvert Journal. https://www.calvert-journal.com/features/show/11232/meet-the-man-who-built-belgrades-theatre-of-broken-dreams-where-the-yugoslav-ideal-lived-and-died

While first searching the site photos I realize that the design of abandoned building is similar with create a collage poem. The main idea is to select meaningful elements and operate them to form a meaning. I grouped the specific manipulations of collage poetry into three categories: *additions, deletions and replacements*. Similarly, the manipulation of space in a remodeling project can also be grouped into these three categories. The sugar factory used to be an important cultural symbol for underground movement and the building itself also has aesthetic value as an classic example of 19th century industrial building. At this stage the sugar factory is a represent of man-make object shows the history of technology improvement for production and political position through art. These values become the elements I choose to preserve for this site as an design base.

I. Additions: the Green Spine

If we look into a bigger picture of the lost space, the process of changing and adapting has a clear pattern. After the glory of original use, space started to fill with rust and dust. During the decay process, the atmosphere of space transform rapidly and form a unique aesthetic style tightly related with ruins. The broken windows, rusted machines, mottled walls, and long-lasting silence. The roughness becomes the character of space. Surprisingly, abandoned by humans the changing of space still taking place in space by nature. The moss and tenacious plants quietly modifying the space among time. A new form of glory debut in the area: the vitality of nature replace the active human production in a gentle and delicate way.

I began to re-examine the spatial order of the site and chose to introduce nature as a spatial connection within the fragmented complex. Vibrant plants bring light and bright colors to the ruined space, and at the same time enhance the comfort of the space. This also becomes the basis for the transformation of the abandoned sugar factory from a purely artificial relic to a comfortable cultural space. The design is linked by three different styles of gardens at the ground level of the complex, creating a spatial and visual connection that allows the different functional zones to benefit from the environmental improvement of the greenery. The roofs

of some of the buildings on the upper floors are converted into outdoor terraces and planted roofs so that the natural experience can be enjoyed wherever you are. The natural elements in the design become a way to connect the fragmented spaces, making the large complex of buildings tightly connected horizontally and vertically. I then extended the natural elements in the site by constructing spatial axes to create effective spatial or visual connections with the main nodes around the site: the Sava River in the north and the racecourse in the south, maximizing the natural scenery.

II. Deletions: Open up Space

After placing the gardens and terraces, I manipulated the building facade according to the degree of publicness and openness of the new functions. For the more active and open functional zones, such as the bar and the art workshop, these spaces can be closely spatially connected to the outdoor garden space, and even the garden can be developed as a continuation of the indoor space. Therefore I open or set back the building facade to form a gray space, change the solid wall near the garden into a glass curtain wall or expand the original windows into floor-to-ceiling doors. In this way the function of the bar and workshop can be extended to the outdoor terrace when the outdoor environment allows it, and brings more diverse behavioral possibilities. In this part of the area, the space has good connectivity, and the garden becomes the center as a transformation node, which also visually adds layers to the space and makes the original factory space with clearer direction and interest to attract people to explore.

In contrast, the museum and theater functions require a more internalized space, reducing the impact of excessive openness on internal activity and circulation. I therefore primarily replaced the upper floors of these areas with glass curtain walls to gain localized view connections and optimize natural lighting. At the ground level, the garden is presented more as a background environment for the interior space, and the glass curtain wall allows people to see the beautiful natural environment indoors, but not to be disturbed excessively when visiting the interior. In the museum part, the roof deck and green roof are placed on the independent flow of the upper floors to compensate for the lack of connectivity of the garden space on the ground level, which not only provides space for rest and public activities for the museum visitors, but also provides different heights of natural landscape for the outdoor decks of other functional areas.

III. Replacements: Enhance Spacial Quality

The original factory space is highly divided into various spatial divisions due to the presence of large machines and has great value for use in renovation. But likewise, the distribution is very fragmented and lacks spatial continuity and directionality as the platforms on each level serve the production use of machinery facilities. Therefore, in the renovation design, I connected the original platforms and expanded them to form a usable continuous space. The combination of rich through-height spaces inside the original building is maintained, while the division is made according to different functional areas. Curves are also introduced in some local spaces, and the soft curved border contrasts with the original regular orthogonal industrial style. As a whole, the new components are light, airy and soft, while the original factory elements focus on solidity, regularity and roughness. The combination of the two enhances the contrast, emphasizing the unique style of the industrial building and the comfort and refinement of the renovation.

The interior of the sugar factory is dark and depressing, with natural light coming mainly from the glass skylights in the partially sloped roof, except for the windows. After adjusting the

facade, the light of the ground floor space was improved. In order to maintain the harmony between the building's exterior and skyline, natural light is also obtained by means of triangular skylights on the retained sloped roof of the building.

In the middle of the complex, a through-height building is transformed into a three-dimensional garden and a glass wall is placed on the axis of the theater and museum to form a visual axis. The original building had only a steel frame for the internal space of the large equipment, and the huge through-height space is highly flexible to add small lightweight platforms to accommodate the different viewing angles of the three-dimensional garden. It can even be flexibly combined and changed at any time using prefabricated components.

In the design process, it becomes important to identify valuable elements for presentation. As a renovation project, the difference between a new project and a renovation project is that it inherits the values of the old building and expands on them. Therefore, in the design, it is important to minimize the drastic reshaping of the original building, but to start from the details and make adjustments in a non-invasive manner. The relationship between the renovated part and the original building is not antagonistic but complementary and reinforcing, while at the same time differentiating from each other, so that people still have the opportunity to understand and touch the real traces of history.

Like the creation of collage poetry, the value of this work does not lie in completely breaking up the old documents in order to obtain the most basic words for the construction of a new poem. Rather, by understanding the value of the original documents, the fragments that have already developed meaning are intercepted and reassembled, ultimately acquiring a new value that transcends the original meaning. I believe that such a transformation approach is an effective and positive continuation of the existing lost spaces in the city, and prevents the rapid expansion and industrial upgrading of the city from generating cultural discontinuity and wasting resources.

Literature and Practical Preference

Literature list:

Fein, Z. (2009). The Aesthetic of decay: Space, time, and perception. http://zfein.com/architecture/thesis/thesis.pdf

Jacobs, J. (1992). The Death and Life of Great American Cities (Reissue ed.). Vintage.

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Stratton, M. (2000). Industrial Buildings: Conservation and Regeneration. Taylor & Francis.

Trancik, R. (1986). Finding Lost Space: Theories of Urban Design (1st ed.). Wiley.

Henri Lefebvre, & Lefebvre, H. (2004). Rhythmanalysis. Bloomsbury Academic.

Precedent list:

Kolumba Art Museum of the Cologne Archdiocese / Peter Zumthor Museum

Boiler House Libčice nad Vltavou / Atelier Hoffman

LocHal Library / CIVIC architects + Braaksma & Roos architectenbureau

798 Art District Renovation Beijing China

Self-Assessment

During this year of research and design projects, I was prompted to think about the position and value of the architect in the design process. As one of the building blocks of a city, architecture, once built, will be there for a long time. By reviewing the history of urban development, the rapid rate of upgrading has made more and more buildings become lost spaces, turning them into islands in the city. In the current environment, the architect's role is no longer exclusively to create brand new buildings, but to improve and enhance existing spaces, and to explore the spatial potential within them. In this studio, the study of cognitive space theory helps me to judge the focus and direction of spatial design more clearly and accurately. Although I experienced a long period of repetition and self-questioning during the research process, these seemingly stagnant stages of refinement provided a stable foundation for the subsequent establishment of the design direction. In the renovation project, the architect is more like a surgeon with a scalpel in his hand, making fine analyses and changes to the building. Seeking to maximize value through minimal manipulation.

In this project, it was important to establish clear evaluation criteria through which to study and analyze the existing building, and to constantly ask questions about the value and meaning of the building, which gave me a clearer understanding of the space, materials, and construction methods.

Through the analogy of collage poetry and architectural renovation, it helped me to refine the specific renovation methods and goals more effectively. It also helped me to understand that renovation is not about creating a new building, but about discovering the value and potential of the existing building and stimulating it.

I am grateful to my design mentor Jorge for urging me to think and evaluate the whole project with precision and rigor during the research and design process. Thanks to Alexander for helping me to establish systematic design ideas and meticulous adjustments. Thanks to Pierre for his advice and help in construction and spatial integration, allowing me to be more flexible in making improvements to the design. Thanks also to all other teachers and students for their valuable suggestions and help during this period.