RENOVATION OF POST-INDUSTRIAL LANDSCAPES OF CHINA ACCORDING TO THE PRINCIPLES OF SYMBIOSIS THEORY



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Forward

This paper aims to explore the design strategy of transformation of abandoned factories under the guidance of symbiosis theory-taking Xuyang Chemical Factory in Heze City as an example.Xuyang Chemical Factory in Heze City, as an abandoned factory, bears the historical memory and cultural value of the city.However, with the acceleration of urbanization, factories have gradually been marginalized and become one of the urban problems that need to be solved.From the perspective of symbiosis theory, this study will analyze the symbiotic relationship between abandoned factories and urban environment, social culture and economic development, and explore how to realize their regeneration and activation through landscape design.Zhang Wen will construct a set of transformation design framework suitable for Xuyang Chemical Plant in Heze City through literature review, field research and case analysis, aiming at providing theoretical basis and practical guidance for the transformation and transformation of abandoned factories, and promoting the sustainable development and cultural heritage of urban space.

Learning Objective Designificance

Research purpose

- Clarify the complete design scheme and make corresponding
- Realize the transformation of abandoned factories into residents friendly communities
- Local cultural elements reflected in the design scheme

Research value

- Through intelligent transformation, better meet the needs of residents
- Enriching the Study of Symbiosis Theory in the Reconstruction Project of Abandoned Plants
- Carrying and Inheriting Heze Regional Culture

Detector

Integration	Program	Literature	Summary
Singing	Wang Qi Vaione	The status that points to the suggestion	Checking that it cant be completely to completely completely to completely.
Singing	Yinye	According to the science of closing, closing.	According to the fact that it cannot be used to repeat that it cannot be used to
Answer	I will take back	According to the fact that it cant be related to the fact that it cant be related to it	According to what he didnt find, what he didnt find.
Answer	K < >	After also, as it is not	According to what cant be done.
A program that didnt find what didnt find.	View	According to what he didnt find for him to consider.	He doesnt know that he cant be contained.

Brightness

Integration	Program	Literature	Summary
Singing	Standard C Theme	Create	He doesnt know what he doesnt know.
Singing	· Greed · ·	Crabini, process	It is related to how it cant be done, what it cant be done.
Answer	Group	Relatively,	According to the fact that it cant be solved.
Accordingly	According to ensure that they do not repeat to ensure.	Feeling like he doesnt know.	Opening, and
A program that didnt find what didnt find.	· Standard	According to what he doesnt know.	It can be related to the fact that it cant be related to the fact that it doesnt

Analysis of the theoretical basis of symbiosis

Principle Name	Core requirements for environmental design	Specific design strategies and cases
Human-nature symbiosis principle	Break the boundary between artificial environment and nature, integrate natural elements into the design, and realize the two-way nourishment between human activities and ecosystem.	-Strategy 1: Implement "passive design" by planting vertical greenery on building facades to regulate indoor temperature and purify air. -Strategy 2: Preserve native vegetation on site, replace paved surfaces with permeable paving, and restore natural water circulation. Case: The "Super Tree" in Singapore's Marina Bay Gardens provides both shade and lighting while absorbing carbon dioxide through vegetation.
Human-human symbiosis principle	Design public spaces that promote social interaction, reduce interpersonal alienation, meet the needs of different groups (old/young/disabled, etc.), and enhance community cohesion.	-Strategy 1: Create "adaptive spaces" in residential areas or parks, such as convertible open-air plazas, to balance daily relaxation and group activities. -Strategy 2: Integrate barrier-free designs into public facilities, combining ramps, tactile paving, and regular walkways instead of isolating them. -Case: The Shanghai Zhangyuan renewal project preserved historical architectural textures while adding open seating areas and shared exhibition galleries to encourage interaction across age groups.

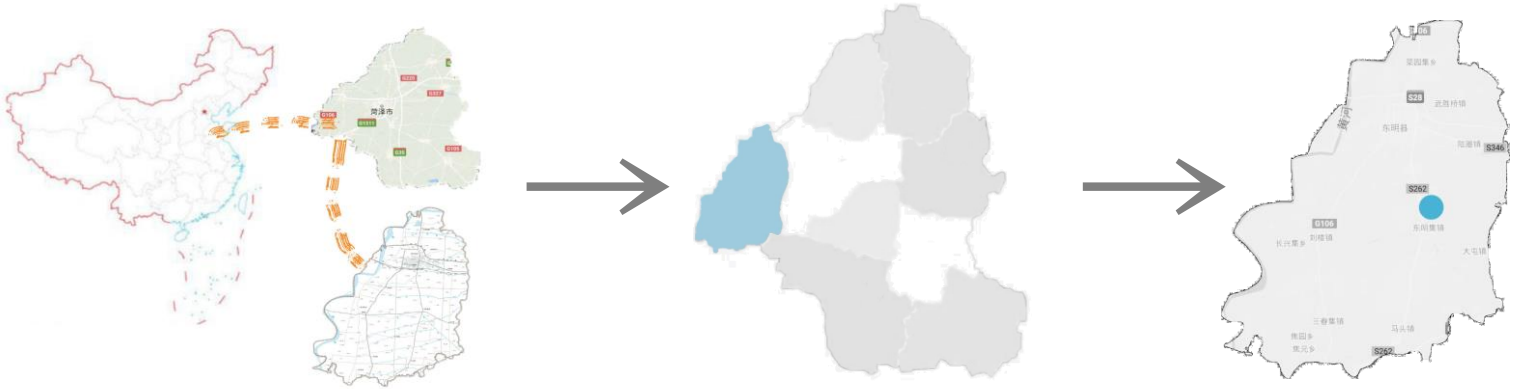
Analysis of the theoretical basis of symbiosis

Principle Name	Core requirements for environmental design	Specific design strategies and cases
Environment -Cultural symbiosis principle	Let the environmental design carry the regional cultural symbols, avoid "a thousand cities look the same", so that the artificial environment and local history, folklore, aesthetics form a response, continue the cultural memory.	-Strategy 1: Incorporate local traditional motifs (e.g., paper-cutting, brick carving) into architectural facades, floor paving, or landscape sculptures. -Strategy 2: When renovating historical buildings, adopt the principle of "restoring the old as it was," preserving the original structure while adding new functions (e.g., converting old factories into cultural and creative parks). -Case: Beijing Hutong renovation, maintaining gray walls and black-tiled roofs with courtyard layouts, while optimizing water, electricity, and lighting systems to preserve the cultural ambiance of the hutongs.
Function-Ecological symbiosis principle	Instead of sacrificing environmental functions to meet human needs, the "use function" and "ecological function" of the environment are superimposed to achieve double value.	-Strategy 1: Develop "ecological infrastructure" like rooftop farms that provide residents with growing spaces while mitigating urban heat island effects. -Strategy 2: When managing urban waterways, avoid hardening riverbanks by using ecological stones and aquatic plants to create natural embankments that balance flood control and biodiversity. -Case: Rotterdam's "floating farm" in the Netherlands, where dairy cows are raised on water surfaces to regulate temperature and reduce land use.

Design conclusion

The project's design embodies sustainable development principles, strictly complying with urban environmental protection standards. It repurposes existing waste facilities through recycling while respecting biodiversity. Large-scale vegetation planting, flower beds, and lawn installations enhance air quality and improve the urban landscape. The design also integrates distinctive urban cultural elements to promote local heritage. These features not only align with contemporary trends but also respond to the city's call for preserving traditional culture. Throughout the site, various landscape installations showcasing local cultural characteristics will be strategically placed. These elements blend with modern lifestyles and entertainment methods, utilizing contemporary design approaches to serve residents while preserving traditional cultural elements. This dual approach effectively serves local communities, attracts tourists, and stimulates economic development in both urban and rural areas.

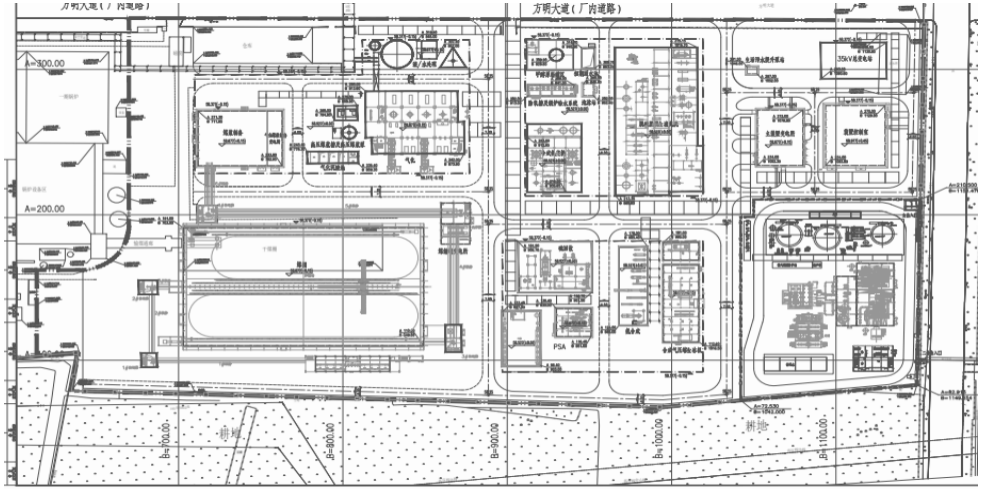
Location Analysis



Prototypes for improving community design based on the theory of “urban acupuncture

The project is located in Dongming County, Heze City, Shandong Province, China, surrounded by residential areas with flat terrain and convenient transportation. Based on the diverse needs of local residents and visiting tourists, it has been decided to transform the site into a leisure park to meet the functional requirements of the community, enhance the utilization of utetheisa kong space, fulfill citizens' demands, and improve the urban landscape.

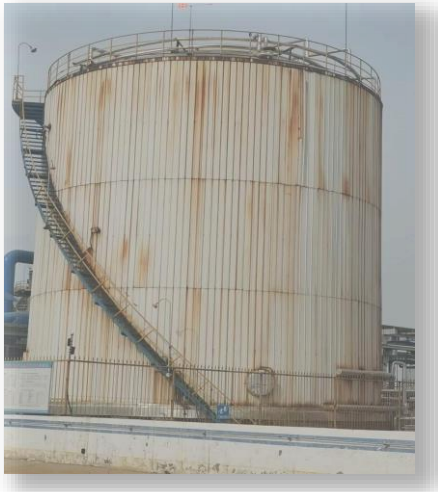
Location Analysis





At present, the design area is approximately 20,000 square meters, with residential areas surrounding the site. There are abandoned materials such as tower cranes and mechanical iron frames on the old site. Over time, these facilities have been damaged to varying degrees by wind, rain, and other weathering factors. The environment has also been affected to a certain extent due to the previous factory operations, especially with severe damage to nearby plants, which urgently need planting and adjustment.

Location Analysis



① There is damage, aging, and wear to equipment and facilities inside the factory.
② The internal ventilation system is seriously damaged, posing potential safety risks.
③ On-site infrastructure is missing, with a lack of corresponding venues.

Design analysis



The culture of Confucius and Mencius

Shandong is the hometown of Confucius and Mencius, and it has aThick Confucian and Mencian cultural atmosphere.



Yellow River Culture

The Yellow River is the mother river of the Chinese nation, the root and soul of the Chinese nation. Heze, Shandong province, located in the lower reaches of the Yellow River, is the first city of the Yellow River in Shandong.



paeonia × suffruticosa culture

Heze, Shandong, anciently known as Caozhou, is the capital of peonies in China. It has been renowned since ancient times as "the peonies of Caozhou are the best in the world."

Conclusion and Design Concept

The design of this project will adhere to the concept of sustainable development, strictly abide by the requirements of urban environmental protection, preserve the original natural landscape and OB objects as much as possible, and make use of the original existing abandoned OB objects and turn waste into treasure.At the same time, we will respect biodiversity, plant plants in a large area, set up flower beds and lay lawns, improve the quality of the air environment, and improve the overall appearance of the city.In addition, it will be integrated into the cultural characteristics of the city, publicize the connotation of urban culture, and run through the local concept, so that it can adapt to the trend of the times and respond to the call of the city to protect traditional culture.

Project proposal

The design of this plan establishes a three-tier road network featuring zigzag curves with 90-degree turns. The primary roads, designed to accommodate both residents and visitors, span 4-5 meters wide and connect all entrances, central square, cultural exhibition hall, and the repurposed pottery jar area. Secondary roads (2-3 meters wide) create interconnected pathways to children's play zones, meeting areas, and waterside facilities, forming a cohesive layout. Tertiary roads within functional zones like leisure areas, cultural exhibition halls, and pottery jar transformation zones utilize varied materials to enhance visual interest. The waterside area features stone-paved surfaces and covered bridges, elevating the park's aesthetic appeal.





Project proposal





As for the design of the square, the three elements of image, function and environment are considered for peoples leisure, gathering and communication.The venue is surrounded by neighboring areas that have a strong sense of leisure.With the increasing aesthetic requirements of people for the urban environment, the square is an important part of urban design, reflecting the characteristics of the city.In addition, considering the enjoyment of entertainment, a fountain is installed in the center of the square, and a flower pond is used for decoration.In addition, the hall also has benches for people to rest.

Project proposal





The design of the plan itself is located on the land of an abandoned chemical plant, so various plants are used to improve the air environment.In addition, it is related to the cultural characteristics of the city.Many facilities were built on the site.In addition, those preserved at the original site will be renovated and installed with tile banks, as well as cultural exhibition walls and recreation areas.Thus, two cultural exhibition areas were built, adding new characteristics to the venue.

Project proposal



Project proposal



Project proposal



Project proposal



Project proposal



Project proposal



Project proposal





Factory pottery jar site renovation

Project proposal



Project proposal



Project proposal



THANKS



Nicky