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Reclaiming the Industrial Past: Linking Industrial Cultural Landscapes with Urban Brownfield Renewal

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ABSTRACT - In the post-industrial era, many cities face the challenge of regenerating brownfield sites while preserving the cultural legacies of their industrial past. This paper addresses the prospects of the framework of industrial cultural landscapes in the area of brownfield regeneration to produce place identity, collective memory and socio-cultural resilience. Breaking away from redevelopment models that are mainly based on economic development and ecological reclaiming, the work insists on industrial heritage as one of the key recommendations for change and sustainable use. Using a mixedmethod research design the work is conducted as a case study research in the Jianxi District of Luoyang, a historic industrial city located in central China.

Spatial mapping provides information on the distribution and transformation of heritage assets while site investigation and interviews with planning authorities, heritage professionals and community stakeholder representatives are used to gain an understanding of perceptions, priorities and issues of culture-led regeneration. In sum, the presented methods present an overall view of how industrial cultural values can be incorporated in the conceptualization and strategies of designing the urban brownfield regeneration processes.

These findings show that industrial cultural landscapes offer a multi-layered framework which links material remains, narratives and community identity. Cultural values for redevelopment is one strategyto build place attachment, integrate the public and build resilience in communities. By reusing the industrial heritage and establishing a link between it and the contemporary life of the city, brownfield transformation is able to regain continuity and malleability. The article makes a contribution to the developing discourse on culture-led regeneration by proposing a contextcritical approach of cultural heritage and sustainable urban regeneration.

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INTRODUCTION

Urban brownfields—underutilized or derelict sites often contaminated by past industrial operations— are widespread in post-industrial cities, presenting complex challenges for urban regeneration. While redevelopment may be impeded due to remediation costs, liability and red tape, these areas are located in inner city neighbourhoods of strategic spatial importance (Rey, Laprise & Lufkin 2021; Dixon 2007). Besides the environmental and the financial costs, brownfield sites carry social and cultural stigmatizations: land fragmentation, a negative public perception of contamination and decay, and a lack of institutional coordination between stakeholders burden regeneration (Urban Brownfield Regeneration Projects, 2021; Ismail et al., 2020). A wider issue within brownfield regeneration is the neglect or underemphasizing of the socio-cultural dimension with respect to the community memory and heritage values in the context of the sustainable and inclusive transition of urban futures (Stoilkov Koneski, 2015; Sroka and Pinho, 2018). Because current approaches are not always able to plan-in for cultural legacy (thereby affecting place identity and social resilience), there has been an increase in interest in Culture-led models of regeneration that go beyond standalone economic or ecological models and include industrial heritage-tangible and intangible-into brownfield landscape change. The incorporation of cultural narratives into the structure of redevelopment can assist cities in the reconstruction of industrial memory, to increase communityinvolvement, and can improve socio- cultural resilience and in this way to produce not just functional urban spaces, but also spaces that are symbolically legitimating.

This study seeks to answer these challenges by analyzing industrial cultural landscapes as a framework for conducting brownfield regeneration in the postindustrial context. Using Luoyang's Jianxi District (a historically important industrial centre), the research considers how the application of spatial analysis and stakeholder interviews can be used to understand opportunities to include cultural values within regeneration strategies.

1. Urban brownfield challenges in post-industrial cities

Urban brownfields are generally defined as previously developed land no longer in use and potentially contaminated by former industrial/ commercial operations (Alker et al. 2000). They are often suitably located for redevelopment near the centre of the city, but because of the associated economic, environmental and institutional complexities, are under-utilised. With postindustrial cities, brownfields form a large part of the urban fabric, mirroring wider shifts from industrial-based economies to services-based urban economies (De Sousa, 2003) and one of the most enduring issues with brownfield regeneration is the expense of site remediation which often exceeds the financial return from redevelopment (BenDor, Metcalf & Paich, 2011). The redevelopment and rehabilitation projects can be complicated by environmental regulation, liability issues for historic contamination, delays caused by governments, and reluctance of private capital (Dixon, 2007). In both [low public investment investment or weak economic incentives for economic development], brownfield development would be less prioritized than greenfield developments, even though this kind of development lead to urban sprawls (Rey, Laprise, & Lufkin, 2021). In addition to economic and environmental factors, governance issues are at the heart of influencing regeneration outcomes. Introduction of programs involving property subdivisions, bureaucracy, and insufficient coordination between agencies often slow or stall projects (Greenberg et al., 2001). Attachments are also vital: also, brownfields are usually linked with blight, danger and deterioration and therefore gather group against redevelopment efforts. These factors stress the importance of involving stakeholders and incorporating participatory planning in order to ensure that the regeneration outcomes reflect community needs and aspirations.

Although there are many regeneration strategies that focus on the restoration of the ecological function, the revitalization of the economy, or on the provision of housing, they often forget the cultural and historical importance of former industrial sites (Dixon 2007). The elements of tangible heritage in the post-industrial landscapes are factories, warehouses and transport infrastructure, while the elements of intangible heritage include workers' memory, social networks and collective identity of that place (Stoilkov Koneski, 2015). Ignoring these cultural aspects risks loss of the layers of the city, undermining a sense of place, and failing to utilise heritage as a catalyst for community and urban branding (Evans, 2020); the associated growing awareness has prompted culture-led regeneration methods to embed industrial heritage into urban futures as a way to make these more culturally unique and socially inclusive. In conjunction with physical change, cultural narratives and community involvement can build socio-culturalresilience, ensure continuity with the city's history, and contribute to adaptation in the long term to economic and demographic change.

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1.1 Lack of cultural-led integration in regeneration

Despite the increased awareness of the need for sustainable brownfield redevelopment, current regeneration is still dominated by economic development goals or environmental remediation goals, often at the expense of socio-cultural goals (Dixon, 2006; Franz et al., 2006). Most planning models focus on land value, risk reduction and technical remediation but do not make provision for the protection of the cultural heritage and memory attached to former industrial sites. Redevelopment projects often create place-less, placemaking spaces and remove the unique heritage layers that create place identity, and the empirical evidence shows that community participation in brownfield redevelopment is still in its early stages, and intangible heritage values, such as stories, traditions, and memories of workers are rarely included in design (Ghabouli and Follis et al. 2023; Evans, 2020). This gap stifles the possibility of regeneration to build socio-cultural resilience that is increasingly understood to be an important facet of sustainable urban change.

Research suggests that there is a pressing need for integrative models which explicitly embed industrial cultural landscapes into strategies of regeneration, where spatial change is linked explicitly to culture and participatory processes. In this sense, the cities are able to reaffirm their relationship with the industrial past in a way that can help to strengthen local identity, activate the community memory and create socially inclusive and culturally unique urban futures. In order to address this gap,this paper proposes to develop and validate a framework that contextualizes tangible and intangible industrial heritage as an enabler of adaptive reuse and urban regeneration, which will be illustrated with a case study of Jianxi District in Luoyang.

1.2 Embed industrial cultural landscapes into regeneration strategies

In response to the identified gaps, this study sets out to explore how the concept of industrial cultural landscapes can be integrated in urban brownfield regeneration strategies in order to deliver socially resilient, culturally unique and environmentally sustainable results. Industrial cultural landscapes are defined as spatial assemblages of material elements (industrial buildings, machinery, transport infrastructures etc.) and immaterial elements (collective memory, work culture and social practices etc.), which together bear witness to the legacy of industrial growth (Hospers, 2002; Loures & Panagopolous, 2007). These landscapes inject physical refurbishment and land reuse of the land with historical continuity allowing the development of a sense of continuity with the city's industrial past. This research locates industrial heritage as a driving force for adaptive reuse and social participation that goes beyond more conventional models reliant on economic or ecological outcomes. Earlier research papers demonstrated the power of culture-led regeneration as an enabler of urban regeneration supporting creative economies, a destination for tourists, and a booster for place identity (Evans, 2020; Garcia, 2004). However, empirical evidence on the effective systematic operationalization of industrial heritage as a design and planning framework is scarce, especially in fast-changing urbanizing contexts in which extensive transformation of industrial lands is taking place.

This study addresses three interrelated issues. The first one is how to systematically identify and map industrial cultural landscapes within post-industrial brownfields. The second issue is how stakeholders, such as local residents, heritage experts, and planners, view and value industrial heritage and cultural memory. The third question is what strategies can effectively incorporate these cultural elements into the reconstruction plan to enhance local identity and socio-cultural resilience? This study takes Jianxi District in Luoyang, one of the particularly crucial industrial centers in Chinese history, as the research object and establishes a multi-level framework. This framework connects spatial analysis, archival research, and the perspectives of stakeholders to guide culture-driven regeneration. This comprehensive approach is helpful for the theoretical discussion of culture-led urban renewal, and also provides practical insights for balancing the pressure of reconstruction and cultural continuity. The research results are expected to offer reference content for the decision-making process of other post-industrial cities To provide a model for the future of cities that are adaptable, inclusive and rooted in local history.

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2. LITERATURE REVIEW

2.1 Evolution of brownfield regeneration models

Brownfield regeneration models have evolved significantly over the past few decades, reflecting shifting priorities in urban planning, environmental policy, and socio-economic development. Early practices were mostly ecological-oriented, with risk reduction and environmental remediation as the main goals. During the 1980s and 1990s, many governments established regulatory frameworks to identify and remediate contaminated land, motivated by concerns over soil and groundwater pollution, public health, and environmental liability (Alker et al., 2000; Thornton et al., 2006). Typical remediation technologies include excavation and disposal, soil washing, capping and bioremediation, aiming to eliminate or control pollutants and make the land suitable for reuse. Under such a model, the criteria for success are generally whether environmental standards are followed, whether pollution hotspots have been removed and whether the land has been restored to a "safe" state. Although ecological-focused approaches are effective in addressing immediate risks, they are often criticized for their high costs, excessive focus on technocrat, and lack of attention to the social and economic aspects (De Sousa, 2003).

From the late 1990s to the early 21st century, the regeneration model increasingly shifted towards an economic-driven redevelopment direction. This model regarded brownfield sites as a strategic opportunity for cities to achieve growth and enhance competitiveness. In places like the United States, Canada, and Europe, Their policy frameworks and incentive programs have begun to emphasize market feasibility, public-private partnerships (ppp), and risk-sharing mechanisms, with the aim of encouraging private sector investment (Greenberg et al., 2001; Adams et al., 2010). Under such a model, the criteria for measuring success are not only about cleaning up the environment, but also about enhancing the value of land, creating more job opportunities, expanding the tax base and reusing underutilized land, so as to stimulate local and regional economic development. For instance, flagship projects like the Docklands in London or the Port area in Toronto They have demonstrated the potential for large-scale redevelopment and transformation of the entire region. However, the economy-oriented regeneration model also faces some criticism. The criticism mainly focuses on the fact that it grants high-return commercial or residential development privileges. This situation may lead to gentrification, causing long-term residents of the local community to be displaced, and also result in the neglect of local heritage and cultural identity. Recently, the third wave of regeneration models has emerged. These models place more emphasis on the cultural and community levels. These culturally inclusive and community-oriented approaches aim to integrate local heritage, identity, and social memory into the reconstruction strategy. They do not merely view brownfield sites as vacant or contaminated land. It is also regarded as a place of symbolic significance and historical value (Evans, 2020; Loures & Panagopoulos, 2007). Culture-led regeneration is increasingly associated with strengthening local attachment, fostering civic pride, attracting creative industries, and supporting tourism and the knowledge economy. This approach reinterprets industrial heritage, such as factories, warehouses, and transportation infrastructure, treating them as assets that can be adaptively reused. Mixed-use cultural districts, museums and public Spaces have been created, which commemorate industrial history and reuse it. The key point is that community participation has become a crucial principle. Planners and designers will encourage local stakeholders to participate in the process of jointly creating a reconstruction vision, which should reflect the common values and collective memory of all (Miles & Paddison, 2005).

This evolution from ecological models to economic models and finally to cultural models This reflects that people are increasingly aware of the multi-dimensional nature of brownfield sites. Brownfield sites are not merely places of environmental responsibility or economic opportunities; they are also places of memory, identity and significance. This transformation provides a conceptual basis for this study, which aims to explore how the concept of industrial cultural landscapes can serve as a guiding framework for contemporary brownfield renewal in post-industrial areas where cultural heritage is at risk of being lost.

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2.2 Concept of industrial cultural landscapes

Industrial cultural landscapes represent complex palimpsests where material remains and social memory intersect. In this replication, material relics and social memories are interwoven. These landscapes not only have their physical structures, but also reflect the entire process of industrialization, deindustrialization and post-industrial transformation, just like an archive of urban modernization (Storm, 2014). Some scholars believe that such landscapes should not merely be regarded as isolated locations, but rather as a network of relationships that links production Spaces with transportation corridors, workers' housing, and urban infrastructure. Together, they shape the spatial and social order of industrial cities (Ribeiro & Nolasco, 2020). Looking at the issue from a networked perspective expands the scope of protection from individual monuments to the entire urban area. This enables a more comprehensive regeneration approach. Integrating intangible cultural heritage is crucial because it can bring social and emotional depth to the landscape and transform those material cultural relics into meaningful places. Oral history, narratives related to labor struggles, and industrial rituals are like "living archives", which can connect current residents with past generations and promote a sense of continuity and belonging. Research shows that places that actively adopt interpretive strategies, such as storytelling, community exhibitions, and participatory heritage mapping, During the reconstruction process, it is more likely to inspire a sense of pride among local residents and also involve community residents (Xie, 2006). These intangible aspects can also help reduce the risks of what some authors refer to as the "museumization" of industrial heritage. In this case, sites are merely preserved as static cultural relics without considering their ongoing social significance (Pendlebury, 2013).

Recently, some methodological innovations have emerged, such as Historic Landscape Characterisation (HLC) and spatial narrative frameworks. These innovations provide tools for systematically capturing the tangible and intangible dimensions of industrial cultural landscapes (Fairclough et al., 2014; Tao et al., 2025). These methods are not merely confined to descriptive lists; they can also explain how industrial Spaces have evolved over time. How do the people in the community experience these industrial Spaces, and how do the significance of these industrial Spaces provide some useful information for future design? This transformation reflects a broader understanding that heritage is actually a dynamic negotiation process between the past and the present, rather than merely the static preservation of cultural relics (Smith, 2006). By conceptualizing industrial cultural landscapes in this comprehensive way, scholars and those engaged in related practices have created opportunities for design regeneration strategies. These regeneration strategies not only achieve good results in terms of visual and economic aspects, but also resonate with people at the social level. This perspective supports a shift from project-based intervention to landscape- scale thinking, with a focus on maintaining spatial and temporal continuity, encouraging adaptive reuse of industrial Spaces, and working with local stakeholders to create a vision for the future. This approach is particularly suitable for post-industrial regions undergoing rapid urban redevelopment, where Both the material structure and the collective memory of industrial life are in danger of being erased.

Moreover, viewing the industrial cultural landscape as a constantly evolving system highlights the criticality of treating regeneration as a process rather than a one-off intervention. Industrial sites rarely transform in a linear fashion; instead, they undergo cycles of production, decline, abandonment, and reuse, each leaving visible and invisible traces. A landscape-based perspective allows planners and designers to work with these temporal layers, selectively revealing and reinterpreting them rather than erasing them. For instance, retaining key industrial structures as landmarks while introducing new public spaces can create a dialogue between past and present, enabling residents to relate to the history of the place as part of their own lived experience. Similarly, involving communities in co-design workshops or participatory mapping exercises ensures that the intangible values—memories, stories, and emotional attachments — are captured and embedded in future plans.In this way, industrial cultural landscapes become both a design resource and a social platform. They offer opportunities for adaptive reuse that go beyond simple architectural preservation to foster new forms of cultural production, such as creative hubs, museums, and open spaces that invite reinterpretation of the industrial legacy. Such approaches also encourage long-term stewardship by giving communities a sense of ownership over the transformation process. By framing brownfield regeneration in this integrative, narrative-rich way, cities can move beyond purely technical or market-driven redevelopment toward strategies that sustain identity, strengthen resilience, and enhance the overall quality of urban life.

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2.3 International perspectives on culture-led regeneration

International experiences with culture-led regeneration demonstrate that industrial heritage can serve as a powerful driver of urban transformation when strategically integrated into redevelopment policies (Bianchini & Parkinson, 1993; Montgomery, 2017). In Europe, the Ruhr region of Germany is mostly cited as a typical example. In the Ruhr region, The Emschel Park International Architecture Exhibition has transformed abandoned industrial land into a network composed of parks, cultural venues and tourist attractions (Foster, 2021). Projects like the Zollverein Coal Mine Industrial Complex have successfully combined the conservation of monumental industrial buildings with new cultural functions, making this site a UNESCO World Heritage Site and a symbol of regional identity (Foster, 2021) This case of Ruhr demonstrates that large-scale and coordinated measures can reshape industrial decline into cultural and economic assets, which have the potential to attract tourism, creative industries and gain international recognition (Evans, 2020).

In the UK, culture-led regeneration typically focuses on repositioning individual sites as iconic cultural landmarks. The transformation of the London Riverbank Power Station into the Tate Modern demonstrates how industrial heritage can adapt to world-class cultural uses while also promoting the regeneration of surrounding areas (Montgomery, 2017). A similar approach can also be seen in Manchester, where The former cotton mills and warehouses have been transformed into creative workspaces and museums, fostering a new urban identity rooted in industrial heritage while supporting knowledge-based economic growth (Bianchini & Parkinson, 1993). The example from North America also highlights the role of culture in shaping the post-industrial reconstruction process. The distillery complex in Toronto demonstrates how a historic whisky distillery complex, after adaptive reuse, has created a pedestrian-oriented cultural district featuring galleries, theaters, and artisan shops, which has become a major tourist destination It is also a model of urban renewal led by heritage (Montgomery, 2017). Pittsburgh has transformed from a steel capital into a "knowledge city", turning an industrial base into an innovation center and cultural venue, and linking economic diversification with the reinterpretation of industrial memory (Evans, 2020). Beyond the Western context, cities in East Asia have begun to adopt culture-driven regeneration strategies, integrating heritage protection with urban development. In Shanghai, the redevelopment of the West Bund Industrial Zone has combined the adaptive reuse of warehouses and docks with the introduction of large art museums and public cultural Spaces, transforming the waterfront area into a center for cultural production and leisure (Zhang et al.,2020). Similar measures have also been taken in Seoul's Oil Tank Cultural Park and Beijing's 798 Art Zone, demonstrating the ability of industrial heritage to attract creative industries. The former production area can also be reshaped into a vibrant cultural district.

These international cases point out several common principles, such as maintaining authenticity and architectural integrity in adaptive reuse is crucial (Bianchini & Parkinson, 1993), public investment and policy frameworks can play a certain role in achieving long-term cultural regeneration (Foster, 2021), and community participation and cultural planning are valuable in maintaining local identity (Evans, 2005). These lessons learned can offer relevant insights to post-industrial cities in China such as Luoyang, which are undergoing large-scale industrial land transformation. People's interest in balancing reconstruction with heritage protection and cultural continuity is growing (Zhang et al.,2020).

2.4 Theoretical frameworks: place identity, resilience, and adaptive reuse

To integrate industrial cultural landscapes into field regeneration, this paper adopts a perspective that combines theories such as local identity, urban resilience, and adaptive reuse. These three perspectives complement each other and together enable us to understand from multiple scales. How to coordinate cultural memory, spatial transformation and future adaptability in the practice of regeneration. From the perspective of local identity, brownfield sites are not Spaces without distinctive features; rather, they are repositories of collective memory and meaning. Industrial buildings, infrastructure, and spatial patterns often serve as the actual support points for local narratives. If they were to disappear, it might leave community members confused or feel a lack of belonging (Relph, 1976). After realizing these connections, protecting and reinterpreting key industrial characteristics is a way to enhance local attachment and promote inclusive reconstruction.

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The resilience theory expands this perspective by focusing on the ability of urban systems to adapt to changes while maintaining their basic functions (Meerow et al., 2016). In the context of the post- industrial revival, resilience is not merely about restoring and reusing land, but also about creating flexible and culturally rich Spaces to meet the constantly changing social, economic and environmental demands. Integrating industrial heritage into reconstruction can maintain a symbolic continuity between a city and its past, thereby enhancing the community's ability to cope with future changes. Adaptive reuse offers a practical approach to achieving these goals. It provides a design- oriented way to reuse industrial buildings while respecting their historical value (Bullen & Love, 2011). By integrating conservation with contemporary uses such as cultural venues, creative centers or public Spaces, adaptive reuse can transform industrial heritage into a driving force for social interaction, economic vitality and cultural expression.

These theoretical frameworks suggest that successful culture-led brownfield regeneration should simultaneously strengthen local identity through the interpretation of heritage, enhance resilience by ensuring long-term adaptability, and achieve these goals through adaptive reuse strategies. This comprehensive perspective provides support for the analytical framework of this article and guides the understanding and interpretation of the spatial, historical and stakeholder data of the Jianxi area in Luoyang.

3. METHODOLOGY

This study adopts a mixed-methods approach to integrate the concepts of place identity, urban resilience, and adaptive reuse, aiming to explore how industrial cultural landscapes can inform culture-led regeneration. It does not view brownfield redevelopment as a simple process of technical restoration and land conversion, but rather emphasizes the spatial and cultural aspects of industrial heritage in Jianxi District. And how these aspects can guide sustainable urban renewal strategies. Jianxi District is located in the west of Luoyang and is one of the earliest planned industrial zones in central China. Its development is closely linked to the national machinery manufacturing industry, which has left a very prominent mark on the urban structure and cultural characteristics of this region. In recent years, with the adjustment of the industrial structure and the transfer of industries, some industrial parks have undergone transformation. However, there are still quite a number of industrial lands and cultural heritages that have not been fully utilized or developed. This situation highlights the challenges and opportunities faced by regeneration. Industrial landscapes still retain the potential for cultural and spatial revitalization.

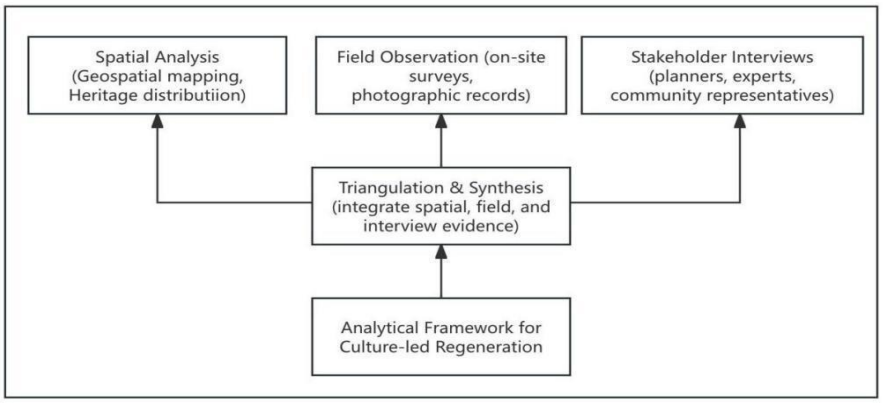

Figure 1. Research framework and methodological design of the study. (Source: Author, 2025).

This article mainly employs methods such as spatial analysis, field observation, and stakeholder interviews. Geospatial mapping is used to identify and visually present the distribution of industrial heritage assets, brownfield sites, and redevelopment areas. Field observations can provide supplementary information on the actual conditions, accessibility and landscape features of major sites. Semi-structured interviews with planners, heritage experts and community representatives can help people understand their views on industrial heritage and expectations for regeneration. These pieces of evidence are integrated through triangulation, which can enhance reliability. It is also possible to build a multi-faceted understanding of the industrial cultural landscape of Jianxi. The final framework formed can

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support environmentally sensitive regeneration strategies, reconnect past industries with contemporary urban life, and enhance local identity and social resilience.

3.1 Case study：Jianxi District, Luoyang

Jianxi District is located in the west of Luoyang City, Henan Province. Under the impetus of the First Five-Year Plan and the "156 Projects" initiative supported by technical assistance from the Soviet Union, it became one of the particularly prominent industrial zones led by the state in the 1950s. In the following decades, This area has gradually developed into a dense heavy industry cluster, which includes mechanical industry, metallurgical industry, bearing production industry, copper processing industry and national defense manufacturing industry. Such development has formed Luoyang's core identity as the "cradle of China's industry". Its spatial layout features large industrial parks distributed along the main transportation axes, along with Soviet-style workers' housing, research institutions, and public facilities such as cultural halls, cinemas, and sports fields (Zhang et al., 2025). This planning approach has given Jianxi a unique industrial form and also a strong sense of local identity. The production space and the living space are closely intertwined.

The economic reforms carried out in the 1990s brought about significant structural adjustments to the industrial foundation of Jianxi. Many state-owned enterprises were downsized, relocated or privatized, which led to the closure of a large number of factories and an oversupply of land. Nowadays, there are many brownfield sites in Jianxi, such as vacant factories, rusty warehouses and abandoned railway branch lines. Among these brownfield sites are scattered residential areas where former workers and their families still live. The coexistence of dilapidated industrial infrastructure and residential districts has led to a complex urban landscape. Some areas have been fragmented and transformed into high-rise residential and commercial projects, while others have been abandoned. This has created security risks, spoiled visual aesthetics, and underutilized precious urban land (Zhang et al., 2025). Despite these challenges, Jianxi still retains key material and intangible heritage values. The surviving factory buildings, water towers and axial road networks retain the spatial logic of the socialist planning in the mid-20th century, while the collective memory of production, labor culture and social life is still deeply rooted in the hearts of local residents. Research shows that these memory domains, whether material or symbolic, continue to influence residents' views of their places and their expectations for the future of the region. This indicates that the regeneration strategy should not only address the issue of physical restoration but also the problem of cultural continuity.

The district is also at a critical juncture: Territorial spatial planning of luoyang designates parts of Jianxi for high-density redevelopment, positioning it as a key growth pole for the city′ s westward expansion (Luoyang Planning Bureau, 2022). This creates a pressing need to balance economic imperatives with heritage conservation. International experience shows that culture-led regeneration can turn such post-industrial districts into vibrant cultural quarters, creative industry hubs, and heritage tourism destinations (Evans, 2020). Jianxi thus represents a living laboratory for exploring how industrial cultural landscapes can be systematically mapped, interpreted, and embedded in redevelopment strategies to create an urban future that is socially resilient, culturally distinctive, and environmentally sustainable. Equally important is the diversity of stakeholders involved in Jianxi′ s regeneration process. Municipal planners and developers often prioritize economic performance and land value uplift, advocating for high-density residential and commercial redevelopment. By contrast, heritage professionals and local historians emphasize the need to conserve representative factory structures and interpret them as part of Luoyang′s industrial narrative. Community voices reflect both pragmatic concerns — employment opportunities, housing quality, infrastructure upgrades — and affective ties to sites of memory, including former workplaces, cultural halls, and residential compounds. These divergent priorities frequently lead to tensions and contested visions for the district′ s future, highlighting the need for participatory and integrative planning approaches. This complexity makes Jianxi not merely a site of physical transformation but a socially charged landscape where memory, identity, and development pressures intersect. Viewing the district through the lens of industrial cultural landscapes allows for a more nuanced understanding of these dynamics, enabling regeneration strategies that reconcile spatial efficiency with cultural continuity. These conditions position Jianxi District as a highly instructive setting for investigating how industrial cultural landscapes can guide regeneration strategies. Its combination of tangible heritage, collective memory, and redevelopment pressure provides a unique opportunity to explore ways of aligning physical transformation with cultural continuity—an inquiry that lies at the heart of this research.

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3.2 Comparative Insights from Post-Industrial Cities

Culture-led regeneration has emerged as a central paradigm in post-industrial urbanism, seeking to transform disused industrial areas into assets that support social, cultural, and economic renewal. To derive transferable insights for Jianxi District, this study draws on two widely discussed cases that are representative of distinct planning traditions: the Ruhr region in Germany and the West Bund Cultural Corridor in Shanghai. These cases were selected based on three criteria: (1) their concentration of industrial heritage assets comparable to Jianxi ' s factory clusters, (2) their large-scale regeneration processes combining environmental, spatial, and cultural interventions, and (3) their visibility in international literature as models of culture-led transformation (Foster, 2021; Yin & Zhang, 2020).

The Ruhr region offers one of the most comprehensive and influential examples of culture-led post- industrial regeneration. The International Building Exhibition (IBA) Emscher Park, implemented between 1989 and 1999, was a decade-long regional initiative covering more than 800 square kilometers and involving over 120 projects. Its strategy combined ecological restoration of the heavily polluted Emscher River, creation of a connected network of green corridors, and adaptive reuse of key industrial sites such as the Landschaftspark Duisburg-Nord and the Zollverein Coal Mine Industrial Complex. At Zollverein, former coal-washing plants and coking facilities were transformed into design museums, cultural centers, and event venues while preserving their monumental Bauhaus-era structures, reinforcing the Ruhr′ s identity as an industrial heartland now reoriented toward culture and tourism (Foster, 2021). Crucially, IBA emphasized bottom-up participation and collaboration across municipalities, engaging local communities in shaping future uses and strengthening a shared sense of ownership and pride in the regional transformation.

Shanghai′ s West Bund Cultural Corridor illustrates a different but equally instructive pathway for industrial waterfront regeneration. The project redeveloped a nine-kilometer stretch of the Huangpu River′ s western bank, converting disused shipyards, warehouses, and oil storage tanks into a dynamic cultural cluster anchored by the Long Museum West Bund, Yuz Museum, and Tank Shanghai Art Center. This transformation was complemented by extensive public realm improvements, including riverside parks, cycling routes, and pedestrian promenades, turning the former industrial strip into a major cultural and recreational destination for Shanghai residents and visitors (Yin & Zhang, 2020). Unlike the Ruhr model′s incremental and participatory approach, West Bund reflects a state-led planning paradigm characterized by comprehensive land assembly, top- down coordination, and significant public investment, enabling rapid implementation but leaving questions about the degree of community participation and how local memory is represented in the reimagined space.

These two cases illustrate distinct but complementary pathways for culture-led regeneration. The Ruhr model demonstrates the value of a long-term, regionally coordinated approach that integrates ecological restoration with heritage conservation and cultural programming, while the West Bund highlights the capacity of centralized planning to deliver large-scale transformation and cultural infrastructure in a relatively short time frame. Both of these experiences have highlighted the criticality of balancing the pressure of reconstruction and the authenticity of heritage, that is, transforming industrial memory into contemporary spatial narratives and involving multiple stakeholder groups in shaping future uses. These lessons learned have thus become the analytical perspective of this study. This article aims to explore how the concept of industrial cultural landscape can be combined through spatial analysis, archival reconstruction, and stakeholder participation to provide some useful information for the regeneration strategy of Jianxi District.

3.3 Research Design & Methods

Building on the conceptual insights derived from international cases and the contextual understanding of Jianxi District, this study adopts a mixed-methods research design to explore how industrial cultural landscapes can inform brownfield regeneration strategies. The methodological framework integrates spatial analysis and stakeholder interviews. This way, the transformation potential and cultural value of this region have been examined at multiple levels. By using spatial analysis methods to identify and visually present the distribution, characteristics and current status of industrial heritage, and at the same time identify those land areas with regeneration potential but not yet fully utilized, this understanding of space provides a structural basis for interpreting the industrial landscape of the region in a broader urban environment. Subsequently, semi-structured interviews were conducted with planners, heritage experts, and community representatives to understand the criticality of industrial heritage, the challenges in

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the reconstruction process, and everyone's expectations for future updates. The spatial data was triangulated and combined with the views of stakeholders to enable the research to link the physical and social aspects of regeneration. It provides a comprehensive framework for understanding how industrial cultural landscapes support context- oriented, culture-driven updates like those in the west District.

3.1.1 Spatial analysis

Spatial analysis is the foundation of this research. Through this analysis, a comprehensive understanding of the distribution and all its characteristics of the industrial cultural landscape in Jianxi District can be achieved. The main purpose of this spatial analysis is to identify those representative brownfield sites and heritage areas, so as to clarify the spatial relationship among industrial relics, redevelopment activities and the surrounding urban environment. Here, Geographic information systems are used to compile and visualize the relevant spatial data, which include land use conditions, industrial cluster status, and infrastructure networks, etc. By superimposing these data sets for analysis, it is possible to discover which regions still have relatively concentrated industrial land and which regions are undergoing transformation. The focus of the analysis is on the main factory areas and transportation corridors, as they have historically influenced the urban form of Jianxi and still play a certain role in the current development process of Jianxi to this day.

To supplement the spatial analysis, we reviewed the relevant planning documents, municipal records and publicly available historical materials. This was done to clarify the background of the industrial development in Jianxi. This literature review can help us explain the spatial patterns presented in the broader economic and policy processes, enabling us to understand how past industrial planning has continuously influenced the current landscape. We also conducted field observations to verify the spatial patterns and record the general physical and environmental conditions of the selected locations. Combining spatial data, contextual information and on-site verification can ensure the accuracy of spatial interpretation and lay a foundation for the qualitative investigation to be carried out later.

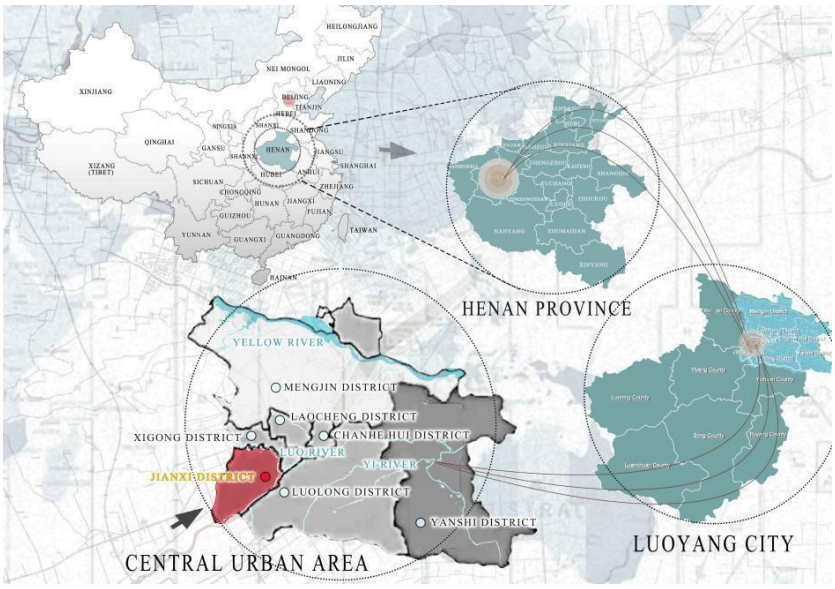

Figure 2. Geographic Location of Luoyang City.
(Source: Drawn by the author based on administrative boundary data, 2025).

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The results of the analysis are a series of thematic maps, which show the distribution of industrial heritage, brownfield plots and reconstruction hotspots. This spatial context foundation can guide the next stage of research, ensuring that when interpreting the perspectives of stakeholders, it is based on an actual understanding of the industrial landscape in the west District.

3.1.2 Stakeholder interviews

Stakeholder interviews were undertaken to capture diverse perspectives on the regeneration of Jianxi District and to complement the spatial – contextual analysis. Recognizing that urban regeneration involves both technical and cultural dimensions, the interview component aimed to explore how different social actors perceive, interpret, and prioritize the district′s industrial legacy.The participants were deliberately selected to represent three main groups: urban planners and municipal officials involved in reconstruction policies, heritage experts skilled in industrial culture and adaptive reuse, and community representatives or long-term residents with personal or collective memories of regional industrial transformation. Such a personnel composition can ensure that the voices of institutions, professionals and local people are equally reflected in the investigation, providing a relatively balanced basis for the subsequent analysis.

This article adopts a semi-structured interview design to strike a balance between the consistency and flexibility of the theme. Each interview follows a guiding framework, but when specific background questions arise, exploration is also allowed. The core topics of discussion include the actual conditions and symbolic values of industrial heritage sites, strategies for integrating heritage protection into urban reconstruction, the perceptible obstacles to culture-led regeneration, and the possible role of public participation in shaping the outcome of renewal. The interview schedule has undergone an initial test. This is done to make it clearer and ensure that the questions are relevant to the professional or experience background of the participants. The collected data was analyzed in a thematic manner, referring to the framework of Braun and Clark. This analysis process began with open coding to identify recurring ideas and expressions. Then classify them into broader subject areas, such as "heritage identification", "regenerative governance", "community identity" and "participatory planning". After cross-referencing stakeholder groups, consensus and differences were discovered: planners tend to emphasize considerations related to regulation and land use, heritage experts focus more on protecting quality and authenticity, while community participants place more emphasis on cultural memory and accessibility.

By combining these qualitative findings with the spatial background results, the regeneration process can be understood from multiple dimensions. Analysis can explain how physical space and cultural values interact in the post-industrial landscape, and also reveal the possible tensions between protection and reconstruction. This integration provides crucial insights into the ongoing transformation in the region, demonstrating how the perspectives of stakeholders can offer a more environmentally sensitive and socially inclusive approach to brownfield regeneration.

3.1.3 Triangulation strategy

To ensure the validity, reliability, and interpretive depth of the findings, this study employed a triangulation strategy that systematically integrated spatial, contextual, and qualitative data. Triangulation was particularly appropriate for this research because brownfield regeneration involves both tangible physical transformations and intangible socio-cultural processes that cannot be captured through a single method. By combining spatial analysis, document-based contextual review, and stakeholder interviews, the study sought to build a multi-dimensional understanding of Jianxi District′s regeneration dynamics.

The triangulation process was designed to connect three complementary dimensions of evidence. The spatial component offered a quantitative and visual basis for identifying land-use patterns, industrial clusters, and redevelopment hotspots. The contextual dimension provided interpretive depth by situating these spatial phenomena within the district′ s broader planning and policy framework. Meanwhile, the stakeholder interviews supplied experiential and perceptual data, revealing how different actors —

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planners, experts, and residents — understand and negotiate the meanings of industrial heritage and regeneration. Integrating these strands allowed the study to interpret not only where regeneration is occurring but also how and why it unfolds in particular ways.Analytically, the triangulation proceeded in two stages. First, findings from each methodological strand were coded and categorized according to thematic relevance. Key recurring concepts — such as heritage recognition, land-use conflict, governance barriers, and community identity — were identified within each dataset. Second, cross-comparison was conducted to detect points of convergence and divergence among spatial evidence, policy context, and stakeholder narratives. For instance, areas identified as redevelopment hotspots in the spatial maps were compared with stakeholders′ perceptions of regeneration urgency and cultural significance. This iterative comparison process ensured that interpretations were grounded in multiple perspectives rather than a single source of evidence.

The synthesis of these datasets produced a more comprehensive and credible understanding of Jianxi′s industrial cultural landscape. Triangulation enhanced the explanatory power of the research by linking measurable spatial patterns with social perceptions and planning intentions. It also helped to identify inconsistencies between policy objectives and on-the-ground realities, thereby revealing critical tensions that may shape the outcomes of regeneration efforts. Ultimately, this integrative approach strengthened the methodological coherence of the study, ensuring that conclusions regarding culture-led regeneration were both empirically supported and contextually informed.

4. RESULTS AND DISCUSSION

4.1 Spatial analysis results

Spatial analysis enables us to have a comprehensive understanding of the evolution and current pattern of industrial land in Jiangxi District. By reviewing existing planning materials, satellite images and on-site records, this study has identified a relatively clear spatial pattern, which reflects historical continuity and also the ongoing transformation. The analysis results show that the structure of land use is gradually adjusting rather than declining all at once. Although some heavy industrial areas have been redeveloped, other areas are still partially active or have problems of underutilization.

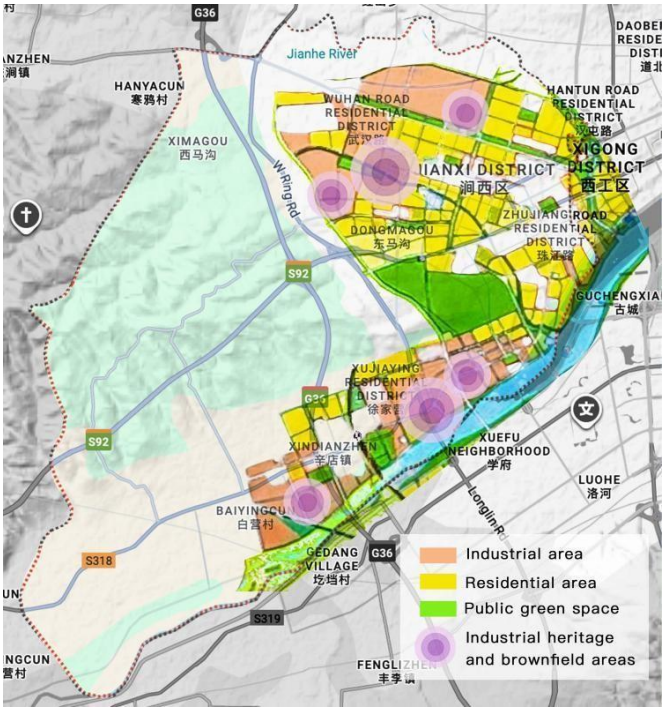

Figure 3. Distribution of industrial heritage and brownfield areas.

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(Source: Drawn by the author based on open-source spartial data, 2025)

The previous factory clusters in the central and western parts of this area have presented a mixed reconstruction model. Some areas have been transformed into residential areas and service facilities, while others continue to be used as light industrial bases or logistics centers. Several plots of land remain idle or in transition, including former production sites, warehouses, and plots near Luoyan First Tractor Factory and adjacent to the railway. These regions have great potential for regeneration because they have preserved the identifiable spatial structures and architectural remains from the industrial era. Heritage asset mapping has identified over ten sites of industrial or cultural value, such as well-preserved factory areas, workers' residential areas, and parts of the historical railway network. These assets are not evenly distributed. The best-preserved clusters are concentrated in the northwest region, which is close to the original industrial core. These assets are geographically adjacent, which means there is an opportunity to form continuous heritage corridors or clusters, and these corridors or clusters can serve as the focus of culture-led regeneration.

Background checks on planning materials and observed reconstruction measures can help us explain how local policies and market factors have shaped these spatial patterns. Policy-driven industrial relocation and land reallocation have contributed to a mixed urban structure in which the traces of past production coexist with new residential and commercial uses. In some recent projects, the retained industrial elements have been applied to cultural or creative uses. There is a localized interest in adaptive reuse. Evidence in terms of space and environment shows that Jianxi District has a subtle development trajectory of selective continuation and renewal. This comprehensive perspective is conducive to conducting qualitative investigations. It also provides a practical basis for formulating environmentally sensitive regeneration measures to align the value of heritage with the needs of contemporary cities.

4.2 Stakeholder perspectives

The stakeholder interviews revealed a spectrum of complementary perspectives regarding the regeneration of Jianxi District. Planners, heritage experts, and community representatives all agreed that the symbolic significance of this area as an industrial heritage of Luoyang is significant, and they all agreed that this historical identity should be preserved during the reconstruction rather than erased. However, different groups attach varying degrees of importance to economic, cultural and social priorities, which actually reflects their different professional backgrounds and experience positions.

Urban planners particularly emphasize the need for strategic land reorganization, the upgrading of infrastructure, and the formulation of policies in line with municipal development goals. Their approach is to view heritage as a potential resource for improving spatial consistency and attracting investment, but with the prerequisite that protective measures do not harm functional efficiency. Compared with them, heritage experts place more emphasis on authenticity, historical continuity, and the criticality of overall protection of representative buildings, factory areas, workers' residential areas, and industrial transportation systems. These buildings together convey the narrative of production in the socialist era. Community representatives are more concerned about daily experiences and the well-being of residents. They emphasize that the reuse of heritage should generate tangible benefits, such as public Spaces that are convenient for everyone to use, employment opportunities, and cultural vitality. For them, the value of industrial heritage lies not only in its symbolic existence but also in its potential to maintain local identity and social cohesion. Although there is a relatively broad consensus on the value of protection, some cross-disciplinary challenges have still emerged. Planners point out that administrative responsibilities are relatively scattered and cross-departmental coordination is limited, which are all obstacles to comprehensive regeneration. Heritage experts point out that the lack of a standardized assessment framework makes it difficult to justify protection without official recognition. Residents raised concerns about displacement, affordability, and the lack of community voices during the planning process. All groups recognized that financial constraints and the high cost of site restoration have long been obstacles to slowing down or restricting project implementation. The key themes emerging from the stakeholder interviews are summarized in Table 1. It compares the perceptions, priorities and challenges determined by planners, heritage experts and community representatives.

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Table 1. Stakeholder Perception Matrix

Themes / Groups	Urban Planners	Heritage Experts	Community Representatives
View on Heritage Value	Heritage as a planning resource and part of city branding	Authenticity and historical narrative continuity	Cultural memory and collective identity
Primary Priorities	Land-use efficiency, infrastructure upgrading, policy alignment	Preservation of key structures, authenticity, and design integrity	Livability improvement, public access, and inclusiveness
Key Challenges	Institutional fragmentation and limited coordination	Lack of inventories and inconsistent heritage criteria	Displacement, affordability concerns, and limited participation
Opportunities for Regeneration	Redevelop idle sites for creative and mixed-use planning	Selective preservation and adaptive reuse	Use heritage sites for community events and cultural education

Even so, stakeholders have recognized meaningful opportunities in culture-led reconstruction. Planners have emphasized that large but underutilized plots are strategically significant Spaces for pilot projects integrating creative industries and reusing heritage. Experts suggest that industrial structures can be selectively protected. And it can be adaptively integrated into mixed-use development, which can serve as a feasible compromise between protection and redevelopment. Community participants imagine heritage sites as cultural nodes, that is, places where markets, performances and educational programs are carried out. This can enhance the participation of local residents and also pass on intergenerational memories. These insights all demonstrate a common aspiration to coordinate the transformation in the material aspect with the continuity of culture and society. Effective regeneration relies on policy consistency, inclusive participation, and creative reinterpretation of industrial heritage.

4.3 Synthesis: industrial cultural landscapes as a multi-layered regeneration framework

When the investigation results of space, environment and stakeholders are comprehensively examined, it is found that the transformation of Jianxi District cannot be understood solely from a single analytical perspective. From the spatial interpretation, it can be seen that the reconstructed plots, vacant plots, transitional plots and the surviving industrial structures are interwoven, forming a mosaic-like scene. This is actually evidence of fragmentation and the existence of potential. The background information obtained from the planning records can illustrate the institutional and economic conditions that drive these patterns, while the perspectives of stakeholders can explain how different participants view and prioritize industrial heritage related to daily urban life. These different levels reveal a multi-dimensional framework of culture-driven regeneration.

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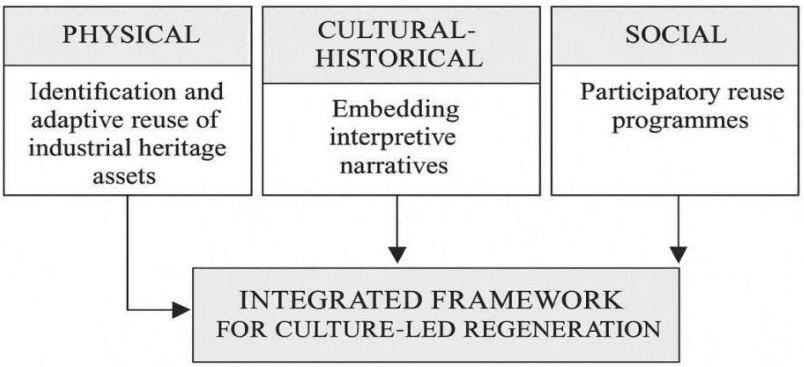

Figure 4. Conceptual framework of multi-layeredculture-led regeneration in Jianxi District. (Source: Author, 2025).

At the physical level, regeneration should focus on identifying key industrial heritage, establishing connections, and conducting adaptive reuse to form coherent heritage corridors or clusters, which can enhance the readability of the space. At the cultural and historical level, the reconstruction process should incorporate interpretive narratives. Preserve and reinterpret the industrial characteristics of the region against the backdrop of a constantly evolving and changing city. At the social level, regeneration should be incorporated into the participation mechanism, involving residents and local stakeholders in the process of formulating reuse plans, so as to ensure that the updated site can maintain its relevance and inclusiveness to the community. By integrating spatial evidence, contextual understanding, and stakeholder explanations, This study clarifies an integrated framework that can link tangible industrial structures with intangible memories and collective aspirations. This multi- layered perspective highlights that Jianxi District has the potential to become a model for coordinating urban reconstruction and cultural continuity, and can enhance resilience and local identity in Luoyang's broader transformation process.

5. DISCUSSION

5.1 Cultural narratives and place identity in regeneration

The research results show that industrial culture narratives are a key resource for rebuilding local identity in the process of brownfield regeneration. Different from purely ecological-driven or market-driven redevelopment methods, which often erase the traces of previous land use and integrate historical memories, they can be transformed under the unique social and spatial background of the region. This discovery echoes the concept proposed by Ashworth and Tunbridge in 2000 that "inheritance is a process", which emphasizes that inheritance should be selectively created and mobilized to meet current needs rather than passively inherited. In the West District, The stratified landscape composed of the remaining industrial buildings, workers' residential communities and symbolic sites provides a material basis for re-telling the industrial history of this area. From an understanding of the background of industrial development and community life, it can be known that many such Spaces are not only production sites but also social nodes where collective ceremonies, festivals, and cultural customs take place. By incorporating these intangible aspects into the regeneration planning, redevelopment is not limited to the protection of the factory area but can also create Spaces that evoke the rhythm of industrial life. This echoes the observation made by Degen and Rose in 2012, that is, sensory and empirical memories can shape the meaning of a city and also enhance people's attachment to the place. This finding emphasizes the role of narrative interpretation, which is like a bridge between material heritage and contemporary place creation.

The interview results show that different stakeholder groups view cultural narratives as a way to reconcile competitive goals. Planners see heritage integration as an opportunity to distinguish the redevelopment project of Jianxi from ordinary real estate projects, thereby enhancing its appeal to investors and tourists. Heritage experts believe that this is a moral responsibility to protect collective memory. Residents, on the other hand, emphasized its role in maintaining the continuity of their personal history. These common interests indicate that culture-led regeneration can serve as a platform to align institutional agendas with community expectations, which is also a widely discussed topic in the literature of participatory heritage planning. This research has also contributed to the broader theoretical debate by positioning cultural narratives not merely as "additional" elements but as structural principles for local

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identity reconstruction. Just as Miles and Paddison said in 2005, a culture-led strategy can redefine previously stigmatized landscapes as Spaces of pride and opportunity. In Jianxi, this process of re-planning has the potential to transform the remaining industrial plots into symbolic anchor points of the new urban identity, recognizing the past while looking forward to the future. This interpretive dimension is particularly relevant to the rapidly urbanizing Chinese cities, where industrial heritage is erased at a faster rate than it is recorded. Integrating cultural stories into the regeneration process can serve as a guarantee for historical knowledge and social spatial diversity. These insights emphasize the criticality of viewing regeneration as a form of cultural production and a physical transformation. By relying on design interventions, interpretive projects and public art to actively plan and disseminate industrial narratives, regeneration can create Spaces that foster a sense of belonging, pride and recognition between residents and visitors. This naration-centered approach lays the foundation for thinking about how these strategies can build socially resilient urban communities, a broader goal. In this sense, cultural narratives not only offer symbolic continuity but also provide a social foundation for resilience in the face of urban transformation.

5.2 Linking heritage-led strategies with social resilience

The survey results of Jianxi District show that industrial heritage is not only the background for redevelopment, but also can positively influence the way communities respond to changes. We should not merely view reconstruction as a physical task, but integrate the value of heritage into the planning. This can maintain continuity while adapting to new economic and social realities. This continuity is the key to social resilience. It depends not only on material infrastructure but also on the community's ability to maintain common goals and identities when facing transformation. A key insight drawn from the interviews is that residents view certain former factories and workers' courtyards as "symbolic anchors of collective memory". They have linked their life trajectories to the history of this region. When redevelopment relies on adaptive reuse, creating memorial Spaces or telling stories to recognize these anchor points, residents are more likely to support or even participate in the process. This is in line with academic research on local attachment, which emphasizes that emotional connections with the place can inspire management and collective action, enhancing the community's ability to face future destruction (Manzo & Perkins, 2006). Another aspect of resilience is reflected in governance. Stakeholders have always emphasized the need for transparent decision-making and meaningful participation. Projects that include workshops, exhibitions or design seminars provide information to the public and create a platform for dialogue, which can narrow the gap between technical planning goals and community aspirations. This participatory element can alleviate conflicts and establish institutional trust, which is a necessary condition for maintaining long-term urban transformation (Healey, 1998).

Legalization-led regeneration has the potential to serve as a catalyst for diversifying the economic foundation of Jianxi. By linking emotional attachment with participatory governance, legalization-led regeneration forms a feedback loop, enhancing both community cohesion and institutional adaptability. If the transformed industrial land is designed more flexibly, it can accommodate cultural venues, creative industries and small-scale entrepreneurship, creating multiple uses and mitigating the impact of future economic fluctuations in the region. This approach does not simply replicate the past heavy industry but utilizes its spatial heritage to develop a more adaptive and people-centered urban economy. From this perspective, the contribution of a heritage-led strategy to resilience is not an abstract ideal but a series of concrete practices, such as protecting symbolic sites, promoting participation, and diversifying opportunities. These approaches provide a path for the development of the West District without erasing its past, balancing the urgency of reconstruction with the slow work of cultural continuity. This interpretation links the discussions at the social level with those at the comparative level, placing Jianxi's experience in a broader international context.

5.3 Comparative insights from international cases

The contextual and empirical findings from Jianxi District resonate with international experiences of culture-led regeneration while revealing distinctive governance and social dynamics.Similar to the Ruhr region,this study confirms that industrial heritage should be re-regarded as an asset rather than a burden. It can generate new perspectives on pride and opportunities, and also motivate public and private actors to take action. However, the transformation of the Ruhr area was successful only due to decades of strong regional governance and continuous financial input. In contrast, the regeneration efforts in the west of Shanghai encountered a shorter policy cycle and more fragmented institutional coordination, which made the long-term continuity uncertain. Compared with the West of Shanghai, another point can be highlighted. That is, cultural programs and public events can play a promoting role in activating redeveloped venues

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and attracting a broader audience to heritage Spaces. Conversely, the example of Jianxi shows that such planning is still in its infancy. Community participation is mostly limited to negotiation rather than joint creation. This difference indicates that it is not enough to just engage in one-off participation. Instead, it should shift towards continuous cultural activities, strengthen emotional connections, and enhance citizen participation. This contrast emphasizes that participation is not merely about procedural inclusiveness It is also a cultural practice that can shape the sustainability of regenerative outcomes.

Another key lesson is about how to balance protection and renovation. Both Ruhl and the West Bank have demonstrated that preserving the selected landmark buildings rather than trying to preserve all the relics can create a very strong visual and symbolic mark, while also leaving room for contemporary functions. The investigation results of the West Bank show that People are more willing to prioritize the value and efficiency of land, and sometimes they sacrifice the protection of historically crucial assets. A more selective, design-led approach can help balance the pressure of development and the need to preserve recognizable cultural symbols, preventing industrial features from being erased. These contrasts indicate that the revival of Jianxi District cannot simply follow the international model. It is necessary to adjust the culture-led strategy based on its own governance capacity, community expectations, and the trajectory of economic development. An environmentally sensitive approach that combines natural renewal and cultural activation can make Jianxi a unique example of post-industrial regeneration in the Chinese context. By doing so, this region not only has the potential to improve spatial and economic outcomes but can also serve as a reference for similar industrial transformation in other medium-sized cities in China. Unlike replicating the international model, the example of Jianxi demonstrates that the culture-led revival in a transitional economy must have adaptability, institutional coordination and a social foundation, which provides conceptual relevance beyond local circumstances.

5.4 Implications for Regeneration Practice

Building on the findings from Jianxi District, this study proposes several implications for future regeneration practice.The research results show that to achieve effective transformation, it is necessary to shift from the decentralized, project-by-project redevelopment model to a coordinated regional-level vision model. Such a framework should integrate heritage protection, adaptive reuse and community development goals to ensure that individual projects can contribute to the shared local narrative rather than generating some unrelated results. Although a single comprehensive master plan may not be necessary, it is very necessary to establish guiding principles in land reuse, design quality and cultural interpretation. These principles can provide coherence at different stages of reconstruction and also help balance flexibility and consistency of long-term identity.

Conservation efforts should focus on the most iconic industrial assets, that is, those with architectural features or carrying a strong collective memory, treating them as newly developed organizational elements. It is not realistic to attempt to protect every single relic, and it will have the opposite effect. Instead, by adopting a selection and design-led approach, these "anchor points" can serve as real reminders of the industrial heritage in the region while maintaining symbolic continuity and adapting to modern functional requirements. They can also become the core focus of creative reuse. Encouraging experimental design competitions, temporary facilities or pilot projects can inspire innovative ideas and also attract professionals and local communities to participate in the shaping and regeneration process.Another key revelation is related to the temporal dimension of cultural activation. When buildings are reused, the regeneration process does not end. It requires continuous planning and participation to maintain the industrial story of the region. During the reconstruction period, cultural activities such as exhibitions, performances and public seminars can be arranged to transform the updated site into an active part of urban life rather than a static memorial hall. Cultural activation adopts a phased approach and is coordinated with the key nodes of physical reconstruction, which can gradually cultivate the public's sense of familiarity and enhance their attachment to the place. Cultivate a sense of local pride.

Institutional capacity and governance also play a decisive role in achieving long-term success. Stakeholders have all emphasized the criticality of transparency, continuity, and allowing local participation in decision-making mechanisms. Establishing a dedicated reconstruction coordination body, whether within the existing municipal structure or as an independent working group, can provide consistency throughout the policy cycle Coordinate between development and heritage interests, and ensure that the reconstruction work remains adaptive and accountable over time. The regeneration of Jianxi District should be regarded as an evolutionary process that integrates selective protection, adaptive reuse and cultural activation. This approach involves a physical upgrade of the space and also includes the renewal of collective identity. By integrating the principle of heritage orientation into daily planning practices, Jianxi District can achieve a feasible approach both functionally and economically. A form of transformation that is inclusive in society and resilient in culture.

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6. CONCLUSION

6.1 Summary of contributions

This study explored how the industrial cultural landscape of Jianxi District in Luoyang can provide insight into urban brownfield regeneration.By integrating spatial mapping, background review, and stakeholder interviews, it examines how physical traces, historical memories, and social values interact with each other, and then forms the priorities for reconstruction. The results of the research show that if industrial heritage is regarded as a shared resource for all rather than a constraint on development, it can become a driving force for strengthening local identity and building more inclusive regeneration strategies.

In addition to the empirical results obtained from the research, this paper also contributes to the discussion of culture-led regeneration in several aspects. This article regards the industrial cultural landscape as a remnant of the past and also as a positive reference for understanding urban changes. This approach links the visible structure of the city with the collective memory level that is less tangible. This article brings a Chinese case to a field that has long been dominated by European cases. It presents a perspective shaped by different governance traditions and social backgrounds. This article demonstrates that heritage can be integrated into design and planning in a way that respects local identity and responds to the rapid transformation of the city.

These viewpoints support a broader understanding of brownfield regeneration, which is not limited to material renewal or economic recovery, but also includes the protection of meaning and continuity. In this regard, the West District is not only undergoing reconstruction, but also demonstrating that past industries can serve as the foundation for future urban identity.

6.2 Limitations and Future Research

Like most case-based studies, this research has some limitations. It focuses on a single region, which enables a detailed understanding of the local spatial and cultural patterns. However, it also limits the scope of the research results. Due to differences in policy systems, market conditions or social compositions, the industrial structure adjustment of other Chinese cities may take different paths.This paper adopts a research method mainly based on spatial analysis and interviews, and it is carried out within a fixed period of time. This method can clearly present the current situation, but it may not be able to fully capture the long-term changes in policies or public attitudes. Future research can be based on this study. Adopt a vertical design to track how cultural narratives and the perspectives of stakeholders change as the regeneration project progresses. We still need to conduct comparative studies to see if similar models exist in other post-industrial regions both within and outside China. The research may delve deeper into the processes of participatory and collaborative design, exploring how the collaboration among planners, designers and residents shapes the actual outcomes and the sense of belonging that follows. Adding quantitative indicators, such as tourist data, local business performance or social welfare measures, can also assess the broader impact of culture-led revival.

Although these limitations have narrowed the scope of current research, they also point out key directions for future studies. The research results indicate that linking cultural memory with spatial transformation is a complex yet necessary task, which deserves continuous attention in the process of Chinese cities striving to self-renew without losing their historical features.

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CONFLICT OF INTEREST

The author declares no conflicts of interest, whether financial or non-financial, that could have influenced the conduct or reporting of this research.

AUTHORS CONTRIBUTION

Author 1 (Zhao Weijie): Conceptualization, Methodology, Data Curation, Formal Analysis, Visualization, and Writing – Original Draft Preparation.
Author 2 (Dr. Suriati Ahmad): Supervision, Writing – Reviewing and Editing, Validation, and Corresponding Author Responsibilities.
Author 3 (Dr. Nadiyanti Mat Nayan): Supervision, Resources, and Writing – Reviewing and Editing.
All authors have read and approved the final version of the manuscript and agreed to its submission for publication.

AVAILABILITY OF DATA AND MATERIALS

Data supporting the findings of this study are available within the article. Additional materials and interview protocols can be provided by the corresponding author upon reasonable request.

DECLARATION OF GENERATIVE AI

During the preparation of this work, the authors used ChatGPT (OpenAI) to enhance the clarity and readability of the writing. After using this tool, the authors carefully reviewed and edited the content as needed and take full responsibility for the accuracy and integrity of the final manuscript.

ETHIC STATEMENTS

This study involved human participants through expert and community interviews. All participants provided informed consent prior to participation. The study was conducted in accordance with institutional ethical guidelines of Universiti Teknologi MARA (UiTM).
No animal subjects were involved in this research.

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