

# Institution, Space and Memory: An Analysis of the Value of Fundamental Research on Dalian's Modern Industrial Heritage

Chang Liu

*Department of Computer, Shenyang City University, Shenyang, Liaoning, China*

**Abstract:** Industrial heritage acts as a tangible witness to the urban and industrial history. Its value is not limited to architecture but also encompasses cultural and social aspects. This research on Dalian's modern industrial heritage changes the emphasis from adaptive reuse to its formative mechanisms, institutional contexts, and social impacts. Through systematic historical analysis, the deep connections among its spatial forms, colonial governance, and industrial regulation are revealed. This work sets up an interdisciplinary interpretive framework, calling for a transition in design education from spatial shaping to cultural inheritance.

**Keywords:** Industrial Heritage; Fundamental Research; Modern Industrial History of Dalian; Urban Space Design; Industrial Heritage Conservation

## 1. Introduction

Industrial heritage constitutes an invaluable and non-renewable cultural resource in urban development. It not only preserves technological and institutional memories from different historical periods but also serves as essential evidence of urban spatial evolution and functional transformation. With ongoing urban renewal and industrial upgrading, deepening research on industrial heritage enables us to draw lessons from history and gain spiritual strength, thereby providing practical references for advancing new industrialization and achieving high-quality industrial development [1,2]. However, current domestic studies predominantly focus on architectural renovation and functional replacement, lacking systematic foundational research on historical evolution mechanisms, spatial organization logic, and socio-cultural connotations. Meanwhile, professional education in urban planning, architecture, and environmental design that examines industrial heritage as a record of human living conditions, along with disciplines

like design studies, anthropology, and applied arts that utilize cultural heritage as key research materials, generally face challenges such as theoretical detachment and contextual insufficiency.

Dalian has a complete industrialization trajectory, and its industrial heritage possesses unique historical backgrounds and institutional transformation characteristics, providing a rare sample for observing the linkage between urban spatial layout and social institutional changes. From the establishment of the port by the Russian Empire in 1898, through the intensive investment of the "National Policy Agency" during the Japanese occupation period, to the nationalization and restructuring of the new China in the 1950s, its industrial heritage not only records a series of transitions in the city's economic role but also reflects the continuity and discontinuity of industry experienced during changes in political systems. This paper takes Dalian's modern industrial heritage as an empirical object to analyze how to conduct professional research and teaching work under the context of industry-education integration, aiming to provide a reference for the innovation of relevant disciplinary models.

## 2. Value of Fundamental Research on Industrial Heritage

Industrial heritage constitutes the aggregate of tangible and intangible legacies left by cities during industrialization, manifesting urban economic patterns, governance technologies, and socio-cultural dynamics through physical spatial entities. Systematic research on industrial heritage is fundamental to understanding urban development trajectories and uncovering its contemporary relevance. Currently, China's studies on industrial heritage predominantly focus on the renovation and reuse of structures, while longitudinal analyses of their origins, evolutionary processes, internal mechanisms, and interactions with urban macro-structures remain underdeveloped.

## 2.1 Historical Evolution and Spatial Characteristics of Dalian Industrial Relics

The industrial heritage of Dalian was developed by the strong intervention of external forces, and its evolution was accompanied by major historical events and constantly changing political objectives and institutional policies. Therefore, its development process has obvious segmentation, and the spatial layout of the city is closely related to the system.

The Russian empire period (1898-1904): The spatial foundation of the export-oriented port city.

After leasing Lüshun, the Russian Empire's core strategic objective was to secure a year-round ice-free deep-water port in the Far East. This geopolitical and economic imperative shaped Dalian's urban planning from its inception, which was fundamentally tied to commercial and maritime transport functions. The planners implemented a clear "separation of military and political" strategy: Lüshun was designated as a closed military fortress, while Dalian (then known under Russian administration as "Дальний") was designed as a free trade port open to global capital and commodity flows.

This fundamental positioning directly shaped Dalian's initial industrial layout and spatial structure. As core industrial relics, Dalian Port and Dalian Shipyard not only marked the beginning of the city's modern industrial civilization, but their port-oriented layout and core functions also fundamentally established Dalian's original spatial paradigm as an "export-oriented port city" [3]. The entire urban fabric grew around this port-industrial zone as the core growth point, adopting an advanced planning model that combined radial and grid road systems. Commercial and storage areas were closely arranged around the port, forming a highly integrated functional space with circulation efficiency as the top priority, creating a synergistic port-city spatial structure [4]. Therefore, the spatial morphological characteristics of industrial construction strategies during this period vividly embodied distinct openness and traffic orientation. As material carriers of the Russian Empire's attempt to integrate into the global trade system, these structures serve as crucial empirical evidence for analyzing the origins of Dalian's modernization and the formation and evolution of its spatial logic.

## 2.2 The Influence of Political and Social Form on Dalian Industrial Relics

The network construction of the core cities of Japan's industrialization in the early period of the national policy corporation (1905-1931).

Through the South Manchuria Railway Company (Mantetsu), Japan transformed its industrial development from port trade to a comprehensive resource development system connected by railways. While constructing trunk and branch lines, the city established transportation hubs like the Locomotive Works and Dalian Urban Transport Company's tram factory (1907), gradually expanding industrial relics from scattered sites into a nested "point-line-surface" system. The railway served as the "line," with factories and docks along its route (e.g., the Ganjingzi Coal Terminal, initially built in 1926) forming the "points." The financial, commercial, and administrative district centered around the "Great Square" (now Zhongshan Square) constituted the "surface," featuring international banks, military installations, and luxury hotels that symbolized the city's commercial might [5]. This spatial differentiation created a modern downtown serving international trade alongside emerging industrial zones along transportation arteries, marking Dalian's transition from a pure trading port to a comprehensive "industrial core city."

Japan's period of concentrated monopoly (1931-1945): Spatial reconstruction and institutional solidification of production-oriented cities.

After the September 18th Incident, Dalian underwent a fundamental transformation in its urban role, shifting from a commercial hub for Japan in Northeast China to a "concentrated production industrial city" serving wartime needs. This transition directly triggered a dramatic restructuring of the urban spatial framework. To meet the massive demands of heavy and chemical industries for land, water, and electricity, the focus of industrial development shifted from the city center to suburban areas like Ganjingzi. Here, large-scale military-industrial complexes such as the Dalian Chemical Industry Company (1933), oil refineries, and steel mills were built in concentrated clusters [6]. The city's symbolic center also transitioned from the "Grand Square," representing commercial prosperity, to the industrial zones of the new suburbs and the

architectural ensemble of the Kwantung Provincial Administration.

The urban layout of Dalian at this time was profoundly shaped by the social system. This was clearly reflected in the "Comprehensive Development Plan for Kanto Prefecture" issued by the Japanese wartime government in 1938 and the "Kanto Prefecture Resident Management System" enacted in 1942. Under policies that prioritized military industries and demanded rational resource allocation [7], the city's population rapidly concentrated in heavy industrial zones like Ganjingzi. This was manifested in the need for large, flat land for heavy industries, which required water and electricity infrastructure along with substantial labor. Supporting facilities such as canteens, dormitories, schools, and churches for core industries like shipyards and chemical plants were constructed, forming unit-based residential areas. This completed the urban development influenced by the social system during this period.

### **2.3 Inertia Inheritance of Dalian Industrial Relics and Urban Morphology Transformation**

After the establishment of new China (after 1945): The continuation and transformation of the production-oriented urban system.

After World War II, Dalian was taken over by the Soviet Union. In the early days of the new China, due to its sound industrial foundation and high degree of nationalization, it quickly became a typical "production-oriented city" prioritized for national development. The spatial framework and large industrial zones established during the Japanese occupation, centered on heavy industry, were fully adopted and expanded. More importantly, the unit system model established by Japan during the war, which controlled labor and resources through factories, was highly compatible with the industrial system and the courtyard-style layout promoted by the new China [8]. Thus, the industrial heritage space in Dalian achieved a continuation and transformation of institutional logic at this time, smoothly transitioning from wartime control to a living and working space under the planned economy, influencing the city's form for decades to come.

Dalian's industrial heritage has completed its historical evolution, characterized by a clear transformation from an "open commercial port"

to a "networked industrial and commercial city" and finally to a "closed military-industrial city." The urban space has evolved from being traffic-oriented and networked to becoming policy-defined hierarchical zones. Research on Dalian's industrial heritage should not merely focus on describing individual architectural forms and structures, but must delve into the shifts in economic functions, the impact of major historical events, and how policies were implemented in the urban spatial framework. This "institutional-space" dynamic provides invaluable historical depth and serves as a powerful tool for understanding the fundamental logic of urban spatial design.

### **3. The Present Situation and Deficiencies of Industrial Relic Research**

China's industrial heritage research and practice projects have become increasingly active under the advocacy of cultural confidence. However, to truly extract the development path with Chinese characteristics and summarize the historical experience of success, it is necessary to avoid the past tendencies of "emphasizing end-stage development and utilization while neglecting preliminary background research" and "focusing on the protection of material remains while overlooking the exploration of social life." These tendencies have led to the flattening and one-sidedness of the industrial heritage protection cause and the value cognition of industrial remains, and will continue to constrain the excavation of their cultural significance in professional academic fields.

#### **3.1 Research Status: A Pragmatism Paradigm Dominated by "Transformation"**

Current research predominantly focuses on adaptive reuse, with discussions revolving around concepts like "renovation" and "repurposing." Examples abound of repurposing old factories into creative hubs, commercial complexes, museums, or public spaces. This transformation-centric paradigm inadvertently reduces industrial heritage to utilitarian objects-devaluing them as non-profitable abandoned buildings or reconfigurable spaces, often reduced to mere symbols. Such an approach isolates industrial architecture from its long historical evolution and complex social context, reducing it to static structures awaiting renovation. Consequently, associated industrial byproducts-including factory unit systems,

collective lifestyles, and even production methods are overlooked.

### **3.2 Research Gaps: Multidimensional Deficiencies in Fundamental Studies**

Taking Dalian as an example, although the city has a considerable number of industrial relics with complete sequences and distinctive characteristics, there are still huge gaps in the related Fundamental Research, which are mainly reflected in the following three dimensions:

Firstly, the research on the formation mechanism and the institutional background is lacking.

The morphological evolution of Dalian's industrial heritage is not merely a product of technological advancement or market-driven choices, but rather the result of the interplay between political power, wartime systems, and planning policies. Current research struggles to elucidate critical issues such as how institutional tools like the "Kwantung Prefecture Comprehensive Development Plan" centralized the allocation of Dalian's spatial resources and production factors, or how the city achieved the construction of a non-native intensive industrial system. The lack of studies on how institutions shaped spatial configurations makes it challenging to deduce Dalian's urban transformation, while its underlying processes and logic remain scarcely understood.

Secondly, the lack of social impact and daily life research.

Industrial heritage is not merely a collection of machinery and factory buildings, but also a living space for generations of people. Current research has largely overlooked the social and life histories embedded in these sites. Under specific historical contexts, what were the daily lives of workers and managers like? Within the resource rationing system, how did living conditions, diets, education, and healthcare differ between workers and their families across factory hierarchies? How did workplace competition and disciplinary measures affect individuals' physical and mental well-being? These human-centric dimensions—where industrial heritage's educational value and emotional resonance lie—have long been neglected due to fragmented historical records and faint material traces. This oversight has resulted in studies lacking depth and warmth, failing to construct a coherent historical narrative.

Thirdly, the lack of systematic evolution process

research.

Many studies have also focused on case studies of individual industrial zones, or isolated achievements with a holistic historical perspective that can conduct cross-sectional analyses of samples at a specific time point. However, the overall research direction still lacks observations of urban industrial heritage developed over long periods, failing to grasp it as a continuous and dynamically evolving system. Taking Dalian as an example, the port construction during the Russian Empire, the industrial and commercial networks during the Japanese Manchurian Railway period, the industrial relocation during the centralized monopoly era, and the nationalization after the establishment of New China—this series of changes constitutes a continuous and intrinsically linked process [9]. Nevertheless, research that systematically maps the spatial continuity and institutional change logic between heritage sites across different stages remains relatively scarce, leading to fragmented understanding of urban industrial heritage clusters and making it difficult to grasp their structural role in urban development as a whole. The research value of Dalian's industrial heritage extends far beyond preserving tangible structures like docks, railways, and factories through adaptive renovations. Its true significance lies in creating a unique analytical framework [10] that enables comprehensive examination of the dialectical interplay between institutional frameworks, spatial configurations, and urban memory. These industrial relics, as living witnesses to history, intricately connect the political-economic contexts, institutional strategies, and spatial planning practices of specific eras, forming a composite sample for observation and analysis. By affirming the value of such industrial heritage, it helps urban residents awaken historical consciousness, foster a sense of identity, and rediscover their cultural roots.

### **4. Conclusion**

Current research on industrial heritage remains trapped in ontological confusion. While studies focusing on the physical forms and future functions of industrial heritage dominate half of the academic discourse, few have made substantial contributions to exploring its historical formation and evolution. The excessive emphasis on "what industrial heritage

is" and "what it can be transformed into" has severely overlooked the fundamental question of "how it came to be." To break through this research dilemma, there is an urgent need to strengthen systematic foundational studies examining the formation and evolution of industrial heritage, its institutional context, and social life. A detailed analysis of the interactive mechanisms of multiple logics can not only accurately reconstruct the deep-seated drivers and specific pathways of urban transformation from the industrial to the post-industrial era, but also extract historical insights into critical issues such as urban spatial design, industrial upgrading, and community resilience building. We should prioritize and refine foundational research on industrial heritage, driving a paradigm shift in understanding. This involves moving beyond viewing industrial relics as isolated, static historical objects to recognizing them as dynamic social spaces embedded in urban fabric and undergoing continuous evolution. Such a perspective transformation will transform industrial heritage into a highly dynamic research frontier, injecting new vitality into interdisciplinary studies. In urban planning, this approach enables in-depth analysis of how spatial design standards and policy power mutually shape each other, thereby distilling universal spatial governance principles. Anthropological research can utilize these sites as fieldwork platforms to observe social structural changes, community network restructuring, and collective memory transmission, revealing profound impacts of industrialization on regional social forms. In creative and applied fields, site-specific design archaeology can uncover historical contexts, technical aesthetics, and place spirit, inspiring contemporary artistic creations and spatial innovation practices. This not only provides substantial conceptual support but also serves as an enduring source of inspiration for critical thinking.

This study establishes a richer interdisciplinary knowledge base for the preservation and interpretation of industrial heritage, while providing crucial support for transitioning spatial shaping in related disciplines toward cultural inheritance. Strengthening foundational research on industrial relics not only fills historical gaps but also creates fertile ground for exploring multidimensional values. Through systematic exploration of their evolutionary processes,

institutional contexts, and social lives, industrial relics can be recontextualized within the dynamic currents of history, revealing their multifaceted value as institutional carriers, social vessels, and spatial practices. Only through this approach can industrial heritage evolve from "examined structures" into "dialogue-worthy spaces," thereby realizing its true significance in cultural transmission and value innovation.

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