# Research on the Coupled Development Model of Historic Buildings and Urban Renewal Based on Collaborative Governance

Lin Tuo*

Gold Mantis School of Architecture, Soochow University, Suzhou, 215123, China

*13739180313@163.com

**Abstract.** Amid China's urbanization shift from incremental expansion to stock optimization, the contradiction between historic building protection and urban functional upgrading has grown increasingly prominent, and the traditional one-way management model struggles to resolve complex interest conflicts, leading to fragmented protection and homogenized renewal projects. This study first conducts a bibliometric visual analysis of global relevant literature from 2002 to 2025 based on the Web of Science Core Collection, finding an exponential growth in publications in this field (dominated by engineering and technology) yet a lack of systematic research on multi-agent collaborative governance mechanisms. In response, it introduces synergetics and collaborative governance theories to construct a four-dimensional coupled development model of "subject-space-function-mechanism", proposes a pluralistic co-governance paradigm of "government guidance, market operation, public participation, professional support", and designs implementation paths of "development benefit feedback" and "HBIM full-life-cycle empowerment". Empirical analyses of Suzhou Pingjiang Road and Beijing 798 Art District verify the model's effectiveness in balancing cultural inheritance with economic and social benefits, providing a theoretical framework and practical guidance for high-quality urban development in the stock era.

**Keywords:** Historic Buildings; Urban Renewal; Collaborative Governance;

## 1 Introduction

Global urbanization deepens the paradigmatic shift of urban development. In China, with urbanization rate exceeding 65%, urban construction enters a new stage of "stock optimization" and "connotation improvement"[1]. As the material carrier of urban memory, the protection and revitalization of historic buildings are key to urban renewal, yet there is a long-standing structural tension in practice: strict heritage regulations turn them into rigid, outdated urban "isolated islands"[2], while capital-driven over-commercialization damages historical context and causes the homogenized "thousand cities with the same face" phenomenon.



D. Magni et al. (eds.), *Proceedings of the 2026 3rd International Conference on Applied Economics, Management Science and Social Development (AEMSS 2026)*, Advances in Economics, Business and Management Research 389,
https://doi.org/10.2991/978-94-6239-672-2_27

Existing studies mostly focus on physical restoration technologies (architectural perspective) or spatial form control (planning perspective)[3], with few exploring multi-agent, multi-factor collaborative mechanisms from the interdisciplinary perspective of management and system theory. In essence, historic building protection and urban renewal form a complex giant system involving government, market and social interests, whose sound operation relies on the coupled coordination of subsystems [4] [5].

## 2 Research Trend Analysis Based on Bibliometrics

To clarify the evolution and cutting-edge trends of historic building conservation and urban renewal, this study retrieved 2015–2025 (including predictions) literature from the Web of Science Core Collection using the keywords "Historic Building", "Urban Renewal" and "Heritage Conservation", and conducted visual statistical analysis. Figure 1 shows annual publications in this field grew steadily from approximately 330 articles in 2015 to a 2025 peak of about 780 articles, reflecting its status as a lasting international academic focus amid global SDG attention and urban development model transformation. Figure 2 shows Italy leads in publications (approximately 600 articles), followed by the People's Republic of China (around 550 articles) and the USA (about 500 articles), with Spain and England having relatively lower outputs; China's strong second-place ranking reflects the urgent demand for relevant research amid its rapid urbanization. Figure 3 reveals engineering and technology disciplines dominate the field—Engineering (over 1,100 records) ranks first, followed by Construction Building Technology and Environmental Science, with Materials Science and Architecture accounting for smaller shares, indicating existing research focuses on physical space restoration and engineering implementation, with insufficient study on governance and multi-agent collaboration, laying a foundation for this paper's collaborative governance model and highlighting the need to fill the gap between technical and social governance research.

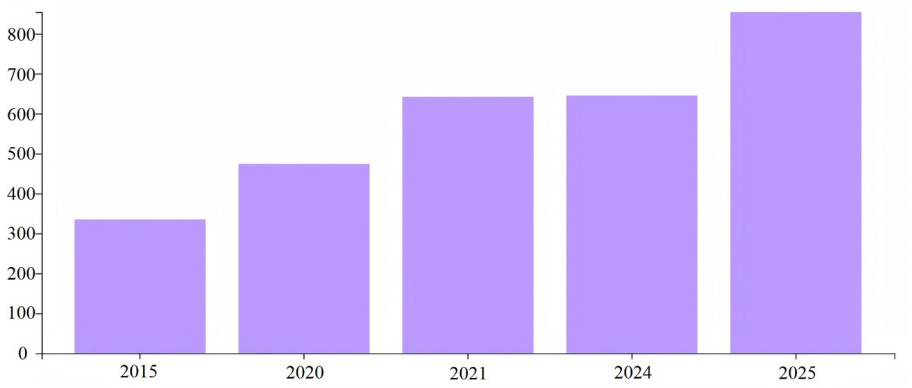


**Fig. 1.** Annual publication trend

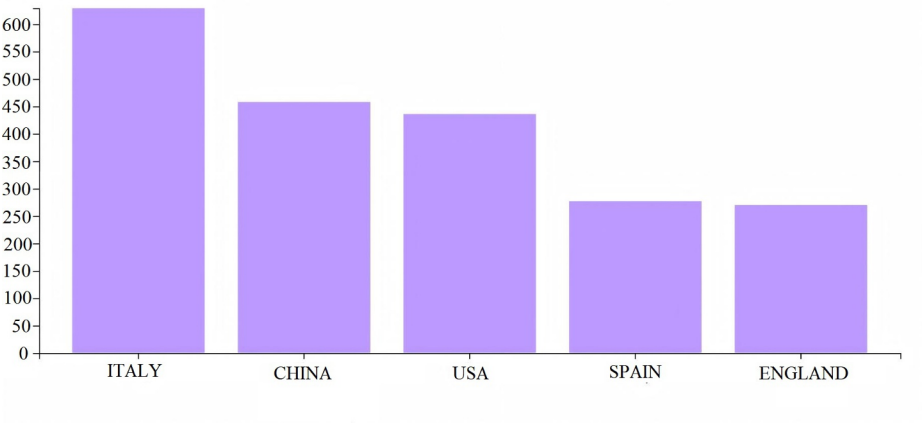


**Fig. 2.** Major publishing countries/regions

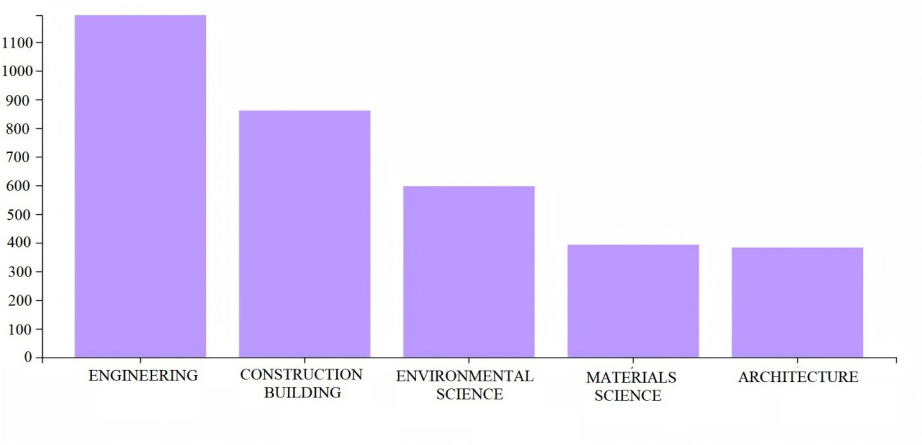


**Fig. 3.** Disciplinary distribution of relevant research

# 3 Diagnosis of Nonlinear Contradictions

## 3.1 Definition of Core Concepts and Theoretical Basis of Collaboration

Clarifying the core connotations and boundaries of historic buildings and cultural relics protection units—easily confused by the public yet distinct under China's regulations—is key to identifying their conflicts with urban renewal and advancing related work. Cultural relics protection units are government-designated high-value immovable cultural relics with three protection grades, strict authentication, cultural relics department administration and the "protection first" principle; historic buildings are non-relic ones announced by municipal/county governments, bearing local cultural memories, with flexible multi-department protection and permitted moderate revitalization.

Based on Haken's synergetics theory, cities are complex systems of economic, social and cultural subsystems. As core variables, historic building protection and urban renewal should form positive coupled synergy, but are often uncoordinated or even negatively synergistic in practice, requiring a shift from isolated interventions to regional coordinated development via new discursive practices[6]. This chapter analyzes the underlying logical contradictions from system theory and institutional economics perspectives, laying the groundwork for subsequent collaborative path exploration.

### 3.2 Core Contradictions

Historic building conservation and urban renewal are plagued by three interrelated contradictions that hinder their coordinated development, and single-dimensional intervention cannot achieve systemic optimization, so a multi-dimensional collaborative governance mechanism is urgently required.

The conflict between static protection and dynamic development[2] stems from their differing temporal-spatial logics: conservation pursues long-cycle cultural inheritance for historical authenticity, while urban renewal follows short-cycle capital circulation, making heritage conservation challenged by rapid urban modernization. The externality dilemma between public value and private benefits[4] arises from misaligned protection investment and development benefits, with high maintenance costs borne solely by the government or owners, turning conservation into a public-private game chip and causing governance deadlock. Improper functional replacement also leads to gentrification and hollowing-out dual entropy increase in functional activation[7]: over-commercialization displaces residents via gentrification, while overly rigid protection results in shabby facilities, low vitality and accelerated building deterioration.

In conclusion, one-sided measures like excessive capital intervention or passive static protection fail to optimize the system, and a multi-dimensional collaborative governance mechanism must be established to balance conservation and development, public and private interests, as well as material and social dimensions.

## 4 "Four-Dimensional Integrated" Development Model

### 4.1 Model Logic and Practical Path of Four-Dimensional Collaboration

To address systemic contradictions between historic building conservation and urban renewal, this paper develops a "subject-space-function-mechanism" four-dimensional coupled model. More than a theoretical framework, it is an operable practical algorithm that resolves subsystem fragmentation via cross-dimensional interaction and coordination, driving systemic order and synergy to realize cultural inheritance, economic development and livelihood improvement. Collaborative governance of the two is based on this framework, with each dimension applying theory-based strategies to fix traditional governance flaws and build an integrated system.

Subject Dimension (collaborative governance theory; "government guidance, market operation, public participation, professional support") addresses single-center flaws

via a multi-stakeholder trust network and clear rights-responsibility system: government as meta-governor, market capital via PPP, public local knowledge, professional technical support. A contractual benefit-risk sharing mechanism ensures win-win outcomes, replacing fragmented orders with holistic regional discourse[6].

Spatial Dimension (space syntax, historical context theories) eliminates heritage "isolation effect" through cross-scale integration: macro (conservation boundaries in territorial planning), meso (cultural corridors linking heritage into a "point-line-surface" network), micro (acupuncture-style micro-renewal for infrastructure upgrading and style preservation).

Functional Dimension resolves the conservation-utilization paradox via adaptive reuse and "production-living-ecology" integration: residential heritage uses "co-living courtyard" to retain residents; industrial heritage for cultural/creative functions, proving conservation/reuse drives sustainable development[8].

Mechanism Dimension ensures systemic operation via a full-life-cycle loop: interdepartmental joint approval streamlines procedures, "benefits for protectors" balances funding, and data-driven monitoring corrects deviations.

### 4.2 Empirical Test and Comparative Analysis of Typical Cases

To verify the universality, robustness and operability of the four-dimensional "subject-space-function-mechanism" coupled development model, this paper selects three representative Chinese cases of historic building conservation and urban renewal for comparative analysis in line with the "typicality, difference and representativeness" principles. These cases cover different heritage types, collaborative difficulties and development models, and embrace the model's four core dimensions, enabling a comprehensive test of its adaptability and application effect in diverse scenarios and providing practical support for the model's optimization, improvement and promotion (Table 1).

A comparative empirical analysis of Suzhou Pingjiang Road, Beijing 798 Art District and Changsha Baiguoyuan validates the four-dimensional model's scientificity and practicality. Pingjiang Road verifies its subject and function dimensions, proving it fit for fragile residential historic districts via government guidance and resident-oriented participation to avoid over-commercialization. 798 tests its space and function dimensions: spatial networking and adaptive reuse of industrial heritage for high-value cultural industries turn derelict factories into cultural assets, confirming feasibility. Baiguoyuan validates its subject and mechanism dimensions, with bottom-up public participation and efficient guarantee mechanisms advancing governance and balancing interests in mixed historic areas with complex property rights. In short, the interdependent four-dimensional model adapts well to diverse heritages and challenges; successful conservation and renewal relies on heritage attribute-based differentiated collaboration (case-specific balance points) rather than equal cross-dimensional efforts, further confirming the model's universality, robustness, operability and reference value for future projects.

**Table 1.** Comparison of collaboration models in three cases

| Comparative Dimensions | Suzhou Pingjiang Road | Beijing 798 Art District | Changsha Baiguoyuan |
|---|---|---|---|
| Core Collaborative Difficulties | Balance cultural protection and commercial development; | Integrate industrial building protection & functional innovation; balance space utilization & style preservation | Coordinate multi-subject interests; solve infrastructure & diverse resident demand problems |
| Verified Collaborative Dimensions | Subject collaboration + Function collaboration | Space collaboration + Function collaboration | Subject collaboration + Mechanism collaboration |
| Core Strategies | retain original residents & Su-style scenes | Preserve building main structure; implant creative/ cultural/ commercial functions; | "Micro-renovation"; build community co-construction mechanism |
| ImplementationPaths | Government-led, full infrastructure funding; encourage resident participation | Market-led, government-guided; introduce cultural enterprises; transform factory spaces; improve supporting facilities | Establish "community planner" system; solve livelihood issues via "co-living design"; |

## 5 Implementation path of collaborative development

Based on the "subject-space-function-mechanism" four-dimensional coupled model and case empirical analysis, this chapter proposes four systematic implementation strategies—institutional supply, economic balance, technological empowerment, social governance—to bridge the theory-practice gap.

Institutional supply: Establish an integrated "protection-renewal" planning system to break administrative barriers, integrate heritage protection and urban renewal plans, delineate rigid heritage "purple lines" in territorial spatial planning and implement two-way verification; adopt mixed land use and negative list management, allow 15%-25% compatible commercial/public service functions (retaining leading functions) and grant market entities functional adjustment autonomy outside the prohibited list.

Economic balance: Apply the TDR model to internalize renewal rent gaps, transfer historic district FAR to high-intensity development areas with a 1.1-1.3x incentive coefficient to cover protection costs; earmark 5%-8% of excess profits from preferential projects for a historic building protection fund, forming a "renewal-supported protection" capital closed loop.

Technological empowerment: Empower full-life-cycle management with HBIM—build high-fidelity digital twins via 3D laser scanning and UAV tilt photography, optimize reinforcement plans through structural/environmental simulation in design, and

realize intelligent monitoring and active prevention via IoT sensors and AI early warning in operation.

Social governance: Promote "symbiotic renewal" instead of passive resettlement; implement a community planner system and online-offline participatory design to safeguard residents' decision-making rights, abandon one-size-fits-all relocation, adopt the "co-living courtyard" model and property right replacement—relocate willing residents, transform space into cultural/creative facilities to attract new citizens, and integrate original and new residents.

## 6 Conclusions

Against the backdrop of China's urbanization shift from incremental expansion to stock optimization, this paper uses bibliometric, synergetic and multi-case analysis to explore the non-synergistic contradictions between historic building protection and urban renewal, identifying the systemic imbalance root as existing research's overemphasis on engineering over governance and three nonlinear contradictions (static protection vs dynamic development, public value vs private benefits, gentrification-hollowing dual entropy increase) leading to long-term systemic disorder; a four-dimensional (subject-space-function-mechanism) coupling model is thus constructed and empirically verified by three typical cases (Suzhou Pingjiang Road, Beijing 798, Changsha Baiguoyuan), confirming the need for targeted collaboration for different heritage types, institutional flexibility, economic incentives and technological empowerment as key variables, and corresponding strategies including flexible control systems, TDR, value feedback and HBIM/digital twins are proposed; in short, the collaborative development of the two is complex, requiring history respect and innovative balance of protection and development, and future efforts should focus on integrated legislation, interdepartmental collaboration, digital application and community motivation to realize governance transformation and preserve urban context.

## References

1. Zhang, G., Liu, X., & Luo, Q. (2025). Topic mining and evolutionary analysis of urban renewal policy texts in China. *Buildings*, 15(18), Article 3324. https://doi.org/10.3390/buildings15183324
2. Smith, A. (2023). *Heritage conservation in rapidly growing cities*. OSF Preprints. https://doi.org/10.31219/osf.io/teycu
3. Rasha, D., Shetty, S., & Khaleel, L. (2024). Restoration practices in heritage conservation. *In Advances in 21st Century Human Settlements* (pp. 1095–1110). Springer. https://doi.org/10.1007/978-981-99-8811-2_88
4. Haque, A. (2025). *The politics of heritage conservation in Karachi*. Palgrave Macmillan. https://link.springer.com/publisher/palgrave
5. Ma, C., Mo, L., & Wang, S. (2025). The coordinated development and evolutionary characteristics of "Port-Industry-City" system in Fangchenggang City of Western China. *City & Built Environment*, 3(1), Article 2. https://doi.org/10.1007/s44213-024-00040-5

6. Wang, X., & Zheng, G. (2024). Narrating regional coordinated development: Discursive practices in China's city-regions. *Cities*, 146, Article 104768. https://doi.org/10.1016/j.cities.2023.104768
7. Marty, J. (2025). The politics of blight: Recent literature on urban renewal. *Journal of Urban History*, 51(4), 945–950. https://doi.org/10.1177/00961442241234679
8. Mazzetto, S. (2023). Heritage conservation and reuses to promote sustainable growth. *Materials Today: Proceedings*. Advance online publication. https://doi.org/10.1016/j.matpr.2023.05.269