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ON CULTURAL HERITAGE CONSERVATION SCIENCE

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叙事的具象化：一种可交互的文化遗产展示设计框架

Embodied Engagement with Narrative: A Design Framework for Presenting Cultural Heritage Artifacts

资料来源：

Chu, J. H., & Mazalek, A. (2019). 具象参与和叙事：呈现文化遗产文物的设计框架 . 《多模态技术与交互》, 3(1), 1; https://doi.org/10.3390/mti3010001.

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摘要：越来越多的博物馆展品开始融入多模型技术和互动。然而，这些媒介分散了参观者的注意力，而无法专注于展出文物本身。本文提出了一种总体概念结构，用于在博物馆展品中设计文物的可交互式互动，从而理解其文化背景。研究结果表明，通过叙事角色与文物的互动可以帮助参观者者理解文物的意义，并与文物建立个性化关联。基于该项研究，我们提出了针对文化遗产领域使用 TENF 的设计建议，并描述了该研究的未来方向。

关键词：交互界面；互动式数字故事；数字文化遗产；框架

1 引言

本研究提出了一个“可交互式叙事框架(TENF)”来设计数字媒体，让参观者能与博物馆中的文化遗产文物产生互动。通过嵌入数字媒体，将数字资源与真实世界的物体和物理环境相耦合，允许交互者通过手势和富有表现力的互动与计算数据进行交互。当前对文物（例如陶器、青铜 / 木制工具、面具、服装）的呈现方式（例如，描述性文本、图像）缺乏背景的叙事，无法将参观者与文物联系起来。触摸文物的感官经历能给参与者一种神秘的体验，引发对物体意义的领悟，并与文物建立起亲密的个人联系。

本研究使用混合方法来展示如何设计交互，

Abstract: More and more museum exhibits are beginning to incorporate multi-model technologies and interactivity. However, these media distract visitors from focusing on the cultural relics themselves. This paper proposes an overall conceptual structure for designing interactive interactions of cultural relics in museum exhibits to understand their cultural background. The research results show that the interaction between narrative characters and cultural relics can help visitors understand the meaning of cultural relics and establish personalized connections with them. Based on this research, we propose design suggestions for the use of TENF in the field of cultural heritage and describe the future direction of this research.

Keywords: tangible interfaces; interactive digital storytelling; digital cultural heritage; framework

1 Introduction

This study proposes a"Tangible and Embodied Narrative Framework (TENF)"for designing digital media that enables visitors to interact with cultural heritage artifacts in museums. By embedding digital media and coupling digital resources with real-world objects and physical environments, it allows interactors to engage with computational data through gestures and expressive interactions. Current ways of presentation (e.g., descriptive texts, images) of cultural heritage artifacts (e.g., pottery, bronze/ wooden tools, masks, garments) lack context and narrativity and do not connect visitors with the artifacts. The sensory

以吸引博物馆参观者与文化遗产文物间产生互动。首先，研究考察了互动叙事学术和交互框架，以强调叙事框架的必要性。然后，通过文献综述和对现有框架的研究结果，构建起一个综合框架 ——TENF，该框架让参观者参与文物的相关实践。接着，文章通过两个项目来说明 TENF；最后，提出在文化遗产领域使用 TENF 的设计建议和研究的局限性以及未来的发展方向。

2 文献综述

2.1 互动叙事

诸如移动应用程序、网络应用程序或数字游戏等数字媒体改变了故事的称述方式，使其以互动的方式展开。在互动叙事中，互动者通过他们的行为来创造或影响一个戏剧性的故事情节。通过对互动叙事学术的研究，我们可以深入了解数字媒体的设计是如何激发参观者对博物馆展品中文化遗产文物的参与。

2.2 可交互的叙事系统

研究可交互的框架，以及现有的博物馆和非博物馆有形和具象叙事项目，诸如上述，有助于揭示了博物馆项目可以采取的设计方向，以更好地整合互动叙事和具象交互，让参观者参与叙事视角。

2.3 走向叙事框架

我们从互动叙事的文献和上述例子中提取了以下叙事设计元素：（1）身体参与（2）叙事角色（3）叙事后果。这些元素可以帮助互动者从叙事的角度来解释一个故事。下面的表 1 说明了每个项目中会出现的元素。

3 可交互的叙事框架 (TENF)

本文提出的 TENF 由上面介绍的三个维度组成，即叙事与非叙事、内部与外部、本体与探索，用于帮助设计师以各种方式整合物理互动、叙事角色和叙事后果等设计元素 (见图 1) 。

叙事性与非叙事性。叙事谱与非叙事谱 (见图 1) 描述了互动者在叙事坏境中互动的位置，

experience of touching artifacts can provide participants with a mysterious experience, triggering an understanding of the object's significance and establishing an intimate personal connection with it.

This study uses a mixed-method approach to demonstrate how to design interactions that attract museum visitors to engage with cultural heritage artifacts. First, it examines the academic literature on interactive narrative and interaction frameworks to emphasize the necessity of a narrative framework. Then, through a literature review and the study of existing frameworks, a comprehensive framework—TENF,is constructed, which enables visitors to participate in artifact-related practices. Next, the article illustrates TENF through two projects; finally, it presents design recommendations for using TENF in the field of cultural heritage, as well as the limitations of the research and future directions.

2 Literature Review

2.1 Interactive Narrative

Digital media such as mobile applications, web applications, or digital games have changed the way stories are told, making them interactive. In interactive narrative, interactors create or influence a dramatic storyline through their actions. By studying the academic literature on interactive narrative, we can gain a deeper understanding of how the design of digital media can stimulate visitors'participation with cultural heritage artifacts in museums.

2.2 Tangible Interactive Narrative Systems

Studying tangible interaction frameworks and existing museum and non-museum tangible and embodied narrative projects, such as those mentioned above, helps reveal the design directions that museum projects can take to better integrate interactive narrative and embodied interaction, allowing visitors to participate in narrative perspectives.

2.3 Towards a Narrative Framework

We extracted the following narrative design elements from the literature on interactive narrative and the above examples: (1) bodily participation, (2) narrative roles, and (3) narrative consequences. These elements can help interactors interpret a story from a narrative perspective. Table 1

表 1：现有项目中框架的叙事设计元素
Table 1. Narrative design elements for a framework identified in existing projects

类型 Type	项目名称 Project name	物理互动 Physical interaction	叙述角色 Narrative role	叙述结果 Narrative outcome
非博物馆项目 Non-museum	三角形 Triangle	用三角形图形分别代表人物、事件和场景。 Using triangular pieces to represent characters, events, and scenes.	“Interactor”是负责把控故事发展的叙述者。 The “Interactor” is the narrator who steers the story.	故事随着参与者将这些三角形拼接起来而展开。 The tale unfolds as participants fit these triangles together.
	任天堂 Nintendo	该界面能实现类似置身游戏世世界中的手势操作。 The interface supports gesture-based actions that make you feel inside a game world.	“Interactor”在游戏世界里就是一名玩家。 Within that world, the “Interactor” is a player.	恰当的游戏操作可能会导致获胜或失败。 Proper play may lead to victory or defeat.
	具象的空间叙事 Tangible Spatial Narrative	有形的抵押品代表着故事中的角色。 Tangible pawns stand for characters in the story.	“Interactor”是一种聚焦工具，用于剖析故事。 The “Interactor” is a focusing tool used to dissect the narrative.	移动这些棋子可以展示故事的不同部分。 Moving these pieces reveals different parts of the story.
	NOOT	物理标签会记对话的不同部分。 Physical tags record distinct segments of dialogue.	“Interactor”是一款用于记录故事的创作工具。 The “Interactor” is a storytelling device for capturing the narrative.	播放设备会在触发时播放音频记录。 A playback unit triggers and replays the audio logs.
博物馆项目 Museum	观察浮游生物种群的互动 Observing Plankton Populations	交互式桌面上的物理环件可充当放大镜使用。 A physical ring on the interactive table functions as a magnifying glass.	“Interactor”是一种外部聚焦者。 The “Interactor” serves as an external focuser.	围绕着这个物理环移动可以观察到浮游生物的数量变化。 Moving the ring around shows changes in the quantity of plankton.
	午餐柜台模拟游戏 Lunch Counter Simulation	实体的长条桌和凳子。 A solid wooden table and stools.	“Interactor”是在实际场景中起着焦点引导的作用。 The “Interactor” acts as the focal guide within the real-world setting.	静坐活动那个的音频播放时没有任何互动环节。 Seated participants listen to an audio play with no interactive component.
	乌托邦 Youtopia	交互式桌面上的实物能够对故事进行操作和调整。 Tangible objects on an interactive tabletop let users manipulate and adjust the story.	“Interactor”是一个虚拟城市的创建者。 The “Interactor” is the creator of a virtual city.	参与者们以多种可持续的方式来建设这座城市。 Participants build the city in multiple sustainable ways.
	海牙和大西洋墙展览 The Hague and the Atlantic Wall Exhibition	有形的实物能够对故事进行操作和调整。 Tangible artifacts allow manipulation and adjustment of the story.	“Interactor”是一种聚焦工具，用于剖析故事。 The “Interactor” is a focusing tool for dissecting the narrative.	围绕这些物体移动会呈现出故事不同的部分。 Moving around these objects reveals different parts of the story.

这决定了互动的物理形态。叙事或非叙事互动提供了想象和联系文化背景（如时间和地点）的感官体验。

内部与外部。本框架中的内部与外部维度（见图 1）捕捉了故事中互动者的叙事视角。与叙事与非叙事的区别在于，内部与外部的范围涉及互动者在心理上对叙事视角的认同。内部或外部互动提供了特定的叙事视角，访问者可以假设，以便他们可以与展品及相关活动产生互动。

本体论与探索性。本体论与探索谱（见图 1）捕获了互动者如何与故事情节互动。本体论或探索性的互动有助于交流信息和引导参观者

below illustrates the elements that appear in each project.

3 Tangible and Embodied Narrative Framework (TENF)

The TENF proposed in this paper is composed of the three dimensions introduced above, namely diegetic vs. non-diegetic, internal and external, and ontology and exploration, to assist designers in integrating design elements such as physical interaction, narrative roles, and narrative consequences in various ways (see Figure 1).

Diegetic vs. Non-Diegetic. The diegetic and non-diegetic spectrum (see Figure 1) describes the position of the interactors in the narrative environment, which determines the physical form of the

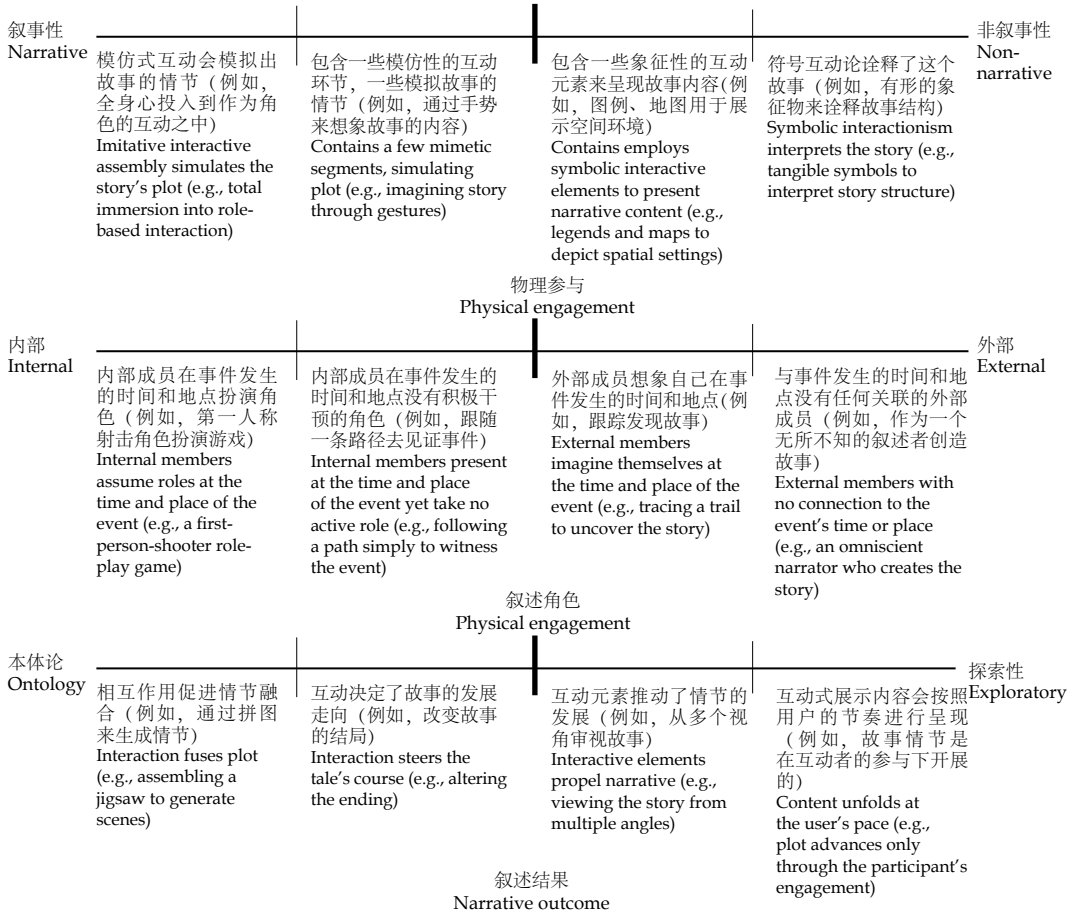

图 1：构成有形和具象叙事框架 (TENF) 的三个维度
Figure 1. Three spectra comprising the Tangible and Embodied Narrative Framework (TENF)

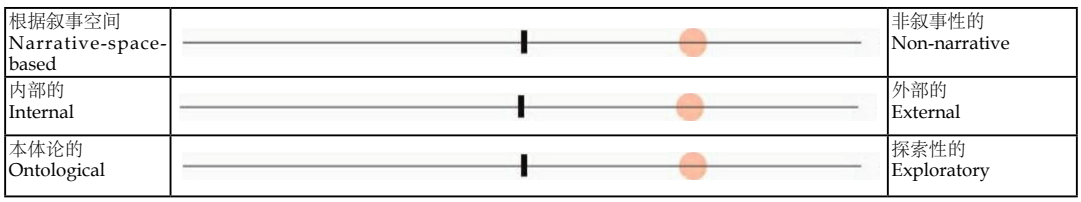

图 2：将可交互叙事项目映射到 TENF
Figure 2. Mapping the Tangible Spatial Narratives project onto the TENF

的体验。

结构的交互性叙事框架。TENF 为设计、生成或分析有形和具象的叙事互动提供了一个总体概念结构。该框架可以将项目映射到三个维度中每个维度的连续体上（见图 1）。

4. 试点和案例研究项目

在“Mapping Place”和“多感官祈祷坚果”两个项目中，研究通过创建一个使用数字和实

interaction. Narrative or non-narrative interaction provides sensory experiences that allow for imagination and connection to cultural contexts (such as time and place).

Internal and external. The internal and external dimension in this framework (see Figure 1) captures the narrative perspective of the interactors in the story. Unlike the distinction between diegetic and non-diegetic, the internal and external range

图 3：Mapping Place 展览中桌面周围的互动
Figure 3. Interaction around the tabletop in the Mapping Place exhibition

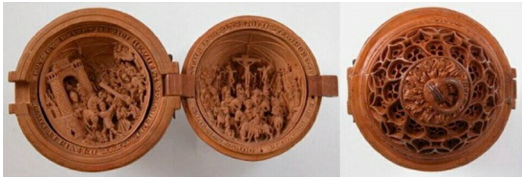

图 4：16 世纪祈祷坚果的内部（左）和外部（右）（图片由大都会艺术博物馆提供）
Figure 4. The interior (left) and exterior (right) of a 16th-century prayer nut (Image courtesy of the Metropolitan Museum of Art)

体媒体来模拟传统文化实践的互动装置，并在期间开发并探索了 TENF。

4.1 试点项目：Mapping Place（2013—2014 年）

该项目模仿刚果卢巴人的卢卡萨板创造了一个互动桌面，参观者可以用它来讲述自己的家庭、朋友和邻居的故事（见图 3）。在识别评估对 Mapping Place 项目在三个维度的映射定位后，在下一个项目中构建了“多感官祈祷坚果”，以非叙事性交互引导参观者与卢卡萨板文化视角深度互动。

4.2. 案例研究：多感官祈祷坚果（2014—2016 年）

该项目聚焦于 16 世纪荷兰人的祈祷坚果（见图 4），关注 3 个不同的感官 —— 触觉、躯体和嗅觉，创建了三个不同的与传感器和微控制器连接的文物复制品，以实现互动。该项目使参观者能够 (1) 将文物置于情境中以及 (2) 建立个性化的联系。

4.3 试点和案例研究项目的结论

基于 Mapping Place 项目和文献研究，我们开发了 TENF，通过三个维度促进参观者

involves the psychological identification of the interactors with the narrative perspective. Internal or external interaction provides a specific narrative perspective that visitors can assume so that they can interact with the exhibits and related activities.

Ontological and exploratory. The ontological and exploratory spectrum (see Figure 1) captures how interactors engage with the narrative plot. Ontological or exploratory interaction helps convey information and guide the visitors'experience.

Structural interactive narrative framework. The TENF provides an overall conceptual structure for designing, generating, or analyzing tangible and embodied narrative interactions. The framework can map projects onto the continuum of each dimension (see Figure 1).

4 The Pilot and Case Study Projects

In the two projects below, "Mapping Place", and"Multi-Sensory Prayer Nuts" , research is conducted through the creation of an interactive installation using digital and tangible media to simulate traditional cultural practices, and developed and explored TENF during this period.

4.1 Pilot Project: Mapping Place (2013–2014)

Inspired by the Lukasa board of the Luba people of Congo, the project created an interactive tabletop where visitors could use it to tell stories about their own families, friends, and neighbors (see Figure 3). After identifying and evaluating the three-dimensional mapping orientation of the Mapping Place project, the next iteration constructed the"multi-sensory prayer nuts," using non-diegetic interaction to guide visitors into a deeper engagement with the cultural perspective embodied by the Lukasa board.

4.2 Case Study: Multi-Sensory Prayer Nuts (2014–2016)

The project focus on 16th-century prayer nut(see Figure 4), engaging three distinct senses—tactile, somatic, and olfactory,created three distinct replicas of the artifact, each embedded with sensors and microcontrollers to enable interaction .The project enabled visitors to (1) contextualize the artifacts and to (2) make personalized

与文化视角的互动。然后在案例研究“多感官祈祷坚果”应用 TENF，设计互动体验以增强叙事参与，并强调文化背景在设计中的关键作用。

5 结论

5.1 设计建议

基于 TENF 框架的研究表明，整合数字媒体、叙事与具身互动能有效促进参观者对文化遗产的深度参与。设计建议如下：（1）模拟文化实践。通过数字化文物的互动设计，以叙事或非叙事方式抽象呈现文化形式，结合手势操作与多感官体验，在数字与文物间建立联系。（2）将参观者与文化观点联系起来。设计需明确参观者的叙事角色，通过背景引导帮助理解文物的原始意义和原始用户对实践的解读方式。（3）提供同步数字反馈。以本体论或探索性方式实时反馈互动结果（如音频、感官提示），帮助参观者调整行为并理解文化实践，避免意义混淆，最终接近原始文化体验。

5.2 局限性和未来方向

在对 TENF 框架进行应用与评估后，研究总结了四个局限性和未来方向：（1）组合局限性；（2）动态交互需求；（3）专业视角缺失；（4）实施环境限制。未来应探索不同维度组合、动态交互设计，并与博物馆专业人士合作进行实地验证。

结论

TENF 框架通过三个关键维度：叙事性 / 非叙事性、内部 / 外部、本体论 / 探索性的构建，指导设计师创建沉浸式文化遗产互动体验，帮助参观者通过数字重建理解文物的原始语境。该框架已在 Mapping Place 和多感官祈祷坚果项目中验证，能将传统展览转化为更具参与性的文化对话空间，推动博物馆体验的数字化转型。

（杨笛、蒋来编译）

connections.

4.3 Findings from the Pilot and Case Studies

Based on Mapping Place and literature, we developed TENF, It fosters visitor engagement with cultural perspectives across three spectra. We then applied TENF to the Multi-sensory Prayer Nuts case study, designing interactions that heighten narrative participation and foreground the importance of cultural context.

5 Conclusion

5.1 Design Recommendations

Research with TENF shows that integrating digital media, narrative, and embodied interaction deepens engagement with heritage.

Recommendations: (1)Simulate cultural practice: Digitally re-create artifacts so that cultural forms are abstracted diegetically or non-diegetically, linking gesture and multisensory feedback to the physical object. (2)Associate Visitors with Cultural Perspectives:Define the visitor’s narrative role and supply background that clarifies the artifact’s original meaning and its users’ interpretations. (3)Provide Simultaneous Digital Feedback: Offer real-time, ontological or exploratory responses (audio, sensory cues) so visitors can adjust their actions, avoid misinterpretation and approach the original experience.

5.2 Limitations and Future Work

Four limitations emerged: (1) combinatorial constraints, (2) need for dynamic interaction, (3) absence of professional perspectives, (4) environmental restrictions. Future research should explore alternative dimensional combinations, dynamic interaction design and on-site validation with museum professionals.

Summary

TENF—structured around diegetic/non-diegetic, internal/external and ontological/exploratory dimensions—guides designers in crafting immersive heritage interactions that help visitors grasp artifacts’ original contexts through digital reconstruction. Validated in Mapping Place and the Multi-sensory Prayer Nuts, the framework turns traditional exhibitions into participatory cultural dialogues and advances the digital transformation of museum experiences.

(translated and edited by
Yang Di, Jiang Lai)

实践案例 Case Study

阿姆斯特丹殖民遗产展示中的空间叙事与特征

The Spatial Narratives and Characteristics of Colonial Heritage Representation in Amsterdam

资料来源：

Emmanuel Akwasi Adu-Ampong, Simone Berg. 阿姆斯特丹导游讲解中奴隶制与殖民遗产的空间叙事与表征 .《遗产旅游杂志》20:1,59-77,DOI:10.1080/1743873X.2024.2382483(2025).

Source：

Emmanuel Akwasi Adu-Ampong, Simone Berg. The spatial narratives and representation of slavery and colonial heritage on guided tours in Amsterdam. *Journal of Heritage Tourism*,20:1,59-77,DOI:10.1080/1743873X.2024.2382483(2025)

1 引言

随着对殖民遗产的研究不断深入，为能更好的对这一遗产类型进行展示，以空间叙事为切入点的文旅融合展示方式，正日益凸显其独特的阐释价值与实践潜力。

基于此，本文选取了荷兰阿姆斯特丹为研究对象，重点阐释两个核心问题，一是阐释殖民遗产的空间叙事路径，二是建构殖民遗产空间叙事的结构与要素。

本文研究了两个问题，一是何种形态的叙事空间，更能吸引公众产生对殖民遗产的兴趣和共鸣；二是在公众参与的基础上，为城市殖民遗产空间叙事绘制遗产地图。基于此，这些调查研究可以为解决欧洲城市中城市发展与殖民遗产保护传承之间的问题提供潜在解决方法。

接下来，本研究首先回顾了殖民遗产保护的既有文献，进而提出研究方法，在分析研究对象的基础上，归纳核心要素，最终进行总结与讨论。

2 研究背景综述与研究方法

在现有研究中，对阿姆斯特丹城市遗产的特征描述有以下两点，一是多聚焦于殖民地国家和美洲种植园区的奴隶制影响下的遗产，

1 Introduction

Amidst the deepening research on colonial heritage, the integration of cultural tourism with spatial narratives has demonstrated significant potential for the representation and interpretation of this heritage type.

Based on this, this study selects Amsterdam, the Netherlands, as the research object, focusing on two core questions: first, to elucidate the pathways of spatial narratives for colonial heritage, and second, to construct the structure and elements of such narratives.

This paper addresses two key issues: first, what forms of narrative spaces are more likely to engage the public and evoke interest and resonance with colonial heritage; and second, based on public participation, to map the spatial narratives of urban colonial heritage. These investigations can provide potential solutions to the challenges of balancing urban development with the preservation and transmission of colonial heritage in European cities.

Following this, the paper begins with a literature review on colonial heritage preservation, summarizes the research methods, discusses the findings, and concludes by highlighting key elements.

2 Literature Review and Research Methods

Existing research on Amsterdam's urban heritage has two main characteristics: first, it predominantly focuses on the impact of slavery in former colonized countries and

而对空间叙事的研究相对较少；二是殖民城市记忆长期被排除在主流史学叙事之外。而历史上，值得关注的是，17 世纪在荷兰史学中被赋予特殊地位，这一被称为“黄金时代”的时期常被描述为荷兰通过贸易、科学与艺术成就登上全球经济巅峰的历史阶段。主流叙事多强调“一个年轻而偏远的共和国，如何在政治、经济和文化领域取得惊人成就”的“奇迹论”。然而，近年批判性研究揭示，这一所谓“奇迹”实际上是建立在通过奴隶制和残酷殖民手段对他人、土地和资源的剥削之上，致使“黄金时代”在当前历史反思的公共讨论中产生认知冲突。

在此背景下，本研究旨在系统考察阿姆斯特丹文旅如何通过空间叙事，再现 17 世纪奴隶制与殖民遗产，特别是解构主流叙事中被隐藏的历史时空维度。

研究方法以具体个体案例研究串联，系统阐述阿姆斯特丹城市遗产对殖民遗产的空间叙事机制，同时着重关注以下三个角度：（1）空间场景中行为，(2)公众参与的互动模式，(3)空间叙事策略及建构过程。旨在通过这一研究，不仅分析空间叙事的表征，也深入探讨空间叙事在阐释遗产重要内涵中的积极作用。

3 研究对象路径选择与节点选择

在参与调研过程中发现，四条“免费步行游览路线”（红、橙、黄、绿线路）的行程中，导游平均会在九个站点停留并进行讲解。在这九个停留点中，平均有两至三个站点涉及十七世纪历史、殖民主义和 / 或奴隶制相关主题。两条“付费步行游览路线”（蓝、紫线路）平均包含十个停留站点，其中同样平均有两至三个站点会讲述与十七世纪、殖民主义和 / 或奴隶制相关的叙事内容。此外，“运河游船”（粉红、棕色线路）在航行途中平均会突出展示十四个景点，其中约三个停留点会涉及十七世纪、殖民主义和 / 或奴隶制相关主题。由于阿姆斯特丹市中心运河网络密集，粉红与棕色两条“运河游船”线路的航行路线存在显著差异且重叠部分有限。主要航行河道包括绅士运河、王子

American plantation regions, with relatively fewer studies on spatial narratives; and second, the memory of colonial cities has long been excluded from mainstream historical narratives. Historically, the seventeenth century holds a special place in Dutch historiography, often referred to as the “Golden Age”, described as a period when the Netherlands ascended to the pinnacle of the global economy through trade, science, and artistic achievements. The dominant narrative emphasizes the “miraculous” story of how a “small and relatively remote Republic” achieved remarkable advancements politically, economically, and culturally. However, recent critical research reveals that this so-called “miracle” was built on the exploitation of other people, land, and resources through slavery and brutal colonization, creating dissonance around the term “Golden Age” in contemporary public debates on historical reckoning.

Against this backdrop, this study systematically examines how Amsterdam’s cultural tourism represents the spatial narratives of seventeenth-century slavery and colonial heritage, particularly in deconstructing the hidden historical dimensions of dominant narratives.

The research method involves linking specific case studies to systematically elaborate on the mechanisms of spatial narratives for colonial heritage in Amsterdam. It focuses on three key perspectives: (1) behaviors in spatial settings, (2) interactive modes of public participation, and (3) strategies and construction processes of spatial narratives. Through this approach, the study not only analyzes the representation of spatial narratives but also delves into their role in interpreting the significant connotations of heritage.

3 Selection of Research Paths and Key Stops

During the participatory observations, it was found that the four “free walking tours” (Red, Orange, Yellow, and Green routes) included an average of nine stops where guides provided explanations. Among these, two to three stops typically addressed themes related to the seventeenth century, colonialism, and/or slavery. The two “paid walking tours” (Blue and Purple routes) averaged ten stops, with similarly two to three stops dedicated to narratives about the seventeenth century,

运河、皇帝运河、黄金湾或船屋巷以及开放港口区域。当经过重要地标和 / 或旅游景点时，游船通常会减速以便进行景点介绍和相关历史叙述。针对“免费步行游览”与“付费步行游览”线路的对比分析显示，两者的停留站点设置及叙事内容具有高度相似性，仅存在少量差异。如图 1 所示的地图标注，各步行线路共有的核心停留站点已作重点标示。

图 1：阿姆斯特丹市中心游览路线关键站点示意图（作者自绘，非比例尺）
注记说明：(1) 达姆广场：作为城市中心广场及历史核心区，设有国家纪念碑与新教堂；(2) 荷兰东印度公司及西印度公司总部旧址：前荷属东印度公司 (VOC) 与西印度公司 (WIC) 贸易机构所在地；(3) 运河体系（市中心主要河道）：包括绅士运河、皇帝运河、王子运河、老前堡堤岸及老后堡堤岸等；(4) 贝居安会院：始建于中世纪的封闭庭院，内设阿姆斯特丹最古老木构建筑及新教、天主教堂各一座；(5) 称量屋：原为阿姆斯特丹城门建筑；(6) 伦勃朗故居：著名画家伦勃朗旧居改建的博物馆；(7) 安妮之家：纪念二战期间犹太裔日记作者安妮 · 弗兰克的专题博物馆；(8) 犹太区：自十六世纪至二战迫害期间犹太社群主要聚居区；(9) 交易所广场：设有国家纪念性建筑贝尔拉格交易所，象征阿姆斯特丹作为全球证券交易发源地的历史地位。
Figure 1. Map of Key Stops in Amsterdam's City Center (Authors' own illustration—not drawn to scale)
Notes: (1) Dam Square: The central square and historic heart of Amsterdam, where the National Monument and the New Church are located; (2) Headquarters of the VOC and WIC: The former headquarters of the Dutch East India Company (VOC) and the Dutch West India Company (WIC); (3) Canals (major ones within the city center): Including the Herengracht, Keizersgracht, Prinsengracht, Oudezijds Voorburgwal, and Oudezijds Achterburgwal; (4) The Begijnhof: An inner court dating back to the Middle Ages, housing Amsterdam's oldest wooden house, a Protestant church, and a Catholic church; (5) The Waag: Originally a city gate of Amsterdam; (6) Rembrandt House: A museum and the former home of the famous painter Rembrandt; (7) Anne Frank House: A museum dedicated to Jewish wartime diarist Anne Frank; (8) Jewish Quarter: The neighborhood that was home to the Jewish community from the sixteenth century until their persecution during World War II; (9) Beursplein: A square featuring the national monument Beurs van Berlage, symbolizing Amsterdam's historical role as the birthplace of the global stock exchange.

4 达姆广场

作为阿姆斯特丹的历史中心与主要公共广场，该场地是“六条步行游览线路”中四条（红、

colonialism, and/or slavery. Additionally, the “canal cruises” (Pink and Brown routes) highlighted an average of fourteen sites during the boat tours, with approximately three stops involving themes from the seventeenth century, colonialism, and/or slavery. Due to the dense canal network in Amsterdam's city center, the Pink and Brown canal cruise routes differed significantly, with limited overlap. The main canals traversed included the Herengracht, Prinsengracht, Keizersgracht, the Golden Bend or Houseboat Alley, and the open harbor area. The boats often slowed down when passing significant landmarks or tourist sites to allow for introductions and historical narratives.

A comparative analysis of the “free walking tours” and “paid walking tours” revealed high similarity in stop selections and narrative content, with only minor differences. As illustrated in Figure 1, the key stops shared across the walking routes are prominently marked.

4 Dam Square

As the historical heart and main public square of Amsterdam, Dam Square serves as the starting point for four out of the “six walking tour routes” (Red, Yellow, Green, and Blue-lines). Here, guides provide introductory narratives that establish the foundation for subsequent storytelling. As Tess, the Blue-line guide, explained:

The Dam holds crucial historical significance as the narrative starting point for Amsterdam's urban development. This site provides the fundamental cognitive framework for tour explanations-visitors must first comprehend its historical origins to effectively connect with subsequent site interpretations.

The interpretive themes at this location primarily cover: the Royal Palace, Dutch monarchy, Amsterdam's urban origins, the National Monument, the Red-Light District, the New Church building, and other quintessential Dutch cultural elements. While seventeenth-century history constitutes only a minor portion of the narratives here, all guides mention the Royal Palace-originally built in the seventeenth century as the city hall. Guides starting their tours here also briefly discuss Amsterdam's seventeenth-century development, emphasizing the Dutch shipping fleet, trade activities, and the accumulated power and wealth of that era.

黄、绿、蓝线）的起始点。在此处，导游会进行游览介绍，并为后续的叙事奠定基础。正如蓝色线路导游 Tess 所解释的那样：

达姆广场具有至关重要的历史地位，因其作为阿姆斯特丹城市发展史的叙事起点。该场域为游览讲解提供了基础性认知框架，游客需首先理解此处的历史渊源，方能有效衔接后续的景点阐释。

该站点的解说主题主要涵盖以下内容：皇家宫殿、荷兰王室、阿姆斯特丹城市起源、国家纪念碑、红灯区、新教堂建筑及其他典型荷兰文化元素。尽管十七世纪历史仅占该处叙事的小部分，但所有导游都会提及始建于十七世纪、当时作为市政厅使用的皇家宫殿。以此处为起点的导游还会简要论及阿姆斯特丹在十七世纪的发展，重点强调荷兰航运舰队、贸易活动以及该时期荷兰所积累的权势与财富，突显皇家宫殿顶部的金色船饰（如图 2 所示）这一十七世纪航运与贸易活动的象征符号。值得注意的是，除蓝色线路导游简要介绍荷兰东印度公司 (VOC) 起源并将其与殖民主义相关联外，达姆广场的解说叙事中均未涉及殖民主义或奴隶制相关内容。

图 2：达姆广场上的皇家宫殿
Figure 2. The Royal Palace on the Dam Square

5 荷兰东印度公司 (VOC) 总部旧址

荷兰东印度公司 (VOC) 是 1602 年成立的全球首家股份制公司，拥有贸易垄断权和准国家权力。其阿姆斯特丹总部旧址（现为大学建筑）（如图 3 所示）是城市导览的核心站点。在六条步行游览线路中，四条线路（橙、黄、蓝、

They particularly highlight the golden ship ornament atop the Royal Palace (as shown in Figure 2) as a symbolic representation of seventeenth-century maritime trade. Notably, with the exception of the Blue-line guide's brief mention of the Dutch East India Company (VOC) origins and its connection to colonialism, none of the Dam Square narratives address themes of colonialism or slavery.

5 VOC Headquarters

The Dutch East India Company (VOC), established in 1602 as the world's first joint-stock company, possessed trade monopolies and quasi-state powers. Its former Amsterdam headquarters (now a university building, shown in Figure 3) serves as a core stop on city tours. Among the six walking tour routes, guides on four lines (Orange, Yellow, Blue, and Purple) select this site to deliver their primary historical narratives about the seventeenth century. At this location, all guide commentaries focus exclusively on themes of wealth and power from that era, omitting other historical dimensions. The Purple paid tour guide particularly emphasizes the VOC's fleet size and global dominance, while notably highlighting the significant Jewish participation in the company. The narrative also covers the building's functional evolution from VOC headquarters to its current academic use.

The Blue paid walking tour guide adopts a distinct narrative focus, examining the origins, operational models, and historical impacts of both the VOC and Dutch West India Company (WIC). Field observations confirm the commentary concentrates on these two chartered companies' activities. Significantly, this guide deliberately foregrounds the period's darker aspects-detailing how the VOC enforced colonial rule through oppression and massacres, including the systematic plundering of colonial spice resources at minimal cost.

6 WIC Headquarters

The Dutch West India Company (WIC), established in 1621, held monopoly rights over all trade and shipping activities west of the Cape of Good Hope, primarily engaging in transatlantic slave trade. Given this historical significance, the former WIC headquarters building now serves as a key stop across various tour routes. The Red freewalking tour (Red line) delivers its core

紫线）的导游选择在此处，集中展开关于十七世纪的主要历史叙事。在此处，导游的解说内容均聚焦于该时期的财富与权力主题，未涉及其他历史维度。其中，紫色付费线路导游的叙述着重强调船队规模论证、全球霸主地位，并特别指出 VOC 成员中犹太裔的重要参与。此外，其解说还涵盖该建筑从 VOC 总部至当代大学校舍的功能变迁。蓝色付费步行游览线路（蓝线）导游的叙事重点则在于探讨 VOC 及西印度公司 (WIC) 的起源、运营模式及其历史影响。实地观察证实，其解说确实聚焦于这两家特许公司的历史活动。值得注意的是，其叙事着重强调了该时期的阴暗面：详细阐释了 VOC 通过压迫与屠杀手段实施殖民统治的历史事实，包括以极低价格掠夺殖民地香料资源的行为。

图 3：荷兰东印度公司 (VOC) 总部旧址
Figure 3. The former VOC Headquarters

6 荷兰西印度公司 (WIC) 总部旧址

荷兰西印度公司（简称 WIC）成立于 1621 年，垄断好望角以西地区的所有贸易与航运活动，主营跨大西洋奴隶贸易。基于这一历史地位，前 WIC 总部建筑现已成为各游览线路的重要参观点。红色免费步行游览线路（红线）在此展开核心解说，内容主要围绕以下历史叙事框架：从宗教切入，串联八十年战争等背景；随后重点分析荷西葡贸易如何催生 VOC/WIC：导游系统论述了香料、油脂、纺织品及奴隶贸易体系，解析阿姆斯特丹证券交易所的创立及其带来的经济活力；继而强调荷兰全球殖民版图与地名渊源；以 VOC 与 WIC 的衰落作结。观察发现，该导游在提及各类贸易

interpretation at this site, structured within the following historical narrative framework: Beginning with religious context that connects to background events like the Eighty Years' War, it then analyzes how Dutch-Spanish-Portuguese trade rivalries gave rise to the VOC/WIC system. The guide systematically elaborates on the spice, oil, textile and slave trade networks before analyzing the establishment of Amsterdam Stock Exchange and its economic impacts. The narrative further emphasizes the global reach of Dutch colonialism through toponymic evidence, concluding with the decline of both VOC and WIC. Field observations reveal the guide's deliberate avoidance of detailing slave trade mechanisms when discussing various commerce systems. This narrative selection, as explained by the guide, stems from tourists primarily seeking urban cognitive frameworks rather than in-depth slavery discourse, as such discussions risk disrupting tour atmospherics. Entertainment-focused guiding requires avoiding guilt induction among visitors. This approach creates a compromise model of "acknowledgement without elaboration"-simultaneously recognizing historical facts while preserving recreational enjoyment of the tour experience.

7 The Waag

The Waag (Weigh House), originating in the 15th century as Amsterdam's oldest surviving secular building, was designated a national monument in 1970. Originally one of three main city gates in Amsterdam's medieval walls, it functioned as a weighing center for colonial commodities during the 17th-18th centuries (circa 1600s).

In the Purple paid tour's interpretation, the building's functional evolution from city gate to weigh house is presented, with particular emphasis on the anatomical guild activities associated with the site and their connection to Rembrandt's artworks. The guide's narrative primarily focuses on the Jewish Quarter and the historical trajectory of Amsterdam's Jewish community. The historical interpretation at this site exhibits distinctive characteristics: Centering on VOC's trading achievements (especially highlighting exclusive trade with Japan). Making passing references to Caribbean and South African colonies. Advocating a balanced view of the Golden Age-acknowledging slavery while emphasizing

时未深入阐释奴隶贸易的具体运作机制。导游解释此叙事选择基于：游客主要寻求城市认知框架，对奴隶制的深入讨论容易破坏游览氛围，娱乐性导览需避免引发负罪感。这种处理方式形成“提及但不深究”的折中模式，既承认历史事实，又维护观光体验的愉悦性。

7 称量屋

诞生于 15 世纪的称量屋是阿姆斯特丹现存最古老的世俗建筑，于 1970 年被列为国家纪念物。该建筑最初为阿姆斯特丹城墙三大城门之一，在 17 至 18 世纪期间（约 1600 年代）曾作为殖民商品的称量中心。

在紫色付费路线的解说中，展示了其从城门到称量屋的功能变迁，重点介绍了在此处发生的解剖学行会活动和与之关联的伦勃朗艺术作品。此外，导游的叙事主要聚焦于犹太区及阿姆斯特丹犹太社群的历史沿革。在该景点的历史叙事有以下特点：以 VOC 贸易成就为主线（特别强调对日贸易），轻描淡写地提及了加勒比和南非殖民地，主张平衡看待黄金时代，既要承认奴隶制但更要强调其对于基建的贡献。导游通过“功过并陈”的叙述策略，既回应历史争议，又维护了游览的正面基调，体现遗产旅游中“选择性记忆”的典型特征。

8 运河

阿姆斯特丹的运河体系是 17 世纪荷兰殖民扩张的产物，其建设资金直接来源于奴隶贸易和殖民剥削积累的财富。然而在现代旅游导览中，这段历史被选择性呈现：导游们普遍强调“黄金时代”的辉煌成就，如 VOC 的贸易网络和运河豪宅的奢华，却刻意淡化背后的殖民暴力。

研究发现，这种叙事选择主要受三个因素影响：首先，旅游公司出于商业考量，往往要求导游避免讨论敏感话题；其次，导游自身也倾向于维护轻松愉快的游览氛围，担心深入探讨奴隶制会影响游客体验；最后，大多数游客更期待娱乐性内容，只有少数来自前殖民地国家的游客会主动追问这段历史。

不同导览形式在叙事深度上存在差异：付

infrastructure contributions. Through this “acknowledging both merits and faults” narrative strategy, the guide simultaneously addresses historical controversies while maintaining the tour’s positive tone, exemplifying the “selective memory” phenomenon characteristic of heritage tourism.

8 The Canals

Amsterdam’s canal system, a product of 17th-century Dutch colonial expansion, was directly financed by wealth accumulated through the slave trade and colonial exploitation. Yet contemporary tour narratives present this history selectively: guides predominantly emphasize the Golden Age’s glorious achievements-the VOC’s trading networks and the opulence of canal houses-while deliberately downplaying the underlying colonial violence.

Research reveals three primary factors shaping this narrative selection. Firstly, commercial considerations lead tour companies to instruct guides to avoid sensitive topics. Secondly, guides themselves prioritize maintaining a lighthearted atmosphere, fearing in-depth slavery discussions might compromise visitor experience. The last, most tourists prefer entertainment-focused content, with only occasional visitors from former colonies actively inquiring about this history.

Significant variations exist across tour formats: Paid canal cruises completely avoid slave trade references. But free walking tours may acknowledge but typically gloss over the subject. Even when personally recognizing this history’s importance, guides consistently choose circumspection to preserve group dynamics and avoid tourist discomfort.

This phenomenon reflects the broader European dilemma in addressing colonial heritage: how to balance tourism’s entertainment demands with historical honesty. The study recommends future urban tours incorporate more balanced historical perspectives while maintaining engagement, enabling visitors to develop more complete understanding.

9 Conclusion

This study aims to explore how urban tourism activities, particularly walking and boat tours, represent and interpret colonial regeneration of historical spatial narratives

费运河游船完全回避奴隶制话题，而免费步行导览虽可能提及，但通常一带而过。导游们即使个人认同这段历史的重要性，在实际解说中仍选择规避，以免破坏团体氛围或引发游客不适。

这一现象反映了欧洲城市在处理殖民遗产时的普遍困境：如何在满足旅游娱乐需求的同时，诚实地面对历史。研究建议，未来的城市导览应当在保持趣味性的基础上，尝试更平衡地呈现历史的多个面向，让游客获得更完整的认知。

9 结论

本研究旨在探究城市旅行活动，特别是步行与游船活动，展示与阐释殖民遗产的方式，重点在阿姆斯特丹历史空间叙事的建构与再生。在本文的研究中可以看出，文旅融合确实能拓展公众的历史认知，实现认知重构，但是同样，也有可能带来负面影响。总的来说，有以下三点:

第一，研究发现，阿姆斯特丹城市在殖民遗产空间叙事逻辑框架的建构是基于权力与财富的视角，其往往局限于特定的时空节点，导致串联不同地域与时期的殖民遗产叙事被弱化。这种选择性叙事会直接影响遗产认定的边界和内涵。

其次，本文拓展了关于建构城市遗产叙事中关键影响因素的探讨范围。对于基于城市感知的线路规划，不仅决定了城市空间的穿行路径，还框定了城市节点的选择与叙事深度。在研究中发现，与之相关的三方人——雇主、导游、游客——都会对其产生重要影响。

第三，研究发现氛围管理与遗产叙事空间的建构也有重要关系，对某一特定城市功能遗产的感知、共鸣，和接受程度，会极大影响历史空间叙事。

综上，作为一种重要的文化生产实践，文化旅游具有塑造集体记忆的重要功能，从而为历史文化的阐释提供新的思路。导览活动、旅游指南和城市地图等工具，完全可以在常规城市游览中，通过多元空间叙事的编排，实现教育性与娱乐性的平衡，从而达到将旅游场所重新激活为历史空间叙事记忆之场所的目标。

（王嘉伊、彭惠佳编译）

in Amsterdam. The findings demonstrate that the integration of cultural tourism can indeed broaden public historical awareness and facilitate cognitive restructuring, but it may also carry negative implications. Key takeaways include:

First, the research reveals that Amsterdam's spatial narratives of colonial heritage are primarily framed from the perspective of power and wealth, often confined to specific temporal and spatial nodes. This selective approach weakens the interconnected narratives of colonial heritage across different regions and periods, directly influencing the boundaries and connotations of heritage recognition.

Second, the study expands the discussion on key factors influencing the construction of urban heritage narratives. The planning of routes based on urban perception not only determines the paths through urban spaces but also defines the selection of key sites and the depth of narratives. The research identifies three stakeholders—employers, guides, and tourists—as significant influencers in this process.

Third, the study highlights the critical relationship between atmosphere management and the construction of heritage narrative spaces. Public perception, resonance, and acceptance of specific urban heritage functions greatly impact historical spatial narratives.

In summary, as an important cultural production practice, cultural tourism plays a vital role in shaping collective memory, offering new perspectives for the interpretation of history and culture. Tools such as guided tours, guidebooks, and city maps can achieve a balance between education and entertainment in general urban tours through the orchestration of diverse spatial narratives, thereby reactivating tourist sites as sites of memory for historical narratives.

(translated and edited
by Wang Jiayi, Peng Huijia)

平台动态 Platform Dynamics

徽州传统民居平面布局改造对火蔓延特性及轰燃时间影响

Influence of Traditional Huizhou Dwellings' Plane Layout Renovation on the Fire Spread Characteristics and Flashover Time

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引言

徽州传统民居从狭义上说就是宅居，广义地理解还泛指村落中的其他建筑类型，如祠堂、书院、商号、牌坊等，宅居是其最基本的形制。随着社会经济的发展和对古建筑的活化保护理念下，徽州传统民居由居住价值衍生出了经济价值，通过改造原有空间，创造出经营性功能的场所。在建筑原有功能空间的基础上，打破旧空间的功能限制并赋予新的功能，并通过对建筑平面布局的设计改造来实现功能空间的重构。然而，鲜有研究对徽州传统民居多种布局类型下室内火灾发展数值的影响进行研究。因此，本文基于徽州传统民居平面布局改造案例特点，总结 5 种改造方式，并且以安徽省黄山市屏山村杨自力宅为研究对象，进行五种改造方式包括民居原型的六种模拟场景设计。运用 PyoSim 软件中的 FDS 模块对火灾设计场景进行数值模拟，研究其火灾过程中火灾蔓延、热释放速率、火灾产物、轰燃时间的变化规律。通过模拟分析民居室内火灾数值变化，总结徽州传统民居改造后的问题与不足，为新时代传统民居的保护改造及其当前仿传统民居营建方式提供一定借鉴与指导。

1 徽州传统民居平面布局特征及其改造类型

Introduction

Narrowly defined, Huizhou traditional dwellings refer to vernacular residences; broadly, they also include ancestral halls, academies, shops and archways, with the residence being the most fundamental type. Under the concepts of economic development and adaptive conservation, these dwellings have acquired new commercial value. By reprogramming original spaces, they have been turned into business premises. Designers break the functional constraints of the old layout and inject new uses through carefully redesigned floor plans. However, few studies have examined how the various renovated layouts affect indoor fire-growth numerically.Therefore, this paper extracts five typical renovation patterns from actual adaptive-reuse projects and takes the Yang Zili residence in Pingshan village, Huangshan City, Anhui Province as the research object. Six fire-simulation scenarios (prototype + five renovations, labelled N1–N6) were modelled with the FDS solver in PyroSim. Fire spread, heat-release rate , fire products and flashover time were analysed. The results clarify post-renovation shortcomings and offer guidance for the conservation-oriented renovation of traditional Huizhou houses and for the design of modern “pseudo-traditional” buildings.

1 Plane-layout features and renovation typologies of traditional Huizhou dwellings

1.1 徽州传统民居平面布局特征

徽州传统民居作为中国传统民居的代表，其平面布局形式整体上分为四类，“凹”型、“回”型、“H”型和“日”型。

“凹”型平面民居多为一进的两层建筑，明间为堂，两厢为寝，构成“一明两暗”的格局；“回”型民居平面形式为三间两进，建筑布局对称，由两组三间相对坐落组成；“H”型民居平面形式同样是三间两进，与“回”型民居区别在于两组三间相背组合共用屋脊。“日”型平面民居是三间三进的建筑，这种平面形式在宅居中很少见。

1.2 徽州传统民居改造类型

随着旅游业的发展，徽州传统民居被赋予了多样化的功能业态，包括民宿、文化中心、展览馆、餐馆等多种类型，其平面布局与空间格局也随之改变。例如，民宿按照游客的需求增加公共交流空间；文化中心兼顾村民和游客的双重需求进行空间的设计与拓展；展览馆根据参观流线进行空间的设计等。徽州传统民居建筑空间组织主要以天井空间为核心，通过墙体分隔出各个空间单元。同时民居内部缺乏一定规模的开敞的公共空间，因此改造多从拆除和新建内部隔墙的方式来实现。

2 模型建立与参数设置

2.1 基准模型建立及火灾场景设置

徽州传统民居以“四水归堂”天井为核心，形成紧凑的“回”型多进院落。天井作为垂直通风通道，加速烟气上升与氧气补给，易形成“烟囱效应”，导致火焰沿天井木窗快速蔓延至上层。徽州传统民居内部以木质隔墙划分“一明两暗”“三间两进”等功能单元，狭窄通道以及复杂的内部流线延缓人员疏散时间。基于徽州传统民居活化改造项目进行的实地考察与统计分析，从现有改造方式中提取典型模式。选取民居内部隔断作为改造方案设计的变量，从内部隔断的拆除和新增改造 5 种不同平面布局类型 (图 1)，并与民居基

1.1 Original plane-layout features

Huizhou dwellings, representative of Chinese vernacular architecture, fall into four basic plan types:

凹 - (concave) – one-courtyard, two-storey; central hall flanked by two bedrooms (“one bright, two dark”).

回 - (enclosed) – three-bay, two-courtyard; symmetrical, two three-bay ranges face each other.

H - three-bay, two-courtyard; two three-bay ranges back-to-back sharing a ridge.

日 - (double-enclosed) – three-bay, three-courtyard; rare in ordinary houses.

1.2 Renovation typologies

Driven by the growth of tourism, Huizhou traditional dwellings have been reprogrammed with a diverse range of functions—guesthouses, cultural centres, exhibition halls, restaurants and more—prompting corresponding changes in floor plans and spatial configurations. Guesthouses, for instance, add communal areas to meet visitors’ needs; cultural centres are redesigned and expanded to serve both villagers and tourists; exhibition halls are reorganised around visitor circulation. Spatially, these houses are structured around central courtyards and subdivided by partition walls, yet they originally lack large-scale open public spaces. Renovations therefore rely primarily on the removal or insertion of interior partitions to create the required spatial qualities.

2 Model development and parameter settings

2.1 Baseline model and fire-scenario setup

Traditional Huizhou dwellings are organised around the “Four Waters Return to the Hall” (四水归堂) courtyard, forming a compact, multi-courtyard “ 回 ”-shaped plan. The courtyard acts as a vertical ventilation shaft that accelerates smoke rise and oxygen supply, readily creating a chimney effect that drives flames rapidly upward along the courtyard’s wooden windows. Internally, timber partitions divide the house into functional units such as “one bright room flanked by two dark

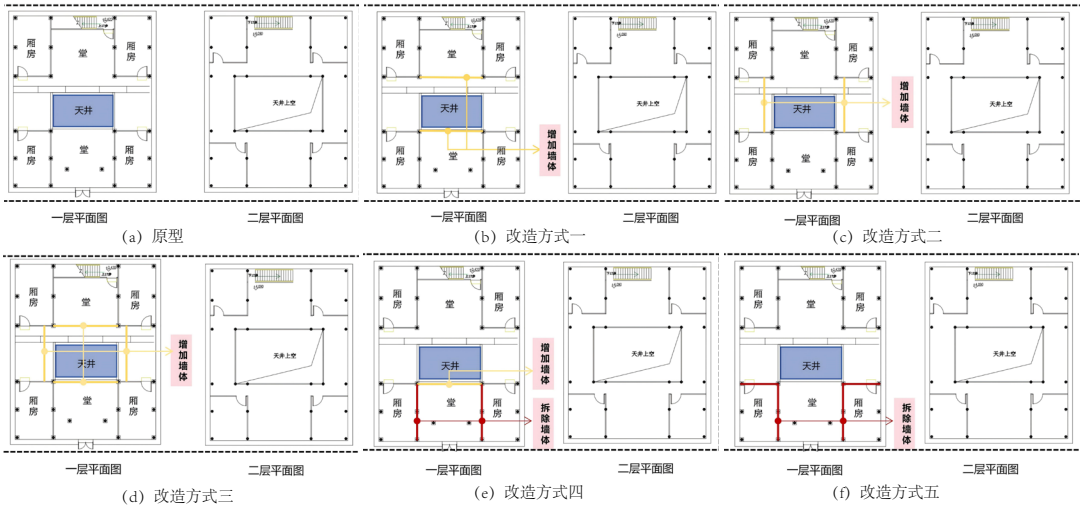
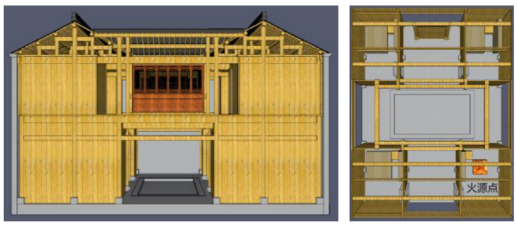


图 1：内部隔断拆除和新增改造示意图
Figure 1. Internal partition removal and new renovation diagram



（a）民居模型　　（b）火源位置

图 2：PyroSim 模拟模型设置
Figure 2. PyroSim simulation model setup

准模型形成 6 个模拟场景（a-f 对应场景 N1-N6）。各场景中模型计算区域、网格划分、边界条件设定均一致。如图 2(a) 所示，利用 PyroSim 软件中的 FDS 模块按照 1:1 比例建立民居模型，模型基础高 0.45m，上部木质构架高 7.8 m，总高 9.4 m，宽 10.7 m，深 14 m。本研究取初始温度 20℃、平均相对湿度 30%、风速为 0 m/s。火源位置设定在民居一进空间房间内部，火源大小为 1m x 1m，如图 2(b) 所示。在 FDS 数值模型中，主要可燃物为建筑本体木结构材料。

木材作为徽州传统民居中广泛应用的建材，其主体结构常采用松木。研究过程中通过现场实测获取松木构件的含水率及密度等基础物性指标，并综合既有文献中关于古松木老化机理、热解动力学特性及燃烧行为演变规律的实验数据，最终确立松木材料的热工性能与基础燃烧特性指标，如表 1 所示。

rooms" and "three-bay, two-courtyard" layouts; narrow passages and convoluted circulation paths slow occupant evacuation.

Based on field surveys and statistical analysis of adaptive-reuse projects, five typical renovation patterns were extracted. Interior partitions were chosen as the design variable: five distinct floor-plan variants were generated by removing or adding partitions (Fig. 1). Together with the baseline prototype, six simulation scenarios were defined (a–f, corresponding to N1–N6). All cases share identical computational domains, meshing and boundary conditions.

As shown in Fig. 2(a), a 1:1-scale dwelling model was built in FDS via PyroSim. The plinth height is 0.45 m, the timber superstructure 7.8 m, yielding a total height of 9.4 m; plan dimensions are 10.7 m (width) × 14 m (depth). Initial conditions were set at 20 °C, 30 % relative humidity and 0 m/s wind speed. The 1 m × 1 m fire source was located inside the first-entry room (Fig. 2(b)). All combustible material in the FDS model is the building's own timber structure.

Pine—the primary structural wood of Huizhou houses—was characterised through on-site measurements of moisture content and density, supplemented by literature data on aged-pine weathering, pyrolysis kinetics and combustion behaviour. The resulting thermal and combustion properties are summarised in Table 1.

表 1：松木材料的热工性能与基础燃烧特性指标
Table 1. Thermal performance and basic combustion characteristic indicators of pine wood materials

参数 Parameter	松木 Pine Wood
峰值放热率 Peak Heat Release Rate	242.78 kW/m²
平均质量损失率 Average Mass Loss Rate	0.1077 g/s
平均放热率 Average Heat Release Rate	187.08 kW/m²
平均有效热量燃烧 Average Effective Heat of Combustion	14.17 MJ/kg
平均一氧化碳生成率 Average CO Production Rate	0.0025 g/s
木材炭化的活化能 Activation Energy of Char Formation	120 kJ/mol
点火温度 Ignition Temperature	456 °C
平均炭化速率 Average Charring Rate	1.03 mm/min
密度 Density	400 kg/m³
比热容 Specific Heat Capacity	1.64×10³ J/(kg·°C)
吸收系数 Absorption Coefficient	$5.0\times10^{-4}m^{-1}$
传导系数 Thermal Conductivity	0.14 W/(m·K)

2.2 参数设置

2.2.1 火灾参数及火源设置

古建筑火灾过程中，火灾前期是燃料控制型，火灾后期是通风控制型。由于传统徽州民居多为木梁结构，因此采用 t^2 火灾增长模型是合理的。t^2 火灾增长模型可以使用火灾期间的最大放热率来计算，可以表示为：

$$Q=at^2$$

其中：Q 为火源放热速率，单位为 kW；T 是以 s 为单位的时间；a 为火灾增长系数，单位为 kW/s^2。徽州传统民居历经数百年的风化侵蚀，木结构含水率较低，符合快燃材料的特性。因此，根据《建筑防烟排烟系统技术标准》(GB51251-2017)，本文采用的火灾增长系数为 $0.04689kW/s^2$，最大热释放速率设为 8MW，且为完整地研究传统民居的火灾蔓延规律及数值变化，设定模拟时间为 1500 s。

2.2.2 网格设置

网格尺寸大小是影响运算效率以及运算结果的关键因素，如果网格划分过细则会消耗太多的计算时间，对于大体量的模型应当避免过细的网格，但对于尺寸较小的模型则可采用较细的网格，从而提高计算的准确性。当火源特征直径 D* 与计算网格尺寸 δx 的比例为 4-16

2.2 Parameter settings

2.2.1 Fire parameters and ignition source

In historic-timber buildings the early stage of a fire is fuel-controlled, while the later stage becomes ventilation-controlled. Because traditional Huizhou residences are dominated by timber beams, a t^2 fire-growth model is appropriate. The heat-release rate can be expressed as:

$$Q=at^2$$

where Q is the HRR in kW, t is time in seconds, and α is the fire-growth coefficient in kW/s^2. After centuries of weathering, the moisture content of the timber is low; the wood therefore behaves as a fast-burning material. In accordance with the Chinese Code for Smoke Control Systems (GB 51251-2017), a growth coefficient α = 0.04689 kW/s^2 is adopted. The maximum HRR is set at 8 MW. To capture the complete fire-development process, the simulation duration is 1500 s.

2.2.2 Grid settings

Grid resolution is critical for both computational efficiency and accuracy. Over-refinement dramatically increases run-time, whereas coarse grids may introduce unacceptable errors. When the ratio of the characteristic fire diameter D* to the grid size δx lies between 4 and 16, reliable results are obtained. D* is calculated from

$$D^* = \left(\frac{Q}{\rho_\infty c_p T_\infty \sqrt{g}}\right)^{\frac{2}{5}}$$

with Q = 8000 kW, ρ_∞ = 1.206 kg/m³, cp = 1.005 kJ/kg · K, T_∞ = 293 K (20 °C) and g = 9.81 m/s^2, yielding D* ≈ 1.395 m. Consequently, δx should range from 0.08 m to 0.35 m. After a grid-independence study, a uniform cubic cell of 0.2 m × 0.2 m × 0.2 m is selected. The computational domain measures 12 m × 16 m × 10 m, comprising 240 000 cells.

2.2.3 Detector layout

Thermocouple rakes are placed in the first, second and third courtyards at heights of 2 m, 4 m and 6 m above floor level—nine points in total. A temperature slice

时，可以得到更准确的结果。其中火源的特征直径 D* 可由下式求得：

$$D^* = \left(\frac{Q}{\rho_\infty c_p T_\infty \sqrt{g}}\right)^{\frac{2}{5}}$$

式中：Q 为火源热释放速率，取 8000kW；p_∞ 为空气密度 1.206 kg/m^3；c_p 为空气比热容 1.005 kJ/kg·K；T_∞ 为环境空气温度 293K(20℃)；g 为重力加速度 9.81 m/s^2。求出 D*≈1.395，因此网格尺寸在 0.08-0.35 之间较为准确。在进行网络无关性检验后选择网格大小为 0.2 m×0.2 m×0.2 m，网格尺寸为 12 m×16 m×10 m，网格数量 240000 个。

2.2.3 探测器设置

在民居一进、二进、三进空间内部分别放置一组热电偶测点，Z 轴方向测点高度分别为 2 m，4 m，6 m，共计 9 个测点，并在 X=-6 m、Y=4 m 和 Z=2.0 m 处设置温度切片。同时，为观察高温烟气对疏散人群造成的影响，在距离室内地面 2.0 m 处设置可见度参数变化切片。此外，为分析火灾产生的 CO 气体对于人员疏散的安全影响，在天井正下方处布置气体探测器，Z 轴方向测点高度分别为 2 m，4 m，6 m，共计 9 个测点。

2.3 探测器建筑火灾轰燃判定

轰燃预测公式：

$$F = 0.118\alpha(K\rho c)^{-0.032}(W_0 H_0^{1.5})^{-0.215} Q^{0.488} A_T^{-0.312}$$

式中：K 为材料的导热率，W/(m·K)；p 为材料的密度，kg/m^3；c 为材料的比热容，J/(kg·K)；W_0 和 H_0 分别为通风口宽度和高度，m；Q 为燃料的热释放速率，kJ/s；A_T 为房间内表面总表面积，m^2。因此，以火焰蔓延动态变化图像以及曲线突变为依据判定古建筑发生轰燃的临界时间。

3 结果与讨论

3.1 火灾蔓延动态发展过程分析

在垂直方向上，燃烧产生烟羽流上升，高

is defined at X = -6 m, Y = 4 m, Z = 2.0 m. To observe the impact of hot smoke on evacuating occupants, a visibility-parameter slice is placed 2.0 m above the indoor floor. In addition, to assess the safety effects of CO generated by the fire on evacuation, gas detectors are located directly beneath the courtyard skylight, with measurement points at 2 m, 4 m and 6 m along the Z-axis, totaling nine further points.

2.3 Judgment of building fire flashover

Flashover prediction formula:

$$F = 0.118\alpha(K\rho c)^{-0.032}(W_0 H_0^{1.5})^{-0.215} Q^{0.488} A_T^{-0.312}$$

K is the thermal conductivity of the material, W/(m·K); p is the density of the material, kg/m³; c is the specific heat capacity of the material, J/(kg·K); W_0 and H_0 are the width and height of the vent, respectively, m; Q is the heat release rate of the fuel, kJ/s; A_T is the total surface area of the inner surface of the room, m². Therefore, the critical time when a flashover occurs in an ancient building is determined based on the dynamic change images of flame spread and the sudden change of the curve.

3 Results and discussion

3.1 Dynamic fire-spread analysis

Vertically, the fire plume rises and hot gases accumulate beneath the first-floor ceiling. In scenario N1 (prototype, Fig. 3a), during the initial 0–200 s the combustible linings in the ignition room ignite; smoke spills into the courtyard through doorways. When the ceiling temperature reaches ~600 °C, the ceiling itself ignites, flames propagate to the second floor, and full-room flashover occurs at 488 s.

Scenario N6 (all partitions in the first-entry space removed) presents a completely open plan. The absence of walls provides abundant oxygen and allows the plume to spread unimpeded (Fig. 3f). Between 0–200 s flames race along the ceiling toward the courtyard; by 235 s the courtyard windows are fully involved, and at 262 s flames erupt from the skylight, triggering global flashover.

3.2 Visibility variation

Because indoor visibility tends to stabilise between 600 s and 800 s, its

温烟气聚集在一层房间天花板。模拟场景 N1 中如图 3(a) 所示，火灾发展初期阶段，即 0-200s 之间，火源房间木质构件开始燃烧，烟气通过门洞溢出至天井空间。同时火焰沿垂直方向上升，高温烟气聚集在一层房间天花板，温度迅速升高。当天花板温度达到 600 ℃ 时，天花板被引燃，火焰向上蔓延至二层，488 s 全室轰燃发生，建筑进入全面燃烧状态。场景 N6 拆除一进空间所有隔墙，形成完全开放布局，改造差异显著，可直观对比隔墙增减对火灾发展的影响如图 3(f) 所示，火灾发展初期即 0-200 s 由于开放空间氧气充足，且烟羽流不受墙体的干扰，火焰快速沿天花板蔓延至天井。235 s 时天井木窗剧烈燃烧，火焰直接侵入二进空间，262 s 火焰由天井喷出，全室轰燃发生。

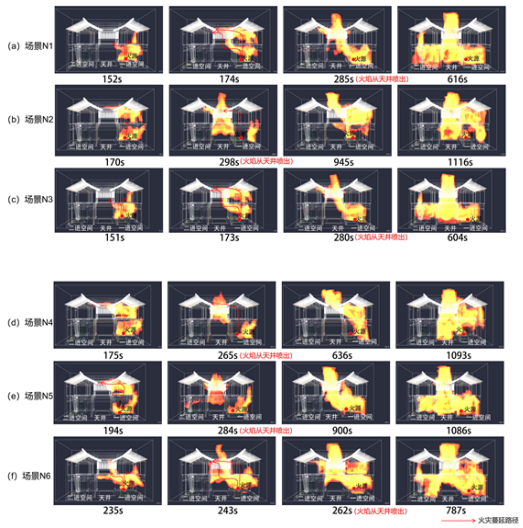


图 3：六种场景下火灾蔓延动态发展过程
Figure 3. Dynamic development process of fire spread under six scenarios

3.2 能见度变化

由于室内能见度在 600 s-800 s 已经趋向于平稳，对人员安全与建筑破坏的增量影响较小。因此选取 0-800 s 模拟结果分析时间，可突出关键动态过程，避免长时程数据稀释核心结论。

由改造场景 N2 和改造场景 N6 能见度变化对比可以看出 200 s 之前天井能见度保持在

incremental impact on occupant safety and structural damage is small. Therefore, the 0–800 s simulation interval is selected for analysis, which highlights key dynamic processes and avoids dilution of the core conclusions by long-duration data.

Comparing the visibility changes in renovation scenarios N2 and N6, it can be seen that before 200 s the visibility in the courtyard remains at 14 m, exceeding the safety threshold. After 300 s, scenario N2, due to the increased number of internal partitions, is unfavourable for smoke exhaust, and the courtyard visibility drops below 5 m, with smoke severely obstructing evacuation routes; in scenario N6, visibility slowly decreases to below 13 m, but because the internal partitions have been removed, smoke exhaust is facilitated, so the impact on evacuation is smaller, and the courtyard visibility stays above 5 m within 600 s.

3.3 CO volume-fraction variation

CO released after ignition is the main cause of occupant poisoning. The time-varying CO volume fraction at 2 m elevation in the courtyard space for each scenario is shown in Fig. 5. The averaged CO volume fraction measured by all courtyard detectors is taken as the analytical object; the reference line in Fig. 5 denotes the safety limit of 0.05 %. It can be seen that CO concentration is initially zero for a period after ignition and then begins to rise. This is because the plume ascends, hot smoke accumulates beneath the ceiling, then spreads horizontally along the ceiling before descending. The CO volume-fraction trends in scenarios N3 and N6 are consistent with scenario N1, exceeding the safety limit at 472 s and 313 s respectively.

3.4 Analysis of flashover-time variation

The heat-release-rate curves for each scenario are shown in Fig. 6, and the full-room flashover times together with peak heat-release rates are given in Table 2. From 0 to 180 s the fire-development trends in scenarios N1–N5 are essentially identical: within 0–150 s the flame remains stable and the heat-release-rate growth is relatively slow; around 160 s the heat-release-rate undergoes a sudden change as flashover occurs in the fire-origin room, and the first peak is reached at about 200 s. Two peaks appear in the heat-release-rate curve.

14 m，均在安全阈值以上。300 s 后场景 N2 由于内部隔墙增加，不利于烟气的排出，天井处能见度降至 5 m 以下，烟气严重阻碍疏散路径；场景 N6 能见度缓慢降至 13 m 以下，但是由于室内隔墙被拆除，有利于烟气的排出，对疏散影响较小，在 600 s 以内天井处能见度均在 5 m 以上。

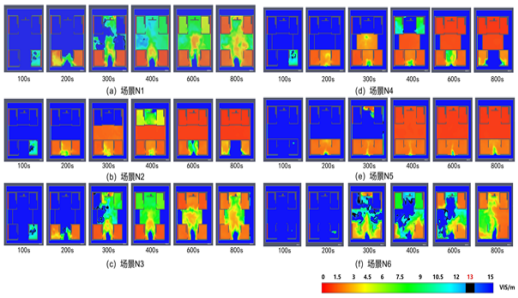


图 4：六种场景下 2 m 高度处能见度
Figure 4. Visibility at 2 m height in six scenarios

3.3 CO 体积分数变化

火灾发生后释放的 CO 是造成人员中毒的主要原因，各场景天井空间标高 2 m 处 CO 体积分数时间变化如图 5 所示。选取天井空间各探测器测得 CO 体积分数平均值作为本研究的分析对象，图 5 中参考线为 CO 体积分数安全临界值 0.05%。由图 5 可以看出，火灾发生后的一段时间 CO 浓度为 0，随后开始上升，这是由于烟羽流上升，高温烟气集聚在天花板位置，随后沿着天花板水平扩散，再从上向下积

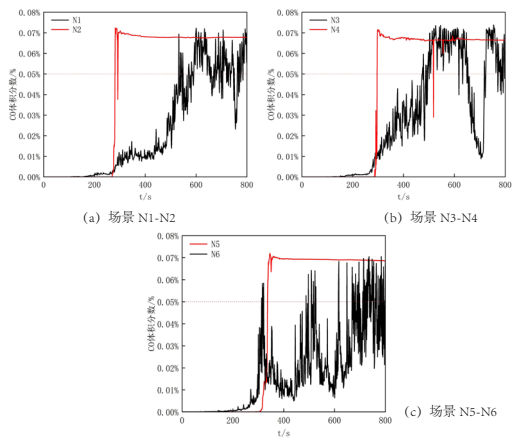


图 5：六种场景下 CO 浓度变化曲线
Figure 5. Change curve of CO concentration under six scenarios

Combined with the fire-spread process, it can be deduced that the first peak occurs after flashover in the ignition room, when all timber members inside are ignited. As combustion proceeds, oxygen concentration decreases and the heat-release-rate begins to drop; meanwhile the flame spreads along the ceiling to the courtyard space, where oxygen is abundant and timber members start to burn, causing the heat-release-rate to rise again. After some time, internal partitions and members are damaged, indoor oxygen is replenished, and the courtyard flames ignite timber members in the second-entry space. Full-room flashover occurs at 488 s, 630 s, 489 s, 570 s and 827 s for scenarios N1–N5 respectively, the dwelling enters a fully developed burning state, and the second peak is reached.

4 Conclusions

CO released after ignition is the main cause of occupant poisoning. The time-varying CO volume fraction at 2 m elevation in the courtyard space for each scenario is shown in Fig. 5. The averaged CO volume fraction measured by all courtyard detectors is taken as the analytical object; the reference line in Fig. 5 denotes the safety limit of 0.05 %. It can be seen that CO concentration is initially zero for a period after ignition and then begins to rise. This is because the plume ascends, hot smoke accumulates beneath the ceiling, then spreads horizontally along the ceiling before descending. The CO volume-fraction trends in scenarios N3 and N6 are consistent with scenario N1, exceeding the safety limit at 472 s and 313 s respectively.

Taking the numerical variation of indoor fire development after adaptive-reuse renovation of traditional Huizhou dwellings as the research focus, six fire-simulation scenarios were established. The study reveals that adding or removing interior partitions alters the plane layout, which in turn affects both the fire-development process and its quantitative parameters. In comparison with the fire-spread behaviour and numerical changes in Scenario N1, the following conclusions are drawn:

1 When the ignition location is kept constant, changing the position and quantity of interior partitions leaves the overall fire-spread path unchanged: first-entry space → courtyard space → second-

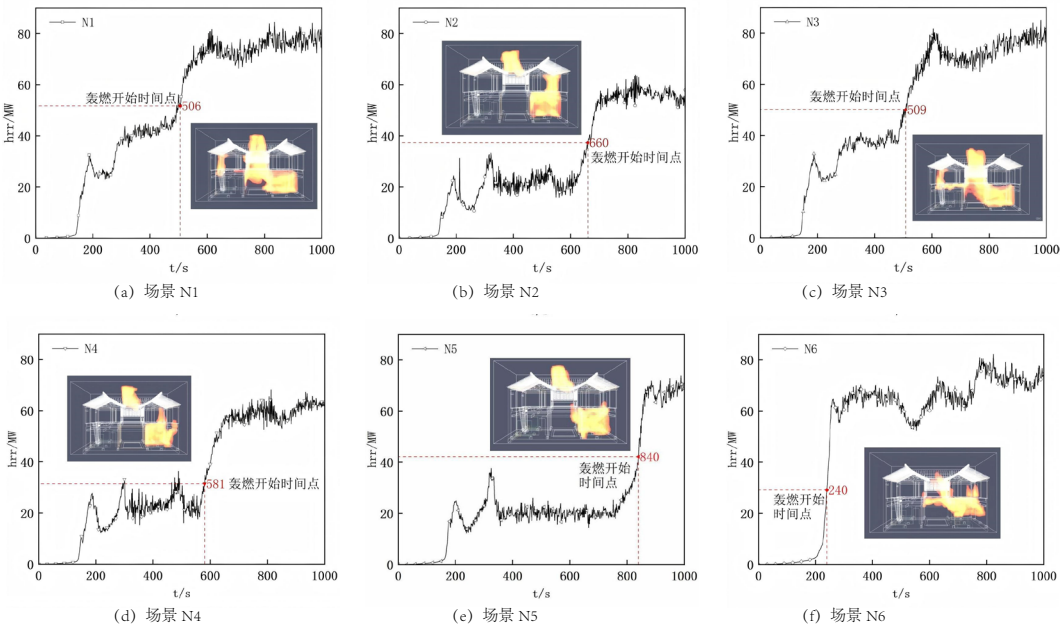


图 6：六种场景下火灾热释放速率变化
Figure 6. Change of fire heat release rate in six scenarios

聚。场景 N3、N6 中 CO 体积分数变化规律与场景 N1 一致，分别在 472 s、313 s 超过安全临界值。

3.4 火灾轰燃时间变化分析

各场景火灾热释放速率变化如图 6 所示，全室轰燃时间与热释放速率峰值如表 2 所示。0~180 s 时场景 N1-N5 火灾发展趋势基本一致，0~150 s 之内火焰处于平稳状态，热释放速率增长较为缓慢，160 s 左右热释放速率发生突变，火源所在房间室内发生轰燃，且在 200 s 左右热释放速率第一次达到峰值。热释放速率出现两次峰值，结合火灾蔓延过程可以得出，第一次达到峰值是在起火房间发生轰燃后，室内木质构件全部被引燃。随着燃烧的进行，氧气浓度降低，热释放速率开始下降，同时火焰沿着天花板蔓延至天井空间，天井空间氧气充足，其木质构件开始燃烧，热释放速率逐渐上升，燃烧进行一定时间后，内部隔墙以及构件遭到破坏，室内氧气得到补充，天井空间火焰引燃二进空间木质构件，场景 N1-N5 分别在 488 s、630 s、489 s、570 s、827 s 发生全室轰燃，民居建筑进入全面燃烧状态，并达到第二次峰值。

表 2：六种场景下全室轰燃时间及热释放速率统计表
Table 2. Statistical table of flashover time and heat release rate in six scenarios

场景设置 scene setting	时间/s time/s		热释放速率 Q heat release rate Q
	T1	T2	
N1	488	522	32516
N2	630	675	24416
N3	489	525	30815
N4	175	187	27734
N5	827	851	24973
N6	240	254	61695

entry space. Interior partitions can obstruct flame spread and thus reduce the rate of fire propagation.

2 Adopting Renovation Method 5 produces the least adverse impact on courtyard visibility caused by smoke and results in the shortest duration during which CO concentration exceeds the safety threshold, thereby lowering health risks to occupants. In Renovation Methods 1, 3 and 4, courtyard visibility drops below 2 m between 200 s and 300 s, while CO concentration rises sharply around 300 s, exceeding and remaining above the safety limit; the resulting smoke hazard is severe and detrimental to evacuation.

4 结论

以徽州传统民居活化保护改造后室内火灾发展数值变化为研究点，通过设置六种火灾模拟场景，研究发现改造过程中由于对民居室内隔墙的增减，改变平面布局，进而影响民居室内火灾发展过程以及数值变化。对比场景 N1 火灾蔓延以及室内火灾发展数值变化，相关结论如下：

1）在火源位置保持一致的情况下，改变民居内部的隔墙位置与数量，火灾蔓延的整体路径保持一致：一进空间 —— 天井空间 —— 二进空间。内部隔墙可以阻挡火焰的蔓延，从而降低火焰蔓延速度。

2）采用改造方式五，火灾发展过程中产生的烟气对天井空间能见度的不利影响最小，且火灾产生的 CO 气体浓度超出安全临界值的时间较少，降低了对人员的健康安全影响。改造方式一、改造方式三以及改造方式四在 200 s-300 s 天井空间能见度下降至 2 m 以下，CO 气体浓度在 300 s 左右急剧上升直至超过安全临界值，并保持在安全临界值以上，火灾产生的烟气对于人员的危害影响非常显著，不利于人员的疏散。因此，从人员疏散以及人员健康安全的角度来看，场景 N6 所对应的改造方式五最适宜。

3）相比于场景 N1 民居全室轰燃的时间 506 s，场景 N2 中轰燃的时间延后了 154 s，场景 N3 中轰燃的时间基本不变，场景 N4 中轰燃的时间延后了 75 s，场景 N5 中轰燃的时间延后了 334 s，场景 N6 中轰燃的时间提前了 266 s。因此，从民居防火保护的角度来看，场景 N6 所对应的改造方式五火灾破坏性最大，场景 N5 所对应的改造方式四最适宜。

Consequently, from the perspectives of occupant evacuation and health safety, Scenario N6 (Renovation Method 5) is the most suitable.

3 Relative to the 506 s full-room flashover time in Scenario N1, flashover in Scenario N2 is delayed by 154 s, remains virtually unchanged in Scenario N3, is delayed by 75 s in Scenario N4, delayed by 334 s in Scenario N5, and advanced by 266 s in Scenario N6. Therefore, from the viewpoint of fire protection for the dwelling, Scenario N6 (Renovation Method 5) poses the greatest destructive potential, whereas Scenario N5 (Renovation Method 4) is the most favourable.

活动报道 Latest Events

第 47 届世界遗产委员会会议在巴黎开幕

47th Session of the World Heritage Committee Kicks Off

资料来源 Source：
https://www.whitr-ap.org/index.php?classid=1461&newsid=3833&t=show

图 1：第 47 届世界遗产委员会会议开幕式现场
Figure 1. Opening Ceremony of the 47th Session of the World Heritage Committee

第 47 届世界遗产委员会会议（7 月 6 日 -16 日）于 2025 年 7 月 6 日（星期日）在法国巴黎联合国教科文组织总部开幕。大会于 7 月 7 日（星期一）召开，并审议议程作为首项议题。

大会主席为尼古拉 · 内诺夫教授（保加利亚），报告员为乔埃尔 · 布西亚纳女士（卢旺达），大会副主席来自比利时、墨西哥、卡塔尔、大韩民国和赞比亚，委员会将在接下来的 10 天里审议和讨论各项专题倡议、世界遗产中心的活动报告、咨询机构（国际古迹遗址理事会、国际文化遗产保护与修复研究中心、世界自然保护联盟）以及 WHITR-AP 等联合国教科文组织二类中心的报告。委员会将讨论已经列入《世界遗产名录》的世界遗产地的保护和管理工作，以及申请列入《世界遗产名录》的提名项目。21 个委员会成员国为：阿根廷、比利时、保加利亚、希腊、印度、意大利、牙买加、日本、哈萨克斯坦、肯尼亚、黎巴嫩、墨西哥、卡塔尔、大韩民国、卢旺达、圣文森特和格林纳丁斯、塞内加尔、土耳其、乌克兰、越南、赞比亚。

The 47th session of the World Heritage Committee (6 July-16 July) commenced at UNESCO Headquarters in Paris on Sunday, 6 July 2025, at UNESCO Headquarters in Paris, France, with the Plenary starting on Monday 7 July with the examination of the firs items of the Agenda.

Under the leadership of Chairperson Prof. Nikolay Nenov (Bulgaria), supported by Rapporteur Ms. Joelle Bucyana (Rwanda) and Vice-Chairpersons from Belgium, Mexico, Qatar, Republic of Korea, and Zambia, during the following 10 days, the Committee will examine and discuss thematic initiatives, the reports of the activities of the World Heritage Centre, the Advisory Bodies (ICOMOS, ICCROM, IUCN) and of UNESCO Category 2 Centers such as WHITR-AP. It will discuss the conservation and management of the World Heritage inscribed on the List which is the key responsibility of State Parties to the Convention. The Committee will examine also inscription proposals on the World Heritage List. The 21 Committee members are Argentina, Belgium,Bulgaria, Greece, India, Italy, Jamaica, Japan, Kazakhstan, Kenya, Lebanon, Mexico, Qatar,Republic of Korea, Rwanda, Saint Vincent and the Grenadines, Senegal, Türkiye, Ukraine, Vietnam, Zambia.

In the opening ceremony, the Director-General (DG) Audrey Azoulay kicked off the session by delivering a powerful opening address that framed heritage as "Our shared legacy and a beacon of hope". Against the backdrop of 1,200+ World Heritage sites spanning 4.8 million square kilometers across 196 States Parties, Azoulay underscored urgent global challenges: one-third of natural sites and 20% of cultural sites now face severe

在开幕式上，总干事奥德蕾·阿祖莱发表了重要的开幕致辞，并将遗产定义为“我们共同的瑰宝和人类希望的灯塔”。面对遍布 196 个缔约国、覆盖 480 万平方公里、超过 1200 处世界遗产地的背景，阿祖莱强调了紧迫的全球挑战：如今，三分之一的自然遗产地和 20% 的文化遗产地正面临严重的气候影响，而地中海地区的遗产城市尤为脆弱。

她重点介绍了教科文组织部署的用于实时风险监测的地理配准工具（georeferencing tools）和沙特阿拉伯支持的“深入探索遗产”（Dive into Heritage）数字平台，称其是应对全球遗产保护危机的关键创新举措。阿祖莱同样强调了教科文组织以公平为导向的议程设置，包括在 27 个尚无遗产地的非洲国家开展能力建设计划，以及在摩苏尔（耗资 1.15 亿美元的重建）和加沙（利用卫星图像进行损害评估）的冲突后恢复工作。总干事最后援引哲学家茱莉亚·克里斯蒂娃（Julia Kristeva）的名言，认为“认为人类的本质在于独特性”，并呼吁采取“切实的多边主义”来应对气候变化、战争和不平等。

正如总干事阿祖莱所引述：“我们每个人都是独一无二的，正是这种独特性构成了人性的本质。”（哲学家茱莉亚·克里斯蒂娃语）从在气候威胁之下保护遗产的存续到在科技时代守护人的自主性，第 47 届世界遗产委员会会议将彰显遗产的持久伟力：于危机前，如护佑之盾；于人类间，似无垠画卷。

climate impacts, with Mediterranean heritage cities particularly vulnerable.

She highlighted UNESCO's deployment of georeferencing tools for real-time risk monitoring and the Kingdom of Saudi Arabia supported "Dive into Heritage" platform as critical innovations. Equally emphasized was UNESCO's equity-driven agenda, including capacity-building programs across 27 unrepresented African nations and post-conflict recovery in Mosul (US$115 million reconstruction) and Gaza (satellite damage assessment). The Director-General closed by invoking philosopher Julia Kristeva's vision of humanity's essence in uniqueness, urging "tangible multilateralism" to combat climate change, war, and inequality.

As Director-General Azoulay quoted: "Each of us is unique, and in this uniqueness lies humanity's essence." (philosopher Julia Kristeva) From climate-threatened monuments to AI-based human autonomy, the 47th Session of the World Heritage Committee will embody heritage's enduring power as both a shield against crises and a canvas for human uniqueness.

第七届世界遗产地管理者论坛在巴黎举行

7th World Heritage Site Managers' Forum Convenes in Paris

资料来源 Source：
https://www.iccrom.org/news/world-heritage-site-managers-gather-paris-strengthen-reactive-monitoring-process

7 月 7 日至 9 日，借第 47 届世界遗产委员会会议之机，第七届世界遗产地管理者论坛在巴黎联合国教科文组织总部举行。

From 7 to 9 July, the 7th edition of the World Heritage Site Managers' Forum took place at the UNESCO Headquarters in Paris, alongside the 47th session of the World Heritage Committee.

图 2：18 位世界遗产地管理者参与会议
Figure 2. Eighteen World Heritage site managers attended the meeting

本届论坛共召集了来自 17 处世界遗产地的 18 位管理者，这些遗产地分布于阿尔巴尼亚、保加利亚、智利、中国、厄瓜多尔、法国、吉尔吉斯斯坦、黎巴嫩、摩洛哥、莫桑比克、北马其顿、韩国、苏里南、瑞典、乌克兰、乌兹别克斯坦和津巴布韦。

论坛以“深化世界遗产反应性监测参与”为主题，围绕该机制如何助力世界遗产的更好管理与保护展开深入探讨。讨论聚焦管理者在落实专家团建议及世界遗产委员会决定时的实际需求；与会者分享经验、识别挑战，并提出让监测流程更贴近一线实际的改进方案。

7 月 8 日，论坛向世界遗产委员会递交最终声明，总结讨论成果，呼吁：

· 加强遗产地管理者、缔约国、世界遗产中心及咨询机构之间的协作；

· 更具包容地吸纳原住民、地方社区及民间社会参与，确保有效保护行动；

· 优先加大能力建设投入，使管理者具备参与世界遗产流程、强化遗产管理所需的知识与工具。

多年来，该论坛已成为遗产地管理者交流经验、建立合作、共同守护世界遗产的重要平台，持续构建全球实践者网络。

This year's Forum brought together 18 site managers responsible for the management of 17 World Heritage properties in Albania, Bulgaria, Chile, China, Ecuador, France, Kyrgyzstan, Lebanon, Morocco, Mozambique, North Macedonia, the Republic of Korea, Suriname, Sweden, Ukraine, Uzbekistan and Zimbabwe.

Held under the theme Enhancing engagement in the World Heritage Reactive Monitoring process, the Forum explored how this mechanism provides support to better manage and protect World Heritage. Discussions focused on what is needed by site managers to implement mission recommendations and World Heritage Committee decisions. Participants shared experiences, identified challenges, and proposed ways to make the process more relevant to on-the-ground needs.

On 8 July, participants presented a final statement to the World Heritage Committee, summarising the results of their discussions and exchanges. The statement emphasized the importance of Reactive Monitoring in supporting World Heritage management and conservation and called for:

• Stronger collaboration among site managers, States Parties, the World Heritage Centre, and Advisory Bodies;

• More inclusive engagement of Indigenous Peoples, local communities, and civil society to ensure effective conservation action; and

• Prioritising increased investment in capacity building to equip site managers with knowledge and tools to engage with World Heritage processes and strengthen heritage management.

Over the years, the Forum has become an essential networking space for site managers to meet, exchange and establish collaborations to foster the protection of World Heritage by building a global community of practice.

2025 年“中法遗产对话”第一期线上活动顺利举行

The First Online Session of the 2025 “Sino-French Heritage Dialogue” Successfully Held

资料来源 Source：
https://www.whitr-ap.org/index.php?classid=1518&newsid=3817&t=show

图 3：活动海报
Figure 3. The poster of the event

2025 年“中法遗产对话”第一期由联合国教科文组织亚太地区世界遗产培训与研究中心上海分中心（WHITR-AP Shanghai）与同济大学建筑与城市规划学院联合主办，法国建筑与遗产之城、世界遗产卢瓦河谷事务处、法国特色小城镇协会以及法国国家建筑师协会协办，并得到上海同济城市规划设计研究院有限公司遗产保护与文化复兴研究院、同济 · 大理遗产保护与文化创新研究院的大力支持。

活动旨在基于中法遗产保护决策者、管理者、专家学者与地方社区之间的对话，为当前遗产保护领域的理论与实践发展提供参考，同时也作为地方实践者的能力建设的一种形式。

对话围绕“诗意栖居”这一主题展开，呼应德国哲学家海德格尔（1889-1976）的诗意栖居中的存在之思与中国思想家、哲学家李泽厚（1930-2021）的诗意栖居中的人间情味。围绕自然及文化遗产、物质与非物质文化遗产整体保护利用所面临的挑战与机遇开展交流，以景观方法推动区域进行高质量、创新性发展。所谓景观方法，即从社会经济、生态环境及广义文化视角对地域进行整体考量，目标是在尊重自然环境基础上提升人居品质，但同时既不沉湎于过去，也不脱离地域语境进行发展。换

The first session of the 2025 "Dialogue Sino-francais sur le Patrimoine" was co-hosted by the UNESCO World Heritage Institute of Training and Research-Asia and Pacific Shanghai (WHITR-AP Shanghai) and the College of Architecture and Urban Planning at Tongji University. It was supported by the Cité de l'architecture et du patrimoine, the Loire Valley World Heritage Office, the Association Nationale des Petites Cités de Caractères, and the Association Nationale des Batiments de France. The event also received strong support from the Institute of Heritage Conservation and Cultural Revival at Tongji Urban Planning and Design Research Institute Co., Ltd., and the Tongji-Dali Institute of Heritage Conservation and Cultural Innovation.

The dialogue aimed to provide insights for the development of theory and practice in the field of heritage conservation based on in-depth discussions among Chinese and French heritage conservation policymakers, managers, experts, scholars, and local communities. Additionally, it served as a capacity-building platform for local practitioners.

The discussion centered on the theme of "Poetical Dwelling," drawing inspiration from the philosophical concept of "being" by the German philosopher Martin Heidegger (1889-1976) and the humanistic sentiment by the Chinese thinker and philosopher Li Zehou (1930-2021). It addressed the challenges and opportunities in the integrated conservation and utilization of natural and cultural heritage, as well as tangible and intangible cultural heritage, and sought to promote high-quality and innovative regional development through a landscape approach. This approach considered the region from a socio-economic, ecological, and broad cultural perspective, dedicated to enhance the quality of human settlements while respecting the natural environment. It avoided both nostalgia for the past and

言之，是通过构建一种“诗意”的生活理念，在有遗产价值共识的基础上营建人居环境。

本届中法遗产对话的中法两国专家讨论的议题包括：遗产价值认定、将遗产保护纳入空间战略规划、完善法规框架、回应社区居民需求、推动居住环境与公共服务的现代化更新，以及发展多元经济等，避免将遗产沦为简单的旅游消费对象。

development that is detached from local context. In other words, it built a "poetic" lifestyle and create a living environment based on a shared understanding of heritage values.

The topics discussed by Chinese and French experts in this session included: heritage valuation, integrating heritage conservation into spatial strategic planning, improving legal frameworks, responding to local community needs, modernizing living environments and public services, and developing a diversified economy, all while avoiding the reduction of heritage to mere tourist attractions.

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