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GIS In Representing Cultural Narratives: Mapping Memory, Identity, And Place In Cultural Landscapes

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Abstract

Cultural landscapes are not merely geographic entities; they are living repositories of memory, identity, and lived human experience. Conventional Geographic Information Systems (GIS) have proven effective in documenting tangible spatial attributes such as land use, topography, and built form. However, they often inadequately represent intangible cultural dimensions, including oral traditions, rituals, and emotional attachments that shape a sense of place. This paper reconceptualizes GIS as a medium for representing cultural narratives by integrating spatial data with collective memory, storytelling, and socio-cultural meanings. Drawing on the theoretical foundations of narrative cartography and participatory GIS (PGIS), the study proposes a conceptual and replicable framework that interweaves memory, identity, and spatial representation. Through a critical review of contemporary literature and illustrative examples, the paper demonstrates how GIS can evolve from a predominantly technical mapping tool into a participatory cultural platform that supports community engagement and the digital safeguarding of intangible cultural heritage.

Keywords: GIS, Cultural Landscapes, Intangible Cultural Heritage, Memory Mapping, Place Identity, Participatory GIS, Narrative Cartography

1. Introduction

Cultural landscapes represent the dynamic and reciprocal relationship between people and place, wherein physical environments are continually shaped by memory, meaning, and social practice [2,8]. Recent interdisciplinary scholarship challenges the perception of maps as neutral technical outputs, instead recognizing them as cultural representations capable of conveying narratives, values, and identities [9,3]. In response to this paradigm shift, GIS practices are increasingly moving beyond purely analytical applications toward participatory and narrative-based approaches that integrate qualitative cultural information alongside conventional spatial data [10,4].

This study aims to develop a conceptual GIS-based framework for representing cultural narratives by integrating memory, identity, and participatory mapping approaches. By synthesizing research on narrative cartography and PGIS, the paper positions GIS as a culturally responsive tool with relevance for academic research, heritage management, and architectural pedagogy.

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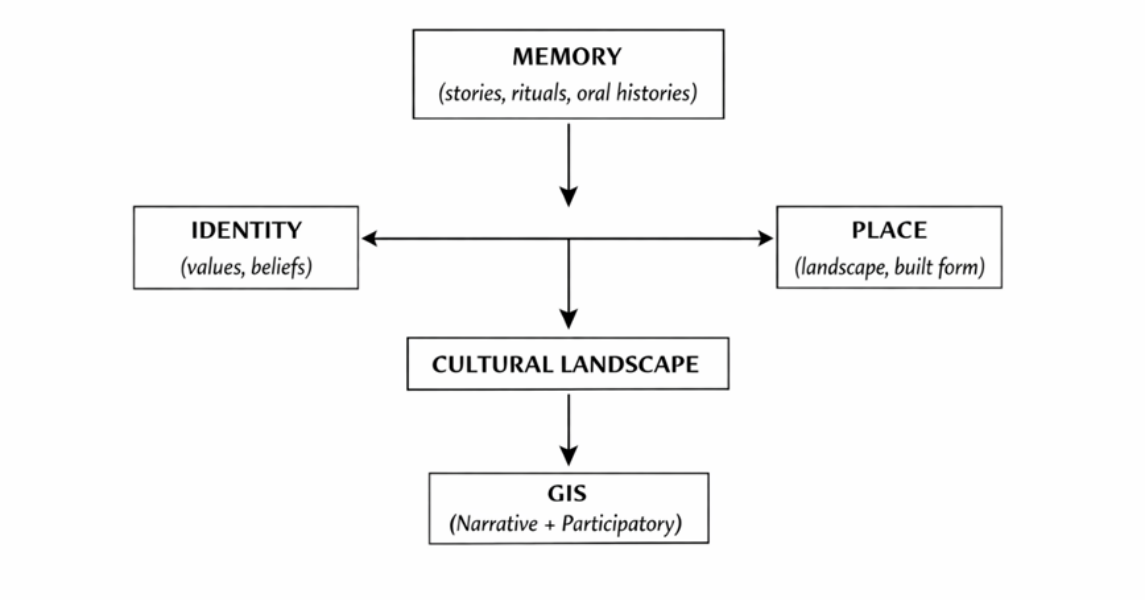

Figure 1: Conceptual framework illustrating the relationship between memory, identity, and place within cultural landscapes, and the role of narrative and participatory GIS in integrating intangible cultural meanings into spatial representation.

Memory, Place Identity, and Cultural Landscapes

Memory and place identity are produced and sustained through everyday practices, rituals, commemorations, and oral traditions transmitted across generations [2,11]. These intangible dimensions anchor communities to specific spatial settings such as temple precincts, markets, sacred groves, and ceremonial routes, contributing significantly to the cultural meaning of landscapes. Nevertheless, such lived experiences are rarely captured in conventional spatial inventories, which tend to prioritize physical and measurable attributes [12].

Recent studies demonstrate that GIS can effectively represent intangible cultural dimensions by mapping ritual routes, memory nodes, and culturally significant events as georeferenced multimedia features [6,7]. By doing so, GIS facilitates a more inclusive and nuanced understanding of cultural value embedded within landscapes, enabling planners and designers to engage meaningfully with both tangible and intangible heritage.

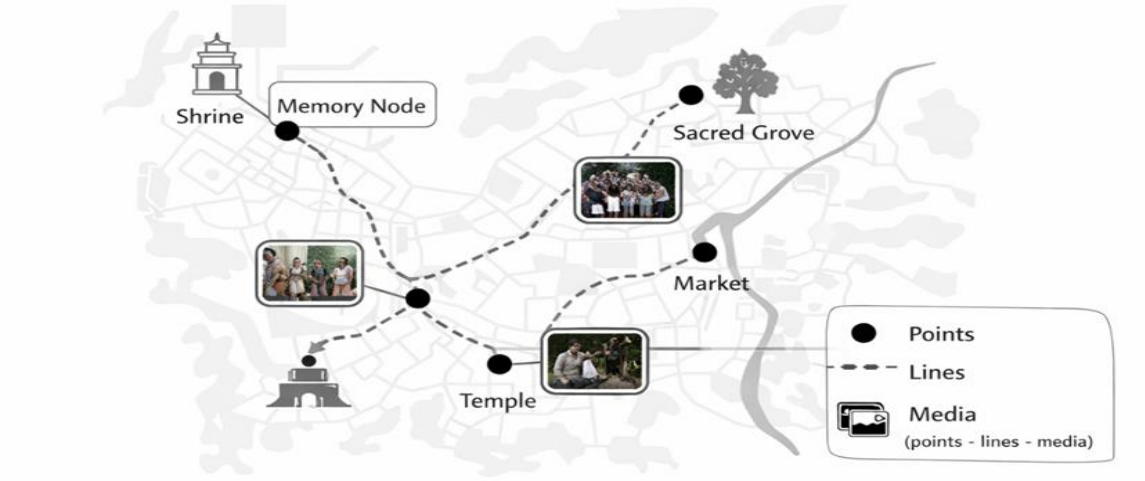

Figure 2: Representation of intangible cultural heritage elements—such as ritual routes, memory nodes, and culturally significant events—spatially mapped using GIS, demonstrating how memory and place identity are anchored to specific cultural landscapes.s

Limitations of Conventional GIS

Despite its analytical strengths, conventional GIS exhibits several limitations in representing cultural narratives. It predominantly prioritizes quantitative, cadastral, and topographic data, often marginalizing lived experience and local knowledge systems [9,10]. Furthermore, traditional GIS outputs typically produce static representations that fail to capture the temporal and evolving nature of cultural processes [3]. The reliance on expert-driven data collection further risks excluding community voices and indigenous knowledge [4,13].

Addressing these shortcomings necessitates a shift toward participatory data collection, multimedia integration, and time-enabled GIS layers capable of documenting cultural continuity and transformation [14,15].

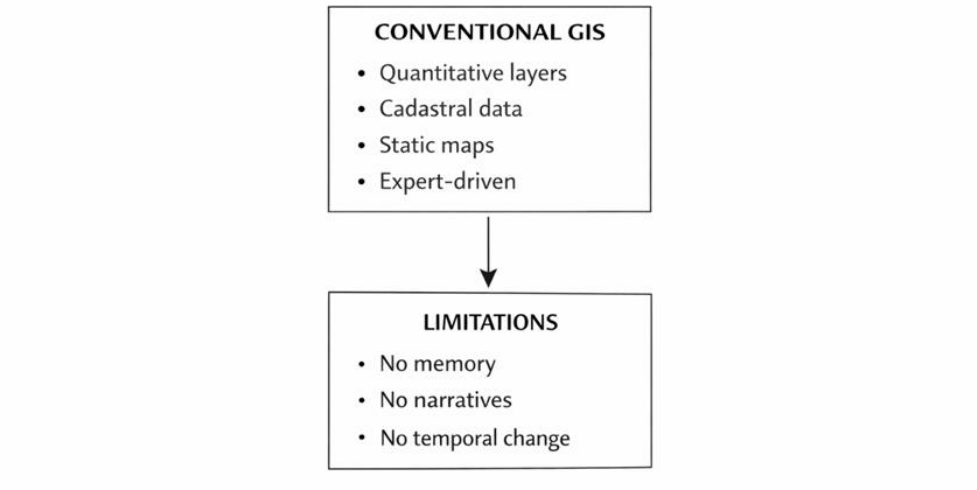

Figure 3: Illustration of limitations of conventional GIS, emphasizing static, expert-driven spatial representations focused on cadastral and topographic data, which inadequately capture dynamic cultural narratives, lived experiences, and local knowledge systems.

Narrative Cartography and Participatory GIS

Narrative cartography conceptualizes maps as storytelling devices capable of representing memories, events, and subjective experiences alongside spatial coordinates [3]. Rather than treating maps as objective or value-neutral, this approach acknowledges them as narrative constructs shaped by cultural and social contexts. Participatory GIS (PGIS) and Public Participatory GIS (PPGIS) further extend this perspective by actively involving communities in the production and interpretation of spatial knowledge [5].

While these approaches enhance cultural authenticity and community empowerment, existing literature also highlights challenges related to representation bias, technological accessibility, and ethical governance of sensitive cultural information [4,10]. Together, narrative cartography and PGIS provide a robust theoretical foundation for mapping cultural narratives in a manner that is both inclusive and ethically responsible.

Methodological Framework for Mapping Cultural Narratives

This study proposes a **conceptual and replicable methodological framework** to guide the integration of cultural narratives into GIS-based mapping practices.

Participatory and Multi-Modal Data Collection

Narrative data can be collected through community workshops, storytelling sessions, guided walks, and semi-structured interviews to document oral histories and collective memory [4,13]. Photographic and

video documentation of rituals and cultural practices, complemented by archival research, supports the spatial and temporal contextualization of narratives [12].

Data Structuring and Metadata
Narratives are geo-referenced as points, lines, and polygons and linked with multimedia content and structured metadata, including narrator identity, date, thematic category, and consent status [15]. Ethical data governance and adherence to research integrity guidelines ensure cultural sensitivity and long-term usability [16].

Visualization and Temporal Representation
Layered GIS visualizations integrate physical fabric with socio-cultural layers, while temporal tools and story-map interfaces illustrate changes in meaning over time [3,17]. Interactive web-GIS platforms further enhance public engagement and interpretive depth [14].

Validation, Ethics, and Dissemination
Community validation workshops play a crucial role in ensuring accuracy and respectful representation of cultural narratives [13]. Ethical safeguards, including informed consent and controlled access to sensitive data, align with UNESCO and UGC research guidelines [1,16].

Evidence from Literature

'Recent studies provide empirical support for narrative-based GIS approaches. GIS-based multi-criteria analysis has been applied to assess intangible cultural heritage tourism potential'[6], 'while spatial appraisal of historic urban cores integrates architectural, social, and cultural values [7]. Advances in 3D GIS and photogrammetry further strengthen material documentation when combined with participatory mapping practices [17]. Collectively, these studies confirm the feasibility and scholarly relevance of integrating qualitative narratives within geospatial frameworks.

Implications for Architectural Education and Heritage Practice

Within architectural education, narrative GIS enhances students' understanding of intangible heritage and place-responsive design principles [2]. In professional practice, the integration of PGIS outputs with conservation assessments enables more inclusive and culturally sensitive interventions, consistent with international heritage frameworks [1,12]. Such approaches support policy-aligned, community-informed planning and conservation strategies.

Challenges and Opportunities

Key challenges associated with narrative-based GIS include data standardization, ethical governance of sensitive cultural knowledge, digital divides affecting participation, and long-term data stewardship [4,10]. Conversely, significant opportunities exist in the development of enriched heritage inventories, participatory planning processes, ICH-based tourism initiatives, and interdisciplinary collaboration enabled by advances in web GIS, mobile data collection, and 3D documentation technologies [14,17].

Conclusion

Reconceptualizing GIS as a narrative-inclusive cultural platform enables the mapping of not only physical landscapes but also the memories, rituals, and identities that animate them. By integrating narrative cartography with participatory GIS, this study demonstrates how GIS can contribute to inclusive heritage documentation, community empowerment, and culturally sensitive planning. The proposed framework

aligns with UGC-recognized research standards and offers substantial potential for application in Indian cultural contexts, including temple precincts and historic settlements.

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