

DECODING THE KNOWLEDGE SPACE OF 'ARCHITECTURAL AND URBAN TRADITIONS' UTILISING A METADATA FRAMEWORK

Madhavi P. PATIL , Ashraf M. SALAMA  , Tarek M. F. AHMED 

Northumbria University, Newcastle upon Tyne, UK

Article History:

- received 28 November 2024
- accepted 06 February 2025

Abstract. This article explores the discourse on Architectural and Urban Traditions (AUT), examining its evolution expressions, and manifestations as a knowledge space. Utilising a Metadata Framework (MF) based on six lines of inquiry—scale, discipline, geographical diversity, typology, governance, and investigation methods—this research systematically examines the relationship between various research dimensions as perceived, researched, and interpreted by academics and scholars. It involves text mining and content analysis to enable deeper, data-driven exploration of evolving themes and patterns within the AUT knowledge space. The MF is implemented through the case of the International Association for the Study of Traditional Environments (IASTE), which is identified based on its focus and longstanding contribution to the discourse since the late 1980s. The study demonstrates how the two pillars of IASTE—Traditional Dwellings and Settlements Review (TDSR) and the biennale conferences (recently annual conferences) have shaped the discourse on traditional environments. It primarily contributes to the field by advancing the application of the Metadata Framework (MF) as a systematic tool for mapping the evolution of AUT discourse, providing valuable insights for future research. Key findings reveal a significant rise in technological integration and governance studies, sustained interest in studying intangible cultural heritage, and growth in linking this with advanced technologies. Conclusions are drawn to elucidate evolving, emerging, and declining themes and areas within the overall knowledge space of architectural and urban traditions.

Keywords: knowledge space, text-mining, architectural and urban traditions, metadata framework.

 Corresponding author. E-mail: ashraf.salama@northumbria.ac.uk

1. Introduction

Examining the discourse on Architecture and Urban Traditions (AUT) is essential to balance urbanisation and sustainability, preserve cultural heritage, and integrate traditional knowledge with modern innovations, ensuring resilient and inclusive cities and environments for current and future generations. However, the examination of AUT has been constrained by fragmented, standalone methodologies (qualitative, quantitative, technological), which overlook capturing the interdependencies of cultural, social, and environmental factors. Recognising this limitation, this article advocates for a holistic Metadata Framework (MF) to provide a more integrated and comprehensive approach.

The aim of this study is to systematically investigate the knowledge space of Architectural and Urban Traditions (AUT) by utilising a Metadata Framework (MF) and text-mining techniques to analyse 334 articles from the Traditional Dwellings and Settlements Review (TDSR) between 1988 to 2022. The research seeks to identify and examine

evolving trends and patterns within AUT and assess how global events and IASTE conference themes have influenced the discourse over time. Through this comprehensive, data-driven analysis, the study enriches the understanding of the dynamic AUT landscape, thereby informing future research directions, interdisciplinary collaborations, and professional practices in the field.

The Metadata Framework (MF) categorises and analyses scholarly discourse using six predefined lines of inquiry: scale, discipline, geographical diversity, typology, governance, and investigation methods. Traditional discourse analysis, which relies on qualitative and subjective interpretations such as thematic coding, narrative analysis, and critical discourse analysis, often suffers from limitations including lack of scalability, potential researcher bias, and difficulties in handling large datasets. These shortcomings can lead to inconsistent findings and hinder the ability to identify broad systematic trends across extensive bodies of literature. In contrast, the MF integrates quantitative text-mining techniques to uncover patterns and trends across a comprehensive dataset of 334 articles from

the Traditional Dwellings and Settlements Review (TDSR). This structured, multi-phase approach not only enhances the reproducibility and scalability of the analysis but also mitigates subjective biases inherent in traditional methods. Furthermore, the MF enables the integration of external factors, such as global events and conference themes, facilitating a nuanced and data-driven exploration of the evolving knowledge space within AUT.

Rooted in historical, geographical, and socio-cultural contexts, traditions are dynamic, socially constructed entities shaped by changing values, technologies, and external influences (Lefebvre, 1991; Rowe & Koetter, 1998; Tschumi, 1996; Vesely, 2004; Vidler, 2002). As a medium, architecture and urban environments embody both collective and individual identities, and the transmission of knowledge occurs through education, apprenticeship, oral traditions, and interdisciplinary research (Jencks, 2002; Kuhn & Hacking, 2012). The examination of AUT provides vital insights into how societies maintain cultural continuity while adapting to evolving circumstances (Jacobs, 1961; Kostof & Tobias, 1999; Lefebvre, 1991; Mumford, 1961; Rapoport, 1982; Salama, 2015). Employing the MF to analyse the evolutionary discourse of AUT (Figure 1) within the published work of the International Association for the Study of Traditional Environments (IASTE), involves utilising datasets from the 33 volumes of its official journal *Traditional Dwellings and Settlements Review* (TDSR) and its conferences.

IASTE is a scholarly association dedicated to studying, preserving, and promoting traditional environments worldwide. It organises its conferences biennially, more recently, annually, serving as essential platforms for scholars, practitioners, and policymakers to engage in debates about advancements of traditional dwellings and settlements. TDSR plays a critical role in disseminating research findings in this field, much of which is presented at its conferences. Typically, TDSR publishes two issues each year, each comprising a curated selection of approximately five peer-reviewed articles that reflect the thematic focus of recent conferences. Premised on revealing the essential characteristics of the AUT knowledge space, the article examines the datasets of volumes and articles of TDSR, which include 334 articles published between 1988 and 2022.



Figure 1. A glimpse into diverse architectural and urban traditions (source: adapted from TDSR)

2. TDSR as a knowledge space

A 'knowledge space' refers to an organised framework encompassing interconnected information, concepts, and ideas pertinent to a specific subject (Crysler, 2000; Salama, 2022). TDSR serves as a repository for a knowledge space that examines the correlation between traditions, culture, and the built environment. The journal engages with key concepts related to tradition, such as identity, authenticity, power dynamics, socio-spatial practices, and globalisation. This comprehensive exploration and critical analysis enable the development of profound insights into how these elements interact and influence each other in various contexts. This focus provides an essential foundation for understanding how these elements shape and influence architecture and urbanism.

Traditional dwellings and settlements house most of the world's population and provide fundamental elements of human life (AlSayyad, 1989, 2018, 2020). In recent years, scholars across diverse disciplines have increasingly examined social and cultural values, images, and perceptions that underpin these environments. Aligning closely with the themes of IASTE conferences, TDSR adopts a structured approach to exploring significant concepts such as '*Rupture and Tradition*,' '*Virtual Traditions*,' and '*The Politics of Tradition*.' This thematic alignment guides researchers in their inquiries and aids as a roadmap for deeper investigations into the evolving nature of tradition and its role in contemporary society.

The interdisciplinary nature of TDSR warrants incorporating perspectives from diverse fields, including anthropology, architecture, cultural studies, sociology, and urban history. This variety of analytical lenses allows for a holistic understanding of the complexities surrounding traditions and their impact on the built environment. Spanning discussions from historical traditions to contemporary practices, TDSR also addresses the effects of globalisation on cultural heritage, providing a comprehensive view of how traditions are influenced by and adapt to changing socio-cultural contexts.



Figure 2. A selection of covers of TDSR representing a visual archive of themes and topics of interest (source: adapted from TDSR)

Articles published in TDSR capitalise on insights gained from IASTE conference themes, ensuring logical continuity in its discourse (Figure 2). This integration reinforces the relevance and timeliness of the research presented, allowing for an ongoing dialogue within the academic community. Notably, TDSR diligently documents evolving trends and debates within the study of traditions and culture, serving as an invaluable resource for scholars interested in past and contemporary shifts and in understanding cultural and socio-spatial phenomena. By and large, TDSR promotes global dialogue through integrating diverse cultural perspectives and disciplinary lenses. It highlights the challenges and opportunities where traditions adapt across different cultural landscapes.

3. Methodology for investigating the knowledge space of TDSR

Investigating the knowledge space of TDSR involves systematic exploration procedures to understand the scope, dynamics, and impact of AUT (Figure 3). Aiming to systematically investigate the knowledge space of AUT the methodology integrates a Metadata Framework (MF) with text-mining techniques through the analyse 334 articles published in Traditional Dwellings and Settlements Review (TDSR) between 1988 and 2022. The methodology employs and validates the metadata framework (MF) to analytically examine the complex discourse surrounding architectural and urban traditions. Text mining and content analyses are deployed to identify recurring themes, keywords, trends, and their evolution over time. It further explores the interrelation between conference themes, global events, and scholarly research trends to discern these factors and the way in which they shape the evolving understanding of traditions within urban development.

The methodology is driven by three core research questions designed to gain insights into the evolution and influence of themes within TDSR:

1. What are the defining features of key periods in the discourse on AUT, as revealed through text mining?

2. What patterns and trends characterise the discourse on AUT across different periods, as revealed through content analysis?
3. How do significant global events influence the themes of IASTE conferences, and what implications does this have for scholarly inquiry into AUT?

Phase 1: Identifying characteristics of key periods

The first phase addresses the first research question, uncovering the defining features of key periods within TDSR. The selection of these six lines of inquiry is grounded in their ability to capture the key dimensions that influence and shape AUT. *Scale* and *geographical diversity* are fundamental for contextualising traditional environments across diverse spatial and cultural settings. *Discipline* ensures that the analysis incorporate multiple perspectives, fostering a holistic understanding of complex phenomena. *Typology* provides a structured way to categorise and compare different forms of traditional dwellings and settlements, facilitating the identification of commonalities and distinctions. *Governance* is critical for understanding the policy and organisational frameworks that support or hinder heritage conservation efforts. Lastly, *investigation methods* ensure methodological rigor and the ability to capture both qualitative insights and quantitative trends, enhancing the robustness of the analysis. Together, these dimensions form a comprehensive framework that addresses both the breadth and depth, providing a nuanced and systematic approach to exploring AUT. This phase is broken down into the following steps:

- a. Defining Six Lines of Inquiry: Six core lines of inquiry guide the investigation including scale, geographic location, discipline, typology, governance, and investigation methods. These dimensions were identified by thoroughly analysing abstracts of a total of 334 articles within 33 volumes of TDSR. The lines of inquiry include:
 - *Scale* which examines the spatial and temporal reach, from local to global contexts, serving to understand the interaction between traditional environments and broader systems.

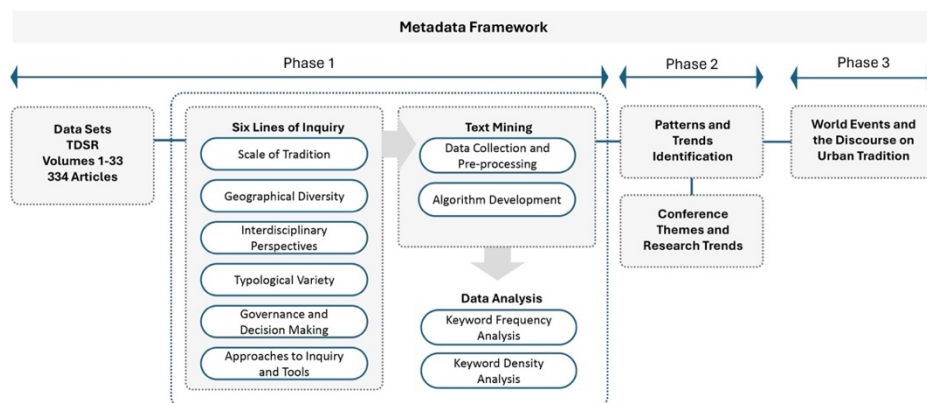


Figure 3. Framework for investigating the knowledge space of the Traditional Dwellings and Settlements Review (TDSR): Integrating text mining and seven pivotal lines of inquiry to analyse patterns, trends, and influences on urban tradition (source: authors)

- *Discipline* which emphasises an interdisciplinary approach, integrating fields such as architecture, anthropology, environmental science, and social sciences to offer a multifaceted analysis of traditional environments.
 - *Geographical Diversity* which demonstrates global inclusivity by incorporating underrepresented regions, providing a broader perspective on unique architectural practices and cultural traditions.
 - *Typology* which categorises traditional dwellings and settlements based on architectural styles, functions, and cultural significance, revealing patterns and variations across different typologies.
 - *Governance* which explores how different governance models affect heritage conservation and community resilience, crucial for sustainable preservation.
 - *Investigation Methods* which highlight diverse methodologies, including qualitative, quantitative, and mixed methods approaches, ensuring a comprehensive analysis of trends and social dynamics.
- b. Algorithm Development for Text Mining: An algorithm was developed to systematically extract data related to these six lines of inquiry. Term Frequency (TF) algorithm was developed and implemented in JavaScript, designed to run in a DOS prompt, thereby making it accessible to researchers without extensive programming backgrounds. TF is a statistical measure that evaluates the importance of a word in a document relative to a collection of documents, enabling the identification of significant keywords by balancing the frequency of terms within individual articles against their prevalence across the entire dataset (Terachi et al., 2006). The algorithm systematically processes the text by first performing preprocessing steps, including text cleaning, lower-casing, stop-word removal, and standardisation of text format. It then calculates the TF scores for each term, highlighting those that are most relevant to specific research dimensions. A minimum frequency threshold of ten occurrences was set, and both unigrams and bigrams were utilised to capture comprehensive keyword data aligned with the six lines of inquiry: scale, discipline, geographical diversity, typology, governance, and investigation methods.

Building on this foundation, a tailored dictionary to these six lines of inquiry was developed to improve keyword accuracy, while synonym recognition was implemented to reduce redundancy, ensuring that similar terms are appropriately grouped. This customisation allows the algorithm to effectively extract and organise relevant keywords, patterns, and themes from the textual content of 334 articles from the Traditional Dwellings and Settlements Review (TDSR). The extracted data facilitates the identification of trends and relationships within the research themes, providing a robust foundation for analysing the evolving knowledge space of architectural and urban traditions. The algorithm was validated through pilot testing on a subset of 15 articles, ensuring optimal keyword extraction before scaling

to the full dataset. To further facilitate reproducibility, the complete codebase, including preprocessing scripts and algorithm configurations will be provided upon request. These enhancements ensure that the Metadata Framework is transparent, customisable, and robust for systematically analysing the knowledge space of architectural and urban traditions.¹

- c. Development of a Coding Manual: A coding manual was created to ensure consistency in keyword identification, serving as a detailed guide that identifies keywords, interprets them to align with the six lines of inquiry, and then categorises them into overarching themes. For example, related terms such as 'sociology,' 'sociologically,' and 'sociologist' were consolidated under the unified keyword 'Sociology.' This approach facilitated accurate and efficient analysis of the text while ensuring data analysis consistency during the generation of results.
- d. Frequency and Keyword Density Analysis: This step involved organising the data by volume and grouping them into seven periods (covering two conferences). Keyword frequency analysis was performed to account for occurrences of predefined keywords within each volume. Tables represented as heat maps illustrate these results, highlighting the evolution of themes and trends.

Phase 2: Exploring influence and impact

The second phase focuses on the second research question, which investigates how conference themes evolve and influence one another over time:

- a. Pattern Identification and Period Characterisation: The keyword density analysis results are analysed to identify patterns and trends across the seven periods identified. By comparing density changes, emerging trends and shifts in discourse are recognised to elucidate dominant themes and significant changes during these intervals. Visual aids, including timelines, are used to illustrate these patterns.
- b. Compilation and Chronological Organisation of Conference Themes: Themes from TDSR journal volumes are compiled and arranged chronologically to trace thematic trajectories.
- c. Theme Trajectory Analysis: The development of conference themes over the years is analysed while identifying connections between them. This includes examining how themes build upon prior discussions and in-depth analysis of abstracts, guided by keywords and concepts that bridge multiple periods.

Phase 3: Incorporating world events into the analysis

The third phase responds to the third research question, it aimed to invigorate the analysis by integrating significant world events, providing valuable context and insights into

¹ The algorithm can be made available upon request.

how external factors influence the evolution of discussions in the discourse of AUT:

- d. Identify Relevant World Events: Situate significant global events occurring between conferences, such as political, economic, cultural, technological, or environmental changes.
- e. Analyse Theme-Event Relationships: Examine how each conference theme relates to the identified world events, seeking direct or indirect thematic connections.

This methodology effectively reveals how TDSR themes evolve and respond to global events, extending the understanding of tradition within dwellings, settlements, and city development.

4. Analysis of key findings

The analysis is structured to respond to the three research questions following three distinct phases outlined under the methodology. It should be noted that while the article encompasses findings across all 33 volumes, it is essential to recognise the constraints of space and scope that preclude presenting detailed results of each period. Therefore, as a focal point of the discussion, we present a comprehensive analysis of seven periods (1988–1995, 1996–2000, 2001–2004, 2005–2010, 2011–2014, 2015–2020, 2021–2022), highlighting key trends and patterns that reflect potential influences from significant global events and evolving conference themes. This approach allows the systematic identification and discussion on how external factors may have shaped research directions and thematic focuses within the AUT knowledge space. The characteristics of each period were identified through the lens of six lines of inquiry derived from keyword frequency and density analysis to capture distinct themes within these periods.

4.1. Dimensional realms and scales

Analysing the data across the categories related to the scale of the built environment reveals significant shifts in research focus from historic preservation in 1988 to sustainable development initiatives in 2022 (Table 1). In the *'geographical and governance scale'* category, the term *'global'* saw a substantial increase, peaking at 632 mentions during 2005–2010, reflecting the heightened impact of globalisation on urban development discourse. Despite this global emphasis, *'local'* contexts remained consistently critical, with mentions peaking at 592 in 1996–2000 and maintaining high levels thereafter. This suggests a persistent balance between global perspectives and local realities in AUT research. The terms *'national'* and *'regional'* also experienced increased attention, indicating a broadened focus to encompass multiple governance levels and their influence on urban environments.

Within the *'land use'* category, *'residential'* areas maintained steady interest, highlighting the ongoing importance of housing in studying traditional environments. However, mentions of *'commercial'* areas declined over

time—from 93 in 1988–1995 to 20 in 2021–2022—possibly indicating a shift towards mixed-use developments or a decreased focus on purely commercial spaces. The *'physical urban elements'* category showed a fluctuating interest in features like *'street,' 'block,' 'complex,'* and *'site.'* The peak in mentions of *'street'* (233) and *'site'* (177) during 2005–2010 suggests a focus on urban infrastructure and site-specific studies.

In the *'settlement type'* category, *'urban'* and *'city'* remained dominant, reflecting ongoing urbanisation and the significance of metropolitan areas in research. *'urban'* peaked at 878 mentions in 2005–2010, while *'city'* reached 743. Notably, *'rural'* experienced renewed interest in 2011–2014 (222) and 2021–2022 (152), indicating growing concerns about rural development and the urban-rural interface. Conversely, *'village'* mentions decreased significantly from 401 in 1988–1995 to 102 in 2021–2022, suggesting a reduced focus on smaller settlements or rural and peripheral developments. Lastly, the *'urban space category'* revealed variable attention to public and private spaces. *'Public space'* mentions peaked at 47 during 2001–2004 but declined thereafter, which reflects changing terminologies or shifting interests toward other aspects relevant to urban life. The low and declining mentions of *'private space'* indicate a limited focus on private domains within the public research discourse.

4.2. Interdisciplinary perspectives

The data reveals a shift in research focus across disciplines from a dominant emphasis on *'architecture and urban history'* (between 1988–2000) to a broader interdisciplinary approach to urban studies, environmental science, and political science (Table 2). In the early periods, *'architecture'* dominated with 444 mentions in 1988–1995, peaking at 479 in 1996–2000, reflecting its central role in the discourse. However, a gradual decline to 225 mentions by 2021–2022 indicates a diversification of research interests. *'history'* consistently remained prominent, emphasising the enduring importance of historical context in understanding urban traditions, though it decreased from a peak of 564 mentions in 2005–2010 to 162 in 2021–2022. The *'political science'* category saw a notable rise in *'political'* mentions, increasing from 123 in 1988–1995 to 329 in 2005–2010, reflecting heightened interest in governance and policy issues affecting urban development amid global influences. *'Management'* emerged with mentions rising from 4 in 1988–1995 to 51 in 2021–2022, indicating growing attention to the organisational aspects of AUT.

'Tourism studies' experienced substantial growth, peaking at 180 mentions in 2005–2010, highlighting tourism's impact on urban economies and cultural heritage. The subsequent decline to 45 mentions may indicate a reduced emphasis or integration of tourism within broader urban studies. *'Environmental'* concerns gained prominence in the *'environmental science'* category, with mentions increasing from 45 in 1988–1995 to 121 in 2005–2010, reflecting a growing awareness of sustainability issues. However, later

Table 1. Trends in keyword frequencies reflecting the evolution of scales of traditional environments: A comparative analysis of TDSR (1988 to 2022) (source: authors)

Scales	Keywords	1988–1995	1996–2000	2001–2004	2005–2010	2011–2014	2015–2020	2021–2023
Geographical and Governance Scale	Global	38	246	288	632	256	186	122
	Local	221	592	392	501	282	323	330
	National	88	199	170	345	254	152	99
	Regional	51	122	44	71	56	38	16
	Society	112	149	101	124	91	99	36
Land Use	Commercial	93	122	74	94	81	49	20
	Mixed-use	1	4	2	13	6		1
	Residential	121	116	57	128	98	139	25
	Alley	9	4		1	13	1	
Physical Urban Elements	Block	27	42	29	44	13	24	7
	Complex	73	77	61	81	75	81	39
	District	22	29	35	117	57	55	16
	Site	86	111	119	177	140	53	102
	Street	168	171	100	233	133	48	17
	Campus	2	3	6	20	11		10
	City	348	450	605	743	380	389	203
Settlement Type	Community	65	267	151	175	134	136	142
	Rural	164	169	90	202	222	89	152
	Suburban	38	138	10	86	40	118	10
	Town	194	185	131	117	90	136	63
	Urban	464	616	439	878	620	671	314
	Village	401	240	111	265	119	72	102
Urban Space	Open space	13	10	9	9	8		2
	Plaza	1	17	2	9	7	5	4
	Private space	1	10	3		4		
	Public space	11	29	47	18	23	32	4

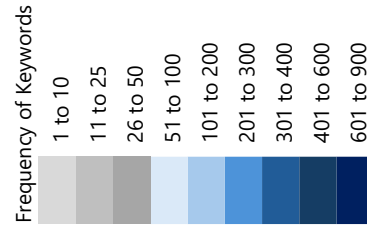
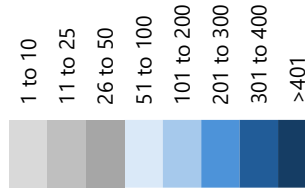


Table 2. Trends in scholarly focus across disciplines within TDSR (1988 to 2022) (source: authors)

Disciplines	1988–1995	1996–2000	2001–2004	2005–2010	2011–2014	2015–2020	2021–2023
Anthropology	56	26	29	26	36	10	11
Archaeology	134	21	14	7	6	15	50
Architecture	444	479	215	385	321	223	225
Architecture/Conservation	7	11	15	21	15	11	9
Architecture/Urban Studies	9	20	11	26	14	7	19
Business/Management	4	24	41	50	24	16	51
Economics	9	24	10	34	17	14	6
Education	14	54	24	59	24	23	25
Environmental Science	45	80	51	121	38	28	27
Folkloristics	7	12	14	8	1	5	1
Geography	25	31	23	25	21	13	3
History	354	468	358	564	542	266	162
Linguistics	42	34	37	57	32	13	18
Literature	30	21	27	29	26	21	10
Philosophy	43	56	30	90	38	20	16
Political Science	125	211	182	351	379	239	60
Psychology	9	18	1	8	6	5	2
Religious Studies	20	18	12	13	11	4	5
Semiotics	12	20	16	9	4	1	5
Sociology	21	22	21	9	38	9	4
Urban Studies	12	123	120	200	26	78	54

Frequency of Keywords



declines suggest integration into other research themes. The consistent presence of 'education' underscores ongoing interest in knowledge dissemination and its role in shaping urban traditions. Over time, the decline in 'anthropology' and 'ethnographic' mentions suggests a shift from purely cultural analyses to more interdisciplinary approaches.

4.3. Geographical diversity

The examination of geographical diversity within the built environment from 1988 to 2022 (Figure 4) encompasses a broad range of locations that illustrate the global nature of AUT, highlighting both underrepresented areas and significant cultural landscapes. In the early stages (1988–1995), research included diverse locations such as Sulawesi Island in Indonesia, Darfur Province in Sudan, and Anatolia in Turkey. This initial diversity underscored our aim of capturing a broad spectrum of cultural and architectural traditions across continents. For example, the presence of research in Lisbon and Porto, Portugal, alongside various regions in Asia and Africa, exemplifies an early commitment to understanding the interconnectivity of global traditions.

As the research progressed into the late 1990s (1996–2000), the geographical scope expanded to include regions in Europe, Africa, and Asia, reflecting the increasing importance of cross-cultural influences. The focus shifted to emerging areas such as Bali in Indonesia and the Purepecha community in Michoacan, Mexico, which highlighted the impacts of globalisation and cultural exchange on local architectural practices. By 2001–2004, the dataset demonstrated a notable shift towards regions affected by global trends, including significant locations like Beijing, China, and Samarkand, Uzbekistan. This expansion mirrored the effects of technological advancements and increased interest in architecture and urbanism of Muslim societies,

particularly in the MENA regions such as Cairo, where a rich historical context collides with modern developments.

The period from 2005–2010, there was a concentration on urban centres like Istanbul, Turkey, and New York, USA, where the complexities of urbanisation and multicultural influences began to redefine architectural and urban identities. Including research from geographical areas such as Dubai, UAE, and the Caribbean Islands highlighted contemporary urban growth alongside traditional cultural narratives. Yet, more recently (2011–2022), the geographical diversity reflects a continuing trend towards the impact of globalisation on urban development. Regions such as Gujarat, India, and the Marshall Islands reveal a growing acknowledgement of unique cultural practices and their significance in modern contexts. The dataset from this period includes notable urban centres encountering challenges related to urbanisation, sustainability, and cultural preservation, emphasising the need for research that respects and integrates diverse cultural narratives.

4.4. Typological variety

The analysis of building/settlement typology from 1988 to 2022 reveals significant shifts in research focus influenced by globalisation, rapid urbanisation, cultural preservation, and community engagement (Table 3). In the 'historical/cultural' category, there was a prominent emphasis on 'colonial administrative buildings,' peaking at 279 mentions during 1996–2000, underscoring a sustained interest in the examination of architectural legacies of colonial periods. However, this interest declined sharply post-2000, reflecting a move away from colonial narratives towards more contemporary issues. 'Royal palaces' and 'ceremonial buildings' also saw increased attention in the mid-2000s, peaking at 23 mentions in 2005–2010, highlighting an interest in preserving grand historical structures amidst modern urban growth.

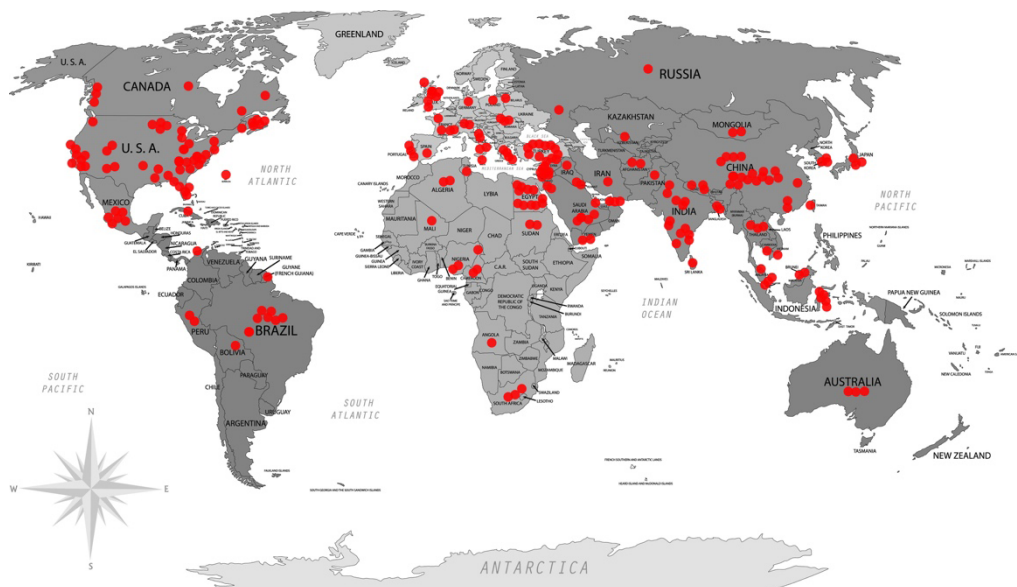
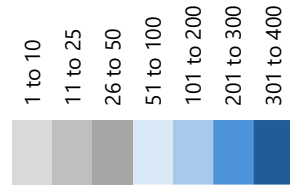


Figure 4. Global distribution of case studies on architectural and urban traditions as portrayed in TDSR (1988–2022) (source: authors)

Table 3. Analysis of building typologies in TDSR (1988–2022), reflecting traditional environments and highlighting shifts in focus across various building types over time (source: authors)

Categories	Building Typologies	1988–1995	1996–2000	2001–2004	2005–2010	2011–2014	2015–2020	2021–2023
Commercial	Market Halls, Bazaars, Shopping Centers	6	1		1			
	Royal Palaces, Ceremonial Buildings	12	6	12	23	7	1	3
Historical/Cultural	Colonial Administrative Buildings	101	279	266	201	168	141	74
	Forts	5	6	5				1
Mixed-Use	Urban Blocks	31	18	4	11	21	1	7
	Mixed-Use Developments	34	22	3	14	17	5	3
	Modern Architecture	96	204	73	173	148	82	71
	Garden Pavilions, Greenhouses	22	16	18	19	10	82	6
Public	Iconic Structures (e.g., Building Facades, Museums)	73	68	42	57	33	76	29
	Adaptive Reuse of Places/Buildings	8	21	22	6	7	9	7
	Standardised Housing, Public Housing Projects	5	48	1	12	4	2	8
	Libraries, Community Centers	5	10	49	13	22	15	5
	Public Squares, Civic Plazas	3	4	9	6		1	3
	Religious Buildings (Churches, Mosques, Synagogues)	12	14	27	2	5		13
Religious	Courtyard Houses	149	62	104	92	170	6	25
	Residential Buildings, Apartments, Complexes	213	165	81	92	57	62	33
	Row Houses, Terraced Homes	10			3	4		
	Vernacular Houses, Indigenous Homes	47	48	15	21	28	46	26
	Informal Settlements, Slums	12	82	74	49	18	177	22
Residential	Squatter Housing	22	64	23	7	4	1	4
	Traditional Housing	371	357	123	218	125	52	58

Frequency of Keywords



The 'mixed-use' category exhibited noteworthy fluctuations, with 'modern architecture, cutting-edge designs' peaking at 204 mentions in 1996–2000 and maintaining substantial interest through 2021–2022. This trend indicates a strong focus on innovative architectural practices and integrating various functions within urban developments. Conversely, 'urban blocks' and 'mixed-use developments' declined after 2000, suggesting a shift towards alternative building typologies. In the 'public' category, 'garden pavilions and greenhouses' peaked in 2015–2020 with 82 mentions, reflecting an increased interest in integrating green spaces within urban environments. The rise in 'adaptive reuse of places/buildings' from 8 mentions in 1988–1995 to 22 in 2001–2004 underscores the growing trend of repurposing historical structures to meet modern needs, balancing preservation with contemporary needs.

The 'residential' category demonstrated a clear evolution, with 'traditional housing' dominating early periods (371 mentions in 1988–1995) and experiencing a decline before resurging to 58 mentions in 2021–2022. 'Residential buildings and apartments' saw steady growth, peaking at 139 mentions in 2015–2020, highlighting the increasing focus on housing solutions in response to the growth of urban populations. Additionally, 'informal settlements and slums' surged to 177 mentions in 2015–2020, reflecting heightened awareness of issues related to urban poverty and informal housing challenges.

4.5. Governance dynamics

The analysis of governance-related keywords from 1988 to 2022 across various overarching governance categories reveals significant trends influenced by political shifts, globalisation, and evolving societal priorities (Table 4). 'Political governance' exhibits notable transformations, and 'local governance' remains consistently high, increasing from 221

mentions in 1988–1995 to 593 in 1996–2000 and maintaining substantial numbers thereafter, peaking at 336 in 2021–2022. This sustained focus highlights the critical role of local authorities in urban development and cultural preservation. 'Tribal governance' saw fluctuations, peaking at 51 in 2011–2014, reflecting intermittent scholarly interest in indigenous governance structures. 'Democratic governance' experienced growth, particularly peaking at 38 in 2015–2020, indicating a heightened emphasis on democratic processes in urban planning. Conversely, 'authoritarian governance' and 'secular governance' remained relatively low, with minor spikes, suggesting a limited focus on these areas in recent research.

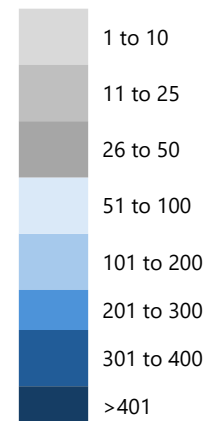
'Governance frameworks' have gained prominence over time, rising to 24 mentions in 2021–2022. This trend highlights an increasing interest in structured approaches to governance within urban contexts. 'Organisational governance', particularly 'hierarchical governance', peaked at 54 in 2005–2010, indicating a strong emphasis on hierarchical structures within organisations managing traditional buildings and settlements. 'Participatory governance' categories demonstrate significant growth, including 'community-based governance'. The term power surged to 164 mentions in 2005–2010 and maintained high levels, peaking again at 125 in 2015–2020. 'Community-based governance' dramatically increased from 65 in 1988–1995 to 267 in 1996–2000, stabilising around 142 in 2021–2022. This underscores a strong trend towards inclusive and collaborative governance models prioritising community engagement in urban interventions.

'Normative governance' categories like 'rule-based governance' peaked at 42 in 2001–2004, emphasising regulatory frameworks. 'Cultural policy governance', encompassing 'cultural policy' and 'socio-cultural policy', saw substantial growth, particularly peaking at 214 in 2011–2014. This

Table 4. Trends in the study of governance within traditional environments (1988–2022), illustrating the evolution of focus on various governance frameworks over the years (source: authors)

Categories	1988–1995	1996–2000	2001–2004	2005–2010	2011–2014	2015–2020	2021–2023
Collaborative Governance	3	8	7	10	7	7	2
Cultural Policy	141	200	135	206	219	64	69
Governance Frameworks	1	1		8	19	15	24
Normative Governance	30	36	42	35	28	18	8
Organisational Governance	18	28	30	64	49	47	17
Participatory Governance	146	393	261	339	245	261	189
Political Governance	291	680	436	595	372	411	378
Social Policy	1		1	2	2	5	
Strategic Governance	7	25	21	47	31	44	16
Urban Governance	4	34	35	29	19	71	12

Frequency of Keywords



trend highlights the increasing importance of cultural policies in shaping traditional urban environments and preserving cultural heritage amidst global influences. Overall, the data reveals a shift towards more decentralised, participatory, and culturally informed governance models, reflecting broader societal transformation and the need for inclusive, sustainable, and context-sensitive approaches.

4.6. Approaches to inquiry and tools

The analysis of research methodologies from 1988 to 2022 within TDSR highlights significant shifts in approaches to investigation (Table 5). 'Fieldwork', encompassing ethnographic and 'participant observations', maintained steady use with fluctuations across various periods. Initial emphasis (11 mentions in 1988–1995) grew in 1996–2000 (19) and 2001–2004 (16), indicating a commitment to immersive, qualitative research. However, its prominence remained stable in the mid-2000s (13) and maintained a consistent presence in recent years (13 in 2021–2022), suggesting a renewed interest in a deep, contextual understanding of traditional communities amidst evolving urban landscapes.

'Case studies' consistently remained a cornerstone approach, with mentions rising from 8 in the early period to 17 in 1996–2000 and stabilising around 16–25 in subsequent years. This sustained use of case studies approach underscores the value of in-depth examinations of specific instances to unravel complex urban and architectural phenomena. 'Interviews' saw a marked increase, particularly peaking at 36 mentions in both 2005–2010 and 2015–2020, before declining to 8 in 2021–2022. This trend reflects a heightened focus on gathering nuanced perspectives and experiences from stakeholders during periods of intense urban and cultural transformation, followed by a possible shift towards other methods or integration into

mixed-method approaches. 'Attitude surveys' experienced significant growth, especially from 45 in 2005–2010 to 60 in 2015–2020, before tapering off to 9 in 2021–2022. This surge aligns with the increasing reliance on quantitative data to capture broad trends and patterns in urban development and community engagement.

'Digital visualisation' emerged as a dominant method in recent years, increasing rapidly to 98 mentions in 2021–2022. This increase highlights the critical role of digital tools and methodologies in contemporary research, enabling complex data analysis and visualisation capabilities that enhance the interpretation of complex data on cultural and urban traditions. Conversely, 'simulation', and 'virtual representation' saw varied trends, with 'virtual reality analysis' notably increasing to 161 mentions in 2021–2022. This reflects the growing adoption of advanced technologies such as virtual reality to create immersive research environments, facilitating innovative studies of traditional environments.

5. Continuity of patterns and faces of tradition as portrayed in TDSR

Investigating the patterns that characterise the discourse of AUT involves exploring the associations among six lines of inquiry—scale, discipline, geographical location, typology, governance, and investigation mechanisms and tools. The examination unravels the complex web of interactions that define the evolution of themes and shape subsequent debates (Figure 5).

5.1. Interconnectedness of scale and typology

One of the most evident patterns is the correlation between geographical scale and building or settlement typology. The data shows a significant rise in mentions of

Table 5. Trends in investigation methods utilised in examining traditional environments in TDSR (1988 to 2022), highlighting the evolution and adoption of diverse methodologies (source: authors)

Investigation Methods	1988–1995	1996–2000	2001–2004	2005–2010	2011–2014	2015–2020	2021–2023
Computer Simulations	1		2	16	13		1
Data Visualisation	10		1			1	
Digital Data Analysis	9	8	1	8	12	11	98
Ethnographic Fieldwork	11	19	16	13	9	6	13
In-Depth Case Study	8	17	16	14	16	15	10
Participant Observations	20	26	12	12	5	27	5
Structured/ Semi-structured Interviews	11	14	25	36	20	36	8
Survey/ Questionnaires	23	28	28	45	20	60	9
Virtual Reality Analysis	1	17	4	3	6	5	161

Frequency of Keywords

- 1 to 10
- 11 to 25
- 26 to 50
- 51 to 100
- 101 to 200

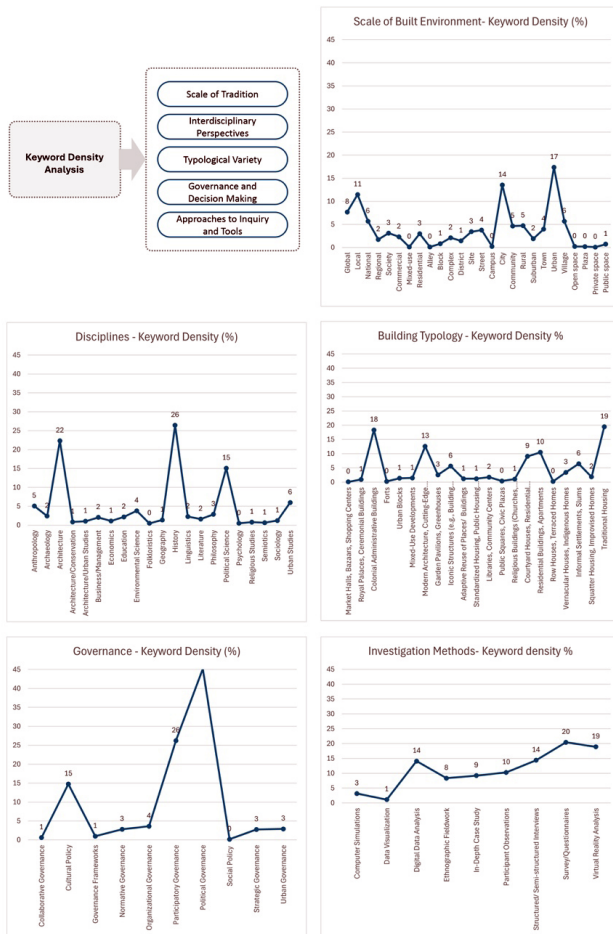


Figure 5. Trends and patterns through keyword density across key research categories, revealing shifts in focus and the evolving priorities within architectural and urban traditions over time (source: authors)

'local' and 'urban' typologies, indicating that urban development has increasingly focused on localised contexts or local solutions to challenges (Abu-Hamdi, 2016; Baweja, 2015; Beckman & Ackerknecht, 1993; Castriota, 1999; Chu & Liang, 2019; Unakul, 2020). For example, the consistent references to 'residential' spaces highlight the need for housing solutions that are tailored to community-specific needs, suggesting a shift towards more inclusive urban practices (Almohaisen, 2016; Donnelly, 2013; Downer & Natwig, 1992; Hall, 1998; Liu, 2009; Thorgrimsdottir, 2018; Zhang, 2015). The growing prominence of 'mixed-use developments' in recent years reflects an integration of residential, commercial, and social spaces, which cater to the modern demand for multifunctional urban environments. This typological evolution emphasises the necessity of contextualising building designs within their geographical settings, where mixed-use developments have revitalised neighbourhoods and enhanced local economies.

5.2. Multi-disciplinarity enhancing research depth

The research methodologies employed have increasingly embraced a multidisciplinary approach. The data shows an

upward trend in the integration of diverse fields, such as 'anthropology', 'sociology', and 'urban studies', enriching the discourse on urban traditions (Hillel, 2018; Jenkins, 2013; Martinon, 1992; Salama, 2015; Young, 2007). This multidisciplinary focus is particularly important in understanding how cultural practices evolve in response to socio-political contexts (Bozdogan, 1996; Campinho, 2019; Duffy, 2004; Whelan, 2019). For example, the utilisation of 'ethnographic fieldwork' and 'cultural policy governance' illustrates how qualitative and governance-oriented approaches deepen insights into community engagement and the complexities of preserving cultural heritage (Da Silva Schicchi, 2015; Leigh & Asojo, 1999; Li, 2014). The inclusion of 'cultural heritage' and 'gender studies' reveals significant intersections in how urban spaces reflect and reinforce social identities (Ekhaese et al., 2018). As cities evolve, the multidisciplinary approach has become essential in examining the complexities of urban life, as illustrated by studies on urbanism that incorporate gender-sensitive development, promoting safety and accessibility in public spaces (Akkar, 2005; El-Kholei & Yassein, 2022; Sobti, 2022). The increase in ethnographic methods, including 'participant observations' and 'semi-structured interviews', indicates a trend towards deeper, qualitative insights that capture the complexities of community interactions and cultural identities (AlSayyad, 2022).

5.3. Governance, power dynamics, and identity

The governance landscape in AUT is complex, with keywords such as 'democratic governance', 'local governance', and 'power' highlighting the evolving nature of decision-making processes (Cowan, 2014; Daher, 1999; Duffy, 2004; Gamble, 2010). The data indicates a notable shift towards more participatory models over time, particularly evident in the rise of 'collaborative governance', which emphasises cooperation between various stakeholders, including local communities, government entities, and civil society (Crysler, 2006; Glassie, 1990; Lawrence, 1982; Zheng, 2013). Moreover, the prominence of 'local governance' signifies an increasing recognition of the importance of grassroots participation in shaping urban policies (Avrami et al., 2014; Hall, 1998; Nam, 2011). This participatory approach empowers local populations to have voice their opinions on the governance of their environments, thus reinforcing local identities and enhancing cultural practices. This trend highlights the importance of local identities and the role of cultural practices in shaping governance structures, revealing how power dynamics influence both the preservation of traditions and urban space identity.

5.4. Evolution of research methodologies

Research methodologies have transformed significantly, from traditional qualitative methods such as 'fieldwork' and 'case studies' to advanced techniques such as 'digital data analysis' and 'virtual representation'. The increasing reliance on 'digital visualisation', with its prominence peaking in recent years, highlights the integration of digital

technology in examining traditional environments, facilitating deeper analysis and visualisation of complex data (Alhasani, 1996; Kahera, 1998; Mugerauer, 2008). This shift is exemplified by using Geographic Information Systems (GIS) to map and analyse urban change, allowing researchers to visualise the spatial distribution of traditions within urban contexts. Additionally, the adoption of methodologies such as ‘computer simulations’ and ‘virtual reality analysis’ enables researchers to model urban environments and engage with participants in immersive settings, providing new insights into the spatial and social dynamics of urban traditions (Moneta, 2020).

5.5. Geographical focus and cultural specificity

Geographical diversity within the dataset emphasises the importance of cultural specificity in understanding urban traditions. The fluctuating focus on ‘local’, ‘national’, and ‘global’ scales suggests an adaptive approach to research, with scholars increasingly recognising the value of examining traditions through a localised lens. This emphasis allows for exploring unique cultural practices and architectural/urban forms, ensuring that research remains relevant to the communities within which it is undertaken. For example, the investigation of vernacular housing in regions like the Andes highlights traditional construction methods and materials that reflect local environmental conditions and cultural practices (Tan, 1995). The analysis of urban spaces in Tokyo showcases how traditional tea houses co-exist with modern skyscrapers, emphasising the need for research that respects and integrates diverse cultural narratives (Cornell, 1997).

6. IASTE conference themes and research trends

The themes outlined in the IASTE conferences from 1988 to 2022 have played an important role in shaping the research trends observed in the datasets (Table 6). Evidently, each conference highlights specific issues, challenges, and advancements within traditional dwellings and settlements, effectively steering scholarly attention towards those areas.

For instance, the early conferences, such as ‘*Traditional Dwellings and Settlements in a Comparative Perspective*’ (1988) and ‘*Value in Tradition*’ (1994), laid the groundwork for examining the fundamental aspects of cultural identity and the significance of traditional practices in the modern context. The subsequent themes evolved to address more complex dynamics, as seen in ‘*(Un)bounding Traditions*’ (2002), ‘*Hyper Traditions*’ (2006), and ‘*Rupture and Tradition*’ (2021), which reflected growing concerns about the impacts of globalisation and the adaptability of traditions. This shift is evident in the increased scholarly output on ‘*cultural heritage*’ and ‘*heritage conservation*,’ as researchers appear to reconcile traditional practices with contemporary urban realities, emphasising the importance of safeguarding cultural identities in the face of modern urban challenges.

The theme ‘*Manufacturing Heritage/Consuming Tradition*’ (1998) underscored the complex relationship between cultural commodification and preservation efforts. This has led to a surge in research on economic aspects of cultural heritage, as seen in the datasets where mentions of ‘*cultural policy governance*’ peaked in the later years. Scholars began to investigate how economic factors influence the preservation and promotion of traditional practices, leading to a greater understanding of the market dynamics in heritage tourism and cultural industries.

The emphasis on sustainability, highlighted in themes such as ‘*Post Traditional Environments in Post-Global World*’ (2004) and ‘*The Politics of Tradition*’ (2018), has prompted a considerable focus on environmental studies. This focus is evidenced by increased mentions of ‘*environmental*’ and ‘*digital representation*’ in recent years, where the integration of traditional knowledge with sustainable practices has gained traction. Scholars appear to have been increasingly exploring how indigenous wisdom and historical building techniques can inform modern sustainable development. This demonstrates a growing recognition of the value of tradition in addressing contemporary ecological challenges.

Themes engaging with technological advancements, such as ‘*Virtual Traditions*’ (2021), have catalysed research into digital heritage preservation and representation tools. The significant rise in related articles highlights a clear response from the academic community to the thematic direction set by IASTE conferences. Researchers seem to have been exploring innovative methodologies that employ virtual reality, digital mapping, and online archives to enhance the study and preservation of traditional settlements, making cultural heritage more accessible to diverse academic and public audiences.

Overall, the IASTE conference themes reflect evolving scholarly interests and actively shape them, guiding researchers toward pertinent contemporary issues and encouraging interdisciplinary collaboration. By fostering a dynamic response to the complexities of tradition in urban development, the TDSR conferences serve as critical catalysts for innovation and advancement in the study of traditional dwellings and settlements. This influence underscores these gatherings’ vital role in advancing the discourse surrounding architectural heritage, sustainability, and cultural identity in a rapidly changing world.

From the synthesis of the seven analysed periods, it becomes evident that the marked increase in sustainability-related keywords during the 2005–2010 period highlights a significant shift towards sustainable development practices within architectural and urban traditions. This trend underscores the growing environmental consciousness in the field and reflects the broader global emphasis on sustainability at that time, directly aligning with the study’s research questions to examine evolving practices within AUT. Similarly, the rise in interdisciplinary approaches observed between 2011–2014 demonstrates the evolving disciplinary boundaries and their impact on AUT discourse, corresponding to the aim of understanding

Table 6. Themes of TDSR conferences from 1988 to 2022, demonstrating key topics that have shaped the discourse on architectural and urban traditions (source: authors)

Conference Themes	Year	City	Country
Traditional Dwellings and Settlements in a Comparative Perspective	1988	California	United States
First World/Third World: Duality and Coincidence in Traditional Environments	1990	California	United States
Development versus Tradition: The Cultural Ecology of Dwellings and Settlements	1992	Paris	France
Value in Tradition: The Utility of Research on Identity and Sustainability	1994	Tunis	Tunisia
Identity, Tradition and Built Form: The Role of Culture in Planning and Development	1996	California	United States
Manufacturing Heritage/Consuming Tradition: Development Preservation and Tourism in the Age of Globalization	1998	Cairo	Egypt
The End of Tradition?	2000	Trani	Italy
(Un)Bounding Tradition: The Tensions of Borders and Regions	2002	Hong Kong	China
Post-Traditional Environments in a Post-Global World	2004	Dubai	United Arab Emirates
Hyper-Traditions	2006	Bangkok	Thailand
Interrogating Tradition	2008	Oxford	United Kingdom
The Utopia of Tradition	2010	Beirut	Lebanon
The Myth of Tradition	2012	Oregon	United States
Whose Tradition?	2014	Kuala Lumpur	Malaysia
Legitimizing Tradition	2016	Kuwait City	Kuwait
The Politics of Tradition	2018	Coimbra	Portugal
Virtual Traditions: The Transience of Tradition in Changing Geographies and Global Landscapes	2021	Nottingham	United Kingdom
Rupture and Tradition: Disruption, Continuity, Repercussions	2022	Kent Ridge	Singapore
The Dynamism of Tradition	2024	Riyadh	Saudi Arabia

the integration of diverse disciplines. This integration has facilitated a more holistic understanding of traditional environments, fostering innovative methodologies and collaborative research initiatives. Additionally, the fluctuation in governance-related themes across different periods illustrates how changes in political and organisational frameworks influence heritage conservation and urban planning practices. For example, the surge in mentions of "participatory governance" in recent years indicates a shift towards more inclusive and community-driven approaches, mirroring global trends towards democratisation and stakeholder engagement. These connections ensure that the presented findings comprehensively address the research questions, providing meaningful insights into the evolution of architectural and urban traditions.

7. Reciprocity of global events and IASTE conferences

Contextualising the discourse from the lens of global events is key to understanding how they influence conference themes, as these events often act as catalysts for societal, political, economic, and cultural changes (Appadurai, 1996; Huntington, 2007; Wallerstein, 2007). The relationship between world events and research focus underscores how global occurrences may shape schol-

arly priorities, methodologies, and questions, ensuring that research remains relevant (Becker, 2008; Crano et al., 2014; Yin, 2017). Understanding continuity and change in themes also reveals how specific topics persist or evolve in response to shifting global circumstances and areas of focus. Connecting these events to policy and practice allows for generating insights into how urban growth and cultural preservation adapt in real-world contexts. Ultimately, recognising how global events influence IASTE conference themes helps anticipate future research directions, ensuring the field remains responsive to emerging challenges (Florida, 2010; Kuhn & Hacking, 2012; Toffler, 1970).

In the late 1980s, global events such as the 'World Conference on Cultural Policies' and the 'UNESCO Development of Networks' catalysed a heightened focus on cultural preservation and the comparative study of traditional environments. These events spurred scholars to examine how cultural practices could be maintained amid modern changes and challenges, which link to the 1988 theme, 'Traditional Dwellings and Settlements in a Comparative Perspective'. This theme laid the foundation for global discussions on the value of tradition across diverse cultural contexts, encouraging exploring how traditional practices adapt and persist in a rapidly changing world.

As the 1990s unfolded, the collapse of the Soviet Union and the Gulf War reshaped political and social

landscapes, which, in turn, appear to have influenced the 1992 theme, *'Development versus Tradition'*. This geopolitical shift prompted a deeper investigation into how cultural traditions interact with political upheaval and development processes. The theme highlighted the tension between preserving traditional practices and embracing modernisation, emphasising the need to balance cultural continuity and progress.

The early 1990s also saw the *'Earth Summit'* and the *'UN Conference on Environment and Development'*, which brought environmental sustainability into sharp focus on the global stage. This shift was reflected in the 1994 theme, *'Value in Tradition'*. Scholars began to explore how traditional practices could be integrated into modern urban planning, especially in the context of sustainability. Such a theme manifested the importance of balancing heritage conservation with the urgent need for environmental stewardship, setting the stage for the growing importance of sustainability within architectural and urban studies.

As the new millennium began, the *'UN Millennium Development Goals'*, coupled with the rise of globalisation, created a sense of uncertainty around the future of traditions. The theme *'The End of Tradition?'* (2000) encapsulated this uncertainty, questioning whether the global interconnectedness brought by modern technology and economic development would render traditional practices obsolete. The conference focused on whether traditional knowledge could adapt and thrive in a rapidly changing world or if globalisation would overwhelm local customs and traditional practices.

The repercussion of the *'UN Summit on Sustainable Development'* and the events of 9/11 in 2001 spurred further reflection on how tradition is tied to geopolitical challenges. The 2002 theme, *'(Un)Bounding Tradition'*, appears to have emerged in response to the heightened focus on sustainability and security, alongside a growing awareness of cultural identity. Scholars began exploring how physical and ideological or conceptual borders impacted the preservation and evolution of traditional practices, emphasising the need to consider regional variations and the intersection of tradition with political and security concerns.

The *'Global Financial Crisis'* of 2008 and the rise of renewable energy initiatives prompted an urgent re-evaluation of traditional practices and their resilience and sustainability. The *'Interrogating Tradition'* (2008) theme reflected this need for reconsideration, as scholars explored how traditional practices could be adapted or preserved in times of economic and environmental uncertainty. The crisis challenged long-held assumptions about the inevitability of modernity, and the conference theme called for a re-evaluation of the role of tradition in contemporary societies.

By 2010, the world's attention had shifted toward climate change and sustainable urban development, especially with the *'UN Climate Summit'* and broader global economic changes. This period instigated a more optimistic outlook on how tradition could integrate with future urban development, as reflected in the 2010 theme, *'The Utopia of Tradition'*. Scholars began envisioning a future where tra-

ditional knowledge and practices were central to creating sustainable, harmonious urban environments, suggesting that tradition could be critical in addressing modern challenges such as climate change and urbanisation.

The years following the *'Paris Climate Agreement'* (2014–2015) and the adoption of the *'UN Sustainable Development Goals'* saw a growing focus on climate action and equitable development. This seems to have led to the 2014–2015 theme, *'Whose Tradition?'* which raised important questions about the ownership and authority in determining which traditions are preserved and for what purposes. It explored the power dynamics involved in selecting traditions to be safeguarded, highlighting the influence of global forces and political agendas in shaping these decisions.

The conference *'Legitimizing Tradition'* (2016) builds on *'Whose Tradition?'* by continuing the inquiry into who defines and validates traditions, exploring their role in legitimisation within political, social, and cultural landscapes. The 2018 conference, *'Politics of Tradition'*, further developed this by analysing how politics shapes traditional narratives and identities. Influenced by the *'Global Compact on Migration'* (2017) and the *'Global Compact for Refugees'* (2018), the 2018 conference addressed the complex relationship between tradition, politics, and global movements of people, highlighting the shifting dynamics of migration, displacement, and cultural integration.

The global COVID-19 pandemic (2019–2021) and the accelerated digital transformation prompted the 2021 theme, *'Virtual Traditions'*. The pandemic forced societies to rethink how traditional practices and knowledge could be maintained and transmitted in a digital age. This shift opened up new possibilities for sharing knowledge on traditional environments and cultural heritage in virtual spaces, raising questions about the future of traditional practices in a digital world and how communities could adapt to new ways of cultural expression and engagement. The idea of disruption continued in *'Rupture and Tradition'* (2022), where the concept of 'rupture' was used to explore how crises and technological advancements disrupt traditional spaces and cultural practices. Building on these, the latest conference, *'The Dynamism of Tradition'* (2024), emphasised tradition as a dynamic, ever-evolving project where the adaptation of cultural practices to the modern world is central.

The preceding shifts highlight the mutual relationship between world events—political, environmental, technological, or cultural—and the themes of IASTE conferences. Each global event appears to have prompted IASTE organisers and scholars to reconsider the role of tradition in a changing world, exploring how architecture and urban development can preserve the past and adapt to new challenges. The evolving nature of these themes features the increasing intersection of tradition with global issues such as sustainability and climate change, digital transformation, and manifestations of cultural identity in urban environments, revealing how AUT continue to adapt in response to the complex challenges of the modern world.

8. Reflective discussions

The comprehensive analysis of datasets from the 'Traditional Dwellings and Settlements Review' (TDSR) including the IASTE conference proceedings spanning 1988 to 2022 provides valuable insights into evolving scholarly trends. Focusing on six lines of inquiry—scale, discipline, geographical diversity, typology, governance, and investigation methods—as a metadata framework, the study systematically dissected the complex interplay between various research dimensions and the influential role of IASTE conferences in guiding scholarly effort. The analysis reveals critical gaps in current research on AUT, alongside promising opportunities for future scholarly endeavours. Identifying these gaps and opportunities is essential for advancing the field and addressing the evolving challenges in the study of traditional environments as a knowledge space.

8.1. Challenges and under-representation within the knowledge space

Challenges and under-representation within the discourse of AUT stem from a specialised focus on specific regions, themes, and methodologies. While key topics such as sustainability and technological integration dominate global discourse, areas such as the intangible cultural heritage of marginalised regions often receive less attention. Key gaps can be articulated as follows:

- **Underexplored Geographical Regions:** Despite the global scope of traditional dwellings and settlements, certain geographical regions remain underrepresented in the research. Central Asia, parts of South America, and remote African regions have limited scholarly attention compared to regions like Southeast Asia, the Middle East and Europe. This geographical imbalance restricts the comprehensive understanding of diverse traditional environments and the associated socio-spatial practices.
- **Prioritising the Tangible Dimension of Cultural Heritage:** While there is a growing emphasis on 'cultural heritage' and 'heritage conservation,' the focus predominantly remains on tangible assets such as buildings, structures, and public spaces. While intangible cultural heritage is evident in many discussions, aspects of oral histories and community practices receive comparatively sufficient attention. This gap may hamper the holistic preservation of traditional environments, given that intangible elements are integral to the cultural identity and continuity of communities and locales.
- **Scarcity of Longitudinal Studies:** Most existing research comprises cross-sectional studies that provide snapshots of traditional dwellings and settlements at specific points in time. There seems to be a notable absence of longitudinal studies that track changes and developments over extended periods. Such studies are crucial for understanding the long-term impacts of modernisation, urbanisation, and policy interventions on traditional environments.

- **Inadequate Integration of Governance and Policy Analysis:** Although governance structures and policies are recognised as significant factors influencing traditional settlements, there is a limited depth of analysis regarding their specific roles and impacts. Research often touches on governance in broader terms without inquiring into how different governance models (e.g., authoritarian vs. democratic) affect heritage conservation, cultural practices, and community resilience.
- **Underutilisation of Mixed-Methods Approaches:** The analysis indicates the dominance of qualitative methods, particularly interviews and surveys, with less emphasis on mixed-methods approaches that integrate qualitative and quantitative data. While the focus on qualitative methods is attributed to the disciplines involved in the study of AUT, mixed-methods research can provide a more valid and reliable knowledge of traditional environments by capturing trends and the underlying social dynamics.

8.2. Prospects for Architecture and Urban Traditions

The future of the knowledge space of AUT hinges on adopting interdisciplinary approaches, integrating advanced technologies, and promoting inclusive research and professional practices that balance preserving cultural heritage with the demands of modern urban challenges. Key opportunities for materialising these prospects can be outlined as follows:

- **Expanding Geographical Scope:** There is a significant opportunity to explore underrepresented regions, enriching the global discourse on traditional dwellings and settlements. Research focusing on Central Asia, South America, and less-studied African regions can uncover unique cultural traditions and how they manifest in the built form, contributing to a more inclusive and diverse body of knowledge.
- **Emphasising Intangible Cultural Heritage:** Future studies should prioritise preserving and documenting intangible cultural heritage alongside tangible assets and physical manifestations. Incorporating methodologies that capture oral histories, traditional practices, and community narratives can further advance the understanding of traditional environments. This holistic approach ensures that physical and cultural dimensions are preserved.
- **Conducting Longitudinal Research:** Initiating longitudinal studies can address the gap in understanding the temporal dynamics of traditional settlements. Tracing changes over decades can reveal the long-term impacts of globalisation, climate change, and policy shifts on traditional environments. Such studies can inform sustainable preservation strategies for evolving socio-economic and environmental conditions.
- **In-depth Governance and Policy Analysis:** The need for more detailed analyses of how specific governance structures and policies influence traditional settlements. Comparative studies examining different governance models across various regions can identify

best practices and effective policy frameworks. Understanding the interplay between governance and community engagement can enhance the effectiveness of preservation efforts and the overall knowledge of AUT.

- **Adopting Mixed-Methods Approaches:** Embracing mixed-methods research can address the limitations of purely qualitative or quantitative studies. Combining statistical analyses with qualitative insights can provide a multidimensional understanding of traditional environments. For example, integrating GIS mapping with ethnographic studies can offer spatial and cultural perspectives on settlement patterns and community dynamics.
- **Leveraging Emerging Technologies:** Integrating advanced technologies such as artificial intelligence, machine learning, and augmented reality presents new opportunities for research and preservation. These technologies can enhance data analysis, facilitate immersive documentation, and improve community engagement in planning and designing for interventions in traditional environments.
- **Fostering Interdisciplinary Collaboration:** Encouraging collaboration across disciplines—such as architecture, anthropology, environmental science, and political science—can lead to innovative research outcomes. Interdisciplinary research can address complex challenges in heritage preservation in complex or contested contexts by combining diverse perspectives and expertise, thereby fostering more effective and sustainable solutions.

9. Conclusions

Following the analysis of findings together with the reflective discussions, it is evident that there is an immense potential of the 'Traditional Dwellings and Settlements Review (TDSR)' in shaping the understanding of architectural and urban traditions. While the 'Metadata Framework' (MF) was developed specifically for this study, demonstrating its adaptability, for investigating diverse, complex concepts across various domains, is essential. It should be noted that there were two key limitations in the approach adopted to respond to the research questions. First, the predominantly quantitative approach, based on keyword analysis and frequency counts, may oversimplify the depth that qualitative methods can provide. Moreover, the study does not directly engage with urban communities, policymakers, practitioners, or the authors of the articles analysed. While acknowledging inherent limitations, we offer a series of recommendations for future research trajectories to address these limitations and enhance the understanding of traditions as a central component of urban futures.

9.1. Metadata framework for analysing traditions in knowledge spaces

The MF is a highly adaptable and robust tool designed to systematically investigate complex concepts across diverse knowledge domains. This framework transcends its origi-

nal purpose by providing researchers with a structured, yet flexible, approach that can be customised to align with specific research objectives and the unique attributes of the concepts under examination. Central to this framework were the six lines of inquiry—scale, discipline, geographical diversity, typology, governance, and investigation methods—which serve as foundational pillars for comprehensive and holistic analyses. To enhance the analysis, the framework incorporated text mining algorithms, which facilitate extracting and processing large volumes of textual data. These algorithms can identify relevant keywords and key terms associated with each line of inquiry, enabling researchers to scrutinise trends and patterns within the datasets systematically. For instance, text mining can quantify the prevalence of themes such as '*Digital Representation*' or '*Cultural Heritage*', providing empirical support for qualitative insights and ensuring a data-driven research approach.

The Metadata Framework (MF) presents several practical applications that can advance future research and professional practices within the field of Architectural and Urban Traditions (AUT). It facilitates comprehensive literature reviews and structured and scalable approach to analysis, contributing to a more systematic and holistic understanding of the research landscape. Furthermore, the framework supports interdisciplinary inquiry by fostering cross-disciplinary collaboration, enabling a more integrated and multi-dimensional exploration of AUT. Additionally, it enhances comparative studies by systematically categorising data across different regions and periods, identifying patterns and anomalies for more robust comparisons. Policymakers can leverage insights from the MF to develop informed strategies for heritage conservation and sustainable urban development, balancing preservation with modernisation. Furthermore, the framework guides future conference themes by identifying emerging research areas and trends, ensuring that scholarly discourse remains at the forefront and responsive to evolving global contexts. Lastly, the integration of text-mining and quantitative analysis within the MF promotes digital humanities initiatives, enabling the development of digital archives, interactive visualisations, and online platforms that make AUT research more accessible and engaging to a broader audience.

9.2. Unlocking the potential of TDSR's knowledge space

The utilisation of the MF in developing critical analysis of TDSR datasets from 1988 to 2022, alongside the conference themes, has revealed the strengths in various types of knowledge, which can be classified in terms of evolving, emerging, and declining areas, central to the knowledge space of AUT. It has uncovered that TDSR can further enhance its role as an important platform for scholarly discourse on traditional environments by identifying three knowledge areas within the overall knowledge space of architectural and urban traditions.

Evolving Knowledge Areas: The analysis revealed that TDSR has significant areas that continue to evolve, contributing to its comprehensive coverage and methodological

diversity. TDSR distinguishes itself through providing interdisciplinary insights and integrating disciplines such as architecture, history, environmental studies, and social sciences, fostering a holistic understanding of traditional dwellings and settlements. This interdisciplinary approach is evolving with the increased emphasis on governance and policy analysis, reflecting a growing interest in how different governance models impact conservation and community resilience in these environments. Integrating technological advancement such as digital and virtual representations also underscore TDSR's responsiveness to contemporary themes, evident in adopting virtual reality and 3D modelling tools. Palpably, TDSR is modernising heritage preservation efforts, enhancing accessibility and engagement. This evolution ensures that it remains aligned with current technological trends and challenges while maintaining relevance across diverse contexts.

Emerging Knowledge Areas: Several new themes are emerging within TDSR, presenting opportunities for expansion and enrichment. One critical emerging area is the focus on intangible cultural heritage, including social traditions, oral histories, and community practices. While previously underrepresented, prioritising the study of intangible elements alongside tangible assets can elucidate further insights into traditional environments, ensuring that cultural continuities and community identities are fully grasped, analysed, and potentially preserved. Adopting advanced technologies such as artificial intelligence, machine learning, and augmented reality offers promising opportunities for innovative research methodologies. These technologies can enhance data analysis, facilitate immersive documentation, and improve community engagement approaches, making intervention efforts more effective and accessible. Geographical diversification is another emerging opportunity; actively seeking contributions from underrepresented regions, such as Central Asia, South America, and Africa, can further diversity and enrich the content of the overall knowledge space.

Declining Knowledge Areas: Conversely, specific areas within TDSR are experiencing a decline in scholarly attention and effort. The study of traditional architectural elements has seen a noticeable reduction in focus, suggesting a shift from classical studies that focus on the physicality of traditions towards more contemporary and interdisciplinary themes. This decline implies changing research priorities influenced by evolving conference themes which prioritise modern issues like sustainability and digital integration over traditional architectural analysis. Additionally, traditional analytical approaches such as phenomenology and semiology are becoming less prominent, reflecting a potential broader trend towards data-driven approaches. This decline suggests that TDSR is continuously seeking to strike a balance between the retention of traditional methodologies and the integration of new analytical techniques to maintain a comprehensive and diverse scholarly landscape.

9.3. Academic and professional implications

The findings of this study hold significant implications for scholars, practitioners, and policymakers in the field of traditional dwellings and settlements. By examining the relationship between scale, discipline, geographical diversity, typology, governance, and investigation methods, this study uncovered the necessity for interdisciplinary approaches, integrating fields such as architecture, anthropology, urban design, planning, and environmental studies. For instance, the rise in 'Technological Influences' highlights the integration of digital tools like virtual reality and 3D modelling, which enhance the documentation, visualisation, and immersive learning of traditional structures. Additionally, the shift towards governance and socio-economic aspects emphasises the need for policy engagement to develop effective frameworks for interventions in traditional environments, fostering community-driven strategies and applicable policy recommendations.

For practitioners, the emphasis on heritage conservation and technological adoption offers actionable insights for upgrading traditional environments. Preservation efforts must encompass both tangible structures and intangible cultural assets, utilising digital technologies to create comprehensive and inclusive preservation plans. Tools such as 3D modelling and virtual simulations improve the accuracy and efficiency of documentation, facilitating better communication and collaboration among stakeholders. Policymakers are encouraged to align urban intervention policies with heritage preservation goals, promoting strategies that balance modernisation with cultural sensitivity. By integrating traditional knowledge and sustainable practices, development initiatives can mitigate the adverse effects of rapid urbanisation, ensuring economically viable and culturally respectful outcomes. This interdisciplinary synergy fosters a holistic understanding of traditional environments, enhancing the relevance and impact of research and professional practices in the modern urban context.

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