Patches, Corridors, Matrix, Webs and Clouds. Expanding Richard TT Forman's Land Mosaic Approach in the Medina of Tunis

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Abstract

This study proposes a framework for analyzing the Medina of Tunis based on Richard T.T. Forman's theory of land mosaics where all landscapes are comprised of patches and corridors organized in a matrix. This paper departs from architectural preservationist methods and views the medina as a multifaceted landscape, integrating tangible and intangible elements. Drawing from Félix Guattari's concept of the three ecologies, the paper expands upon Forman's model by introducing two additional categories, webs and clouds, to encompass the social and subjective aspects of the landscape. Through a literature review and landscape fieldwork, the study advocates for an integrative approach to analyzing the medina's physical and intangible components. The resulting framework offers a landscape analysis tool applicable to other urban landscapes, moving beyond the taxidermy of urban/cultural conservation practices and considering marginalized communities affected by capitalism-driven heritage management and tourism. Such a perspective is integral in promoting social and ecological inclusivity and embedding sustainable practices, particularly in response to the pressing challenges of climate change.

Questo studio propone un quadro per l'analisi della Medina di Tunisi, basato sulla teoria dei mosaici terrestri di Richard T.T. Forman in cui tutti i paesaggi sono costituiti da macchie e corridoi organizzati in una matrice. Questo articolo si allontana dai metodi di conservazione architettonica e vede la medina come un paesaggio multiforme, che integra elementi tangibili e immateriali. Prendendo spunto dal concetto delle tre ecologie di Félix Guattari, l'articolo espande il modello di Forman introducendo due categorie aggiuntive, reti e nuvole, per comprendere gli aspetti sociali e soggettivi del paesaggio. Attraverso una revisione della letteratura e un lavoro sul paesaggio eseguito sul campo, lo studio sostiene un approccio integrativo all'analisi delle componenti fisiche e immateriali della medina. Il quadro risultante offre uno strumento di analisi del paesaggio applicabile ad altri paesaggi urbani, andando oltre la tassidermia delle pratiche di conservazione urbana/culturale e considerando le comunità emarginate colpite da una gestione del patrimonio e del turismo guidata dal capitalismo. Tale prospettiva è fondamentale per promuovere l'inclusione sociale ed ecologica e incorporare pratiche sostenibili, in particolare in risposta alle pressanti sfide del cambiamento climatico.

Background

The Medina of Tunis (often shortened in this paper as 'the Medina'), has been the subject of many architectural preservation and conservation efforts aimed at safeguarding its heritage (UNESCO World Heritage, 2023c; Aga Khan Program for Islamic Architecture, 2023; Nardella, Cidre, 2016). This research approaches the Medina and its conservation as a landscape. This research includes a literature review of the Medina and its preservation efforts, complemented by periods of fieldwork. The framework presented, that emerged from fieldwork, is built on evidence such as oral histories and sensorial information, which are often absent in official data, as much as the spatial elements themselves.

Compact layouts, large block sizes, courtyards, narrow streets, and labyrinthine structures usually characterize medinas (Abudib, 2016; Hakim, 1986). However, since the mid-20th century, colonial urbanization strategies, such as the introduction of large boulevards into historic centers, have led to standardized development practices, often influenced by colonial thinking. This departure from traditional morphological patterns disregards historical and social contexts, resulting in the loss of the original form of medinas (Abudib, 2016). Yet, recognizing, preserving, and enhancing heritage is crucial because it provides context and collective memory to the present (Abudib, 2016).

The Tunis Medina comprises souks, plazas, rooftops, and pavements supported by an integrative water system. Preservation efforts have, until now, focused on the tangible elements, retaining remnants of the fortification walls, *babs* (gates), and courtyards. If we consider the Medina of Tunis as a landscape, how does that help us understand it differently? Forman and Godron's concept of landscape ecology views landscapes as mosaics of patches, matrices, and corridors (Forman, 1995; Forman, Godron, 1981). Forman (1995) compares landscapes to the view from an airplane's window, revealing ecological and geographic traits, such as species distribution and human-environment interactions. Forman highlights the importance of combining both aerial and ground-level perspectives to fully grasp ecological and land use patterns and proposes that all landscapes comprise three components: they must have patches and corridors and be organized in a matrix. This approach primarily focuses on the scientific and environmental aspects of urban ecology, overlooking social and subjective elements. This paper incorporates perspectives from Guattari's *The three Ecologies* (2014) and *Ecological Urbanism* (Mostafavi, Doherty, 2016) to address this gap and integrate ecological, social, and subjective aspects into the Medina's analysis. It introduces two additional categories, 'webs' and 'clouds,' to categorize the Medina's immaterial elements. In addition to Forman in landscape ecology, other fields offer similar frameworks; Stan Al-

Fig. 1 - Seventh-century Tunis (Tunisia), 1641 (University of Minnesota Libraries, James Ford Bell Library).

len (1999) in architecture (points, lines and planes) and Kevin Lynch (1960) in urban design (landmarks, paths, edges, districts and nodes). A similar analytical framework tailored to landscape architecture draws from these theories and is proposed in this paper.

The Medina of Tunis Preservation Efforts and Globalization: Focusing on Tangible Aspects and Heritage-Based Tourism

The Medina of Tunis holds significant historical and cultural importance in Tunisia and North Africa. Today, along with the broader city of Tunis, the Medina serves as a central hub for political, cultural, and heritage discussions. Established in 698 A.D., Tunis served as the capital for influential dynasties such as the Hafsids. The Medina embodies an interplay between architecture, urbanism, and sociocultural and economic transformations. Housing a remarkable collection of historical monuments (UNESCO World Heritage Centre, 2023a), it comprises a central part and surrounding suburbs. The 19th century witnessed significant infrastructural development around the Medina, leading Tunis into the modern era (Akrout-Yaiche et al., 2012). In the 20th century, the Medina transformed into a symbol of resistance against colonialism, embodying the aspirations of Tunisians (Escher, Schepers, 2008a).

Tunisian cultural heritage legislation rooted in French norms has significantly influenced preservation practices in the country (Nardella, Cidre, 2016). The Medina of Tunis underwent beautification under Plan Valensi, extending this approach to protect archaeological sites and residential areas within the Medina. Post-independence in the 1950s, President Habib Bourguiba advocated for modernization ideals, linking heritage conservation with economic growth via tourism. This led to the abandonment and deterioration of historical buildings, casting the Medina as a relic of the past. Despite prioritizing progress, some Tunisians recognized the Medina's significance, which had long been neglected by the French administration. Proposals in the 1950s and 1960s, supported by Bourguiba, aimed at creating wide boulevards and tall buildings running right through the historic Medina, faced opposition from historians, architects, urban planners, and the public (Abdelkafi, 1989).

Fig. 2 - Tunis, Tunisia. The Medina is in the center (photo: Google Earth, 2024).

To counter such threats to the Medina, the mayor of Tunis established the *Association de sauvegarde de la médina de Tunis* (Association for the Safeguarding of the Medina), or ASM, in 1967. Since then, the ASM has played a pivotal role in preserving and revitalizing the infrastructure and residential areas (Nardella, Cidre, 2016). Professionals from various fields have studied the Medina's structure, society, economy, and history (Escher, Schepers, 2008a). In 1989, the ASM shifted its focus to conservation, advocating for rehabilitation rather than a museum-centric approach (Nardella, Cidre, 2016). The mayor of Tunis recognized urgent housing issues like overcrowding and emphasized the need for comprehensive analysis. Notable progress was made through successful reconstruction efforts in the late 1980s and a slum clearance campaign in the early 1990s (McGuinness, 1997). While the ASM gained popularity for defending the Medina against demolition plans, it faced criticism for limited engagement with residents, leading to perceptions of being disconnected and treating the local population as mere subjects (McGuinness, 1997).

In the late 1990s, the Tunis city center saw significant rejuvenation, focusing on the main streets and the Medina. Avenue Habib Bourguiba underwent a beautification project, clearly reflecting the French influence (Akrout-Yaïche, 2004). The Hafsia and Oukala residential projects were implemented to address the Medina's housing crisis (McGuinness, 1997). In the early 2000s, the ASM initiated projects to enhance the neglected streetscape[1]. These various efforts were awarded an Aga Khan Award for Architecture on several occasions.

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Fig. 3 - Tunis Medina, main street network (credit: Areti Kotsoni/Critical Landscapes Design Lab, 2023).

Building on Hardt and Negri's work, Coslett (2020) posits that tourism, heritage management, and preservation efforts often perpetuate neocolonial structures, resulting in homogenous representations lacking cultural authenticity (Zukin, 2012). In fact, globalization and neoliberal policies have fostered cultural and biological homogenization. Despite this, the ASM remains cautious of external influence and aware of potential neocolonial implications regarding programs that could reinforce Eurocentric dominance (Nardella, Cidre, 2016). Today, even if the Medina is far from being a 'museumified' heritage city (Sarmento, 2017), it heavily relies on tourists, most of whom seem to be looking for bargains over cultural encounters (Sarmento, 2017), raising a multiplicity of issues as the call for papers points out.

Considering the ecological, socioeconomic, and subjective aspects, as well as the marginalized communities affected by capitalism-driven heritage management and tourism, one might reflect on neglect-

ed zones in the Medina beyond tourist routes, such as the sustainability of handicraft industries (Coslett, 2020). This is especially pertinent amidst Tunisia's current economic, social, and political crisis post-revolution. The uprising of 2011 was fueled by neoliberal economic policies, exacerbating socioeconomic disparities and marginalization (Kaboub, 2013). The mechanisms and dynamics of neoliberalism, initiated by Bourguiba during the crisis of the 1980s (Murphy, 1999) and supported by his successor, Zine El Abidine Ben Ali, have led to social marginalization and stigmatization of peripheral and rural areas (Ayeb, Bush, 2019), and in popular urban neighborhoods of major cities (Lamloum, Ben Zina, 2015). Zemni (2017) emphasizes the socio-spatial roots of the Tunisian revolution, originating in rural discontent but taking off predominantly in the urban realm.

In the aftermath of Ben Ali, urban spaces symbolizing power, such as Avenue Habib Bourguiba and
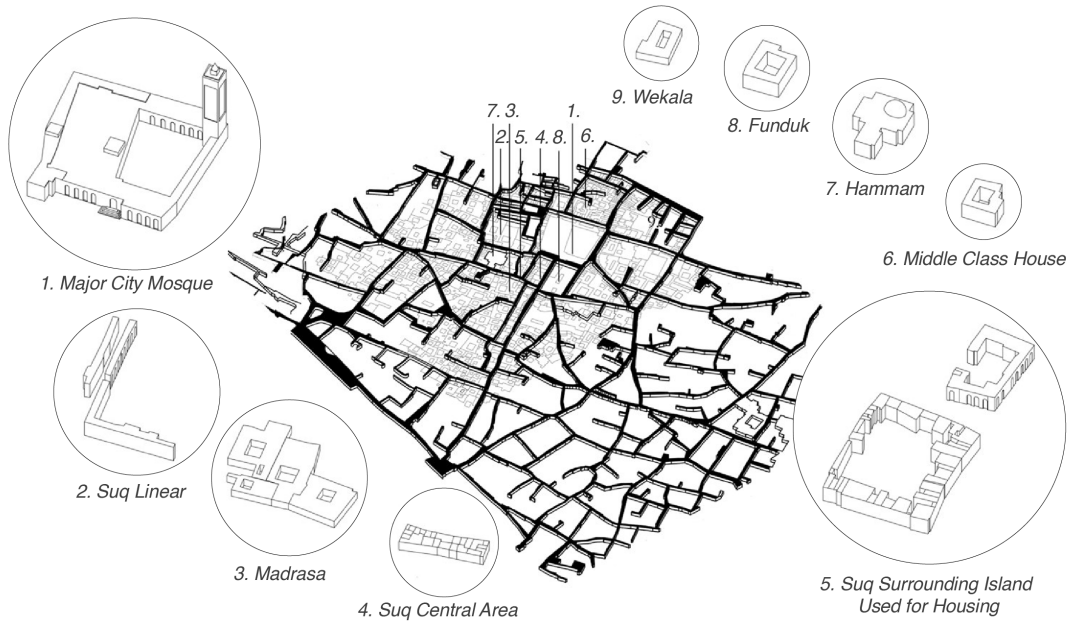
Fig. 4 - Characteristic building typologies of the Tunis Medina (credit: Areti Kotsoni/Critical Landscapes Design Lab, 2023).

the Medina, have become focal points for social and political activism, fostering new urban social movements through the self-organization of citizens claiming their right to the city (Zemni, 2017). The Kasbah Square in the Medina, whose centrality has been confirmed and even reinforced starting with the Hafsids through the Ottoman period to French colonization, became one of the permanent sites of such dynamics (Abidi-Belhadj, 2022). The ASM emphasizes the importance of urban conservation to preserve the Medina's unique architectural styles, cultural influences, and atmospheres (Akrout-Yaiche et al., 2012). However, when buildings are viewed in isolation from their context, they risk being reduced to mere analysis from only spatial or stylistic viewpoints (Santelli, 1992). Although Tunis's historic streetscapes boast architectural diversity, the lack of a comprehensive conservation plan sometimes poses challenges for integrating new developments.

The literature review revealed the predominant focus of urban preservation efforts on the tangible aspects of the Medina, primarily its architectural infrastructure. For example, most literature references the same sources on regeneration efforts, such as the ASM projects. This paper diverges from these conventional perspectives by employing a landscape architectural framework to analyze and comprehend the Medina. Such an approach addresses economic, social, and ecological inclusivity by integrating sustainable practices that align with the objectives of the Kunming-Montreal Global Biodiversity Framework. It emphasizes the importance of adopting sustainable practices essential for adapting to the challenges of climate change, such as increased temperatures, reduced rainfall, rising sea levels, and declining land productivity.

Methodology

The research for this paper began in 2019 when one

of the authors, Gareth Doherty, and Tunis-based developer Lucio Frigo initiated discussions about the challenges faced by the Medina. Doherty proposed a landscape approach for urban conservation, drawing on the methodology of the Critical Landscapes Design Lab at the Harvard Graduate School of Design, which he directs. Frigo's firm, Materia Inc., sponsored the research, which included a design studio led by Francesca Benedetto, a design critic in landscape architecture. The project included a research associate position filled by Areti Kotsoni, the second author. Doherty lived in the Medina for two and a half months, conducting landscape fieldwork. Kotsoni spent just over two weeks in the Medina and then focused on developing the literature review and mapping. Doherty organized educational workshops, and both researchers interacted with residents and visitors, participating in everyday encounters as much as possible. They collaborated with a diverse range of inhabitants and stakeholders, including the ASM.

Inspired by Corner's (1992) emphasis on drawing as a fundamental component of landscape projects, Kotsoni drew a series of maps of the Medina. Geospatial technology was utilized to generate a detailed digital elevation model of Tunis. In challenging traditional Nolli-style maps, emphasis was placed on building interconnectedness by redrawing an ASM-provided map. Deming and Swaffield (2011) characterize landscape architecture strategies as investigative procedures for specific research designs to contextualize the methods. The fieldwork approach integrates site assessment tools and imaginative, immersive research.

Capturing the Medina's Complexity: The Significance of the Intangible-Sensorial Aspects

The paper presents and categorizes the characteristics gathered during fieldwork to analyze the Medina as a landscape. Like other medinas, it comprises compact courtyard houses and a principal mosque, Al Zaytuna, surrounded by souks, forming a central

Fig. 5 - An expanded view, landscape mosaics (credit: Areti Kotsoni and Radakrishnan T.R./Critical Landscapes Design Lab, 2023).

public space for prayer, shopping, and social interaction. Specific trades and crafts are clustered around Al Zaytuna, with neighboring residential areas hosting small stores, hammams, and other amenities. Souks are organized by trade. The closer proximity to Al Zaytuna and the Kasbah correlates with increased refinement and desirability of crafts and products sold, such as Souk El Berka for jewelry, Souk El Attarine for perfumes, and Souk Ech-Chaouachine for traditional headgear like the chéchia, traditional headgear. Acknowledging these elements independently and as part of a coherent whole is essential for understanding the Medina.

The fieldwork findings are categorized below and organized around Forman's land mosaics concept, which we found was limited in its ability to fully capture the complexity and sensorial experiences of the Medina. Instead, this research organizes its intangible elements, such as social activity, oral histories, and smells, into two new categories: 'webs' and 'clouds', which emerged from fieldwork, acknowledging their significance in comprising urban spaces. This approach explores and documents the landscape project that embed new narratives and dynamic topologies, redefining places and their interactions with society to enrich our understanding and experience of living within them.

Clouds
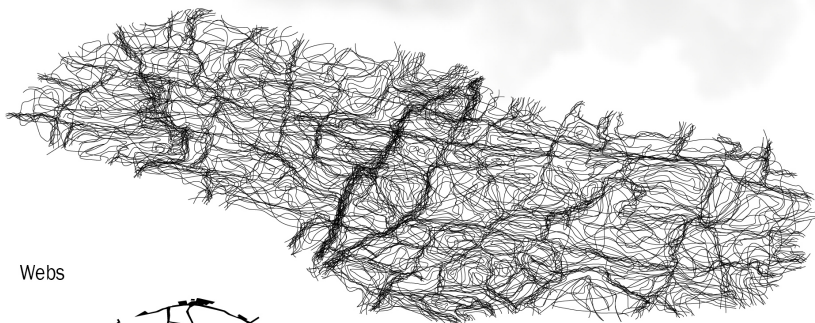
Webs

Corridors

Patches

Matrix

Patches

Patches are discrete areas or parcels of land with relatively homogeneous characteristics in terms of land use, varying in size, shape, and composition (Forman, 1995). As the basic building blocks of landscapes, the patches' composition, size, and distribution significantly influence the overall ecological functioning of a landscape. Within the Medina, patches encompass green spaces, courtyards, rooftops, and other horizontal surfaces.

Green Spaces

Green spaces are limited in the Medina. The Medina's sparse vegetation requires a systematic approach to integrating green infrastructure. Current greenery is limited and disjointed, with only occasional trees and isolated plants. A cohesive strategy for more significant green initiatives is crucial for a healthier, more livable environment. Greener streetscapes can help lower temperatures and improve community well-being.

Public Spaces

Large squares and gardens are rare in the Medina, and are primarily located in suburban areas near the gates (Zhioua, 2022). Existing squares lack greenery (Ammar, 2022). The term souk derives from *ya-soukou*, meaning to guide or push forward animals; the Medina embodies perpetual movement, lacking designated public spaces aside from the hammam and the mosque. The Al Zaytuna Mosque is Tunisia's foremost religious institution, integral to the nation's religious, educational, political, and social realms (Lamine, 2017). Historically, it united the Muslim community – military, civilians, converts, and men and women – for Friday sermons, calls to prayer, education, and justice (Lamine, 2017). Today, it remains central for communal gatherings and prayers but is often excluded from public space due to gender-conformed use and limited versatility. Open areas near city gates, historically used for trade, lack vegetation and suitability for leisure (Lamine, 2017).

Courtyards

The Medina's courtyards, essential to its architectural heritage, hold promise for cultural and social renewal. With features like central fountains, they can become social gathering spaces. Introducing greenery, where possible, can help mitigate climate issues, reduce urban temperatures, and improve air quality. Implementing passive cooling would enhance their utility. Participatory redesigns would align with local needs, highlighting the courtyards' significance in urban revival and community engagement.

Medina's Edges

As the Medina evolved into a tourist destination and walls vanished, small shops appeared around the outskirts, highlighting its 'soft edges' (Abudib, 2016). Informal markets and food vendors contribute to its expansion outside the walls; one could talk about a 'remedinization' of the modern city, especially post-revolution. Peripheral zones like Town Hall Plaza, focal points like the Babs, tree-lined spaces like Avenue Bab Menara, and transitional areas like Bab Carthagena vary in openness. Viewing these spaces as filters, not barriers (Forman 1995), opens revitalization possibilities for the Medina.

Rooftops

The overlooked rooftops hold potential for urban greening, transforming the Medina into semi-public areas. These interconnected spaces are from a secondary elevated Medina, offering cityscape views.

Corridors

Corridors are linear or elongated features within a landscape that connect patches (Forman, 1995). They function as pathways for organisms, nutrients, and genetic material between different patches. Maintaining corridors is crucial for promoting genetic diversity, species dispersal, and enhancing ecosystem resilience. In the Medina, corridors include streets, water collection systems, pavements, connections between buildings, and circulation on rooftops and

inside buildings for both human and non-human movement.

Pavement and street patterns

The Medina's dense urban fabric features a maze of alleys and streets with diverse paving. The Medina's pavements combine aesthetics and functionality, facilitating its water management system. Each souk's character is mirrored in its paving, potentially offering a wayfinding system.

Water collection system

Water management in the Medina faces challenges due to potable water scarcity, relying on water truck deliveries. Yet, its heritage includes rainwater-harvesting systems like flat terrace courtyards and communal wells, reflecting its social and cultural history. Optimizing this infrastructure, inspired by models like Tunis Science City, can enhance water accessibility, preserve heritage, and improve living conditions.

Webs

"Man (sic) is an animal suspended in webs of significance he himself has spun", the anthropologist Clifford Geertz famously declared, invoking Max Weber (Geertz, 1973). Analyzing webs of significance is about looking for meaning. Webs in the Medina are encompassed in all sorts of spaces, from the private home to the public sphere, and concentrated in dynamic areas for social interaction, whether organized or spontaneous settings. Webs include connections among individuals and entities, human and non-human, through engaging in activities, such as visiting cafes or creative collectives. Whether temporary or permanent places like souks, they embody the distinctive ambiance and potential ephemerality of webs.

Souks and artisans

Souks are crucial for social interaction (Zhioua, 2022), resulting from the gradual assembly of specialized markets organized into guilds or corporations (Santelli, 1992). However, the artisanal sector in the Medi-na is declining due to fewer artisans, waning youth interest, and the emergence of modern alternatives. Challenges include limited educational resources and decreased demand for artisanal products. Interviews reveal concerns like aging artisans, fading professions, and the risk of traditional crafts becoming obsolete. Mass-produced goods are replacing artisanal items, leading to the closure of many traditional shops and altering the Medina's landscape with the retirement of older artisans. There is a noticeable knowledge gap in local traditions among the youth, underscoring the necessity for educational initiatives to preserve the Medina's heritage.

Businesses

Business owners and residents stress the significance of Tunis' gastronomy, advocating for more opportunities and spaces for culinary experiences in the Medina. They propose keeping restaurants open on Sundays and evenings to accommodate more visitors and advocate for venues supporting women-owned businesses. Suggestions to stimulate the Medina's economy include extending shop hours for increased vibrancy, especially in the evenings, organizing year-round cultural events, and establishing bars and recreational areas for youth and tourists.

Festivals and Activities

Events in the Medina, particularly music and art festivals, can turn the area into a lively hub, fostering connections and community engagement. Cultural activities draw people into the Medina, sustaining local businesses and enhancing the area's economic vitality.

Hygiene

Fieldwork revealed poor hygiene in the Medina, with sanitation issues and trash accumulation, especially in souks and plazas. The Tunisian revolution was marked by waste as a central symbol through which the revolution and its aftermath were experienced and morally assessed (Darwish, 2018). Neglected maintenance accelerates building deterioration due to overcrowding from housing shortages (Vigi-

Fig. 6 - A Medina street (credit: Gareth Doherty/Critical Landscapes Design Lab, 2023).

er, 1987). Outdated infrastructure strains water and sewerage systems, posing health risks. Unregulated growth and unclear land ownership complicate planning. In 1980, the central Medina housed 45,500 inhabitants, with extreme densities of up to 1,000 person/ha (Vigier, 1987).

Clouds

Clouds in the Medina represent its intangible aspects, encompassing sensorial experiences, memories, oral histories, and myths. They define the essence and character of the Medina, inviting interpretation and longing. The sensory landscape extends beyond the visual to include olfactory and auditory dimensions, smellscapes, and soundscapes that characterize the Medina as a multifaceted landscape. Connecting sound, space, scent, and touch to the spatial continuum disrupted by modern planning highlights the importance of reimagining the tangible landscape as intertwined with intangible experiences (Benedito, 2021).

Nighttime

The Medina operates on diverse daily rhythms, influenced by day/night cycles and the opening hours of various facilities (Sarmento, 2017). Activities shift to nights during Ramadan (when fasting is required from dawn to dusk), indicating potential for nighttime cultural, social, and economic growth. However, for the other eleven months of the year, the Medina often feels deserted at night, with darkness masking many activities. While good lighting can enhance safety and architecture, a limited lighting preserves the ecosystem and minimizes disturbance to wildlife.

Soundscapes

The Medina's soundscape is an essential part of its cultural identity and community life, ranging from the call to prayer to the clatter of kitchen utensils and the distinctive sound of copper striking in 'Souk En-

nhas.' Every evening a cacophony of birds chirping marks the transition to the evening.

Smellscapes

The Medina is renowned for its diverse smells, from the fragrances of Souk El Attarine, to the odor of leather in Souk Blaghjia, along with aromas of coffee, freshly baked bread, and street food or home-cooked meals guiding visitors through its alleys. At the same time, the all-pervasive smell of cigarette smoke can be overwhelming for some and is tangibly absent during the fast Ramadan, transforming the Medina for one month of the year. Each morning, shortly after 8 a.m., the Rue de la Kasbah is purified with incense.

Oral histories, memories, and desires

Oral histories and urban myths have significantly influenced Tunis's urban landscape, revealing a deep connection between stories, religious beliefs, and architectural landmarks. Whether it is the enduring presence of the souks, resisting attempts at relocation due to their cultural importance, or the design of houses reflecting the fears and values of their inhabitants, the city's landscape is a tapestry woven with the threads of its stories and traditions.

Matrix

The matrix is the main land cover type surrounding and isolating patches in a landscape (Forman, 1995). Forman writes, "And a matrix is extensive to limited, continuous to perforated, and variegated to nearly homogeneous," referring to the multiple forms the matrix can take (Forman, 1995, 7). In the Medina, the matrix is represented by the intricate wall system that structures the urban landscape. Beyond walls, fundamental architectural elements like columns, beams, and floors, extensively studied during the Medina's restoration, punctuate the landscape. These elements, along with other features like doors, courtyards, and paths, define the Medina's

morphology (Berardi, 1970; Valensi, 1970). But a landscape approach by necessity needs to move beyond this mostly physical approach to understanding the matrix and recognizes the social and subjective ecologies that bind the Medina together as a landscape; the stories, the narratives, the sounds, and smells that shape daily life. Anne Whiston Spirn tells us that landscape is the mutual shaping of people and place: people shape landscapes, and landscapes shape people. As such we need to understand how patterns of inhabitation function as a part of the matrix that binds the Medina and makes it a landscape.

Reflections

The findings above synthesize the Medina of Tunis as a landscape, highlighting the interconnectedness of environmental, social, and mental ecologies. The methodology categorizes tangible and intangible elements, underscoring the need for a holistic evaluation before proposing urban regeneration solutions. Visualizing the intangible features is an essential next step in this research. In the same vein, Mahroug and Belakehal (2016) explore 'heritage atmospheres', focusing on sensorial aspects of the Medina and comparing past and new sensorial feelings expressed by users since the 19th century. They identify three ways in which the Medina's atmospheres have evolved: persistence, loss, and adjustment. They acknowledge the ASM's role in the last phase in creating new atmospheres, particularly with the introduction of new cultural policies. The next step in this research is to comprehend the required actions, changes, or revitalizations in each element to contribute to the urban regeneration of the Medina as a whole.

Examining webs and clouds, along with patches, corridors, and the matrix, establishes an analytical framework that can be a basis for understanding the landscape of the Medina more holistically. The framework, which can be applied in other settings, enables detailed analysis of each component and their integration into a cohesive whole. Patch-

es, such as green spaces, courtyards, edges, rooftops, and urban density, offer insights into the spatial fabric, historical significance, and potential revitalization areas. Corridors, like pavements, street patterns, and water collection systems, illustrate connectivity and fluidity. The matrix, represented by the wall, ceiling, roof, and paving systems, highlights labyrinthine interconnectedness. Webs, like souks, local restaurants, and festivals, underscore dynamic spaces for social interaction and economic vitality. Clouds, capturing soundscapes, smellscapes, and oral histories, emphasize intangible and ephemeral elements shaping the Medina's character, aura, and sociocultural identity.
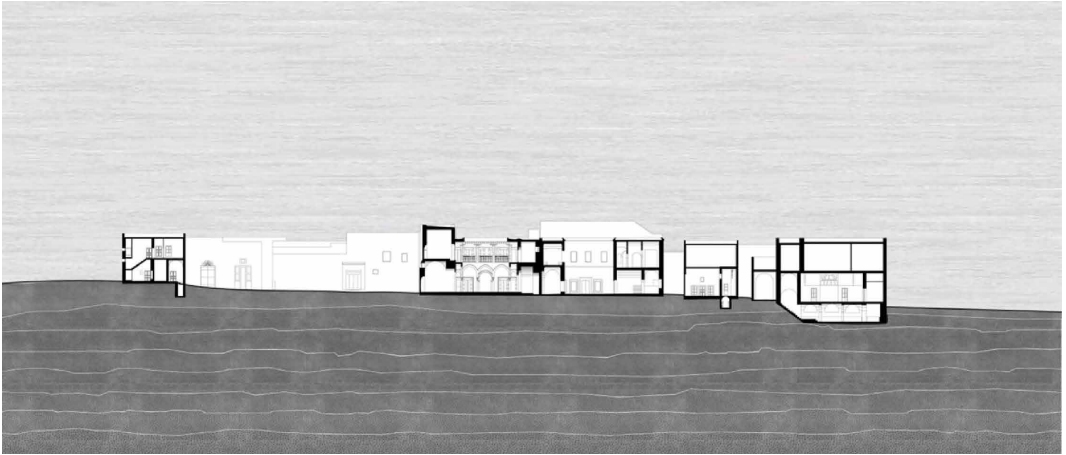
However, this study has limitations. It separates the tangible from the intangible for organizational purposes; we acknowledge that both are inseparable and co-exist within the Medina. The study should have more extensive data collection, more comprehensive mapping, and more in-depth fieldwork. A detailed analysis of the transformations needed in each layer for effective urban regeneration is crucial for formulating robust recommendations. The absence of green spaces, the decline of artisanal practices, and hygiene challenges pose both obstacles and opportunities for urban regeneration. Conserving both tangible and intangible heritage is vital for maintaining the Medina's identity. The framework

facilitates a thorough examination of each component, individually and collectively, within this complex landscape. It advocates for a holistic approach to analyzing the Medina of Tunis as a landscape, providing a theoretical framework applicable to other similar historical landscapes. This study lays the groundwork for future research and landscape architectural approaches to urban regeneration, aiding in the development of new narratives, topologies, and scenarios for the re-signification of the Medina of Tunis and other medinas across North Africa.

This study has explored landscape solutions that integrate new narratives within urban spaces. The framework presented highlights the potential of landscape architecture to transform urban interactions and foster a deeper connection to place, encouraging sustainable and culturally enriched reimagining of historical landscapes. The goal of this approach is to reshape the ecological (including environmental, social, and subjective) functions of dense urban landscapes, such as medinas, advocating for their dynamic, inclusive critical conservation.

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Acknowledgements

Notes

[1] A pilot initiative was launched in the early 2000s, aiming to engage in extensive design and restoration work while fostering close collaboration with residents, users, and utility companies.

Fig. 8 - Section through the Tunis Medina-neighborhood scale (credit: Areti Kotsoni/Critical Landscapes Design Lab, 2023).

Fig. 9 - Tunis, Tunisia. The Medina as a Mosaic (photo: Google Earth, 2024).

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Fig. 10 - Medina of Tunis, Tunisia. The Al-Zaytouna Mosque (credit: Gareth Doherty/Critical Landscapes Design Lab, 2023).

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