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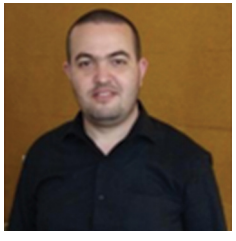
Houria BACHAKH
Architect and urban planner by training (EPAU, 1988), she has been a Senior Lecturer since 2001 and leads the "Urban Project" studio. After completing a Magister (1999) on urban development mechanisms, she is continuing her research with a doctoral thesis on the sacred in the contemporary city.
E-mail :h.bachakh@epau-alger.edu.dz



Bakour Mohammed
University Professor and Researcher at EPAU since 2010, holding a doctorate and HDR. His work focuses on urban mobility, transport systems, territorial planning, and GIS. He has been leading the "City, Urban Planning and Sustainable Development" (VUDD) research laboratory since 2022.
E-mail :m.bakour@epau-alger.edu.dz

Sacred Places in Network at the Heart of the City : Case of the Historic Core of El-Djazaïr Beni-Mazghana El-Mahroussa

Sacred places rank among the most enduring human-built structures, addressing essential spiritual and social needs. An investigation conducted in the historic core of Algiers during Maghrib prayer analyzed 147 routes of regular worshippers across nine mosques, employing a combined methodology of Multiple Correspondence Analysis (MCA), classification, and GIS. The examination of twenty-two daily home-to-mosque itineraries, shaped by spatial, social, and spiritual constraints, revealed a previously undocumented sacred network. This partial discovery delineates a segment of the sacred route connecting five mosques within the original network and suggests the relevance of spatial syntax for comprehensive modeling of this sacred pathway.

Keywords:
Enduring sacred place; Sacred urban network; Mixed-methods approach (MCA/Clustering/GIS); Historic core of El-Djazair

الكلمات المفتاحية :
المكان المقدس الخالد
الشبكة الحضرية المقدسة
المنهجية متعددة الأساليب (التحليل التوافقي المتعدد /التصنيف/نظم المعلومات الجغرافية)
النواة التاريخية لمدينة الجزائر

تُعدُّ الأماكن المقدَّسة من بين أبقى المنشآت البشرية، فهي تستجيب لحاجات روحية واجتماعية جوهرية في الوسط الحضري. دراسة ميدانية بالنواة التاريخية للجزائر أثناء صلاة المغرب حلَّلت 147 مساراً لمصلين منتظمين بتسعة مساجد، مستخدمةً منهجيةً تجمع بين (التحليل التوافقي المتعدد، التصنيف، ونظم المعلومات الجغرافية). وكشف فحص اثنين وعشرين مساراً يومياً من البيت إلى المسجد -المُشَكَّلة بفعل قيود مكانية واجتماعية وروحية - عن شبكة مقدسة غير مسبوقة. هذا الكشف الجزئي يحدد قسماً من المسار المقدس يربط خمسة مساجد ضمن الشبكة الأصلية، ويُبرز أهمية توظيف النحو المكاني لنمذجة شاملة لهذا المسار.

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1. INTRODUCTION

No historical core in the world can be fully understood without acknowledging the religious dimension that permeates it. It is this richness—spatial, social, and spiritual—that justifies the use of the concept of a "historic core." This concept captures a living, dynamic, and deeply inhabited urban reality (Schulz, 1979), well beyond the rigid and reductive confines of the "historic center," a notion largely outdated in many contemporary contexts (UNESCO, 2004). However, no historic core is as deeply imbued with values as that of Muslim societies, despite centuries of religious invasions and the persistent secularizing and dehumanizing forces shaping today's world. Everything seems to contribute to distorting its image, erasing its lived experience, and effacing its memory. Yet, this erasure fails in the face of the intimate resistance of its inhabitants, who carry this soul in their hearts, preserve it in their memory, and embody it in every fiber of their being. A profound bond ties them to their past and their community, the Ummah. In a world undergoing constant transformation and increasingly driven by materialism, they strive to preserve this immaterial essence that connects them to their heritage (Aroua, 1969).

Moreover, it is difficult to grasp the character, essence, and soul of these urban cores—so closely tied to spirituality and imbued with a sacred dimension revealing the existence of a Unique God—without a deep understanding of Islamic practice. This practice is structured around a triadic model composed of three interdependent pillars: Chahada (declaration of faith), Ibadat (rituals), and Morality (Aroua, 1992). Their observance systematically confers sacredness to both space and time, stemming solely from the fundamental principles of Unitarian philosophy: Hikma (wisdom) (Aroua, 1969). This sacrality shapes and governs urban spaces in both their material and immaterial dimensions. These dimensions intersect to produce places that embody and express a religious value deeply rooted in the spiritual and social fabric of the city.

These urban spaces, as entities clearly defined and spiritually sometimes physically interconnected, are "structured" around a sacred center: the Kaaba (Raymond, 1985; Driss, 2001; Moussaoui, 2002). As the center of the world, it constitutes the unifying element around which the entire Islamic religious universe is organized, creating a spiritual network punctuated by sacred sites (mosques) scattered across the world. These sites allow the extension of sacredness through divine blessing: the baraka (Driss, 2001). These relay sites are not merely spaces for prayer; they play a pivotal role in the spatial and social structuring and identification of Muslim territories (Garcin, 2000). They contribute to the founding and shaping of new cities, as well as the adaptation of existing ones to meet the requirements of Islamic civilization by embedding themselves within a centralized sacred network.

This network allows the sacred to diffuse throughout all levels of collective life—from the territorial to the domestic sphere—in multiple forms, while ensuring a coherent unity and harmonious continuity between the spiritual, the social, and the spatial (Aroua, 1969). In other words, these relay sites, built by humans to meet their spiritual and social needs or aspirations, bear witness to remarkable endurance, thereby highlighting their sustainability. While they may stand out from their surroundings, they cannot exist in isolation, for they serve as spiritual anchors. They are interconnected not only through an immaterial network, but also through a set of sacred paths embedded in a complex urban fabric.

1.1 THEORETICAL CONTRIBUTIONS TO UNDERSTANDING THE SACRED URBAN NETWORK

The relationship between sacredness and the urban network has been the subject of numerous academic studies. Without claiming to be exhaustive, three complementary approaches can be identified that shed light on the structuring logic of sacred urban networks. Among the literature, we focus in particular on the works of researchers such as Berardi (1969), Driss (2001) on the historic cores of Maghrebi cities, and El-Kadiri A.S. (1985) in the heart of Mecca, all of which have contributed significantly to our understanding of how the sacred permeates public space.

The analysis of the formation and transformation mechanisms of the urban fabric of the historic core of Tunis—now a model city for morphological readings of medinas and ancient settlements—enabled Italian architect Alberto Berardi (1969) to grasp the spatial and social organization of urban space through a multidisciplinary approach. He identified three fundamental components: discrete elements, groups, and the complex organism. These components—including pathways, sacred sites, and the overall urban structure—collectively contribute, in his view, to the manifestation of sacredness in the city.

Similarly, although not originally focused on religion, the German sociologist Hedi Hekkerhart Eckert, in his study titled "Enclosed Exclusion", applied the principle of dichotomy between two opposing worlds to urban morphology—seen as an urban fact and as an expression of Islamic civilization (Privitera & Métalsi, 2016). This analytical framework allowed him to understand the social and spatial organization through the lens of the sacred: al-batin/ad-dahir (the inner/outer) and halal/harem, which he considered to be the deep structure of Islamic societies and the urban spaces that reflect them.

From another urban context, a study conducted by El-Kadiri A.S. in the holy city of Islam—Mecca, considered a sacred territory—examined the relationship between accessibility, spatial arrangements, and the use of spaces surrounding mosques. His analysis was based on two main sources: surveys of 623 worshippers and 153 imams across 153 mosques, and a spatial analysis of the urban development around these religious sites.

In addition, Driss, N. demonstrated how the sacred permeates public space in the contemporary city, weaving strong links between belief, practice, and user perception. Through interviews exploring the daily lives of urban dwellers, his multidisciplinary approach captured the complexity of interactions between space, use, and representations of the sacred within the urban center of Algiers, via three distinct pathways: one

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related to urbanity, another with a commercial focus, and a third centered on memory.
While each of these studies offers unique insights into how sacredness contributes to the contemporary Muslim city—spatially, socially, and spiritually—they leave unresolved the question of how the everyday movements of worshippers contribute to the identification and formation of the sacred urban network. This is precisely the question that this research seeks to address.

1.2 QUESTIONING THE SACRED URBAN NETWORK

Rooted in the Unitarian philosophy of Tawhid (Aroua, 1969), the Islamic notion of the sacred—Muqaddas—derives from the Arabic word meaning "purified" (Chelhod, 1986; Rassmel, 2009), and reflects a spiritual dimension that transcends everyday life. This purification, which guides righteous behavior, virtuous actions, and the spiritual integrity of the believer, also tends to infuse the entire urban environment. The pursuit of purity, both physical and inner, directs the individual toward harmony between material, social, and spiritual realms, in accordance with divine prescriptions (Aroua, 1992; Al-Askar, 1999).
In this context, sacred places play a central role in urban space, particularly within historic cores, where they bear witness to centuries of devotion and concentrate unique heritage values. They represent the point of convergence between the spiritual and the urban. More than simple religious edifices, mosques form a network of spiritual connections that disseminates sacredness while preserving traditions, rituals, and core values. Integrated into the urban fabric, these sites shape a living space where sacredness is made manifest and endures, guiding worshippers toward spiritual poles and nurturing their bond with the Creator.
The urban network thus becomes an active medium for sacredness, wherein the daily itineraries of worshippers trace an interconnected web that conveys three fundamental dimensions: spatial, social, and spiritual. However, in contemporary urban studies, this immaterial dimension is often sidelined in favor of approaches focused on functionality (such as urban atmosphere) or morphology.
How, then, do the daily journeys of worshippers toward the mosque contribute to the construction of a sacred urban network?

1.3 TOWARDS A SACRED URBAN NETWORK SHAPED BY WORSHIPPERS

Throughout the year, five times a day, the call to prayer—proclaimed by the muezzin—rhythms the lives of the faithful, inviting them to detach from material concerns and enter a state of spiritual contemplation (Al-Jîlâni, 1999; Al-Askar, 2003; Badri, 2007). Each moment of prayer begins with ablutions, a necessary purification before the journey to places of worship, thus transforming every itinerary into an act of spiritual devotion and unifying these places through a shared experience.
Beyond its individual dimension, prayer acquires profound social significance when practiced collectively—particularly in neighborhood mosques—thereby strengthening spiritual and communal ties (Aroua, 1992). In this sense, each worshipper who performs daily prayers at the mosque contributes to a dual sacralization: that of the path taken, and that of the urban network itself. The urban fabric becomes a living vessel of sacredness, where the paths of the faithful interweave to form a network that binds together spatial, social, and spiritual dimensions.
Based on this observation, our central hypothesis can be formulated as follows:
The regular movements of worshippers between their homes and the mosque, undertaken to perform at least one congregational prayer, actively contribute to the sacralization of the urban network, by revealing its spatial, social, and spiritual dimensions.

1.4 IDENTIFYING THE SACRED URBAN NETWORK AND ITS CHARACTERISTICS

In response to the transformations underway in the city of El-Djazair, the bay redevelopment project is part of a broader strategy aimed at strengthening the city's identity and supporting its transition into a metropolitan area (PAC Exp, 2011). This metropolitan territorial coherence is based on the integration of several axes with varying characteristics (Fig. 5). The revitalization of the historic core focuses primarily on the rehabilitation of transversal axes.
Among these, the transversal axis T03 (P1) transcends its basic function as a connection between the citadel and the sea, becoming a genuine sacred urban path. In parallel, a second axis with a sacred character (P2), proposed by the National Agency for Protected Sectors, cuts through the heart of the upper Casbah, running parallel to the coastal promenade. This axis crosses several other mosques, thereby reinforcing the anchoring of the sacred within the urban structure and extending the spiritual reach of the historic core.
This path is based on an original, exclusively dendritic (tree-like) network from the Islamic era, marked by a highly hierarchical organization. Together, these two axes may form a unified sacred path, playing a structuring role in both the urban and spiritual organization of the historic core—potentially forming the sacred backbone of the city.
Although this investigation is part of a broader initiative—the design of a Sacred Urban Path Charter conceived as an analytical and preservation tool rather than a prescriptive document—our analysis focuses here on an essential preliminary step: the identification of the sacred network structuring the P2 path. The goal of this research is to identify and analyze the sacred urban network underlying path P2, by highlighting its spatial, social, and spiritual dimensions.

2. METHODOLOGY AND INVESTIGATION TOOLS

Our methodological approach is based on a dual framework: on the one hand, a data collection phase, combining theoretical documentation with field investigation; and on the other hand, an analytical phase, including Multiple Correspondence Analysis (MCA), clustering, spatial analysis using GIS, as well as a critical examina-

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tion and interpretation of the network's spatial, social, and spiritual dimensions (Fig. 1).

2.1 THE FIRST PHASE WAS STRUCTURED AROUND THREE MAIN STAGES:

2.1.1 PRELIMINARY EXPLORATIONS AND DESIGN OF THE QUESTIONNAIRE

Before conducting the face-to-face survey with worshippers in the historic core of El-Djazair, several complementary methods were mobilized—such as documentation review, field observations, and informal discussions—to better understand the context, define the study perimeter, identify the targeted mosques, specify the survey population, refine the hypotheses, and design the questionnaire.

2.1.2 PRE-SURVEY TESTING AND METHODOLOGICAL ADJUSTMENTS

The pre-survey phase made it possible to test the methodological tools with a small sample (seven worshippers) at the El-Kebir mosque before deploying them across ten other mosques. This critical step revealed the need to reformulate certain questions, remove or add others, and include a legible map accompanied by a detailed situational analysis to facilitate the representation of itineraries.
One of the main challenges of the survey was to determine the most appropriate method for capturing the paths taken by worshippers. Three approaches emerged:

- The first consisted in drawing the routes directly on a map—offering high geographical precision and clear visualization;
- The second relied on identifying specific landmarks in the questionnaire and reconstructing the path afterward—a simpler and more accessible method, though potentially less standardized and less precise;
- The third approach, inspired by Kevin Lynch (1960), proposed a cognitive mapping based on the user's subjective perception of space. While useful for exploring spatial representation, it offers less geographic precision and may limit the potential for standardization.

2.1.3 IMPLEMENTATION OF THE MAIN SURVEY PROTOCOL

Following the preparatory phase—which led to the adjustment of the questionnaire and the adoption of the first method (map-based representation)—we carried out the main survey. This was conducted in front of mosques at the time of the Maghrib prayer, with 205 worshippers interviewed. The protocol followed three stages:

- The first covered mosques located in the lower part of the historic core: El-Kebir, El-Djedid, Bechtine, and Ben Fares;
- The second focused on those in the upper part: Sidi Abdellah, M'Hamed Cherif, El-Safir, Sidi Ramdane, and El-Barani;
- The third centered on the Sidi Abrahm El-Bahri mosque, located in the Admiralty district.

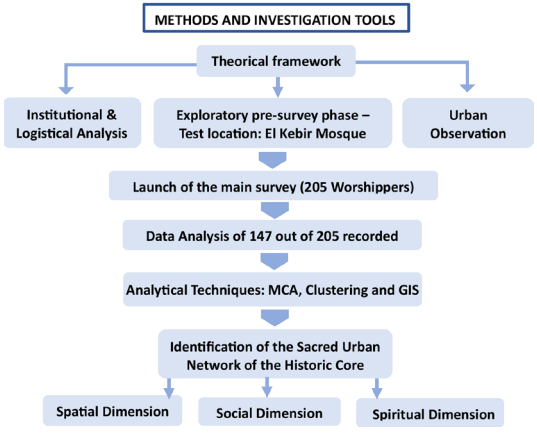

Figure 1: Methodology for Analyzing Sacred Urban Networks — Integrated Approach and Investigation Tools

2.2 Statistical Approach for the Identification of the Sacred Urban Network

To identify the spatial, social, and spiritual characteristics of the sacred urban network underlying Pathway N2, we apply a dual statistical approach. On the one hand, Multiple Correspondence Analysis (MCA) is used to explore the relationships between various qualitative variables (Missouni, 2017); on the other hand, K-Means clustering enables a clear segmentation of the possible clusters that define the sacred urban network (Fig. 2). This combined method helps identify distinctive groupings within the network. GIS (Geographic Information System) is then used as an integrative platform (Bakour, 2016) to map the results of both the MCA and clustering, transforming statistical data into spatial representations across three levels in order to delineate the network under study.

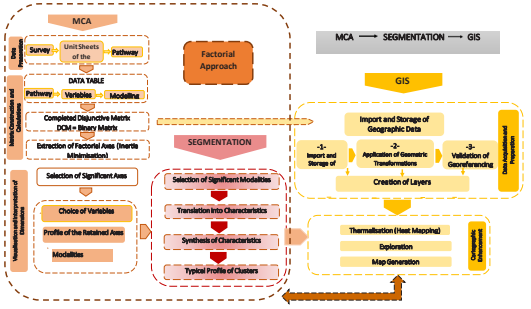

Figure 2: Methodological Framework: From Factor Analysis to Geospatial Modelin

3. SACRED URBAN NETWORK OF THE HISTORIC CORE OF EL-DJAZAIR BENI MAZGHANA EL-MAHROUSSA AS THE STUDY CONTEXT

This section provides contextual grounding for the study of the historic core of El-Djazair and its sacred sites undergoing revitalization, through a pathway proposed by the National Agency for Protected Sectors (ANSS) that connects these sites into a traditional urban network. Although overlooked by the PAC project, this sacred pathway reveals a spiritual, social, and spatial dimension essential for understanding the heritage of the area.

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3.1 PRESENTATION OF THE STUDY CONTEXT

The historic urban core of El-Djazair Beni Mazghana El-Mahroussa has been listed as a UNESCO World Heritage Site since 1992. It holds a central place in the urban history of the Maghreb and continues to attract admiration and scholarly interest, underscoring its importance on both regional and international scales. Imbued with a sacred dimension and the site-specific baraka under divine protection, its strategic location on the Mediterranean coast lends it a unique and enduring character.

This core, whose origins date back to the Phoenician period—as suggested by its name—bears testimony to a rich heritage. This material and immaterial legacy, shaped by religious tradition, is embodied in its sacred sites, which reveal a complex past and continuously enrich the spiritual life of its inhabitants.

In the 19th century, colonization profoundly disrupted this historic core, partially destroying its original structure and introducing a conception and perception of space rooted in materialist philosophy (Fig. 6). This shift initiated a gradual devitalization that marginalized the historic heart of the city (Msefec, 1984), which has since struggled to preserve its identity and integrate into the new colonial urban center.

In addition, neglect and the passage of time have tarnished its former brilliance—once celebrated for its whitewashed walls and interplay of light—contributing to its present-day deterioration despite its World Heritage status. Only fifteen mosques remain preserved (Figs. 3 and 4) out of the original 122 documented by Devoulx (1902), most of which were built between the tenth and early twentieth centuries. These remaining mosques continue to serve as vital hubs within the historic core:

- For visitors, they are the main points of curiosity.
- For residents, they remain the most vibrant and active spaces.
- And for worshippers, they are the most frequented locations in daily life.

Figure 3: Mosques of the Historic Core of El-Djazair

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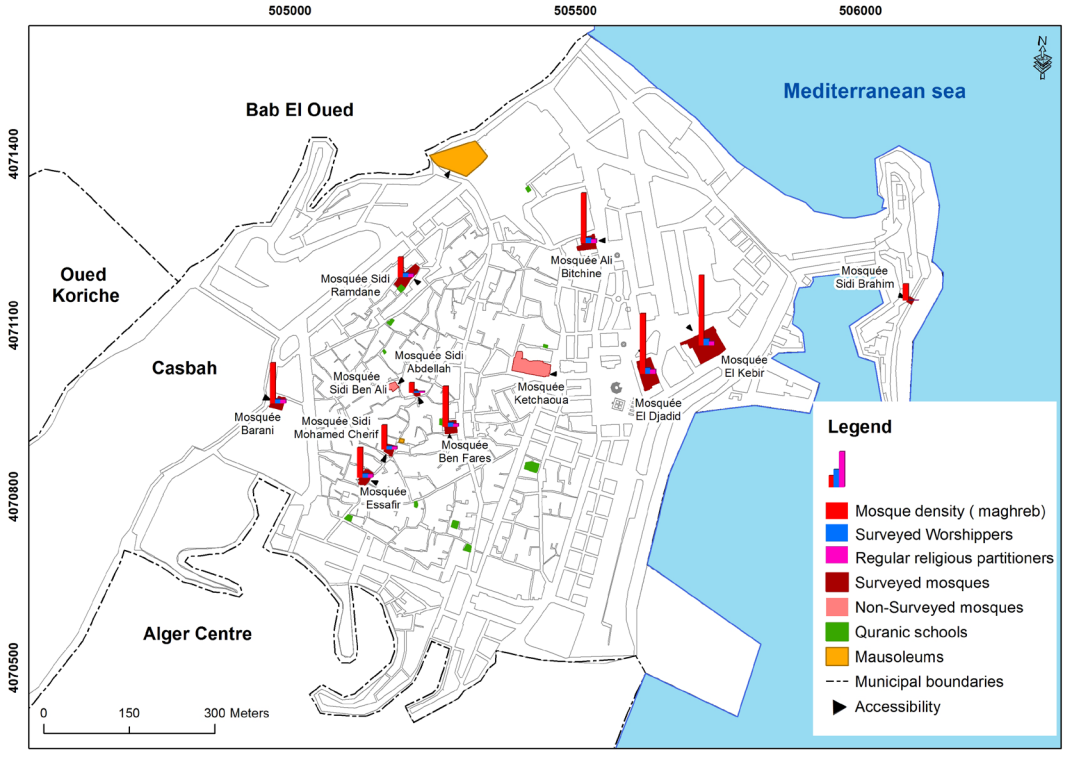

Figure 4: Location of Mosques and Spatial Distribution of Surveyed Worshippers by Mosque, Based on PPMSS (2012)

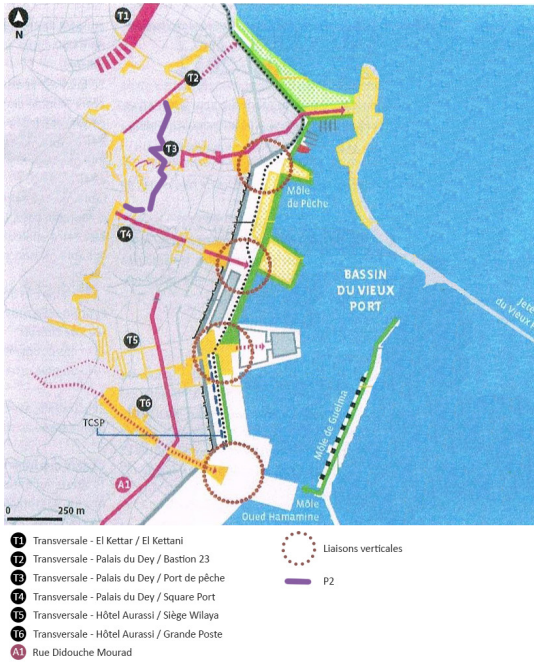

Figure 5: El-Djazair Bay Development Plan (PAC Exp, 2011): Location of Sacred Pathways P1

3.2 REHABILITATION OF THE HERITAGE AXES OF THE HISTORIC CORE

In response to ongoing transformations, the bay redevelopment project is part of a broader strategy aimed at strengthening the city's identity and supporting its evolution into a metropolitan center (PAC Exp, 2011). Although the project is based on a sustainable development approach that incorporates social and cultural dimensions, it tends to dilute the spiritual dimension within the cultural axis, without granting it explicit recognition.

Yet, the revitalization of the historic core should fully integrate the religious dimension as a fundamental component of urban identity. The goal should not be limited to the preservation of sacred sites as mere heritage elements, but rather to promote an active requalification—one that enhances their spiritual significance, fosters appropriation by the local population, and ensures accessible and respectful conditions for visitors within a coherent urban framework.

This metropolitan territorial coherence is based on the integration of a set of axes with diverse characteristics (Fig. 5). The revitalization of the historic core focuses primarily on the rehabilitation of transversal routes that connect to the seafront promenade, thereby ensuring a functional link between the city and the sea and contributing to its spatial and cultural integration.

Among these axes, transversal route T03 goes beyond its basic role as a connector between the citadel and the sea—it becomes a true sacred urban pathway. It crosses the historic core from top to bottom, linking several sacred sites: the Mosque of the Dey and the Janissaries' Mosque located within the citadel, as well as the El-Barani Mosque at its foot. The path continues through the upper Casbah (Al-Djabal), where the Sidi Abdellah Mosque is located, and descends toward the Ben Fares Mosque. Three other mosques—Kachaoua, El-Djedid, and El-Kebir—are situated in the lower section (Al-Wata), while the Sidi Brahim Mosque is located inside the Admiralty

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district.
This pathway affirms the role of religion within an urban network structured by three complementary spatial logics: the upper part maintains a dendritic layout, characteristic of the organic structure of the Casbah; the lower part adopts a more regular, Cartesian structure, partly inherited from the Roman era; while a hybrid network ensures continuity between the two, articulating these contrasting morphologies into a coherent functional and symbolic system.
In addition, a second sacred axis (P2)—proposed by the National Agency for Protected Sectors—runs through the heart of the upper Casbah, parallel to the coastal promenade (Fig. 5). This route, linking Bastions N10 and N08 at its extremities, also passes through several mosques—Sidi Ramdane, Ben Ali, Sidi Abdellah, Bougdour, M'Hamed Cherif, and Safir—thus reinforcing the presence of the sacred in the urban structure and extending the spiritual reach of the historic core.
This pathway is based on an original dendritic network from the Islamic era, characterized by a highly hierarchical organization.
Interestingly, these two routes—one running east–west and the other north–south—intersect at the Sidi Abdellah Mosque. Together, they could form a unified sacred path, serving as a structuring element in both the urban and spiritual organization of the historic core—potentially forming the sacred backbone of the site.
Although this investigation is part of a broader objective—namely the development of a Sacred Urban Path Charter conceived as a tool for analysis and preservation rather than a purely prescriptive document—our analysis here focuses on a critical preliminary stage: the identification of the physical, social, and spiritual characteristics of the sacred network structuring this path, particularly axis P2.

4. EXPLORING THE SACRED URBAN NETWORK OF THE HISTORIC CORE OF EL-DJAZAIR THROUGH A THREEFOLD APPROACH: MCA, CLUSTERING, AND GIS

The study of the sacred network requires a methodology capable of simultaneously capturing its statistical complexity and spatial dimension. To achieve this, we combined Multiple Correspondence Analysis (MCA) with K-means clustering. The integration of these results into a Geographic Information System (GIS) enabled the spatialization of the data and significantly enriched their interpretation.

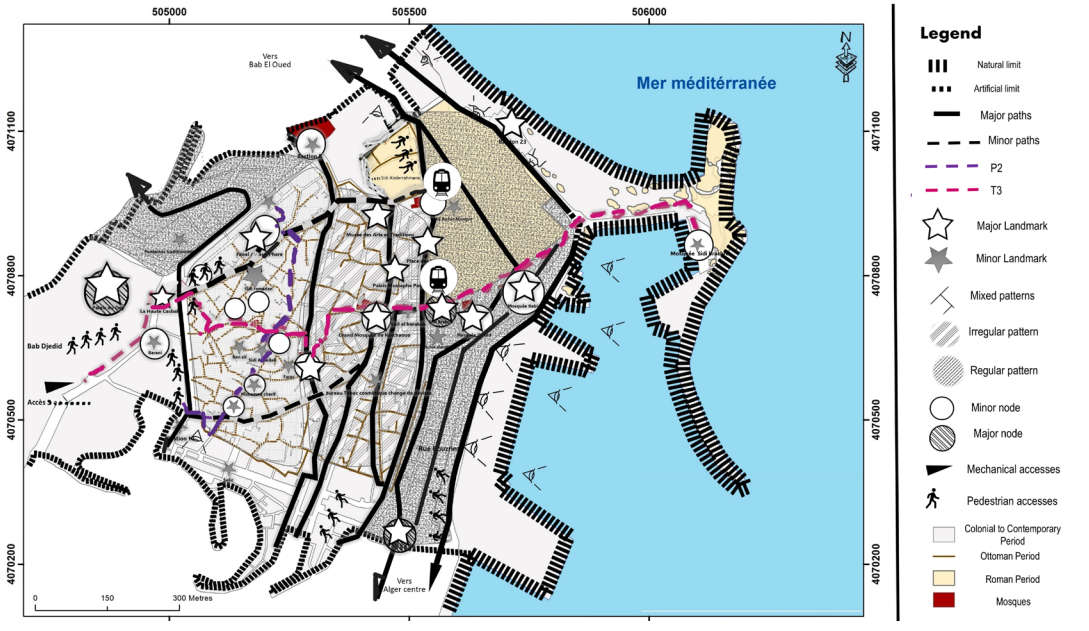

Figure 6 : Urban Structure Map of the Historical Nucleus of El-Djazair Beni Mazghana.

4.1 MULTIPLE CORRESPONDENCE ANALYSIS (MCA)

Following the field survey, the data collected were verified, structured, and then analyzed using Multiple Correspondence Analysis (MCA) conducted with the R software environment. This method allowed us to explore 44 variables and 120 qualitative modalities (Fig. 7), revealing differentiated contributions to the construction of the factorial axes. The analysis focused specifically on 147 regular pedestrian routes (from home to mosque), excluding occasional or motorized movements (Fig. 7).

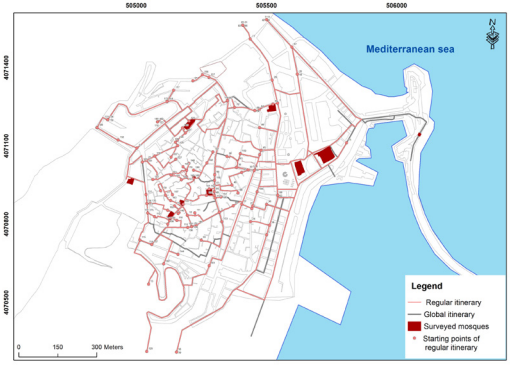

Figure 7: Spatialized Survey Framework — Mosques, Itineraries (147/205), and Departure Points

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Our selection of the first five factors in the Multiple Correspondence Analysis (MCA) is based on a rigorous methodological approach. Although these five factors collectively explain 36.91% of the total inertia across 76 potential dimensions, this choice proved optimal for achieving our research objectives.

Three main criteria justify this decision:

1. The absence of a clear inflection point (or "elbow") in the scree plot (Fig. 8), which prevents a purely mathematical selection;
2. The consistency and significance of these five factors throughout the analysis; and
3. Their thematic relevance to our study of the sacred urban network.

These factors enable a clear structuring of the relationships between variables and modalities, while maintaining a balanced compromise between informational richness and interpretive clarity. Including a larger number of dimensions would have introduced unnecessary complexity, reducing the readability of the results without providing meaningful analytical value.

This balanced methodological choice thus allows us to effectively address the complexity of the data while ensuring a thematically relevant interpretation aligned with the goals of our study.

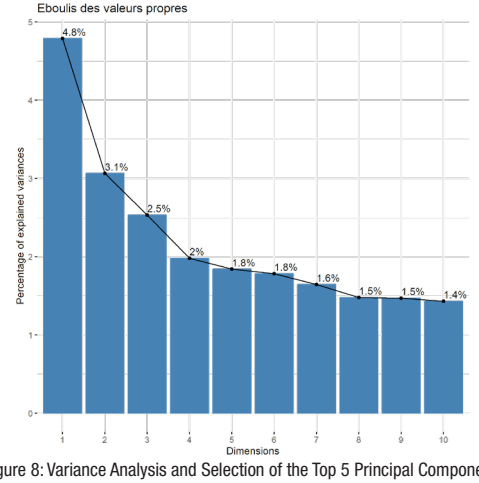

Figure 8: Variance Analysis and Selection of the Top 5 Principal Components Based on the Inertia Criterion — Scree Plot

Among these factors, the first two axes—F1 (12.67% inertia) and F2 (7.63% inertia)—were specifically retained for their ability to characterize the sacred network underlying Pathway P2. These axes reveal the key dimensions of Cluster 1 (K = 6), highlighting the original urban network, which will be developed further in the following sections.

A detailed examination of the variables and modalities associated with each axis allows us to identify a central thematic focus for each one (Fig. 9).

Continuing this analysis, the interpretation of the first two factorial axes reveals the thematic structures underlying the sacred urban network. Axis F1 groups together several highly contributive variables, notably the constraint variable (Q10_ constraint-itinerary), which highlights the types of obstacles encountered on daily routes to the mosque for Prayer A—such as insecurity, unsanitary conditions, and inadequate dimensions. Axis F2, by contrast, brings forward more specific variables related to the reduced use of the network during the Dohr prayer. The cross-interpretation of these two axes offers a clear and specific reading of the sacred urban network within the historic core.

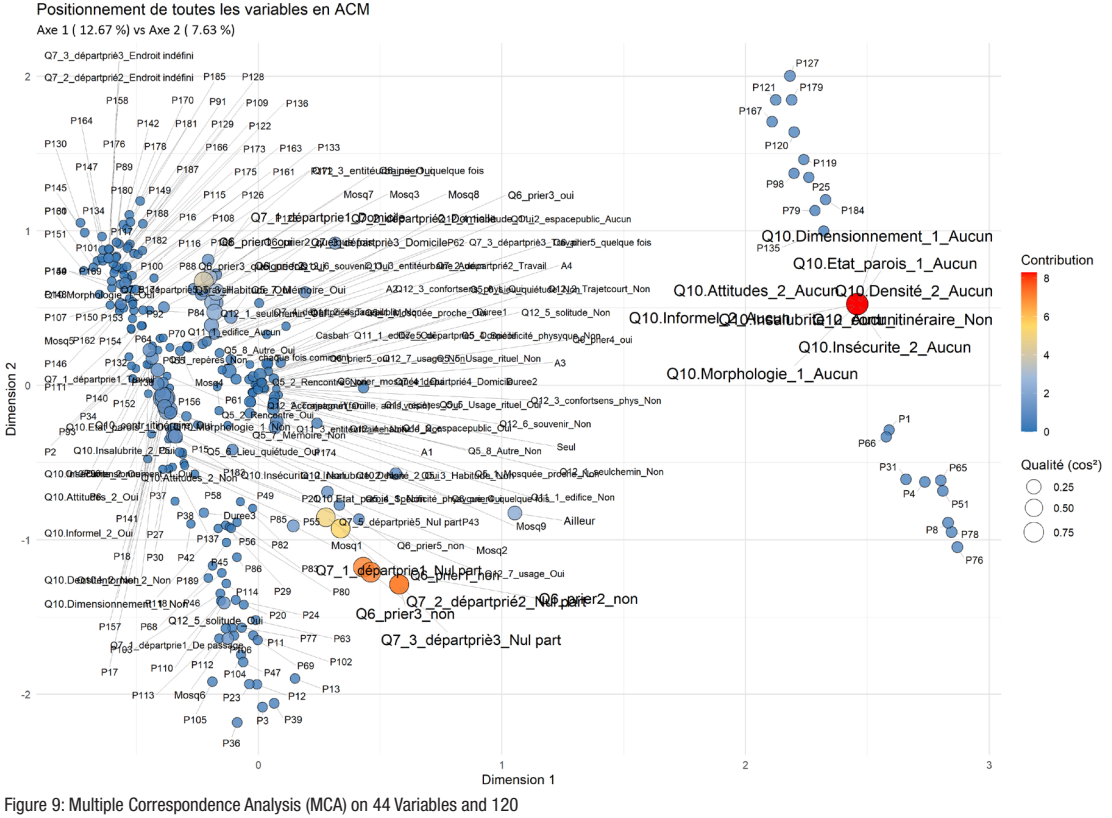

Figure 9: Multiple Correspondence Analysis (MCA) on 44 Variables and 120 Modalities (147 Routes)

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4.1.1 A SACRED URBAN NETWORK WITHOUT SOCIAL OR SPATIAL CONSTRAINTS, RELATED TO THE NON-PRACTICE OF EL-ASR, WITH NO DECLARED STARTING POINT

Axis F1, contributing 12.67% to the total inertia, stands out as the most structuring component of the factorial analysis, surpassing the other axes in significance. It captures a substantial share of the data's variability and provides an essential initial reading of their organization. This central role is explained by its ability to clearly differentiate the sacred urban network, particularly through highly contributive variables such as Q10_constraint-itinerary, which exposes the nature of the constraints (insecurity, unsanitary conditions, narrow passages, etc.) typically encountered on mosque-bound routes.
However, this axis defines a sacred urban network characterized by the absence of such constraints across the entire set of paths. In addition, less contributive variables such as Q7_3 prayer departure = Nowhere and Q6_prayer3 = No also appear to play a role in structuring this axis (Fig. 10). These modalities indicate that, during the El-Asr prayer, worshippers do not use any of the identified routes, as they do not attend their usual mosques at that time.

- Q10_constraint-itinerary = No (coordinate: 2.46, contribution: 8.53%)
- Q7_3 prayer departure = Nowhere (coordinate: 0.58, contribution: 0.90%)
- Q6_prayer3 = No (coordinate: 0.58, contribution: 0.90%)

The fact that worshippers do not use this sacred urban network during the El-Asr prayer indicates a temporary reduction in its use. However, this does not negate the network's primary attribute: the absence of constraints. In fact, these routes are still used at other times, such as during the El-Maghreb and El-Aicha prayers, and occasionally for Fadjr and El-Dohr. This suggests a degree of satisfaction or familiarity with the network, possibly linked to a spiritual state of khouchou' (focused humility) that makes worshippers less sensitive to ordinary disruptions in their routes.

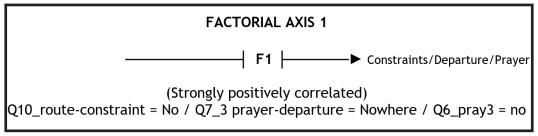

Figure 10 : Constraints as a Factor in the Polarization of the Sacred Urban Network

The positive correlation of all responses associated with "None" gives this sacred urban network an ideal profile, marked by complete flexibility, and strongly polarizes Axis 1. This structuring allows us to identify the theme of this factorial axis (F1) as that of a sacred urban network free from social and spatial constraints, specifically linked to the non-practice of the El-Asr prayer, with no declared point of departure. It reveals a regular use of the network, but without real spatial or social anchorage, inviting reflection on the nature of spiritual and social interactions expressed through it.

4.1.2 WEAKENING OF SACREDNESS WITHIN THE URBAN NETWORK RELATED TO THE NON-PRACTICE OF EL-DOHR, WITH NO DECLARED STARTING POINT

Axis 2, contributing 7.63% of the total inertia, emerges as the second principal axis in the factorial analysis. It captures a set of key modalities that provide a complementary reading of the data structure. This role is explained by its ability to differentiate the sacred urban network through both the frequency of ritual practice and the spatial characteristics of the starting points. These variables structure the axis through modalities that display high coordinate values, indicating extreme positions in the factorial space:

- Q7_2 prayer departure = Nowhere (coordinate: 1.21; contribution: 7.72%)
- Q6_prayer2 = No (coordinate: 1.18; contribution: 7.64%)

Axis F2 is primarily structured by two highly contributive variables: one refers to the absence of a declared departure location for prayer—specifically the "Nowhere" modality associated with Dohr prayer (Fig. 11); the other highlights the lack of practice of this prayer at that particular time of day. It is nevertheless likely that these worshippers performed the prayer at home or in another location.
This axis does not exhibit strong polarization—no significant negative pole emerges from the analysis. Instead, it reflects a unidirectional tendency toward a more discreet or distanced use of the sacred urban network, particularly at this time of day. The two major variables, positioned on the positive side of the axis, define a positively polarized profile marked by a weakening of sacredness in the urban network. This shift is evident both spatially, through the absence of movement toward the mosque, and temporally, through the lack of religious practice tied to this specific moment—particularly in the mosques that are normally frequented.

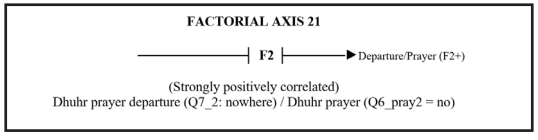

Figure 11: Departure Location and Dohr Prayer as Factors in the Polarization of the Sacred Urban Network

Axis F2 also appears to be linked to the frequency of network use, inferred from the departure points associated with the mosque for prayer. It highlights the routes that were not taken during the Dohr prayer, particularly those linked to the "Nowhere" modality. This decrease in attendance—especially noticeable during certain prayers—leads to a loss of continuity and intensity in the sacred urban network, reflecting an adaptation of religious practices to the rhythm of daily life.
This theme invites reflection on the combined impact of temporal and spatial dimensions on the weakening of sacredness within the urban network. It manifests as a lower attendance at places of worship, particularly during this prayer time, expressed through either the absence of movement toward the mosque or the declared non-participation. However, this should not be interpreted as abandonment of religious practice,

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but rather as partial engagement with the sacred itinerary.

4.2 Qualitative Approach Through Sacred Urban Network Segmentation

The K-Means statistical analysis with six clusters (K = 6) provides a clear and meaningful segmentation, allowing for a deeper understanding of the sacred urban network. This model enhances the interpretability of results and ensures a coherent distribution of groups. It thus represents a significant improvement in the study of urban sacredness.

The model achieves an R^2 value of 67.52%, explaining more than two-thirds of the total variance and clearly outperforming the previous clustering configurations. Additionally, the total WSS (within-cluster sum of squares) decreases from 285.42 (K = 5) to 238.71 (K = 6)—a reduction of 46.71 points—demonstrating stronger intra-cluster cohesion.

This evolution, coupled with a 6.35-point gain in R^2, confirms the relevance and stability of the model, where the balance between complexity and explanatory power is optimized. Although the marginal gains in R^2 decrease (+14.9 points between K = 3 and K = 4; +11.9 between K = 4 and K = 5; +6.3 between K = 5 and K = 6), this diminishing trend suggests that the six-cluster solution is an ideal compromise.

Finally, the share of WSS carried by the largest cluster drops from 43% (K = 3) to only 19% (K = 6), indicating a more balanced distribution of itineraries across the groups and enhancing the robustness of the model. These trends confirm that segmentation into six clusters allows for a refined and nuanced reading of the sacred urban network without falling into the trap of excessive over-segmentation.

Cluster 1 exhibits a notable feature—it only emerges in the six-cluster configuration (K = 6), after testing all variations from K = 3 to K = 6. This uniqueness makes it the focal point of our analysis in decoding the sacred network underlying Pathway N2. Finally, the integration of a spatial mapping would add significant value to this analysis by strengthening the interpretation and overall understanding of the network.

Cluster	Sample Size	Key Characteristics					Theme (Interpretation)
		Axis1	Axis2	Axis3	Axis4	Axis5	
1	55	-0.2434	-0.2224	-0.0689	+0.1576	+0.0384	Sacred urban network restricting movement/prayer practices (Dohr and Asr).
2	21	-0.0949	+0.3058	-0.1654	+0.0099	+0.3112	Sacred urban network in the face of reduced frequency of travel for prayers (Dohr and Aicha).
3	28	-0.0803	+0.4257	-0.1061	+0.0232	-0.2955	Sacred urban network facing reduced frequency (El-Dohr) and flexibility (El-Dohr and El-Asr).
4	12	-0.2102	-0.0890	-0.1580	-0.6574	+0.1074	Sacred urban network facing the impact of professional constraints.
5	12	-0.1364	-0.0916	+0.9814	-0.1502	-0.1443	Sacred urban network without visual landmarks.
6	19	+1.1470	-0.2074	-0.0366	+0.0085	0.0039	Sacred urban network without urban constraints and reduced traffic to the location (Asr).

Table 1: Correlations of Clusters 1 to 6 with the Factorial Axes and Associated Themes

The heatmap (Fig. 12) provides a quick visual overview of the differences and similarities among the clusters. Clusters 4, 5, and 6 each exhibit a highly distinctive characteristic along a particular axis, whereas Clusters 1, 2, and 3 are more similar to one another but are differentiated through subtle combinations of values across several axes. This visualization
serves as a prelude to the detailed analysis that follows and graphically validates the selection of Cluster 1 as the focus of the study.

Following the identification of structuring axes and their associated themes through factorial analysis, the K = 6 clustering segmentation enables the characterization of sacred urban networks, revealing six balanced groups with distinct features. These are summarized in the
table (Fig. 11), the heatmap (Fig. 12), and their spatial projection (Fig. 13).

Cluster 1, composed of 55 itineraries, displays a moderate within-cluster sum of squares (WSS) and good internal homogeneity, suggesting a notable internal coherence despite the absence of a sharply defined profile. Relatively stable and balanced, it nonetheless shows a slight tendency toward negative profiles on the first two axes. It is characterized by a moderately negative value of –0.243 on Axis 1, indicating a strongly affirmed

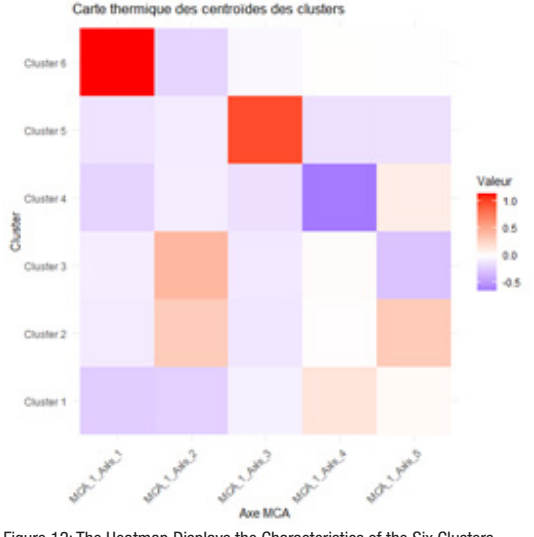

Figure 12: The Heatmap Displays the Characteristics of the Six Clusters

sacredness but one that is exercised within spatial and social constraints during worshippers' journeys to the mosque for the El-Asr prayer. Its slightly negative value of –0.222 on Axis 2 reflects a similarly affirmed sacredness, this time related to departure and the Dohr prayer.

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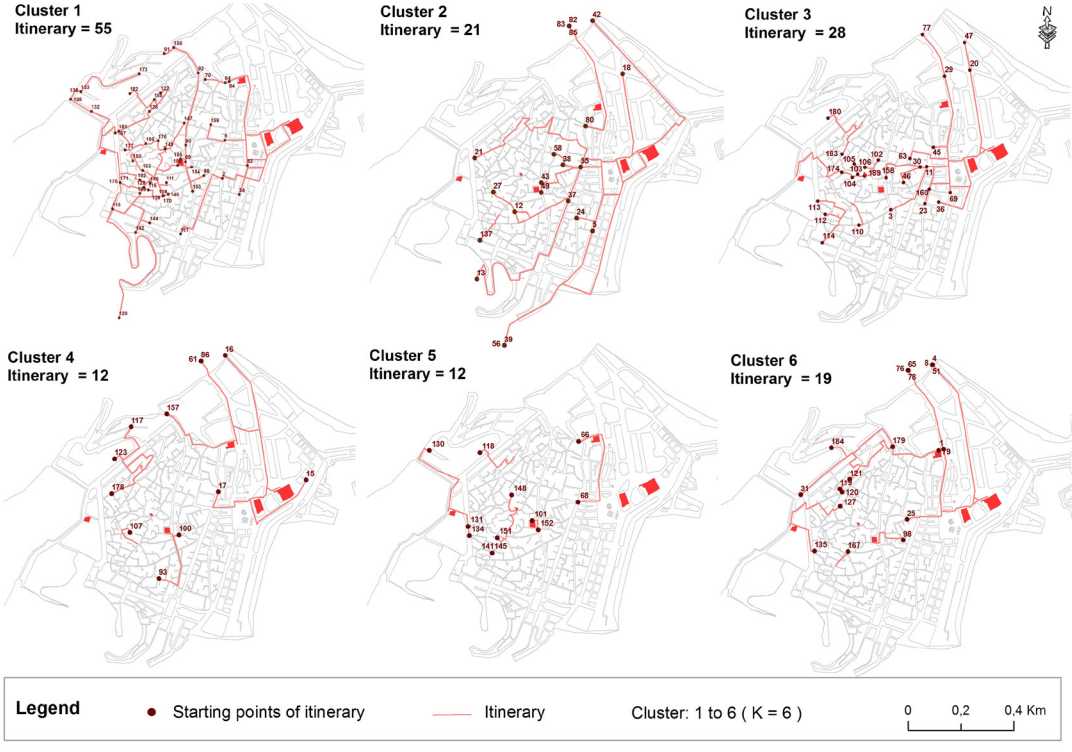

Figure 13: Spatial Projection Map of the Six Clusters

4.3 SPATIAL APPROACH USING GIS FOR THE SACRED URBAN NETWORK

Our GIS-based analysis reveals the complex structure of the sacred network across various spatial scales. The processing of the six clusters (K = 6) highlights a hierarchical spatial organization, within which Cluster 1 stands out due to its particular morphology. Although statistically homogeneous, this cluster exhibits significant spatial discontinuity, which only becomes evident in the six-class configuration—as confirmed by a systematic comparison of the segmentations from K = 3 to K = 6. This spatial approach allows us to move beyond the apparent contradiction between statistical homogeneity and spatial heterogeneity (Fig. 14). The analysis of the sacred urban network here is based on the nesting of three complementary spatial perimeters, allowing for the identification of the sacred network underlying the urban pathway, and for the delineation of its main characteristics. This configuration enables a clear distinction between the sacred network and the preserved historical structure located in the upper part of the original core, and also makes it possible to precisely locate the itineraries adjacent to Pathway P2. A close examination reveals a spatially discontinuous network:

- the first zone extends through the lower part of The area and features a regular pattern;
- the second has a linear morphology;
- and the third covers the upper part of the historic core, encompassing primarily the original urban network, composed of 30 itineraries—22 of which are analyzed in detail to reconstruct the multidimensional characteristics of the original sacred network (Fig. 14).

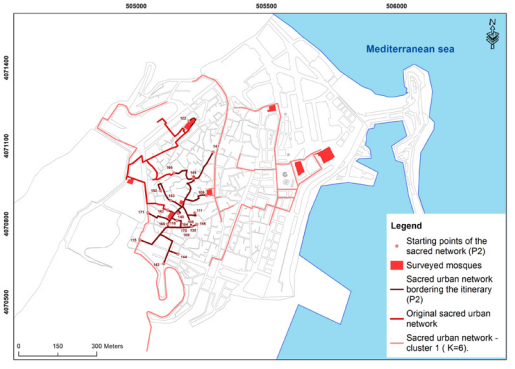

Figure 14: Nested Mapping of the Three Spatial Strata and the Sacred Network

Although the urban network in the upper part of the historic core has retained its original morphology and structure—originally designed to meet both social and spiritual needs—the lived experience of today's worshippers reveals a daily reality that is markedly different. This tension between formal permanence and the transformation of uses becomes evident when examining the data from Cluster 1 (K = 6), which represents the most authentic segment of the historical network.
Our analysis focused specifically on the 30 itineraries included in this cluster, and more precisely on the 22 itineraries that form a coherent spatial structure, enabling the identification and characterization of the original sacred urban network underlying Pathway P2 (Figs. 14 and 16). This cluster corresponds directly to the theme identified through Multiple Correspondence Analysis (MCA): "Sacred Urban Network Under Constraint: Mobility Challenges During El-Dohr and El-Asr Prayers."

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Figure 15: Identification of the Various Constraints Affecting the Original Sacred Urban Network

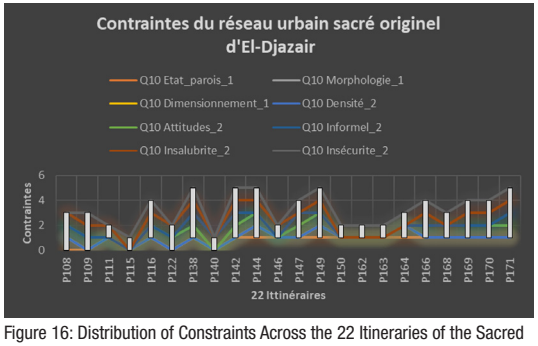

Figure 16: Distribution of Constraints Across the 22 Itineraries of the Sacred Urban Network

5. SACRED URBAN NETWORK IN THE FACE OF HOME-TO-MOSQUE CONSTRAINTS (EL DOHR AND EL-ASR)

Today, the original sacred urban network survives only through its remnants—witnesses to a spatial organization deeply rooted in the Unitarian principles of Islam. Designed to embody these values in everyday life, its spatial components reveal an inseparable connection between the intimacy of faith and civic engagement. The sacredness of this urban space is conditioned by its use, governed by specific rules, where the sacred informs daily life and governs all spheres of existence, both individual and collective.

It is worth recalling that if the sacred is synonymous with purification, the profane— following Driss—is not to be equated here with secularism in the Western sense.
According to Berardi, the urban fabric of the medinas is meticulously arranged, structured as a regulated system in which each pathway, threshold, or point of interaction expresses a collective order. Through their layout, these elements regulate flows and safeguard the intimacy of residential quarters. This spatial system functions as a filter, ensuring safety, cleanliness, and calm. The environment—clean and well-maintained—is continuously purified through a communal logic of preservation. Such a dynamic illustrates the close link between the built environment and the ideal of purity—a principle that transcends materiality to respond to a spiritual imperative.
User behavior conforms naturally to this spatial logic (respect, restraint, modesty), establishing a form of urbanity guided by shared values grounded in spatial, social, and spiritual harmony. It is therefore not a constraining space, but rather a structured and secure environment in which the articulation between urban space and social practices helps preserve the integrity of a lifestyle founded on the principles of El-Hikma (wisdom).
As Aroua (1992) states, this spatial organization subordinates physical function to moral function, which itself is subordinated to the spiritual function. Thus, this urban network materializes a religious conception of living together, where physical space becomes the material extension of immaterial principles. This logic gives the concept of the "Enclosed Exclusion" (Berardi, 1969) an emblematic status, representing the dialectic between al-batin (the inner, protected realm) and ad-dahir (the visible, external world), thereby connecting the visible and the invisible in a sacred logic aligned with the principle of himâya—divine protection.
The results of our field survey—based on testimonies from worshippers—highlight that six of the eight main constraints encountered on the way to mosques relate primarily to:
poor sanitation (presence of garbage, stagnant water, unpleasant odors),

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inappropriate behaviors,
a general sense of insecurity, and
visible deterioration of the built environment (cracked walls, lack of lighting, damaged pavement, etc.).
To these primary issues are added two frequently cited constraints:
the multiplication of informal uses (illegal vending, squatting, incivility),
and the challenging morphology of routes (stairs, narrow passages, poor dimensions).
In comparison, the study conducted by El-Kadiri A.S. (1986) on the mobility of worshippers identified other types of constraints, notably:
long distances to reach places of prayer,
lack of public transportation,
and shortage of parking spaces.
These results reflect a different usage context: in our case, the surveyed worshippers are mainly pedestrians and benefit from a relatively dense network of mosques within the historic core, which limits concerns related to long-distance travel or parking.
Furthermore, although certain questions raised in the works of Driss and El-Kadiri—such as the choice of prayer site, place of residence, route selection criteria, or age group—were also included in our questionnaire, they were not retained in the present analysis, as they did not contribute to the definition of Axes F1 and F2, and thus did not participate in identifying the theme of the sacred urban network revealed by this cluster.
These observations are not entirely new. Three of them had already been noted in Driss's study, which attributed them to the historic core, particularly the Casbah. His investigation— conducted through a "memory path"—yielded significant findings, not from a survey focused solely on sacred sites, but from a broader exploration of how users perceive the Casbah as a place of memory.
In Driss's work, sacredness is primarily understood through the spaces surrounding specific sites—such as the mausoleum of Sidi and the El mosque—as well as through religious practices observed during Ramadan, a key moment to analyze worshippers' behaviors. However, the constraints related to public space do not emerge directly from the observation of sacred sites themselves, but rather from the global image attributed to the neighborhood as a place of poverty, informality, and danger—as revealed in responses to the question: "What does the Casbah represent to you?" (Driss, 2006).
Our own survey, however, enables a more precise localization of these issues (Figs. 15 and 16): these difficulties are also experienced along the daily routes taken to reach the mosques, which directly affects the spiritual use of the sacred urban network. Although the original network still exists physically, it no longer fully performs its sacred function that is, a network capable of supporting worshippers in maintaining their required state of purification for prayer.
The testimonies gathered underscore the constraints faced by worshippers, particularly during their home-to-mosque journeys for the El-Dohr and El-Asr prayers, which were the focus of the two factorial axes (Fig. 15). Falling within the theme of a sacred urban network made restrictive due to the regular nature of such trips, these findings reveal that current usage conditions—marked by inappropriate behavior, insecurity, and poor maintenance—undermine the continuity and coherence of the sacred system.
The responses reveal that access to sacred sites is not merely a spatial movement, but rather a true obstacle course, where physical, social, and spiritual dimensions are deeply intertwined. The difficulties encountered are not simply cumulative: they interlock, creating a global experience in which constraints reinforce one another.
The spatialization of survey results (Fig. 16) makes it possible to visualize both:
the original sacred network as it is practiced and perceived by worshippers, and
the spatial configuration of the constraints inherent to that sacred urban network.

5.1 CONSTRAINING SACRED URBAN NETWORK: PHYSICAL DEGRADATION ALONG DAILY HOME-TO-MOSQUE ROUTES

The routes to mosques are frequently described by worshippers as being marked by severe physical degradation of the urban environment. Among the most often cited issues are broken stairways and damaged roads (drouge maksra, trik mkasra, tarik machi makhdouma, ardh mkasra), as well as the absence of street lighting, expressed through phrases such as tarik bla dou and dhalem. This is compounded by cracked walls (souar mkasra) and homes at risk of collapse (manazil tanhar), contributing to a widespread feeling of neglect and insecurity.
Worshippers also emphasize significant unsanitary conditions: stagnant water, infestations of rats (el fiarane) and large rodents (el djerdane), dirty puddles (el maghzna fi el boukaa), and foul odors (riha taa zbal tatlaa), all of which deeply undermine the spiritual experience of movement toward sacred places.
Furthermore, the topography of the neighborhood presents additional obstacles: narrow alleys (trik madiyqa), a succession of stairways (droug escalier), and network complexity (bazf droug) render the routes difficult, even exhausting—particularly for elderly individuals, children, or worshippers with reduced mobility.
This degraded material environment directly affects the comfort, safety, and dignity associated with the act of going to the mosque, at times transforming what should be a ritual journey into a daily ordeal.

5.2 FRACTURED SACRED URBAN NETWORK: SOCIAL CONDITIONS ALONG HOME-TO MOSQUE ROUTES (INSECURITY, UNSANITARY CONDITIONS, BEHAVIOR, ETC.)

The deterioration of the built environment is accompanied by palpable social insecurity, strongly felt by worshippers on a daily basis. They report frequent incidents of delinquency, mentioning risaba (assaults or violent acts) and sarakin (thieves). They also point to the troubling presence of moutachrida (homeless individuals) and barania (people perceived as outsiders to the community spirit of the neighborhood), which generates a feeling of unease and estrangement.
More concerning still are reports of drug trafficking near mosques, with testimonies describing

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scenes where “chabeb yataata ibia el moukhdiert amama el masadjid” (young people consuming or selling substances in front of mosques) or the explicit mention of “bayr el moukhadirat koudem djamaa” (drug dealing taking place just outside the mosque) compromise the sanctity of these spaces and create profound discomfort among worshippers.
In addition, perceived disrespectful behaviors contribute to this sense of social disorder: “ramya el aousakh fi tarik” (throwing trash in the street), “inaidem el akhlak” (loss of moral values), “nas machi mrabiyin” (people lacking proper upbringing), “adem tahadhour” (lack of civility), and “ihmal tourouk” (neglect of public pathways). These recurrent perceptions indicate a rupture of the social contract that historically governed sacred space—rooted in respect for places, neighborhood solidarity, and shared norms of modesty and decency.

5.3 WEAKENED SACRED URBAN NETWORK: COMPROMISED CONDITIONS OF PURIFICATION ALONG HOME-TO-MOSQUE ROUTES

These descriptions also point to a fragilization of the spiritual dimension of the sacred journey. The route to the mosque cannot be dissociated from its immediate environment. Dirtiness (el aousakh fi el tarik) and nauseating odors (riha taa zbal tatlaa) undermine the sense of purity essential to fulfilling the rite.
The perceived insecurity and deviant behaviors encountered along the way give rise to fear and discomfort, obstructing the spiritual contemplation and serenity that the act of prayer requires. In addition, disrespect for religious and social norms in the vicinity of mosques is experienced as a direct violation of their sacredness.
Finally, informal or squatting practices—such as “nass tbni ou taal fi douyour” (unauthorized construction or vertical extensions), or the “squatting of parcels from demolished homes”— disrupt the old spatial order, in which the urban network was once designed in harmony with its sacred vocation.
The perception of a general weakening of sacredness in the historic core of El-Djazair thus appears to be the result of both physical and social interferences, which collectively tend to detach the urban network from its original spiritual function.
Thus, the analysis of these itineraries reveals that physical degradation, social dysfunctions, and the relaxation of sacred norms mutually reinforce one another. This interaction across the three dimensions—physical, social, and spiritual—creates a cumulative degradation process, where the decline of one dimension inevitably leads to the erosion of the others.
As a result, the daily journey to the mosque for the five prayers—especially El-Dohr and El Asr—which is meant to be a ritual and sacralized act, now unfolds within an environment that no longer fulfills the fundamental conditions of sacredness:
bodily purification (ṭahāra),
environmental calm (sakîna),
and inner serenity (itmi’nân).

CONCLUSION

This study highlights the cumulative impact of the constraints encountered along routes to mosques—physical degradation, feelings of insecurity, and violations of sacred thresholds— which, by reinforcing one another, hinder both mobility and the maintenance of the state of purification (ṭahāra) required for collective prayer. While previous studies have addressed urban sacredness from various angles, our approach provides precise insight into how each disruption—dirt, incivility, obstructions—alters the religious experience, compromising both spiritual focus (khouchouʿ) and the minimal ritual conditions required.
This analysis focuses specifically on the original and traditional sacred urban network, composed of 22 daily itineraries that are constrained during travel to the mosque for El-Dohr and El-Asr prayers—falling within the thematic scope revealed by factorial axes F1 and F2. This approach confirmed our hypothesis: worshippers who perform at least one prayer regularly at the mosque from home—with both conditions being fundamental—actively contribute to the sacralization of the urban network.
The originality of this research lies in two major contributions:

1. The systemic modeling of interactions between the physical, social, and spiritual dimensions of the sacred network;
2. The methodological development of an operational charter for the sacred urban network, linking spatial diagnostics (MCA / clustering / GIS), restoration recommendations, and local monitoring tools.

This charter is intended to equip worshippers, urban planners, and institutional actors with the means for an integrated rehabilitation of religious routes within historic cores. Beyond the case of the historic core of El-Djazair, this approach can be transferred or applied to other historic urban centers—especially in the Islamic world—where reviving urban sacredness depends on a renewed articulation between memory, practice, and spatial configuration.
That said, this initial phase of analysis remains focused on the original sacred urban network underlying Pathway N2, which has not yet been integrated into the modeling. It will be the subject of a complementary study mobilizing spatial syntax analysis, which will in turn address the spatial and social dimension of this network using a set of concepts aligned with the thematic framework of constraints. The objective is to extend the current findings to the entire sacred network and refine the analytical framework by incorporating new dimensions that will emerge from an in-depth study of Pathway P1.
Ultimately, this research invites us to reimagine the historic core as a space where sacred places assert themselves as durable places—not only as heritage to be preserved, but as sacred spaces in the making, where religiosity is not limited to monumental architecture but is also embedded in daily practices and urban networks animated by faith.

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ISSN 1828-5961

BIBLIOGRAPHY

Al-Askar, A. b. M. (s. d.). Aḥkām ḥuḍūr al-masjid [أحكام حضور المسجد]. Islamway. http://www.alaskar.net

Al-Fawzan, A. I. S. (2000). Aḥkām ḥuḍūr al-masājid [Les règles relatives à la fréquentation des mosquées] (1re éd.). Dar al-Watan.

Al-Ghamdi, A. b. S. (1986). Étude sur l'emplacement des mosquées dans la ville de La Mecque. Club culturel et littéraire de La Mecque.

Al-Jîlâni, A. A. (1999). Les secrets des secrets. Al-Bouraq.

Aroua, A. (1969). L'Islam à la croisée des chemins. SNED.

Aroua, A. (1992). Qu'est-ce que l'Islam ? Dahlab.

Mohammed Bakour, Tahar Baouni, Thomas Thévenin. La dépendance automobile à Alger : entre efficacité du système automobile et précarité du système de transport. RTS. Recherche, transports, sécurité, 2018, 2018, pp.26.(10.25578/RTS_ISSN1951-6614_2018-01) (hal-01773851).

Chabane, I. (2006). Évaluation de la qualité vécue des environnements hermétiques en mur rideau de verre : Cas d'étude - Immeuble bureau à Alger. École Polytechnique d'Architecture et d'Urbanisme (EPAU).

Chelhod, J. (1986). Les structures du sacré chez les Arabes. Maisonneuve & Larose.

Devoulx, A. (1870). Les édifices religieux de l'ancien Alger. Imprimerie nationale.

Driss, N. (2001). La ville mouvementée : Espace public, centralité, mémoire urbaine à Alger. L'Harmattan.

Garcin, J.-C. (2000). Grandes villes méditerranéennes du monde musulman médiéval. École française de Rome.

Groupement Arte Charpentier-Wilaya d'Alger. (2020). Aménagement de la baie d'Alger : Stratégie d'aménagement pour la baie d'Alger - Avant-projet. Wilaya d'Alger. https://url exemple.dz

Larmarange, J., & Temporal, F. (2006). Déroulement des enquêtes quantitatives et/ou qualitatives. https://joseph.larmarange.net/IMG/pdf/dero

Lynch, K. (1979). The image of the city. MIT Presse.

Miaux, S. (2009). Corps urbain : Mouvement et mise en scène. In Géographie et Culture (pp. xx-xx). L'Harmattan.

Ministère de la Culture & Wilaya d'Alger. (2012). Plan permanent de sauvegarde et de mise en valeur du secteur sauvegardé de la Casbah d'Alger (Conformément au décret exécutif n°03-324). Direction de la Culture de la Wilaya d'Alger, CNERU.

Missoum, S. (s. d.). Alger à l'époque ottomane : La médina et la maison traditionnelle. Dans G. Esquer (Éd.), Bombardement d'Alger par l'amiral Neale, 1824.

Missouni, R. (2017). Analyse des facteurs du redoublement scolaire au cycle d'enseignement moyen algérien. Cas d'étude : CEM Ibn Rochd, Draïa, Alger. ENSSEA.

Mohsen, A. S. (2014). The ontological concept of sacred and profane in Islam (analytic study). GJAT: Gulf Journal of Applied Technology, 4(1), 117. https://www.gjat.my

Moussaoui, A. (2006). Espace sacré au Sahara : Ksour et oasis du sud-ouest algérien. CNRS Anthropologie.

Msefec, J. (1984). Villes islamiques : Cités d'hier et d'aujourd'hui. Conseil international de la langue française.

Norberg-Schulz, C. (1979). Genius loci : Towards a phenomenology of architecture. Rizzoli.

Privitera, F., & Metalsi, M. (2016). Le signe de Médina : Morphologie urbaine selon Roberto Berardi. https://www.amazon.fr

Ras-Mel, A. A. (2009). Le sacré et la coutume populaire. Revue de la Culture Islamique, 5, 89-96. Ministère des Affaires Religieuses et des Habous.

Raymond, A. (1985). Gran des villes arabes à l'époque ottomane. Sindbad.

UNESCO. (2004). Patrimoine et développement durable dans les villes historiques du Maghreb contemporain : Enjeux, diagnostics et recommandations. Bureau de l'UNESCO à Rabat.

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