ICONARP
International Journal of Architecture and Planning
Received: 05.05.2025 Accepted: 15.12.2025
Volume 14, Issue 1/ Published: 30.06.2026
Research Article *DOI: 10.15320/ICONARP.2026.363 E- ISSN:2147-9380*

Towards a Comprehensive Typo-Morphological Exploration of Silifke (Mersin, Turkey)'s Multi-Layered Urban Form: Methodological Insights within the Context of Urban Morphology

Meltem Akyürek Algın*
Şebnem Hoşkara**

Abstract

Many Anatolian towns with historically layered urban fabrics have undergone rapid spatial transformations in recent decades, often resulting in the loss of traditional morphology and the weakening of collective urban memory. This study focuses on Silifke (ancient Seleuceia ad Calycadnum), a mid-sized Anatolian town with a rich historical background, and examines the planning and morphological changes in its historic core within the broader context of cultural heritage conservation and urban policy. The analysis covers an approximately 150-hectare area that encompasses Silifke's multi-layered historical center and archaeological protection zones, as defined in the 1995 conservation plan. The research employs a typo-morphological approach grounded in multi-layered mapping techniques and historical data. Its originality lies in developing a context-specific morphological framework for medium-sized Anatolian towns, a category that remains underrepresented in urban morphology literature. A key methodological contribution is the introduction of an "x-ray" analysis—superimposing chronological urban layers produced from archival maps, cadastral records, aerial photographs, historical engravings, and municipal plans. This method reveals the evolution of spatial elements such as street networks, building patterns, and plot configurations across different historical periods. Findings indicate that Silifke's historic core retained strong spatial continuity until the mid-20th century. However, post-1950 rural-to-urban migration led to increased building activity; during the 1960s, parceling practices began to alter the traditional plot structure; and from the 1980s onward, the rise of high-rise construction further disrupted the historical urban fabric. Notably, the absence of a conservation-oriented development plan until 1995 allowed these transformations to unfold without a regulatory heritage framework. These cumulative changes constitute key turning points in the town's morphological evolution. Overall, the study underscores the importance of integrating morphological analysis into heritage-sensitive urban planning and proposes a transferable analytical model for other Anatolian towns facing similar developmental pressures.

Keywords: *Urban form, Urban history, Urban morphology, Urban transformation, Silifke-Mersin-Turkey*

* Department of Architecture, Toros University, Mersin, Türkiye (*Corresponding author*)
Email: meltem.akyurek@toros.edu.tr

** Department of Architecture, Eastern Mediterranean University, Northern Cyprus, Mersin 10, Turkey
Email: sebnem.hoskara@emu.edu.tr

To cite this article: Akyürek Algın, M., & Hoşkara, S. (2026). Towards a Comprehensive Typo-Morphological Exploration of Silifke (Mersin, Turkey)'s Multi-Layered Urban Form: Methodological Insights within the Context of Urban Morphology. *ICONARP International Journal of Architecture and Planning,* 14 (1), 313-347. DOI: 10.15320/ICONARP.2026.363

Copyright 2026, Konya Technical University Faculty of Architecture and Design. This is an open access article under the CC BY-NC- ND license

INTRODUCTION

Urban morphology offers a crucial framework for understanding the spatial, social, and cultural evolution of cities by analyzing their physical structure and its interaction with human activity over time (Kropf, 2018; Oliveira, 2019; Arefi & Aelbrecht, 2024). The morphology of a city encompasses not only the arrangement of buildings and streets but also the historical layers, socio-economic dynamics, and political shifts embedded in the urban fabric (Karaarslan & Çelikyay, 2019; Ayten & Aygen, 2022; Moudon, 1997). This multifaceted perspective supports the recognition of urban identity and cultural memory as essential components in the persistence and transformation of cities (Rodger & Rau, 2020; Bandarin & van Oers, 2012).

Historically, cities have been conceptualized in diverse ways shaped by their socio-political and cultural contexts. From Aristotle's notion of the city as a community pursuing collective well-being (Topal, 2014), to medieval understandings centered on defensive, walled settlements (Yapıcı et al., 1999), and to Mumford's (1961) description of medieval cities as "walled human settlements" reflecting socio-economic and defensive functions, interpretations of urban space have evolved considerably. Contemporary studies increasingly view cities as dynamic, socially constructed environments shaped by the interplay of economic, political, and cultural forces (Rodger & Rau, 2020), reflecting a broader shift from static models toward more process-oriented approaches to urban transformation (Arefi & Aelbrecht, 2024).

Urban morphology systematically examines the spatial organization of urban environments by focusing on the relationships between streets, plots, and buildings (Conzen, 1968). This approach is particularly valuable for analyzing historical layering and transformations driven by changing social and political dynamics (Bilsel, 2015). Drawing upon geography, architecture, and history, it provides a comprehensive analytical lens for understanding the evolution of urban form (Kubat & Topçu, 2009).

The foundations of modern urban morphology were laid in the 18th and 19th centuries, beginning with Goethe's early ideas on form and later formalized through the evolutionary models of M.R.G. Conzen (Tezer, 2021). Conzen emphasized the interdependence of streets, plots, and buildings as elements that evolve in response to socio-economic shifts (Conzen, 1981; Kaya, 2019). Complementing this perspective, the Italian school—led by Muratori and Caniggia—developed typological analysis methods integrating historical continuity with contemporary design (Caniggia & Maffei, 2001; Levy, 1997; Oliveira, 2016; Panerai et al., 2004). The French school further enriched the field through its focus on spatial systems and urban structure (Panerai, 1970).

Despite their rich historical layering, mid-sized Anatolian towns remain underrepresented in urban morphology research (Ünlü & Baş, 2017; Kubat, 2009). These settlements face pressures arising from modernization, migration, and planning interventions, which gradually

DOI: 10.15320/ICONARP.2026.363

reshape their spatial logic. Recent studies highlight the need to analyze urban fabrics both vertically (as historical stratification) and horizontally (as spatial configuration), offering a dual lens essential for understanding such environments (Tezer, 2021).

Silifke—a town with Hellenistic origins and successive Roman, Byzantine, and Ottoman layers—provides a compelling case for examining these dynamics. Its historical core, covering approximately 150 hectares (1.5 km^2), illustrates the challenges experienced by Anatolian towns undergoing rapid socio-economic and spatial change. Prior research shows that parcelization, increasing building density, and planning interventions often lead to fragmentation and the loss of traditional urban characteristics (Ünlü & Durmuşoğlu, 2022; Ayten & Aygen, 2022; İnceoğlu, 2013; Akyürek Algın & Hoşkara, 2024), particularly where large-scale renewal projects or gated communities introduce spatial discontinuities.

This study addresses these issues through an integrated typo-morphological methodology that combines spatial analysis, historical mapping, and typological reading to investigate the transformation of Silifke's urban core. It seeks to answer the following questions: How have planning interventions and socio-economic forces reshaped Silifke's urban morphology? What key moments define continuity and rupture within the historical core? How do changes in streets, plots, and building typologies reflect broader socio-spatial processes? By superimposing multiple historical layers and analyzing morphological change across scales and time, the study contributes to filling the research gap on mid-sized Anatolian towns and offers a transferable framework for similar contexts.

Methodologically, the research adopts a multi-scalar and diachronic approach grounded in typo-morphological analysis (Ünlü, 2018; Ünlü, 2019). It integrates historical cartographic materials, cadastral records, aerial photographs, urban plans, and field observations to construct a comprehensive, multi-layered representation of Silifke's spatial evolution. Through this framework, the study identifies patterns of morphological transformation, continuity, and fragmentation shaped by planning decisions and socio-political change, highlighting the interplay between urban form and socio-economic processes beyond the scope of heritage conservation.

Urban morphology continues to expand through the integration of advanced spatial analysis tools such as Geographic Information Systems (GIS), three-dimensional modeling, and big data analytics, which enable more precise mapping of urban transformations (Li, Zhang & Wu, 2023; Martins & Silva, 2024). These technological advancements help capture the complexity of historically layered towns like Silifke. Moreover, contemporary studies emphasize the importance of incorporating socio-environmental factors and participatory approaches, contributing to a more holistic understanding of urban change (Rahman & Chen, 2025; Silva & Gomes, 2023). This integrative perspective enriches academic

discourse and supports sustainable, context-sensitive planning strategies.

While this study focuses on the morphological evolution of Silifke, urban morphology as a discipline benefit from comparative perspectives. Historical examples—such as the transformation of Paris under Haussmann in the 19th century—demonstrate how large-scale political and socio-economic agendas can profoundly reshape urban form (Harvey, 2003; Jordan, 1995). Recognizing such precedents enables a deeper interpretation of morphological change as a process intertwined with governance, ideology, and modernization paradigms (Hall, 2014). Although this research does not undertake a comparative urban analysis due to its scope, these insights inform its conceptual and interpretive framework.

Building on this conceptual and historical framework, the present study now turns to the methodological strategies required to examine Silifke's multi-layered urban form. Given the town's complex spatial history and the interplay of socio-economic, political, and planning dynamics discussed above, a methodological approach capable of capturing both diachronic continuity and contemporary transformation is essential. The following section therefore outlines the integrated typo-morphological and spatial analytical framework employed in this research, explaining how historical cartographic materials, quantitative indicators, and qualitative field observations are combined to reveal the processes shaping Silifke's urban morphology.

METHODOLOGICAL FRAMEWORK AND CASE STUDY APPLICATION: SILIFKE'S URBAN FORM

This study investigates the interplay between physical and social transformations shaping Silifke's urban morphology, focusing on buildings, plots, urban blocks, and street patterns (Marshall, 2005). Taken together, these components reveal the district's structural and socio-cultural evolution, enabling a comprehensive qualitative and quantitative interpretation of the city's form and its transformation processes. The methodological framework employs a layered analytical approach grounded in typo-morphological principles and enhanced through the integration of diverse data sources and digital mapping tools. The metaphor of an "x-ray" analysis is used to describe a diachronic method in which successive urban layers are superimposed to identify spatial continuities, ruptures, and transformations over time (Kropf, 2018; Oliveira, 2016; Arefi & Aelbrecht, 2024). This approach establishes a dynamic visualization of Silifke's development across multiple scales—from citywide structures to individual plots—reflecting the two-directional analytical logic emphasized in contemporary morphological research.

Data sources include municipal maps from 1975, 1988, and 2023; cadastral records; archival aerial photographs; historical engravings; and extensive field documentation. These materials were cross-

DOI: 10.15320/ICONARP.2026.363

validated using official archives, conservation council records, and on-site inspections. For instance, while the 1902 cadastral map indicates approximately 350 residential buildings, conservation zoning plans and field surveys confirm that only 21 Ottoman-period houses remain, revealing a pronounced degree of morphological loss and fragmentation. Historical maps, aerial photographs, and cadastral plans were digitized, georeferenced, and vectorized using AutoCAD and GIS to enable chronological layering and multi-scalar comparison. These layers were then subjected to morphological mapping to identify spatial continuity and rupture, supported by space syntax analysis to quantify street integration and hierarchy (Cömert & Hoşkara, 2013).

For the quantitative component, three neighborhoods representing distinct phases of Silifke's Republican-era development were selected: Göksu, the most recently developed; Atik, developed earlier yet still expanding; and Say, shaped during the early Republican period. Within each neighborhood, representative urban blocks (adalar) were chosen. Blocks containing registered heritage buildings were excluded to ensure that the analysis reflects typical developmental patterns rather than protected outliers. The objective of this phase is to reveal the morphological characteristics of urban growth—such as density, building form, and plot utilization—while capturing the social and spatial dynamics that differentiate the three neighborhoods.

Quantitative indicators—including building counts, footprint areas, plot shapes and sizes, and connectivity indices (beta and gamma values)—were extracted to compare traditional and contemporary spatial configurations. To assess morphological similarity between blocks, four variables were used: average plot size, average building footprint, average number of storeys, and built-up ratio. Each variable Xwas standardized using z-score normalization:

$$X' = \frac{X - \bar{X}}{s_X}$$

where X^'is the standardized value, X ¯is the mean, and s_Xis the standard deviation. Euclidean Distance between any two blocks was then calculated as:

$$D = \sqrt{(x_1' - x_2')^2 + (y_1' - y_2')^2 + (z_1' - z_2')^2 + (w_1' - w_2')^2}$$

Lower distance values indicate higher morphological similarity between blocks. This systematic comparison provides insight into the diachronic evolution of urban form across the three neighborhoods and clarifies how spatial patterns have shifted since the early Republican period.

Complementary qualitative observations focused on building typologies, façade elements, materials, and conservation status, with specific attention to the relationships between streets, blocks, and plots, as well as the visual integration of architectural elements. This component responds to earlier critiques regarding the insufficient representation of design-related attributes in morphological studies.

The results of the qualitative and quantitative analyses were synthesized with historical and contemporary planning data to delineate urban protected areas, transition zones, and development zones, illustrating how governance, conservation policy, and socio-economic forces have reshaped spatial continuity and urban boundaries.

By combining typo-morphological principles with spatial network analysis and socio-spatial interpretation, this framework captures the layered, diachronic structure of Silifke's urban form. It bridges historical and contemporary dimensions, demonstrating how planning decisions, conservation approaches, and socio-economic processes interact to shape morphological change. This integrated methodology highlights the value of detailed morphological understanding—supported by digital tools and multi-scalar analysis—for informing adaptive and context-sensitive strategies in historically layered mid-sized Anatolian towns (Steadman et al., 2009; Cömert, 2013; Siyavuş & Belge, 2024).

CASE STUDY CONTEXT: THE HISTORICAL TOWN OF SILIFKE (SELEUCEIA AD CALYCADNUM)

Silifke—whose name derives from the Greek "Seleucia"—is located approximately 80 km west of the city of Mersin, within the western part of Mersin Province, at the edge of the Çukurova Plain (Figure 1) (Aktüre, 1997). Founded in the early 3rd century BCE by Seleucus I Nicator, one of Alexander the Great's generals, the town possesses a rich historical heritage shaped by successive Greek, Roman, and Byzantine civilizations (Taşkıran, 2009; Aykaç, 2018). Although its formal establishment dates to the Hellenistic period, the settlement history of the area stretches back nearly 8,000 years, making Silifke one of the oldest continuously inhabited locations in the region (Sevim, 2019). The earliest known inhabitants were the Luwians, who settled in the region around 3000 BCE (Uçar, 2009).

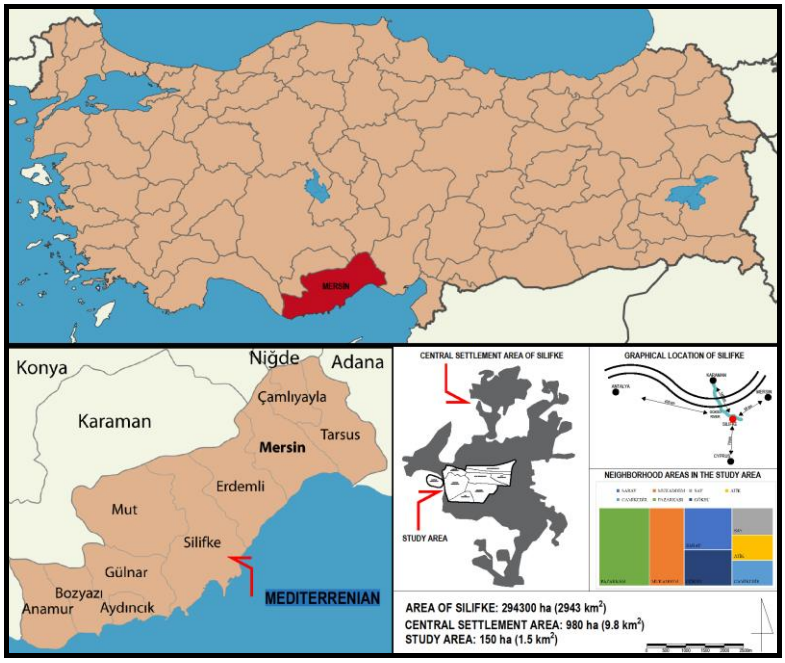


Figure 1. Geographical location of Mersin Province, Silifke District, and the selected case study area within Silifke (Edited by the author based on cografyaharita.com)

DOI: 10.15320/ICONARP.2026.363

Silifke's socio-spatial development can be understood through six major administrative phases, beginning with its foundation under the Seleucids in 312 BCE. These phases include Roman rule (64 BCE), the Byzantine period (395 CE), the Karamanoğulları Principality (1256 CE), the Ottoman era (1483 CE), and the Republican period (from 1923 CE onward) (Aykın, 2011). Across these eras, the town's development consistently gravitated toward the acropolis—a pattern characteristic of many ancient Anatolian cities. The trade route linking the Anatolian interior to Taşucu Port and the Port Castle (Ak Liman) played a significant role in shaping Silifke's urban axis. The stone bridge constructed over the Göksu River strengthened this connection and facilitated the expansion of urban functions along the flatter southern banks of the river, which were better suited for settlement.

Today, Silifke's economy is primarily based on agriculture, animal husbandry, and tourism, reflecting both its rural character and its extensive archaeological and cultural assets. Administratively, Silifke is a district within Mersin Province, covering approximately 2,943 km^2, while the central settlement spans roughly 9.8 km^2. The historical urban core—the focus of this study—covers about 150 hectares (1.5 km^2).

Silifke's historical urban structure emerged from two interrelated components: the upper town (acropolis), situated on a fortified hill and functioning historically as a strategic and defensive center; and the lower town along the riverbank, which accommodated markets, warehouses, and trade facilities, forming the economic backbone of the settlement.

TYPO-MORPHOLOGICAL CHARACTERISTICS OF SILIFKE

Silifke presents a historically layered and morphologically complex urban fabric shaped by continuous settlement from the Bronze Age through the Roman period (64 BCE–395 CE) and subsequent eras. Archaeological findings from the Bronze Age, together with architectural remains from the Roman period, demonstrate the area's long-standing urban occupation and spatial organization. While systematic architectural documentation and formal urban mapping became widespread during the Ottoman period, earlier phases of Silifke's urban development are reconstructed primarily through archaeological excavations, historical engravings, and archival textual sources.

This study investigates Silifke's typo-morphological characteristics by analyzing the key spatial and architectural components that reveal the continuity, adaptation, and transformation of its urban form over time. The analysis focuses on:

- Buildings: Examined through surviving structural remains and their functional evolution across historical periods, with attention to typological continuity, material use, and construction techniques.
- Plan Typology: Evaluation of building layout patterns—such as courtyard houses, row houses, and detached dwellings—to uncover the

spatial logic, cultural practices, and land-use principles informing urban design.

- Façade Typology: Assessment of the architectural expression of buildings, including façade composition, openings, ornamentation, and materials, to trace stylistic transitions and identify elements that contribute to the town's streetscape identity and historical layering.
- Land Utilization: Analysis of how plots were allocated and adapted for residential, commercial, religious, and civic uses throughout Silifke's historical development.
- Street Network: Examination of the street system's morphology in terms of connectivity, hierarchy, orientation, and integration within the wider urban structure, considering historical trade functions and topographical constraints—particularly the Göksu River and surrounding slopes.

Through this integrated typo-morphological framework, the study reveals both enduring spatial continuities and transformative processes that have shaped Silifke's urban fabric across successive civilizations. The interplay between persistent spatial structures and adaptive modifications illustrates the dynamic evolution of a mid-sized Anatolian town within its layered historical context.

Buildings

Although Silifke was founded during the Seleucid period, no architectural remains from this era have survived, likely due to rebellions and subsequent destructions. Silifke Castle, which remains standing, preserves medieval features and is believed to have Hellenistic origins. Roman-era remnants include ruins around the temple area, the remains of a theater, and a stone bridge over the Göksu River, although much of the bridge's original Roman character has been lost. Byzantine contributions are represented by the Tekir Warehouse water cistern and several masonry buildings, reflecting the typical construction techniques of the period (Mansel, 1943).

During the Ottoman period, the castle continued in use, with additional development constructed atop earlier ruins. According to the Adana Provincial Yearbook (Salname) of 1289 AH, by the 16th century there were approximately 17 houses, mainly on the southern bank of the Göksu River outside the castle walls. At that time, Tevekkül was the only recorded neighborhood, with a population of around 86. Political unrest throughout the 18th century limited population growth, which reached only about 200 residents by the century's end.

The 19th century marked gradual demographic and urban growth:

- By 1876, the population reached 854, distributed across 2 neighborhoods.
- By 1879, the population doubled to 1,708 across 5 neighborhoods.
- By 1902, the district included approximately 350 houses across 8 neighborhoods (Adana Province Yearbooks, 1872; Keil & Wilhelm, 1931).

DOI: 10.15320/ICONARP.2026.363

Despite evolving neighborhood boundaries, 7 of these 8 historical neighborhoods retain their original names today (Yalçın, 2021). By the late Ottoman period, Silifke exhibited a multi-ethnic composition—including Turks, Greeks, and Armenians—which further enriched the district's morphological and social fabric (İnceoğlu, 2013).

Architectural Plan Typology

The urban core of Silifke has been examined through its typological development during two key historical periods: the Ottoman Period and the Republican Period. This section focuses on the layout patterns and spatial organization of individual buildings rather than broader urban zoning or planning aspects. Although few Ottoman-period houses survive, extant architectural remnants provide valuable insight into the town's historical urban fabric.

Silifke Castle, with its medieval appearance, was originally constructed during the Hellenistic period and served as the town's first urban nucleus. According to Evliya Çelebi, the castle housed approximately 60 residences during the Ottoman Period (Dağlı et al., 2005). The Silifke Conservation Plan identifies 40 of 58 preserved structures in the study area as Ottoman-period buildings, including 21 residences, 12 shops, and various other functional structures (Figure 2).

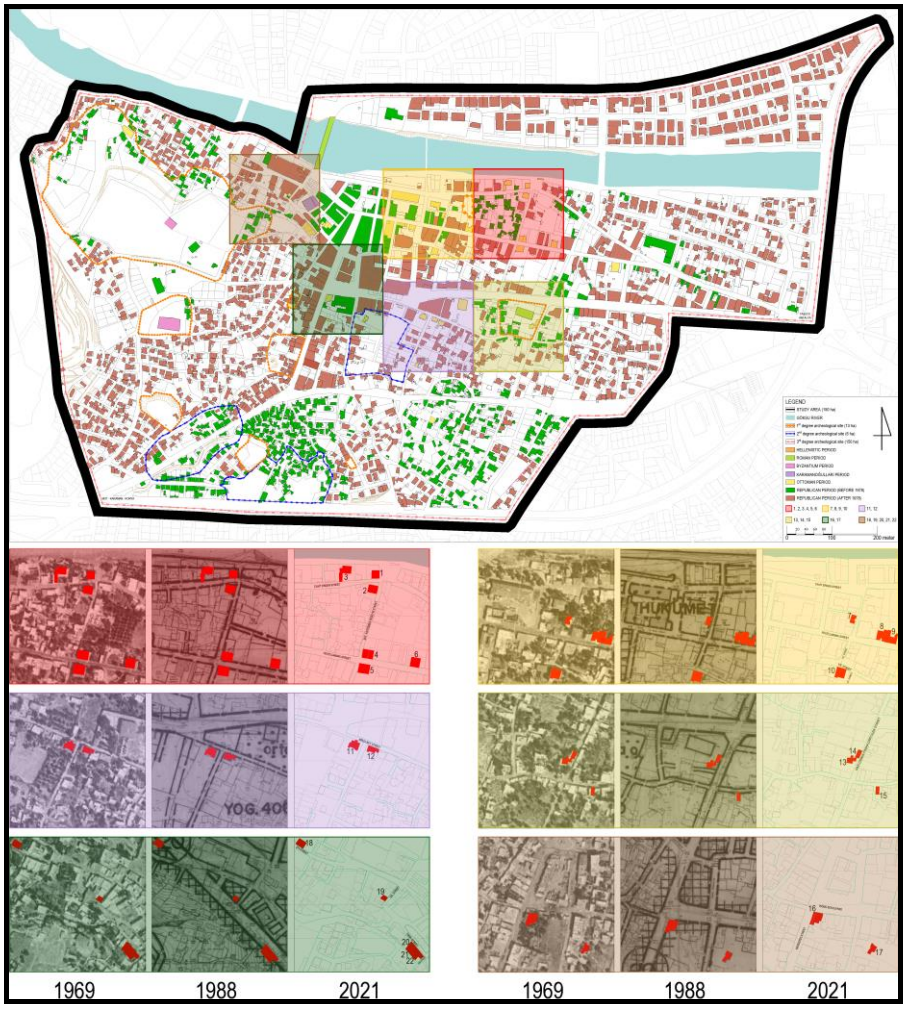


Figure 2. Period-based zoning map showing the distribution of Ottoman-era traditional houses in the study area (Prepared by the author based on the 1969 aerial photograph and Silifke municipal maps from 1988 and 2021)

ICONARP – Volume 14, Issue 1 / Published: 30.06.2026

Typical features of Ottoman houses in Silifke include:

- One or two stories, often accompanied by gardens or open areas.
- Street-parallel walls acting as buffers between private and public spaces.
- Placement on corner plots or along street edges, with façades oriented for optimal street engagement.
- Interior layouts separating service areas, private rooms, and reception spaces, often including a central hallway (hayat) and sofa (Figure 3).

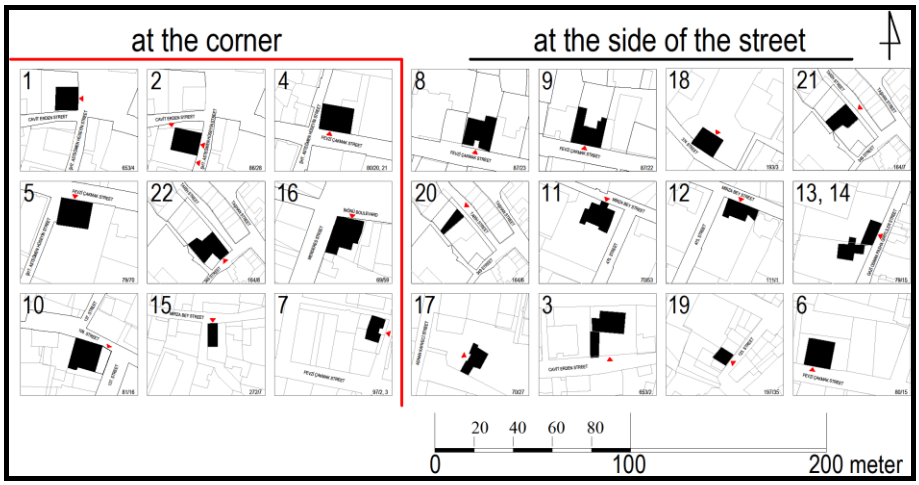


Figure 3. Examples of plot–street relationships in Ottoman period houses (Prepared by the author based on the Silifke municipal maps)

For morphometric analysis, four representative Ottoman houses were selected based on neighborhood proximity and corner-plot positioning, revealing both typological consistency and individual variation in spatial hierarchy:

- House 1 (β = 0.93, γ = 0.125): Moderate compactness, clearly defined functional zones, emphasizing privacy.
- House 2 (β = 1.045, γ = 0.099): Higher compactness, fluid circulation, less rigid functional separation.
- House 3 (β = 1.111, γ = 0.130): Intermediate compactness with moderately articulated spaces.
- House 4 (β = 0.944, γ = 0.111): Balanced functional separation and interconnectivity.

Single-storey houses typically feature a central hallway connecting rooms, while two-storey houses place service areas on the ground floor and living spaces above. Ornamentation in wood and stone, evident in ceilings, doors, and façades, reflects the aesthetic and social values of the period. Variations in compactness and circulation patterns demonstrate subtle adaptations to plot geometry, family structure, and cultural practices.

DOI: 10.15320/ICONARP.2026.363

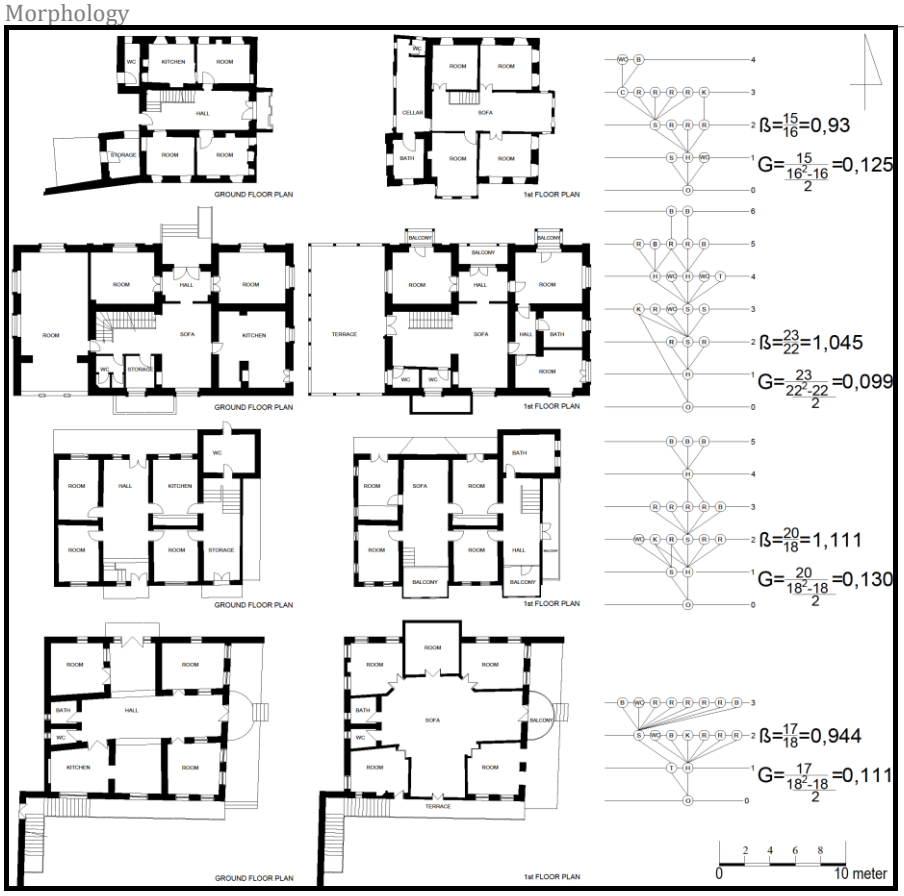


Figure 4. Spatial analysis of four Ottoman houses (H1–H4) with β and γ values (Prepared by the author)

The Republican Period introduced substantial typological change, particularly after Silifke's first zoning plan in 1978, which reshaped plot organization and building patterns. Republican houses are analyzed in two groups:

Houses Built Between 1923 and 1978

These dwellings were typically one or two stories, reflecting residents' economic status. Traditional construction methods—such as mud-brick walls, earthen roofs, and garden integration—persisted. Interior layouts included:

- 1 room + kitchen,
- 2 rooms + kitchen,
- rooms + kitchen + sofa

Single-room houses had garden-accessed kitchens, whereas two-room houses incorporated a central sofa, separating day and night functions. Morphometric analysis of eight representative houses (R1–R8) highlights (Figure 5):

- R1 (β = 0.500, γ = 1.0) and R2–R3 (β = 0.666, γ = 0.666): Minimal spatial complexity, strong functional separation.
- R4–R8 (β = 0.750–0.800, γ = 0.400–0.500): Moderately articulated spaces, compact layouts, simple circulation patterns.

Compared to Ottoman houses, early Republican dwellings are more compact, less connected internally, and dominated by orthogonal layouts. Pragmatic concerns, material economy, and functional efficiency outweighed formal or aesthetic considerations.

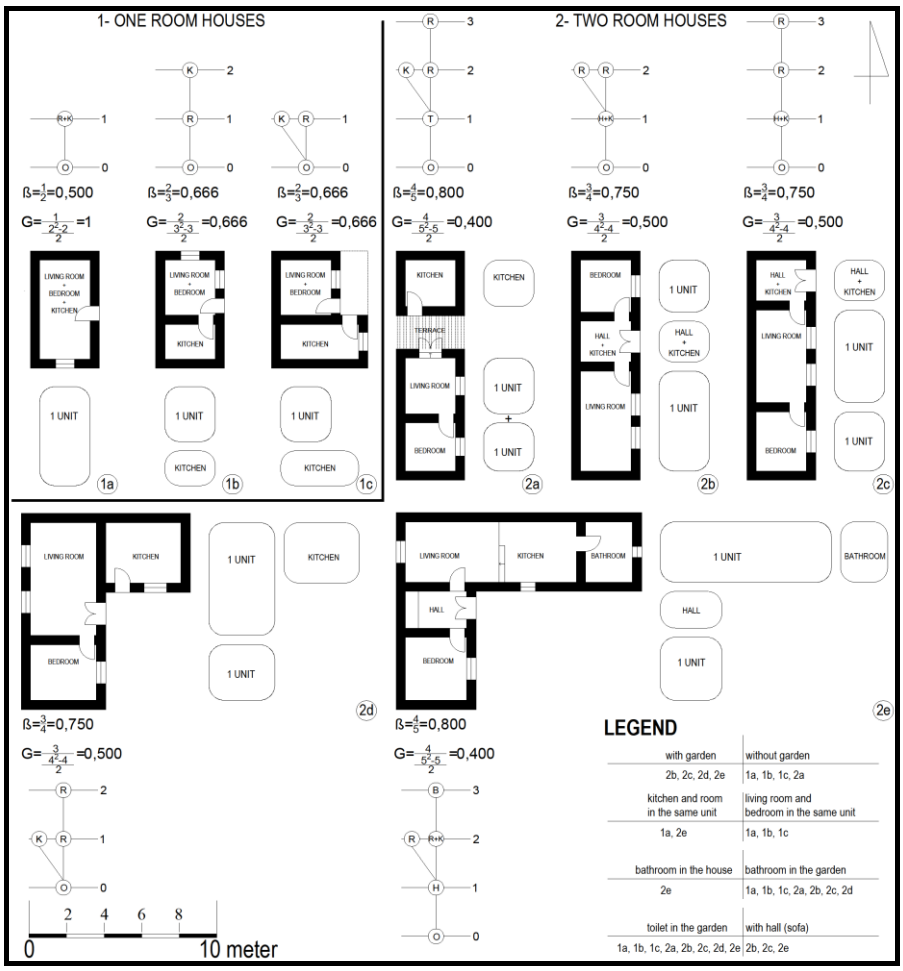


Figure 5. Morphometric analysis of eight Early Republican houses (R1–R8) with β and γ values (Prepared by the author)

Houses Built After 1978

Modern construction, including reinforced concrete, introduced standardized floor plans, symmetrical façades, and stricter alignment with the street grid. While some elements of traditional vernacular architecture persist, modernist influences increasingly replaced local spatial patterns, marking a significant transformation in late 20th-century Silifke.

Morphometric and qualitative analyses reveal the evolution of domestic spatial logic in Silifke:

- Ottoman houses emphasize flexibility, privacy, and integration of indoor and outdoor spaces.
- Early Republican houses prioritize compactness, orthogonal layouts, and functional clarity.
- Late Republican houses reflect modernist standards, favoring repetition, street alignment, and efficiency over traditional spatial articulation.

This dual-period analysis, combining quantitative morphometrics with qualitative typology, provides a comprehensive framework for understanding the continuity and transformation of Silifke's domestic architecture and its contribution to the town's historical urban morphology.

DOI: 10.15320/ICONARP.2026.363

Facade typology

Silifke's architectural fabric exhibits heterogeneity in terms of façade typology and building heights. While the study area includes structures ranging from one to nine storeys, low-rise buildings—particularly one- and two-storey houses—predominate, reflecting the town's historical development, socio-economic diversity, and zoning practices. A clear spatial contrast exists along the Göksu River:

- Southern bank (historical core): Predominantly one- to two-storey buildings maintaining traditional morphology and a human-scaled urban form.
- Northern bank (modern expansion): Mid- to high-rise apartment blocks enabled by reinforced concrete and fewer conservation constraints.

Vertical densification remains spatially fragmented and localized (Figure 6).

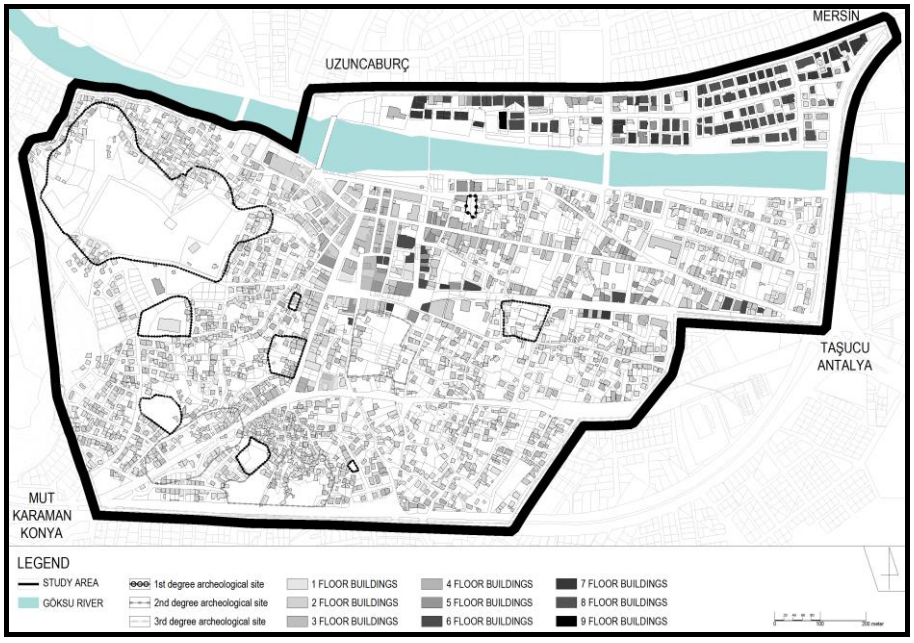


Figure 6. Building heights and floor area ratios derived from the 2023 zoning map of Silifke Municipality (prepared by the author based on municipal data, 2023)

Two diagrams summarize these patterns:

- Diagram 1: One-storey buildings occupy ~103,575 m^2 of total footprint, while nine-storey buildings cover only 620 m^2, confirming low-rise dominance in land coverage.
- Diagram 2: Among 1,406 buildings, 1,380 are one-storey and only 26 exceed seven storeys, showing that vertical growth is rare and localized.

Diagram 1. Total footprint area (m^2) by storey count in the study area.

Diagram 2. Number of buildings by storey count in the study area.

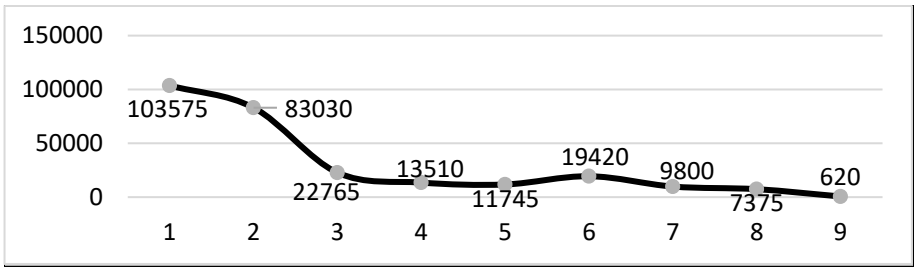


Diagram 1. Total footprint area (m^2) by number of storeys in the study area (Prepared by the author)

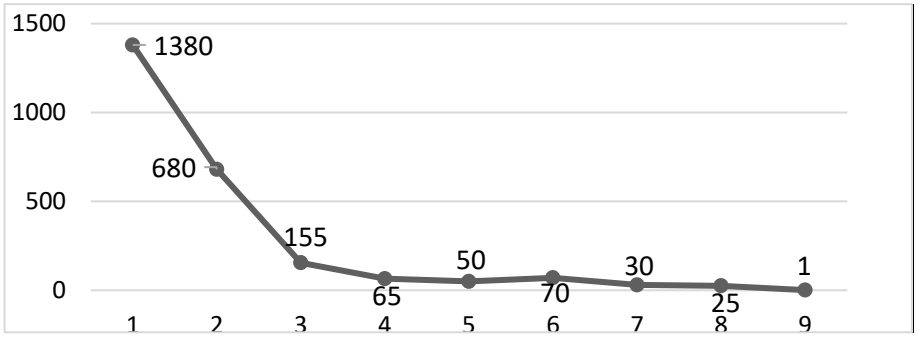


Diagram 2. Number of buildings by storey count in the study area (Prepared by the author)

Buildings from the Ottoman and early Republican periods display consistent morphological characteristics:

- Rectangular windows with wooden or iron frames.
- Flat or pitched roofs with overhanging eaves.
- Arched or winged entrance doors.
- Smaller ground-floor and larger vertically aligned upper-floor windows.
- Use of local stone and timber.
- Bay windows (cumba) in two-storey houses built with the Bağdadi technique, enhancing articulation and seismic resilience (Figures 7–8)

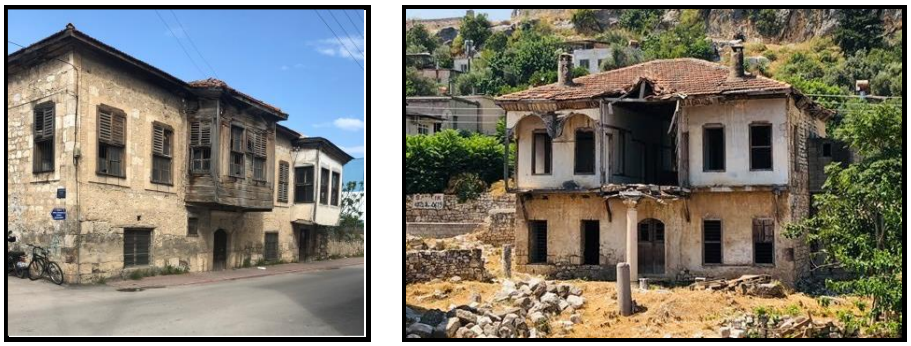


Figure 7. Unrestored traditional residential buildings in the historical core of Silifke (Author, 2023)

Constructed entirely from locally sourced stone, these façades feature modest openings, thick walls, and restrained decoration. Restoration projects preserve original proportions, window arrangements, and material harmony, sustaining visual coherence while improving structural resilience (Figure 8).

DOI: 10.15320/ICONARP.2026.363



Figure 8. Restored residential façades representing traditional building typologies in the southern bank of Silifke (Author, 2024) bank of Silifke (Author, 2024)

Early Republican Period (1923–1950)

This era represents a transitional phase with partial dissolution of the Ottoman street fabric and fragmented alignments. Neighborhoods such as Say experienced irregular parceling and heterogeneous built environments due to incomplete planning and accelerated construction in the 1940s (Figure 9).



Figure 9. Early Republican-period development in Say neighborhood, showing irregular parceling and fragmented building fabric (Author, 2023) bank of Silifke (Author, 2024)

Post-1980s Façades (Modern/Contemporary)

The introduction of reinforced concrete facilitated rapid apartment-based development, producing standardized façades and dense vertical forms that disrupted the town's traditional human scale. Northern bank construction, previously constrained by flood risk, expanded built-up areas from 2,220 m^2 in 1975 to 14,600 m^2 in 2021 (Figure 10).



Figure 10. Post-1980s apartment development in Göksu neighborhood, northern bank of Silifke (Author, 2023)

Large-scale apartment blocks exemplify a morphological rupture from the organically evolved southern core. Repetitive façades and mixed-use programs reflect modern zoning trends but often lack typological diversity and contextual integration.

On the southern bank, heritage awareness has encouraged new constructions attempting to harmonize with historic surroundings. While these projects reference traditional materials—stone façades, pitched roofs, wooden details—they often rely on superficial imitation rather than genuine morphological understanding, creating visual and spatial inconsistencies within the historic fabric (Figure 11).



Figure 11. New constructions on the southern bank reflecting contextual imitation and adaptive attempts (Author, 2023)

Morphological Duality

Silifke's urban landscape demonstrates a clear duality (Figure 12):

- Southern core: Cohesive, low-rise, historically grounded fabric.
- Northern districts: Fragmented, vertical, modern development with repetitive forms.

Spatial and quantitative data confirm that one- and two-storey buildings dominate, while taller structures remain exceptional and spatially concentrated. This duality reflects the coexistence of two architectural trajectories: one rooted in historical continuity and traditional craftsmanship, and the other shaped by modernization, contemporary planning practices, and reinforced concrete construction.

DOI: 10.15320/ICONARP.2026.363

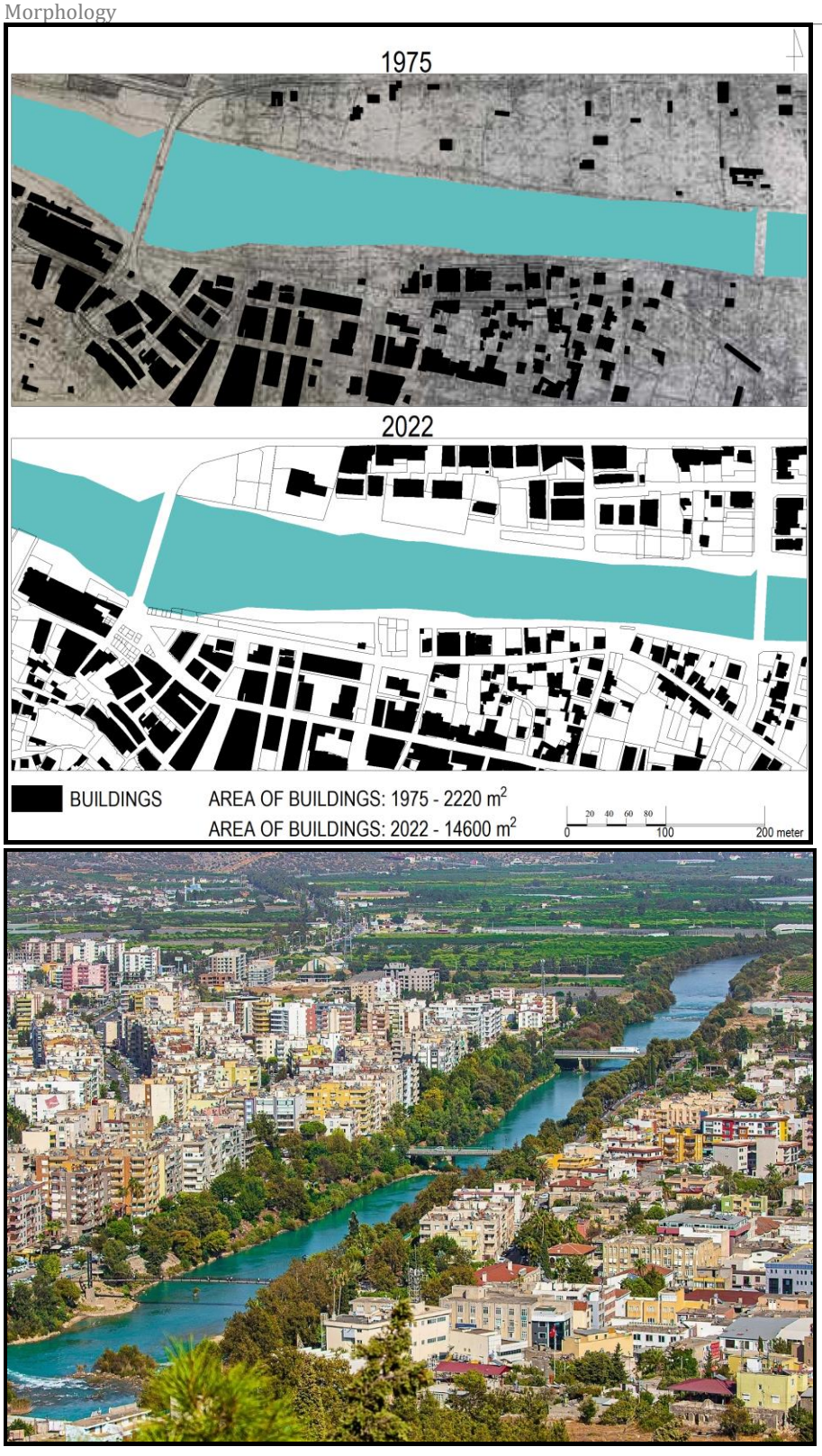


Figure 12. Urban expansion of the Göksu Neighborhood over 45 years (Prepared by the author based on Silifke Municipality maps from 1975 and 2021, https://www.sitso.org.tr/tr/silifke-kulturu)

Urban Block and Plot Typology

Silifke's urban morphology reflects a complex stratification, shaped by successive layers of historical continuity and contemporary planning interventions, particularly observable in the varying patterns of its blocks and plots. A comparative spatial analysis of cadastral and architectural datasets (Silifke Municipality, 2023) reveals a clear distinction between planned and organic growth patterns. While the urban blocks north of the Göksu River display a rectilinear, grid-like structure associated with recent planned development, those immediately to the south present a more heterogeneous pattern, blending early 20th-century planning schemes with remnants of the organic historical fabric. In contrast, the far southern and western neighborhoods—such as Atik and Mukaddem—exhibit irregular, topography-driven forms, suggesting incremental and less formalized patterns of urban expansion. The central commercial core, including Pazarkaşı and Camikebir, reveals a hybrid configuration, combining a loose grid with radial alignments—indicative of layered historical urban phases (Figure 13).

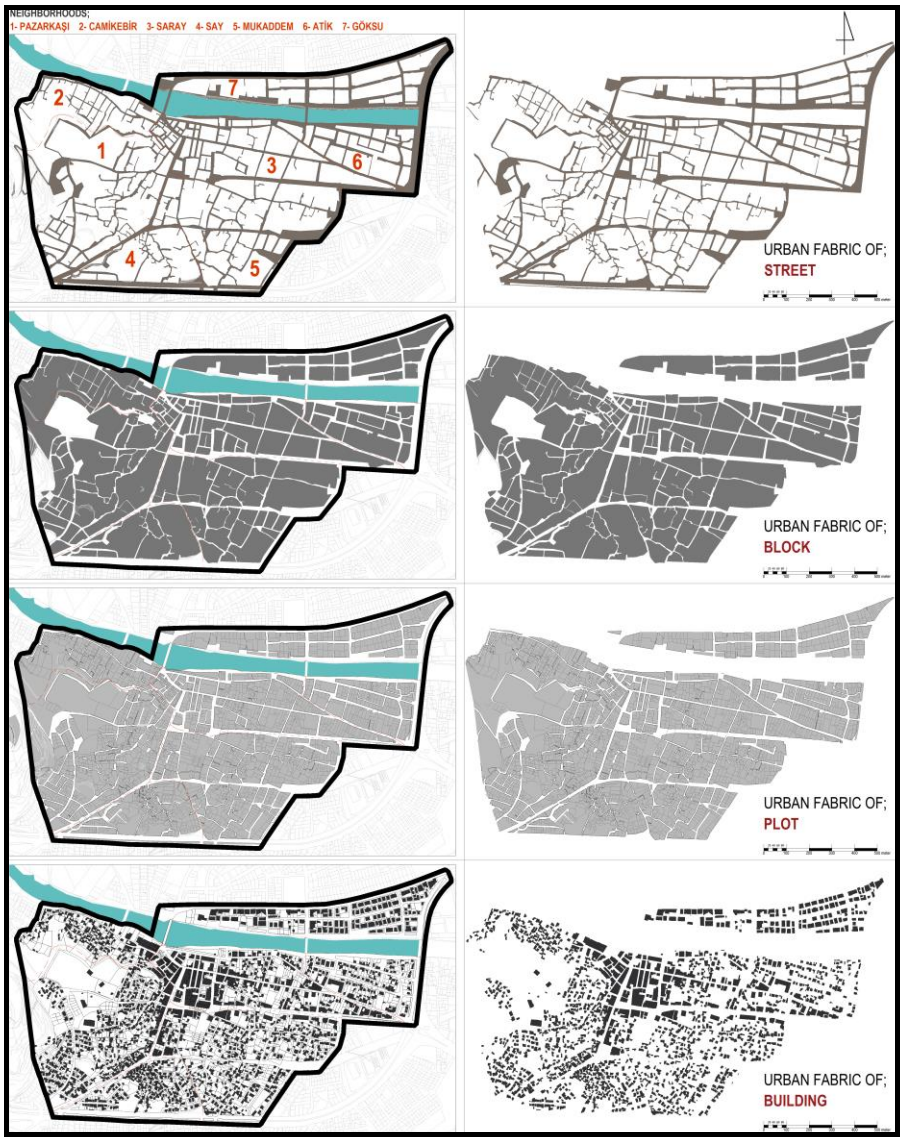


Figure 13. Spatial configuration of streets, blocks, plots, and buildings in seven Silifke neighborhoods, showing morphological differences shaped by historical and planning contexts (Prepared by the author based on Silifke Municipality maps, 2021)

DOI: 10.15320/ICONARP.2026.363

At the plot level, significant diversity emerges in terms of shape, orientation, and built density. In the historical core, plots tend to be smaller and irregularly shaped, while newly developed northern areas—such as the Göksu Neighborhood—exhibit more regular, spacious, and geometrically coherent plots. In commercial zones, floor area ratios (FAR) generally range between 1:1 and 1:2, highlighting a correlation between the period of urban development and the degree of spatial regulation (Figures 7 and 8).

A typological analysis of plots reveals three predominant categories based on geometric proportions and spatial constraints:

- Rectangular plots with elongated proportions (1:3, 1:4, 1:5),
- Square or near-square plots (1:1 or 1:2), and
- Irregular plots, often shaped by topographic or pre-modern cadastral constraints.

To assess diachronic transformation at the plot level, seven representative drilling/sample areas were selected across the study neighborhoods. These circular samples—each approximately 5× magnified from their original scale—capture the spatial configuration of streets, plots, and buildings in two temporal snapshots: before 1978 and after 1978. The comparative analysis reveals clear morphological contrasts between earlier organic patterns and later planned interventions (Figure 14).

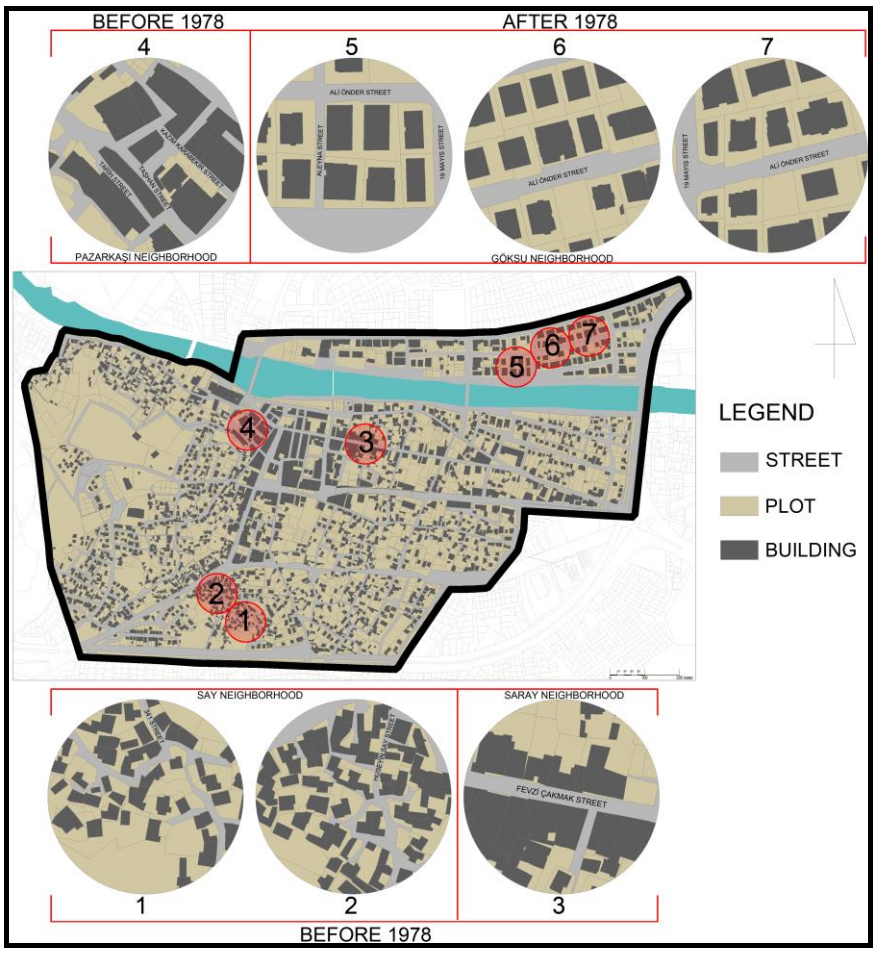


Figure 14. Diachronic morphological analysis of seven sample areas in Silifke, showing pre-1978 and post-1978 changes in streets, plots, and buildings (Prepared by the author based on Silifke Municipality maps, 2021)

In the older cores—such as Pazarkaşı, Camikebir, and Say—the pre-1978 fabric is characterized by irregular plots, narrow streets, and dense building coverage. Post-1978 development in these same areas tends to follow infill patterns, with minimal structural reorganization. In contrast, neighborhoods like Göksu, which underwent major expansion after 1978, exhibit a more regular, rectilinear layout with wider streets, larger plots, and lower initial building densities—indicating a shift toward planned urbanism.

Separately, a quantitative analysis of morphological similarity between three selected urban blocks was conducted using the Euclidean Distance method. As emphasized in the methodology section, three blocks from Göksu, Atik, and Say neighborhoods were selected to assess morphological proximity and potential social implications. The first block, located in Göksu Neighborhood, was labeled Block 1 (B1); the second, in Atik Neighborhood, Block 2 (B2); and the third, in Say Neighborhood, Block 3 (B3). The measured morphological data are summarized in Table 1.

Table 1. Morphological data of selected blocks

Block	Avg. Plot Size (m^2)	Avg. Building Footprint (m^2)	Avg. Height (storeys)
B1	886 m^2	384 m^2	6.5
B2	1215 m^2	472 m^2	2.7
B3	114 m^2	62 m^2	1.5

These values were normalized using z-score standardization:

- Average Plot Size: Mean ≈ 738.33, Std ≈ 461.4
- Average Building Footprint: Mean = 306, Std ≈ 176.3
- Average Height: Mean ≈ 3.567, Std ≈ 2.13

Table 2. Standardized Values (Z-scores)

Block	Plot Size (m^2)	Building Footprint (m^2)	Height
B1	0.32	0.44	1.38
B2	1.03	0.94	-0.41
B3	-1.35	-1.38	-0.97

The Euclidean Distance formula was applied to measure morphological similarity:

$$D = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

DOI: 10.15320/ICONARP.2026.363

Table 3. Calculated Distances

Block Pair	Distance
B1–B2	1.99
B1–B3	3.41
B2–B3	3.37

Lower distance values indicate higher morphological similarity. B1 and B2 are the most similar blocks, while B1–B3 and B2–B3 are less similar. These physical differences suggest that blocks with larger plots and taller buildings (B1 and B2) may support higher population densities, more complex social interactions, and shared spaces such as courtyards or pedestrian paths. Conversely, smaller, lower-rise blocks (B3) are associated with lower density, more private living, and fewer daily encounters. If these blocks correspond to different historical periods, B3 may represent a traditional urban pattern with close-knit community networks, whereas B1 and B2 reflect modern planning approaches emphasizing individual living and more fragmented social structures.

Finally, to examine broader diachronic trends across all neighborhoods, drilling samples were analyzed at three time points—1969, 1988, and 2021—focusing on changes in construction density and plot utilization. The analysis revealed distinct growth patterns (Figure 15):

- Pazarkaşı saw a significant increase (1.5–2.5×) between 1969 and 1988, followed by stabilization after 1988.
- Camikebir increased moderately until 1988 but experienced minor declines in some plots thereafter.
- Saray exhibited initial decline, with gradual recovery and expansion after 1988.
- Say remained largely static until the late 1980s, with a slight rise in built-up area in the following decades.
- Mukaddem showed negligible change across both periods.
- Atik experienced an increase (approx. 1.5×) between 1969 and 1988, but remained unchanged post-1988.
- Göksu, representing the most dynamic transformation, grew roughly 2× between 1969–1988 and surged with a 6× increase from 1988 to 2021.

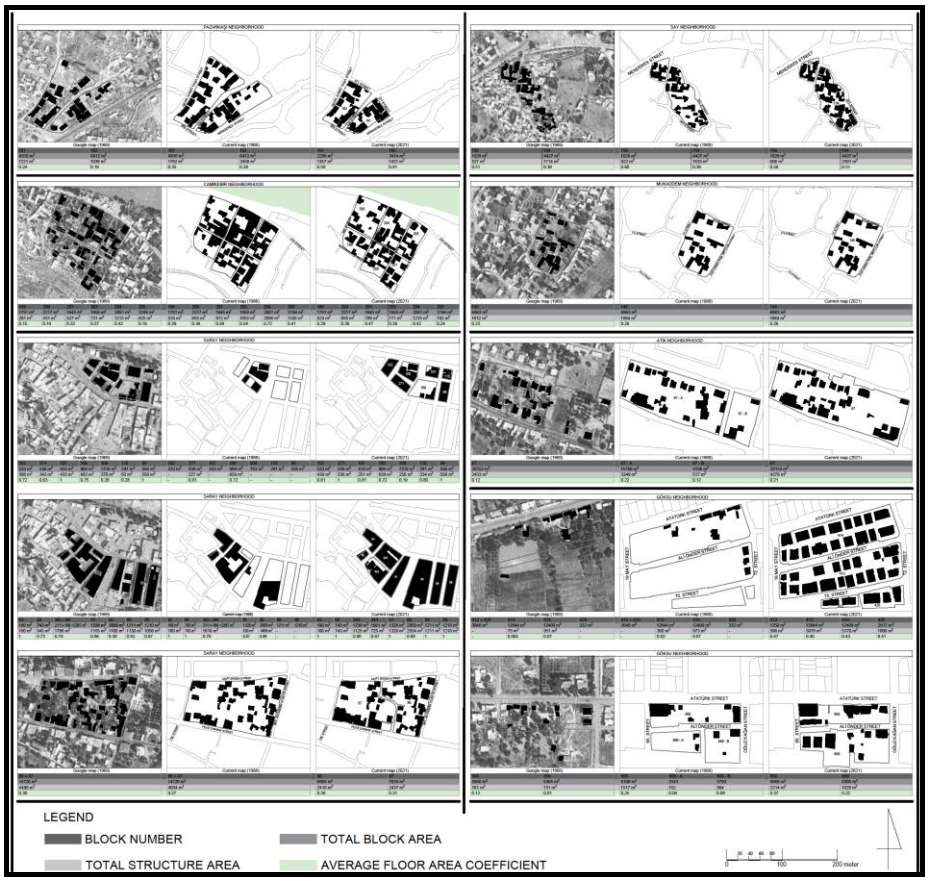


Figure 15. Temporal comparison of block areas, built-up areas, and average FAR in selected Silifke neighborhoods based on 1969, 1988 aerial photos and 2021 cadastral maps (Prepared by the author)

By clearly separating the Euclidean Distance analysis of specific blocks from both the pre-/post-1978 drilling samples (Figure 14) and the long-term historical growth analysis (Figure 15), this section provides a comprehensive understanding of Silifke's urban morphology, combining both micro-level block typology and broader temporal transformations.

Street System

The street network of Silifke exhibits a dual and layered morphology shaped by both natural topography and successive phases of urbanization. Variations in terrain, function, and historical context have produced distinct street typologies across the city. In the historic residential zones surrounding Silifke Castle and the acropolis, narrow and irregular streets follow the contours of the land, while flat areas along the Göksu River display a more rectilinear organization, reflecting the interaction between natural form and human adaptation, a relationship that continues to define the town's present-day circulation structure.

In the southern historic core, streets maintain a pedestrian-oriented scale, forming an intimate relationship with adjacent plots and façades. Conversely, modern neighborhoods—especially Göksu—feature wider, vehicular-oriented streets designed according to zoning regulations. This contrast highlights Silifke's dual urban logic: a historically continuous organic core versus a planned, expansionary periphery (Figure 13, Figure 14).

DOI: 10.15320/ICONARP.2026.363

Historically, the city's street structure originated under Seleucus I Nicator (295–290 BCE) as a planned settlement, later reorganized during the Roman period around two main spatial anchors—the Roman Temple and Silifke Castle. The Stone Bridge (77–78 CE) introduced a perpendicular axis across the Göksu River, creating the foundational east–west circulation spine that still defines the city's structure (Keil & Wilhelm, 1931). Subsequent Byzantine, Seljuk, and Ottoman interventions retained and reinforced this network, especially around religious and civic nodes such as the Tekir cistern and Alaeddin Mosque. As a result, the historic core demonstrates a remarkable degree of spatial persistence, while peripheral areas evolved through episodic expansion and renewal.

South of the Göksu River, where mixed-use functions such as trade and administration concentrate, a semi-grid pattern dominates, gradually dissolving into irregular streets toward the southern and western edges. On the northern bank, post-1978 zoning and reinforced concrete construction introduced standardized building setbacks—3 m from plot boundaries and 5 m from streets—establishing a more uniform and rhythmic urban pattern.

A global axial analysis using DepthmapX was conducted to quantify the spatial structure and centrality of Silifke's street system (Radius = n). The results (Figure 16) show the highest integration values along the historic spine connecting Silifke Castle, the Roman Temple, and the Stone Bridge, indicating the continued functional and symbolic centrality of this corridor. Peripheral neighborhoods such as Mukaddem and Atik show lower integration, reflecting their fragmented street forms and topographic constraints. This digital analysis strengthens the two-way interpretive approach adopted in this study—moving from the overall spatial system to the individual street level and vice versa—revealing how morphological continuity and transformation coexist across time.



Figure 16. Global axial integration map of Silifke (Radius = n), showing higher integration in the historic core (red-yellow) and lower integration in peripheral areas (green-blue) (Prepared by the author using DepthmapX)

A diachronic morphological comparison based on maps and aerial imagery (1838–2021) further clarifies this evolution (Figure 17). The analysis demonstrates gradual densification after the 1950s, followed by accelerated expansion in the late 20th century. Periodic reductions in built-up areas correspond to socio-economic disruptions, including material reuse from ancient structures and post-exchange housing abandonment. From the 1980s onward, rural-to-urban migration and zoning-driven development spurred steady spatial expansion, particularly on the northern bank.

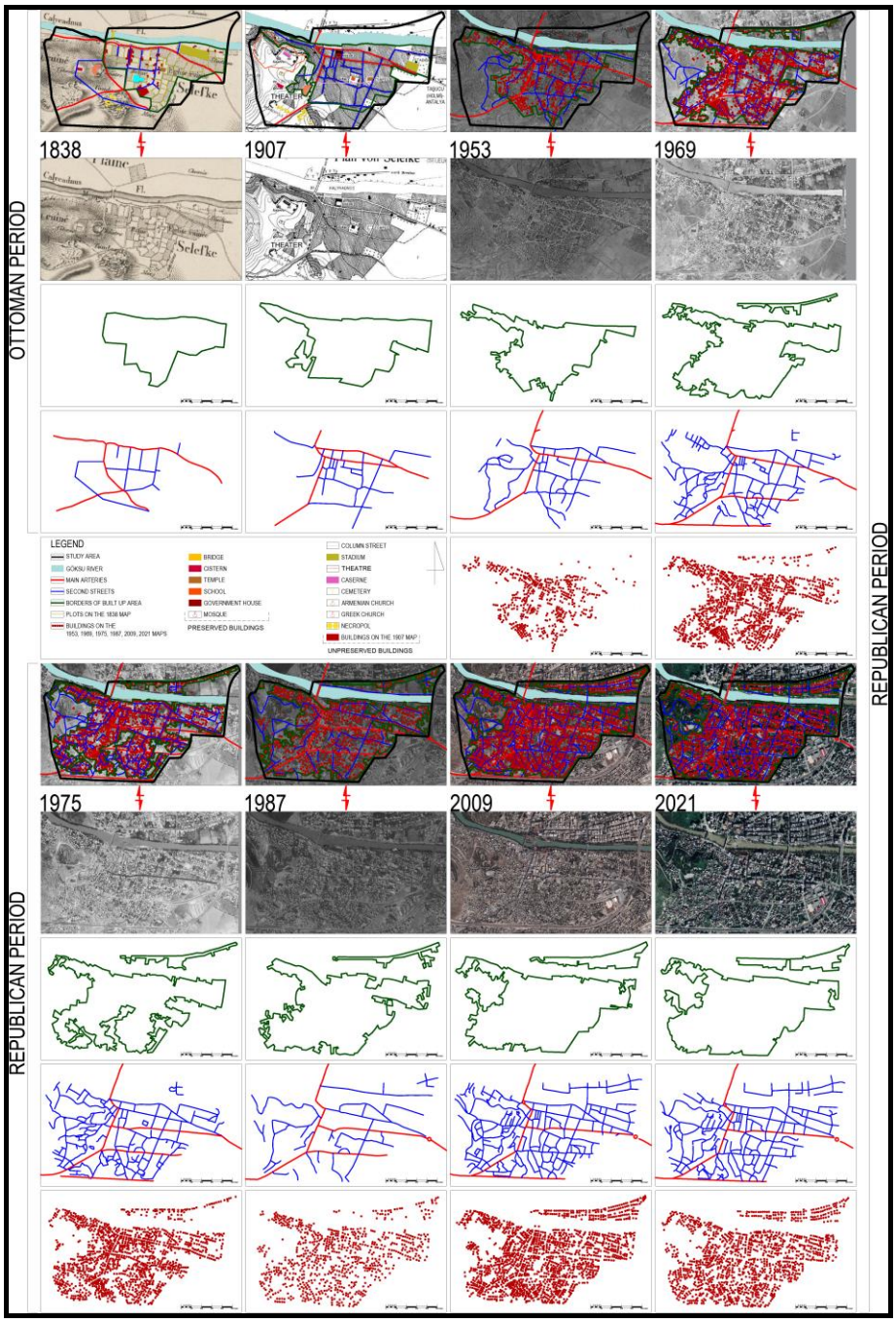


Figure 17. Evolution of Silifke's street system, building density, and plots from 1838 to 2021 (Prepared by the author using historical engravings and aerial photographs)

DOI: 10.15320/ICONARP.2026.363

The apparent reduction in built-up area observed in 1953 reflects historical and socio-economic factors. The two significant Roman-era buildings, the theatre and the stadium, which still appear prominently in Ottoman-period maps, were partially dismantled in the early Republican period, with their materials reused for housing. In addition, many houses of Greek and Armenian residents were abandoned or destroyed due to the population exchange. Combined with the post-war economic hardships, these factors temporarily deformed the urban fabric, explaining the smaller built-up areas recorded in the 1953 map. From the 1950s onward, with migration from villages to the city, the built-up area began to expand periodically, reflecting the gradual growth of Silifke's urban footprint.

Figure 18 presents a spatial overlay map highlighting morphological overlaps and changes identified across different time periods in Silifke. The percentages in the timeline indicate the proportion of built-up areas that have persisted, expanded, or diminished relative to previous periods, offering a quantitative perspective on urban transformation. Notably, a slight decrease in built-up area is observed between 1975 and 1987, reflecting the physical and socio-economic conditions of the period. Following the early Republican era, the town experienced material reuse from significant Roman buildings such as the theatre and stadium, and the departure of Greek and Armenian populations resulted in partial demolition or abandonment of their residences. This, combined with the post-1950 rural-to-urban migration, contributed to periodic expansions and contractions in the urban fabric. The overlay map thus not only illustrates morphological continuity and changes but also contextualizes these patterns within broader historical, demographic, and socio-economic processes, providing a nuanced understanding of Silifke's layered urban development and linking the visual data directly to the analytical insights of this study.

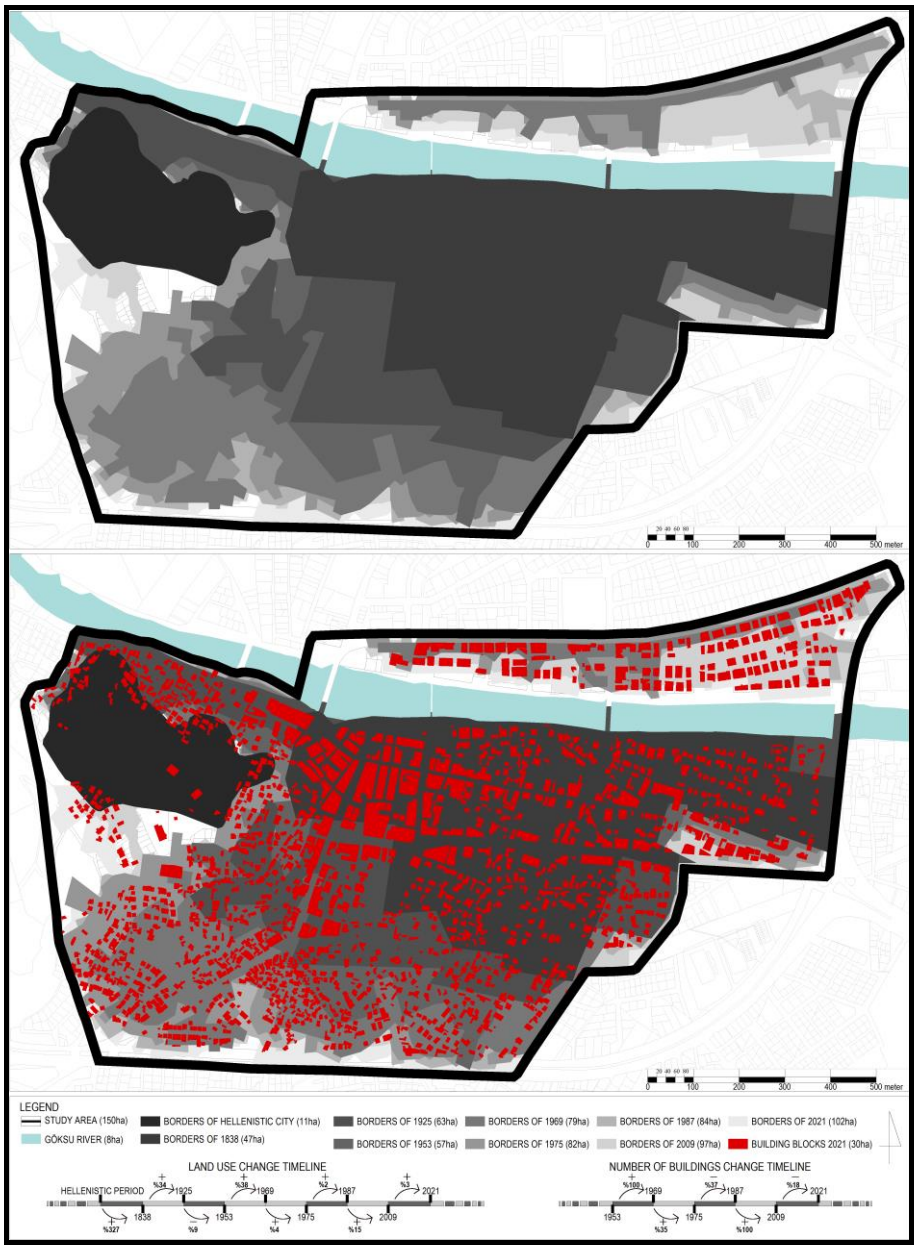


Figure 18. Composite map of Silifke's settlement growth from the Hellenistic period to 2021 with current building footprints and protected areas (Prepared by the author using historical engravings, aerial photographs, and the 1995 Conservation Plan)

The percentage values shown in the timeline of Figure 18 represent the relative change in built-up areas compared to the preceding period within the total study area of 150 hectares. The hectare figures in parentheses (e.g., 57 ha, 73 ha) indicate the absolute extent of the urbanized area at each recorded time point, while the positive and negative percentages denote the proportional increase or decrease relative to the previous stage. For example, the expansion from 11 ha in the Hellenistic core to 47 ha in the Ottoman period reflects a gradual outward growth of settlement, whereas the slight decrease observed between 1975 and 1987 corresponds to the partial demolition and material reuse of abandoned Greek and Armenian houses, as well as the dismantling of ancient buildings during the early Republican period. From 1988 onward, consistent increases in built-up area, particularly toward the northern riverbank, illustrate Silifke's response to demographic and planning pressures. This quantitative clarification

DOI: 10.15320/ICONARP.2026.363

reinforces the interpretive depth of Figure 18, linking the visualized data to the historical and socio-spatial dynamics that shaped Silifke's urban morphology.

Townscape Reading of Silifke

Silifke's townscape is the result of layered historical, topographical, and social processes. Understanding its urban fabric requires not only the documentation of historical buildings and land use patterns but also the application of modern tools—such as aerial photographs, GIS, and Google Earth mapping—to visualize continuity, changes, and the interaction between historical and contemporary buildings (Siyavuş & Belge, 2024). To complement this townscape reading, spatial analysis tools such as DepthmapX can be applied to examine street network integration and connectivity, providing a digital perspective that reinforces historical and morphological observations. This approach allows us to examine how the town can be understood, sustained, and communicated to its users.

Land Use

The historical continuity in Silifke's spatial organization is evident in the persistence of functional cores established during the Ottoman period (Siyavuş & Belge, 2024). Early representations, such as the 1925 engraving, show land use patterns centered around key religious and commercial anchors, which remain recognizable in the Saray neighborhood and extend into Pazarkaşı and Camikebir. Despite urban expansion, this historical core maintains economic and social centrality. In addition, digital tools such as aerial photographs and Google Earth allow for a precise visualization of these functional cores, facilitating an understanding of how land use patterns have persisted or transformed over time.

Current land use analysis reveals:

- Residential functions occupy approximately 76% of the built environment, serving as the primary morphological determinant.
- Commercial functions account for 6%, concentrated mainly within the historic center.
- Mixed-use buildings, with commercial spaces on the ground floor and residences above, constitute 18%, typically along major streets or transitional zones (Manav & Urak, 2024).

This distribution illustrates how secondary functions are spatially localized while residential buildings dominate the townscape.

Building Typology

Silifke's built environment presents a layered architectural typology shaped by six historical periods. Spatial and material characteristics vary distinctly between the north and south banks of the Göksu River, reflecting contrasting development patterns and construction techniques. Traditional Ottoman-period residential architecture along Fevzi Çakmak and Cavit Erden Streets employs masonry with horizontal wooden beams at 1.5-meter intervals, enhancing load distribution and structural flexibility in seismic conditions (Manav & Urak, 2024).

Cantilevered bay windows (cumba), built using the Bağdadi technique—a wooden skeletal frame filled with plastered lath—articulate facades and add spatial richness, a pattern also observed in Mut district, indicating shared regional traditions (Manav & Urak, 2024). Early Republican houses integrated natural bedrock on sloped plots (Figure 19), providing thermal insulation and reducing construction costs, while supporting functional adaptation to the terrain.



Figure 19. Dwellings constructed on bedrock in Pazarkaşı Neighborhood, Tarih Street. (Photographs taken by the author in 2023)

In addition, digital documentation through Google Earth and 3D modeling can support the visualization of building typology and facade variations, enabling a more interactive analysis of how architectural features respond to terrain, plot geometry, and historical continuity.

Today, reinforced concrete dominates northern expansion areas, largely aligned with plot-based zoning, yet inconsistencies with the historic urban fabric remain due to partially enforced regulations. This has led to a fragmented architectural landscape, where loss of typological continuity affects both visual coherence and functional integration. Historical maps, archival photographs, and recent Google Earth observations help document these transformations, providing insights into how residents interact with and adapt to the evolving urban environment.

FINDINGS

This study investigated the transformation of Silifke's urban fabric through a multi-layered analytical approach, using the metaphor of an "X-ray" to reveal vertical stratifications over time. The diachronic analysis covers nearly two centuries, from 1838 to 2021, interpreting Silifke's full morphological evolution—from the Hellenistic to the Republican periods—as a continuous layering process.

Key urban elements such as plots, street networks, and building typologies were analyzed both independently and overlaid to detect patterns of continuity, shifts, and ruptures. Additionally, a localized "urban coring" method—focused morphological probing of selected zones—was applied, uncovering micro-scale stratifications and typological changes that are not visible in broader district-level analyses.

DOI: 10.15320/ICONARP.2026.363

A major finding is the morphological and functional differentiation between the southern and northern banks of the Göksu River. The southern bank preserves a traditional commercial core and residential neighborhoods with strong spatial continuity, forming Silifke's historical backbone. In contrast, the northern bank exhibits recent development characterized by apartment blocks with commercial ground floors and residential upper floors, oriented towards consumer-driven mixed-use functions along the riverfront and Atatürk Boulevard.

Among the neighborhoods examined, those on the southern bank include Saray, Pazarkaşı, Camikebir, Mukaddem, Say, and Atik, either entirely or partially included in the study area. On the northern bank, only part of the Göksu neighborhood was analyzed. Six of these neighborhoods display typological similarities that indicate a consistent historical urban language. The northern bank, however, stands out as a distinct morphological and functional zone shaped by post-1980s expansion.

Figures 12 and 13 visually support these observations by illustrating the diachronic development of urban form, building density, street networks, and spatial overlays that highlight significant changes and continuities.

Overall, these findings demonstrate how Silifke's urban form is the product of a complex interaction between historical continuity, topographical constraints, and contemporary urban pressures—resulting in a spatially layered and functionally divided townscape.

Discussion and Comparison

The findings of this study reveal a distinct morphological duality in Silifke's urban form. This duality is most evident in the contrast between the historically layered southern bank and the rapidly developed northern bank of the Göksu River. These zones differ not only in building typology and density, but also in planning logic—organic versus planned growth, pedestrian-oriented versus vehicle-prioritized streets, and traditional versus modern construction techniques.

This morphological duality is further supported by quantitative analysis at the block scale. The Euclidean Distance analysis, as outlined in the methodology section, provides insight into the morphological similarity between selected urban blocks. The results indicate that Block 1 (Göksu) and Block 2 (Atik) are the most similar, reflecting larger plots and taller buildings associated with more recent planned development, whereas Block 3 (Say) exhibits greater distance, consistent with smaller, irregular plots and lower-rise structures characteristic of the historic core. These findings not only reinforce the qualitative observations of neighborhood-scale differences but also demonstrate the strength of quantitative approaches in capturing urban form patterns. Although this analysis was applied to a limited number of blocks in this study, extending it across the entire city could provide even stronger evidence of Silifke's spatial structure and morphological evolution. In this sense, the current implementation serves as a demonstrative example for

urban morphology studies, bridging quantitative assessment with historical and planning insights.

Such spatial dichotomies are not unique to Silifke. Nearby towns offer instructive comparisons. Mut, for example, retains a largely traditional morphology with limited vertical development. Tarsus, sharing Silifke's Roman and Ottoman heritage, exhibits a more fragmented urban landscape where historic cores coexist with sprawling modern peripheries. However, its greater regional centrality and population pressure have led to different patterns of integration and transformation. Safranbolu stands as a successful case of historic core preservation, where regulatory frameworks and conservation practices have maintained strong morphological coherence.

At the international level, mid-sized European towns such as Siena (Italy) and Toledo (Spain) offer further insights. Despite experiencing modern development pressures, Siena has managed to maintain spatial continuity between its historic and newer districts. Toledo, similarly, has integrated tourism and conservation strategies to maintain the identity of its historical core while supporting economic development. Compared to such cases, Silifke's urban transformation appears more fragmented—largely due to the lack of an integrated conservation vision that connects planning with typological continuity.

In the specific study area analyzed in this research—entirely located within a third-degree archaeological site—there are legal conservation constraints. However, these constraints have not always been accompanied by comprehensive planning or design guidelines, leading to partial and sometimes contradictory implementations. As a result, although physical development is allowed under controlled conditions, the absence of a typologically sensitive planning approach has contributed to morphological inconsistency and underutilization of spatial potential within the historic fabric.

In this context, the study argues for a heritage-led urban development model that balances conservation with adaptive reuse and functional integration. Such an approach—anchored in typological continuity and multi-scalar morphological awareness—can provide a roadmap for resilient urban transformation in similar medium-sized towns. These insights contribute to the broader discourse in urban morphology by emphasizing not only the descriptive but also the prescriptive potential of morphological analysis in guiding urban policy and design.

CONCLUSION

This study presents a comprehensive morphological analysis of Silifke, a medium-sized Anatolian town with layered historical development and significant contemporary transformation. Using diachronic cadastral maps, street networks, building typologies, and localized urban coring, the research examined the town's spatial anatomy across multiple scales—from individual plots to entire

DOI: 10.15320/ICONARP.2026.363

neighborhoods—revealing patterns of continuity, rupture, and hybridization.

Employing the "X-ray" metaphor as an interpretative framework, the urban fabric was analyzed as a multi-layered system through digital tools such as AutoCAD and Depthmap. Morphological strata—plots, streets, and building types—were examined both individually and in superimposed configurations, enabling quantification of spatial relationships and typological continuity across historical phases.

One of the key findings is the identification of distinct morphological zones shaped by the intersection of historical continuity, topographical variation, and regulatory interventions. The southern bank of the Göksu River retains a hybrid historic core, where irregular street patterns coexist with grid-based fragments from early 20th-century planning, accommodating low-rise residential fabric and a continuous commercial spine. In contrast, the northern bank reflects post-1980s planned development, characterized by rectilinear street grids, regular plots, and multi-story reinforced concrete buildings, showing minimal integration with the historic core.

Quantitative analysis using Euclidean Distance on representative urban blocks (Göksu, Atik, Say) further illustrates morphological similarity and divergence. Blocks with larger plots and taller buildings (Göksu and Atik) were more morphologically proximate, while smaller, lower-rise blocks (Say) reflected the traditional urban pattern. These differences correlate with social dynamics, population density, and historical period of development, offering measurable insight into urban form transformations.

Compared to other towns such as Tarsus, Mut, Safranbolu, and Siena, Silifke shows a more visible rupture between traditional and modern areas. While some towns integrate new development incrementally or preserve typological continuity, Silifke reflects fragmented growth influenced by speculative development and ambiguous zoning policies.

The study contributes to planning-oriented urban morphology by identifying zones of typological and functional disjunction, emphasizing adaptive reuse, spatial coherence, and typological continuity as core principles for heritage-sensitive development. Digital visualization tools, including 3D overlays and spatial mapping, enhance communication with planners, authorities, and residents, supporting participatory approaches and informed decision-making.

In sum, the research bridges morphological analysis with practical planning strategies, highlighting how quantitative measures, such as Euclidean Distance, alongside diachronic and spatial analysis, can inform interventions that respect the multilayered identity of medium-sized, historically complex towns.

REFERENCES

Aktüre, S. (1997). Bronze Age cities in Anatolia. İstanbul: History Foundation Yurt Publications.

Akyürek Algın, M., & Hoşkara, Ş. (2024). Transformation of Silifke—a historic town in Anatolia in the Ottoman Period. Buildings, 14(1412), 8. https://doi.org/10.3390/buildings14051412.

Arefi, M., & Aelbrecht, P. (2024). Urban morphology: Urban design nexus revisited. URBAN DESIGN International, 29, 135–136. https://doi.org/10.1057/s41289-024-00259-y.

Arefi, M., & Aelbrecht, P. (2024). Urban design and morphology: Reconnecting people and place. Routledge.

Aykaç, R. (2018). Silifke kalesinin kazıları sonucunda ortaya çıkan yerleşim dokusu (Yayımlanmamış doktora tezi). T.C. Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Sanat Tarihi Anabilim Dalı. https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp.

Aykın, E. (2011). Çizgilerle Tarsus'tan Anamur'a. Ankara: T.C. Ministry of Culture Publications.

Ayten, S. S., & Aygen, Z. (2022). Kentsel bir fragman olarak kapalı konut yerleşmeleri: Kayseri örneği. Kent Akademisi, 15(1), 123–144. https://doi.org/10.35674/kent.1128990.

Bandarin, F., & van Oers, R. (2012). The historic urban landscape: Managing heritage in an urban century. Wiley-Blackwell.

Bilsel, C. (2015). Urban morphology as a spatiological approach in urban history research. In Y. Baş (Ed.), Türkiye Urban Morphology Symposium: Basic Approaches and Techniques – Proceedings Book (pp. 59–77). Mersin University Publications.

Caniggia, G., & Maffei, G. L. (2001). Interpreting basic building: Architectural composition and building typology. Alinea Editrice.

Cataldi, G., Maffei, G. L., & Vaccaro, P. (1997). The typo-morphological approach of G. Caniggia and his school of thought. Urban Morphology, 1(1), 52–56.

Cataldi, G., Maffei, G. L., & Vaccaro, P. (1997). Saverio Muratori and the Italian school of planning typology. Urban Morphology, 1, 49–50.

Coğrafya Harita. (2022, March 25). Türkiye mülki idare sistemleri haritası. http://cografyaharita.com/haritalarim/4lturkiye-mulki-idare-sistemleri-haritasi1.png.

Conzen, M. R. G. (1968). The use of town plans in the study of urban history. In H. J. Dyos (Ed.), The study of urban history (pp. 113–130). Edward Arnold.

Conzen, M. R. G. (1981). The urban landscape: Historical development and management. Academic Press.

Conzen, M. P. (2004). Thinking about urban form. Peter Lang.

Cömert, N. Z., & Hoşkara, Ş. (2013). A typo-morphological study: The CMC mass housing district Lefke, Northern Cyprus. Open House International, 38(2), 16–30.

Cömert, N. Z. (2013). Testing an integrated methodology for urban typo-morphological analysis on Famagusta and Ludlow (PhD dissertation). Eastern Mediterranean University, Cyprus.

Dağlı, Y., Kahraman, S. A., & Dankoff, R. (2005). Evliyâ Çelebi Seyahatnamesi: Anadolu, Suriye, Hicaz (1671–1672) (Vol. 9). İstanbul Devlet Matbaası. (Orijinal eser 1935'te yayımlandı), 161.

García, M., & Pérez, L. (2022). Advances in urban morphology: Integrating spatial technologies for heritage cities. Journal of Urban Planning and Development, 148(3), 04022025. https://doi.org/10.1061/(ASCE)UP.1943-5444.0000689.

Google Maps. (1969). Ankara Air Force Command Archive.

Gürtürk, S. (1987). Silifke tarihi. Can Matbaası.

DOI: 10.15320/ICONARP.2026.363

Hall, P. (2014). Cities of tomorrow: An intellectual history of urban planning and design in the twentieth century (4th ed.). Hoboken, NJ: Wiley-Blackwell.

Harvey, D. (2006). Paris, capital of modernity (1th ed.). Routledge.

İnceoğlu, M. (2013). Silifke yaşam kültürü. Tebeşir Yayınları.

Jordan, D. P. (1996). Transforming Paris: The life and labors of Baron Haussmann. University Of Chicago Press.

Karaarslan, E., & Çelikyay, S. (2019). Analysis of the historical urban texture of Yeşilyurt (Malatya). Bartın University International Journal of Natural and Applied Sciences (JONAS), 2(2), 261–273.

Kaya, A. Y. (2019). Çorum urban morphology (PhD dissertation). T.C. Fırat University, Elazığ.

Keil, J., & Wilhelm, A. (1931). Monumenta Asiae Minoris antiqua (Vol. III, pp. 6–8). Manchester University Press.

Kropf, K. (2018). The handbook of urban morphology. John Wiley & Sons.

Kubat, A. S., & Topçu, M. (2009). Morphological comparison of Antakya and Konya historical urban textures. International Journal of Human Sciences, 6(2), 336.

Levy, A. (1997). The typo-morphological approach of G. Caniggia and his school of thought. Urban Morphology, 1, 52–56.

Li, X., Zhang, Y., & Wu, J. (2023). GIS and big data applications in urban morphology: Mapping the evolution of historic city centers. Cities, 134, 104054. https://doi.org/10.1016/j.cities.2023.104054.

Manav, A., & Gediz Urak, Z. (2024). Traditional architecture in the central-northern Mediterranean region: Tectonics and typological analysis of traditional Mut houses. ICONARP International Journal of Architecture and Planning, 12(2), 606–637. https://doi.org/10.15320/iconarp.2024.284.

Mansel, A. M. (1943). Silifke Rehberi. Maarif Press. (Ministry of Education, Antiquities and Museums Directorate)

Marshall, S. (2005). Urban pattern specification. Institute of Community Studies.

Martins, F., & Silva, T. (2024). 3D modeling in urban morphological studies: A case for sustainable planning. Environment and Planning B: Urban Analytics and City Science, 51(1), 122–140. https://doi.org/10.1177/23998083231123456.

Moudon, A. V. (1997). Urban morphology as an emerging interdisciplinary field. Urban Morphology, 3–8.

Mumford, L. (1961). The city in history: Its origins, its transformations, and its prospects. Harcourt, Brace & World.

Oliveira, V. (2016). Urban morphology: An introduction to the study of the physical form of cities. Springer.

Oliveira, V. (2019). Urban form and design. Routledge.

Oliveira, V. (2021). Morphological research in planning practice. Springer.

Panerai, P., Castex, J., & Depaule, J.-C. (2004). Urban forms: The death and life of the urban block. Architectural Press.

Panerai, P. (1970). Castex Jean, Notes sur la structure de l'espace urbain. In Selçuk Batur için mimarlık yazıları (pp. 30–33). Mimarlar Odası Ankara Şubesi.

Rahman, M., & Chen, Y. (2025). Community engagement and socio-environmental factors in urban morphology: Toward participatory spatial planning. Urban Studies, 62(4), 789–807. https://doi.org/10.1177/00420980231156789.

Rodger, R., & Rau, S. (2020). Thinking spatially: New horizons for urban history. Urban History, 47, 372–383.
Rodger, D., & Rau, H. (2020). Reframing the city: From urban metabolism to political ecologies of food distribution. Anthropological Theory, 20(4), 419–438.
Serin, R. (2002). Analysis of the conservation problems of traditional Silifke houses and conservation and development proposal for Taşucu Street (Master's thesis). Gazi University, Ankara.
Sevim, A. (2019). Cilicia travelers and İçel traveler notes (Vol. 1, pp. 11–16). Cinius Press.
Silifke Municipality. (1975). Silifke Municipality current map of 1975 and 2022.
Silifke Municipality. (1988). Silifke Municipality current map of 1988 and 2022.
Silifke Municipality. (2023). Silifke Municipality current map.
Silva, A., & Gomes, R. (2023). Beyond form: Incorporating socio-environmental perspectives in urban morphological research. Journal of Urban Affairs, 45(2), 321–338. https://doi.org/10.1080/07352166.2022.2145678.
Siyavuş, A. E., & Belge, R. (2024). Urban sprawl in Thrace: Case of Çorlu. Planlama, 34(1), 10–21. https://doi.org/10.14744/planlama.2024.04557.
Steadman, P., Evans, S. H., & Batty, M. (2009). Wall area, volume and plan depth in the building stock. Building Research & Information, 37(5–6), 455–467.
Taşkıran, C. (2009). Silifke Great City (pp. 3–76). SİM Matbaacılık Ltd. Şti.
Tezer, S. T. (2021). A proposal for a methodological framework for settlement history analysis: Possibilities offered by urban morphology and historical geography. Tasarım Kuram, 17(32), 70–89.
Topal, A. K. (2014). What is a city conceptually and where is the city in Turkey? Dokuz Eylül University Social Sciences Institute Journal, 6(1), 276–294.

Uçar, A. (2009). Silifke in the 19th century according to Temettuat Books. İstanbul Silifke Culture and Solidarity Association.
Ünlü, T., & Baş, Y. (2017). Morphological processes and the making of residential forms: Morphogenetic types in Turkish cities. Urban Morphology, 21(2), 105–122.
Ünlü, T. (2018). Mekânın biçimlendirilmesi ve kentsel morfoloji. In Türkiye Kentsel Morfoloji Ağı (TNUM) II. Sempozyum Bildirileri.
Ünlü, T. (2019). Managing the urban change: A morphological perspective for planning. ICONARP International Journal of Architecture and Planning, 7(2), 435–456.
Ünlü, T., & Durmuşoğlu, C. (2022). Adana'da konut alanlarının döngüsel gelişimi: Oluşum, birikim ve dönüşüm dönemleri. In TNUM III. Sempozyumu Bildirileri.
Yalçın, A. (2021). Socio-economic and urban development in Silifke (From the 16th century to the 19th century). Karamanoğlu Mehmetbey University Journal of Literature Faculty, 4(1), 146–164.
Yalçın, A. (2004). Geç devir Osmanlı Silifkesi (1860–1904) (Vol. 5, p. 7). Taşeli Ofset, Silifke.
Yapıcı, K., Görgün, T., Özbudun, S., Duran, M., Özbolat, N. K., Hünler, K., Demirer, T., Doğmuş, O. E., Orhangazi, Ö., & Demirer, G. (1999). Environment and city in the grip of the YYD. Ütopya Press.
https://www.sitso.org.tr/tr/silifke-kulturu, accessed date: 26.10.2025

Resume

Meltem Akyürek Algın is an architect and Assistant Professor at Toros University. She received her bachelor's and master's degrees from Near East

DOI: 10.15320/ICONARP.2026.363

University (NEU) and earned her PhD from Eastern Mediterranean University (EMU). Her primary research interests include urban history, urban morphology, and space syntax. She also conducts research on historic urban environments, sustainable urban design and planning, street-scale spatial analysis, and urban identity. In addition to her research activities, she contributes to architectural education through design studios and theoretical courses. Her current academic work focuses on understanding and analysing the spatial structure and evolution of cities.

Şebnem Hoşkara is a tenured professor of Architecture and Urbanism (Urban Design) at the Department of Architecture, Eastern Mediterranean University (EMU) in Cyprus. She is the Director of Urban Research and Development Center (URDC) of EMU and Director of EMU Press Executive Committee. She is the Editor of a recently published academic journal – Journal of Urban Research and Development. She worked as a Visiting Professor at University of Texas at San Antonio (UTSA) as the Interim Director of Urban and Regional Planning (URP) Graduate Programs between 1 September 2018-31 May 2019 and she was the Dean of the Faculty of Architecture at EMU between October 2010 – October 2016. She is a founding member of Cyprus Network for Urban Morphology (CYNUM), and a member of ISOCARP, EDRA, Europa Nostra, ISUF and TICCIH. Professor Hoskara does research in Architectural and Urban Design Education, Urban Morphology, Public Space and Placemaking, Sustainable Urban Design and Planning, SDGs, Cultural Heritage Conservation and Conservation of Industrial Heritage in Cyprus.