

From Badw to Industrial Corridors: Ontological Layers in the Formation of the Saudi Urban System

Ahmed Jarallah Al-Jarallah¹

email. Pro_ajj@hotmail.com

Abstract

This study advances a civilizational-spatial interpretation of Saudi Arabia's territorial transformation by integrating Qur'anic spatial ontology (badw, qaryah, madinah), early twentieth-century decentralization policies, and contemporary corridor-based industrial integration within a unified hierarchical-network framework. Rather than attributing Saudi urbanization solely to hydrocarbon revenues and state-led modernization, the paper argues that the Kingdom's transformation—now characterized by urbanization levels exceeding 86 percent—reflects a layered process of ontological consolidation unfolding across sequential spatial regimes.

The analysis identifies four structurally cumulative stages: (1) mobility-based territoriality, in which diffuse tribal formations dominated spatial organization; (2) stabilization through the Hujar settlement initiative, which established approximately 175 fixed nodes and introduced territorial legibility; (3) hierarchical urban pyramid formation, marked by multi-tiered differentiation between villages, regional centers, and metropolitan cores; and (4) corridor-based network integration, exemplified by the Eastern Industrial Corridor linking Dammam, Ras Tanura, Jubail, Ras Al-Khair, and northern energy nodes into a linear multi-nodal industrial spine.

By employing a Civilizational Spatial Analysis Framework (CSAF), the study bridges semantic ontology, demographic reconstruction, and regional planning theory. It demonstrates that institutional stabilization preceded large-scale industrial intensification and mitigated extreme primate-city concentration often observed in resource-dependent economies. Corridor integration, therefore, represents not an abrupt planning innovation but the apex of a century-long process of territorial consolidation.

The Saudi case contributes to broader urban epistemology by reintroducing the mobility-settlement distinction as a foundational analytical variable and by situating network urbanism within long-term structural sequencing. Ultimately, the transition from badw to industrial corridors reflects a progressive consolidation of territorial order in which stabilization enables hierarchy and hierarchy enables networked integration.

Keywords

Saudi urban transformation; Hujar settlements; territorial stabilization; mobility-based territoriality; hierarchical urban systems; Eastern Industrial Corridor; network urbanism; corridor planning; urban epistemology; civilizational spatial analysis; Saudi Arabia urbanization; regional development.

¹ University of Imam Abdrahman Bin Faisal- Department of Urban & Regional Planning

المخلص

تقدّم هذه الدراسة تفسيراً حضارياً-مكانياً للتحوّل الإقليمي في المملكة العربية السعودية من خلال دمج الأنطولوجيا المكانية القرآنية (البدو، القرية، المدينة) مع سياسات الاستقرار في أوائل القرن العشرين، ومع نماذج التكامل الصناعي القائم على الممرات في المرحلة المعاصرة، ضمن إطار هرمي-شبكي موحد. وبدلاً من إرجاع التحضر السعودي حصرياً إلى عوائد النفط والتحديث الذي قادتته الدولة، تجادل الدراسة بأن التحوّل الذي شهدته المملكة — والذي تجاوزت فيه نسبة التحضر 86% — يعكس عملية تراكمية متعددة الطبقات من ترسيخ البنية الأنطولوجية للمجال عبر أنظمة مكانية متعاقبة.

وتحدد الدراسة أربع مراحل بنيوية مترابطة:

- (1) إقليمية قائمة على الحركية، هيمنت فيها التشكيلات القبلية المتنقلة على تنظيم المجال؛
 - (2) مرحلة الاستقرار من خلال مشروع الهجر، الذي أسس ما يقارب 175 عقدة استيطانية ثابتة وأدخل مفهوم القابلية الإدارية للمجال؛
 - (3) تشكّل هرم حضري هرمي تميّز بتدرج متعدد المستويات بين القرى والمراكز الإقليمية والنوى الحضرية الكبرى؛
 - (4) التكامل الشبكي القائم على الممرات، والمتمثل في الممر الصناعي الشرقي الذي يربط الدمام ورأس تنورة والجبيل ورأس الخير والعقد الطاقوية الشمالية ضمن عمود صناعي خطي متعدد العقد.
- وباستخدام إطار التحليل المكاني الحضاري (CSAF)، تربط الدراسة بين التحليل الدلالي الأنطولوجي، وإعادة البناء الديموغرافي التاريخي، ونظرية التخطيط الإقليمي. وتُظهر النتائج أن الاستقرار المؤسسي سبق التصعيد الصناعي واسع النطاق، وأسهم في الحد من ظاهرة المدينة المهيمنة الأحادية التي تظهر غالباً في الاقتصادات الريعية. وعليه، فإن التكامل عبر الممرات لا يمثل ابتكاراً تخطيطياً فجائياً، بل يشكّل ذروة مسار ممتد على مدى قرن من ترسيخ النظام الإقليمي.
- وتسهم الحالة السعودية في تطوير الأبيستمولوجيا الحضرية من خلال إعادة إدراج ثنائية الحركية-الاستقرار بوصفها متغيراً تحليلياً تأسيسياً، ومن خلال موضوعة العمران الشبكي ضمن تسلسل بنيوي طويل الأمد. وفي المحصلة، فإن الانتقال من البدو إلى الممرات الصناعية يعكس ترسيخاً تدريجياً للنظام الإقليمي، حيث يتيح الاستقرار نشوء الهرمية، وتُمكن الهرمية من تحقيق التكامل الشبكي.

الكلمات المفتاحية

التحوّل الحضري السعودي، مشروع الهجر، الاستقرار الإقليمي، الإقليمية القائمة على الحركية، النظم الحضرية الهرمية، الممر الصناعي الشرقي، العمران الشبكي، تخطيط الممرات، الإبيستمولوجيا الحضرية، التحليل المكاني الحضاري؛

1. Introduction

1.1 Background

Urban theory has traditionally explained spatial transformation through industrialization, state formation, and capital concentration. Classical and contemporary frameworks emphasize density, institutional governance, and networked integration as defining characteristics of urban systems. Yet these approaches often presuppose a settled territorial regime as their analytical starting point, overlooking the foundational transition from mobility-based territoriality to stabilized settlement.

The Saudi case provides a rare opportunity to observe this foundational transition within a compressed historical timeframe. At political unification in 1932, the territory was largely characterized by mobility-dominant settlement patterns, with nomadic and semi-nomadic populations constituting the majority. Fixed urban centers represented a limited proportion of the demographic structure. Less than a century later, urbanization exceeds 86 percent, industrial cities structure global energy networks, and the Eastern seaboard hosts a linear industrial corridor integrating petrochemical, mining, logistics, and maritime infrastructures.

Rather than interpreting this transformation solely as a consequence of oil wealth, it may be understood as a layered process of spatial consolidation in which stabilization preceded hierarchy, and hierarchy enabled network integration. The Saudi trajectory therefore offers an empirical case through which theoretical questions about mobility, settlement, and urban integration can be reexamined.

1.2 Research Objective

This study aims to develop a hierarchical–network interpretation of Saudi Arabia’s territorial transformation by integrating urban theory with empirical historical reconstruction.

The research pursues three interrelated objectives:

1. To conceptualize mobility, stabilization, and institutional centrality as distinct spatial regimes within urban epistemology.
2. To examine the Hujar settlement initiative as a structural phase of territorial stabilization that transformed diffuse mobility into nodal settlement.
3. To analyze the Eastern Industrial Corridor as a contemporary manifestation of networked integration built upon earlier hierarchical consolidation.

Through this approach, the study bridges theoretical abstraction and spatial practice, demonstrating how ontological distinctions can illuminate concrete patterns of settlement restructuring and industrial corridor formation.

1.3 Significance of the Study

The study is significant at both theoretical and applied levels.

Theoretically, it reintroduces the mobility–settlement distinction as a foundational variable in urban analysis. Much contemporary urban theory begins with already stabilized territories; this research instead foregrounds the structural transition that makes hierarchical and networked urbanism possible. By integrating semantic spatial categories with modern urban frameworks, it expands the epistemological scope of urban studies.

Practically, the Saudi case demonstrates how early territorial stabilization can mitigate extreme metropolitan primacy and facilitate balanced hierarchical growth. The distributed Hujar settlements created nodal anchors across vast geographic space, enabling subsequent infrastructural expansion and demographic redistribution. The later emergence of the Eastern Industrial Corridor illustrates how corridor-based integration depends upon prior stabilization and hierarchical structuring.

Thus, the study contributes to corridor planning literature by situating network integration within long-term territorial sequencing rather than treating it as a discrete policy instrument.

1.4 Methodology

The research adopts a qualitative–historical analytical design structured through the Civilizational Spatial Analysis Framework (CSAF), which integrates theory and empirical evidence across three layers:

1. Conceptual–ontological analysis: extracting spatial distinctions between mobility, stabilization, and centrality as analytical variables.
2. Historical–demographic reconstruction: tracing the transition from mobility-dominant territoriality at unification to widespread settlement stabilization and urban expansion.
3. Spatial–structural analysis: examining the morphology and functional integration of the Eastern Industrial Corridor within network urbanism theory.

By sequentially linking these components, the methodology demonstrates how theoretical categories correspond to measurable demographic shifts and observable spatial configurations. The framework

does not assume direct causal derivation from civilizational discourse to planning policy; rather, it identifies structural continuities across historical layers of territorial consolidation.

This integrative design enables the study to move beyond purely economic explanations and toward a multi-scalar interpretation that connects semantic ontology, state formation, demographic transformation, and industrial corridor development within a unified analytical model.

2. Literature Review

2.1 Urban Epistemology and Theoretical Framing

Urban scholarship has evolved through successive paradigmatic shifts, each redefining what constitutes “the urban.” Classical sociological theory conceptualized the city as a legally bounded and institutionally autonomous entity characterized by governance capacity, market exchange, and socio-economic differentiation (e.g., Weber). In this tradition, urbanity is defined not merely by size but by structured authority and organized administration.

Industrial-era theory subsequently emphasized density, labor specialization, agglomeration economies, and infrastructural concentration as defining features of urban form. The city became associated with industrial clustering and spatial differentiation of functions. Later, critical urban theory reframed space as socially produced, shaped by political economy, capital accumulation, and state power (e.g., Lefebvre; Harvey). These approaches deepened understanding of modern urbanization but typically presupposed sedentary territorial organization as an already established condition.

From Bounded Cities to Networked Regions

More recent scholarship in network urbanism and regional planning has shifted attention from bounded cities to relational systems of nodes and flows (e.g., Castells; Scott; Hall & Pain). Mega-regions, polycentric metropolitan systems, and infrastructural corridors are conceptualized as integrated spatial platforms linking multiple centers through transportation, logistics, and energy infrastructure. In this framework, urbanity becomes a function of connectivity rather than density alone.

Corridor planning literature further develops this relational logic by emphasizing linear multi-nodal integration, export competitiveness, and infrastructural coupling (e.g., Priemus & Zonneveld; Neuman & Zonneveld). However, both network urbanism and corridor theory generally assume the prior existence of stabilized nodes. The transition

from diffuse territorial occupation to fixed settlement grids is rarely interrogated as a structural transformation requiring theoretical attention.

The Mobility–Settlement Gap in Urban Epistemology

Despite these theoretical advances, a conceptual gap persists. Much contemporary urban theory begins its analysis after ontological consolidation has already occurred. The distinction between mobility-based and settlement-based territorial regimes is often treated as a pre-modern background condition rather than as a structural variable with long-term implications for urban formation.

The Saudi case problematizes this assumption. At the beginning of the twentieth century, much of the Arabian Peninsula was characterized by mobility-based territorial organization. Tribal formations moved seasonally in response to ecological cycles; settlement density outside oasis towns remained limited; territorial boundaries were fluid; and administrative penetration was constrained. In such a context, theoretical models grounded solely in density, agglomeration, or network connectivity offer limited explanatory power. Before hierarchy and corridor integration can occur, stabilization must first transform space into nodal settlement.

Ontological Framing: Mobility, Stabilization, Centrality

To conceptualize this foundational transition, the present study draws analytically on the spatial distinctions embedded in the categories of *badw*, *qaryah*, and *madinah*. Interpreted structurally rather than theologically, these terms articulate an ontological spectrum of territorial organization:

- Mobility-based territoriality
- Stabilized bounded settlement
- Institutionalized urban centrality

This spectrum reframes urbanization as progressive consolidation rather than abrupt industrial expansion. Mobility yields to stabilization when populations anchor themselves to fixed localities. Stabilization evolves into centrality through institutional differentiation. Centrality can then scale outward into hierarchical systems and, eventually, into networked integration across regions.

Saudi Urban Studies and the Missing Structural Link

Gulf urban scholarship has extensively documented state-led modernization, oil-driven development, and megaproject urbanism (e.g., Elsheshtawy; Hertog; Kanna). Within Saudi Arabia, research has examined industrial cities such as Jubail and Yanbu, administrative centralization,

and petrochemical clustering along the Eastern seaboard. These studies highlight the transformative impact of hydrocarbon revenues and strategic planning.

The Hujar settlement initiative, however, occupies a more limited theoretical position in existing literature. It is typically analyzed as a political and religious strategy aimed at sedentarizing tribal populations and consolidating authority. While its political significance is widely acknowledged, its structural implications for long-term spatial organization have received less systematic integration within urban theory.

Demographic evidence indicates that nomadic populations constituted a majority at unification, while urban residents represented a small minority. Over subsequent decades, urbanization increased dramatically, now exceeding 86 percent. Yet Saudi Arabia does not exhibit extreme primate-city concentration comparable to many resource-rich states. Instead, it maintains a multi-tiered urban hierarchy comprising small towns, intermediate centers, and major metropolitan nodes.

This pattern raises an unresolved theoretical question: did early territorial stabilization mitigate later metropolitan hyper-concentration? Existing scholarship documents both sedentarization and industrial growth but seldom connects them within a unified structural framework.

Corridor Planning and Hierarchical Preconditions

The literature on industrial corridors provides insight into the spatial configuration of the Eastern Industrial Corridor. Petrochemical complexes, mining facilities, logistics platforms, and maritime terminals align along a linear Gulf coastline, forming a multi-nodal industrial spine. Corridor theory emphasizes efficiency, specialization, and global connectivity.

However, it rarely addresses how such corridors depend upon prior hierarchical structuring of settlement systems. Network integration presupposes stabilized nodes capable of supporting labor markets, administrative coordination, and infrastructural density. The Saudi trajectory suggests that corridor formation is not an isolated planning instrument but the apex of earlier stabilization and hierarchical consolidation.

Identified Gaps

Across the literature, three principal gaps emerge:

1. Urban epistemology under-theorizes the transition from mobility-based territoriality to stabilized settlement grids.

2. Saudi urban studies document modernization but insufficiently integrate early sedentarization into long-term structural analysis.
3. Corridor planning theory emphasizes integration but seldom situates corridors within historical sequences of territorial consolidation.

Positioning of the Present Study

This study addresses these gaps by synthesizing semantic ontology, historical-demographic reconstruction, and spatial-structural analysis within a hierarchical–network framework. By interpreting the Hujar initiative as a foundational stabilization phase and the Eastern Industrial Corridor as the apex of network integration, the research reframes Saudi urban transformation as progressive territorial consolidation rather than episodic modernization.

3. Civilizational Spatial Analysis Framework (CSAF)

This study adopts a qualitative–historical analytical design structured through what is termed the Civilizational Spatial Analysis Framework (CSAF). The framework is designed to integrate semantic interpretation, historical-demographic reconstruction, and spatial-structural analysis into a coherent explanatory model. Rather than employing econometric modeling or spatial simulation, the study focuses on identifying structural continuities across temporal layers of territorial transformation.

The CSAF operates through three interrelated analytical components.

3.1 The first component is conceptual–ontological analysis.

This stage examines Qur’anic spatial terminology—*badw*, *qaryah*, and *madinah*—as structured categories encoding modes of territorial organization. The objective is not theological exegesis, nor normative interpretation, but conceptual extraction. The analysis identifies the implicit spatial properties embedded in each term: mobility, stabilization, and institutional centrality. These properties are then abstracted into analytical variables applicable to historical and contemporary contexts.

3.2 The second component is historical–documentary reconstruction.

This stage relies on demographic records, historical accounts of the Hujar settlement initiative, and national statistical data documenting urbanization trends. Particular attention is given to population composition at the time of unification, the establishment of approximately 175 documented Hujar settlements in the early twentieth century, and the subsequent increase in urban population percentages across decades. The

goal is to trace the transition from mobility-based territoriality to stabilized settlement patterns and hierarchical urban formation.

3.3 The third component is spatial–structural interpretation.

This stage examines the Eastern Industrial Corridor as a contemporary manifestation of networked functional urbanism. Industrial clustering along the Gulf coast, port–industrial coupling, infrastructural density, and linear multi-nodal integration are analyzed in relation to corridor planning theory and network urbanism. Rather than treating the corridor as an isolated planning initiative, the analysis situates it within the longer sequence of stabilization and hierarchical structuring identified in earlier phases.

3.4 Fourth Integration across these components proceeds sequentially.

Semantic ontology establishes the conceptual axis of mobility, stabilization, and centrality. Historical reconstruction identifies the empirical transformation corresponding to the stabilization phase. Spatial-structural analysis demonstrates how hierarchical formation enables corridor-based integration. The framework thus links civilizational categories, demographic evidence, and contemporary planning configurations within a unified interpretive arc.

The CSAF does not claim direct causal derivation between religious discourse and state policy. It does not suggest that modern planners consciously applied Qur’anic categories in designing settlement systems or industrial corridors. Instead, the framework posits structural continuity at the level of territorial logic. Civilizational spatial distinctions provide an ontological lens through which historical transformation can be interpreted, without implying deterministic or theological causation.

The study also acknowledges its interpretive scope and limitations. It does not employ quantitative GIS modeling to measure spatial concentration indices. It does not calculate formal primacy ratios or apply econometric forecasting models. Nor does it attempt to generalize the Saudi trajectory universally across different geopolitical contexts. Rather, it seeks to illuminate a specific case in which mobility-based territoriality transitioned into stabilized settlement and ultimately into networked industrial integration.

By combining semantic analysis with empirical demographic data and regional planning theory, the CSAF provides a multi-layered methodology suitable for examining long-term territorial restructuring. It allows the study to move beyond narrow disciplinary boundaries—bridging urban theory, historical sociology, regional planning, and civilizational studies—while maintaining analytical coherence.

The next section applies the first component of this framework in detail, examining the structured semantic distinctions between *badw*, *qaryah*, and *madinah* and extracting their spatial implications. This study does not claim universal generalizability but offers an interpretive structural model grounded in the Saudi case.

4. Qur'anic Spatial Ontology: A Structured Semantic Analysis

The semantic component of the Civilizational Spatial Analysis Framework begins with a structured examination of three key Qur'anic spatial terms: *badw*, *qaryah*, and *madinah*. The objective is not exegetical theology but conceptual clarification. Each term is analyzed as encoding a distinct mode of territorial organization. By identifying the structural properties embedded in these categories, it becomes possible to articulate an ontological axis of spatial consolidation applicable to historical and contemporary contexts.

The term *badw* derives from a root associated with openness, exposure, and emergence. In classical Arabic usage, it refers to desert life and the condition of inhabiting open terrain beyond fixed settlement boundaries. Within Qur'anic narrative contexts, the term denotes a form of habitation characterized by mobility rather than architectural consolidation. Spatially, *badw* implies diffuse occupation of territory, seasonal movement, and adaptive engagement with environmental conditions. Authority structures in such regimes are often relational and kinship-based rather than territorially bounded. There is limited architectural centrality and weak internal differentiation of space.

Importantly, *badw* does not correspond directly to the modern statistical category of "rural." Rural settlements in contemporary classification systems are typically sedentary and agriculturally anchored. By contrast, *badw* signifies mobility-based territoriality in which settlement is temporary, dispersed, or seasonally variable. The decisive feature is not low density but the absence of stabilized nodal structure. Territory is traversed rather than bounded; authority is relational rather than spatially centralized.

The term *qaryah* derives from a root associated with gathering, hosting, and collective settlement. In Qur'anic usage, it frequently denotes a community anchored to a recognizable locality. Unlike *badw*, which emphasizes openness and movement, *qaryah* implies boundedness and collective cohesion. The settlement is treated as a corporate entity capable of collective action and responsibility. Spatially, this suggests fixed

habitation, recognizable territorial limits, and social integration within a localized framework.

The scale of qaryah in narrative contexts varies, indicating that size alone does not define the category. What distinguishes qaryah structurally is stabilization: the transition from diffuse occupation to fixed, bounded settlement. Internal differentiation may be limited, and institutional complexity may be modest compared to larger urban centers. However, the presence of architectural permanence and localized cohesion marks a significant ontological shift from mobility-based regimes.

The term madinah derives from a root associated with settlement, governance, and organized urban life. Within Qur'anic contexts, it conveys institutional centrality and structured spatial organization. The phrase "from the farthest end of the city" indicates internal differentiation between center and periphery, implying morphological extension and circulation pathways. Madinah therefore represents not merely settlement but organized urban centrality characterized by administrative coordination and spatial structuring.

The distinction between qaryah and madinah is not reducible to population size. Rather, it concerns institutional intensity and internal spatial differentiation. A qaryah may be stabilized yet lack complex administrative layering. A madinah embodies structured centrality, governance capacity, and internal stratification. In contemporary terms, it approximates the notion of an institutionalized urban core.

Synthesized analytically, the three categories form a progressive axis:

Mobility-based territoriality (badw)
→ Stabilized bounded settlement (qaryah)
→ Institutionalized urban centrality (madinah)

This ontological progression can be structurally summarized in Table 1, which clarifies the spatial logic, settlement morphology, and institutional intensity associated with each category.

Table 1. Ontological Spatial Categories

Category	Spatial Logic	Settlement Form	Institutional Intensity
Badw	Mobility-based territoriality	Diffuse / non-nodal	Relational authority
Qaryah	Stabilized bounded settlement	Fixed local node	Collective cohesion
Madinah	Institutional centrality	Differentiated urban core	Structured governance

Source: Author's structured semantic analysis.

This progression is not explicitly presented as a chronological developmental sequence within scriptural discourse. However, structurally, it encodes increasingly consolidated forms of spatial organization. The transition from movement to stabilization, and from stabilization to centrality, represents cumulative structuring of territory.

When abstracted from their linguistic origins and interpreted analytically, these categories illuminate fundamental spatial distinctions often obscured in modern urban discourse. Contemporary classifications frequently collapse diverse settlement forms into binary urban–rural categories defined by density thresholds. The ontological distinctions embedded in *badw*, *qaryah*, and *madinah* instead foreground mobility, boundedness, and institutional centrality as primary variables.

This structured semantic analysis establishes the conceptual foundation for interpreting the Saudi transformation. The early twentieth-century Arabian Peninsula approximated a mobility-dominant regime analogous to *badw*. The Hujar settlement initiative introduced fixed nodes resembling the structural condition of *qaryah*. Subsequent urban hierarchy formation and industrial centrality reflect characteristics aligned with *madinah*. The progression is not textual replication but structural analogy.

By identifying this ontological axis, the study provides a conceptual lens through which historical stabilization and contemporary network integration can be interpreted as stages within a continuum of territorial consolidation. The following section applies this framework to the empirical case of the Hujar settlement phase, examining how stabilization transformed diffuse mobility into nodal territorial order.

5. The Hujar Settlement Phase: Territorial Stabilization and Nodal Formation

At the beginning of the twentieth century, much of the Arabian Peninsula operated under a mobility-dominant spatial regime. Tribal formations traversed vast territories in accordance with ecological cycles, water availability, and pastoral requirements. Settlement outside oasis towns and pilgrimage centers was limited in permanence and architectural consolidation. Authority was relational and kinship-based, and territorial boundaries were fluid. This condition corresponds structurally to the ontological category of mobility-based territoriality identified earlier.

The Hujar settlement initiative marked a decisive turning point in this spatial configuration. Beginning in the 1910s and expanding in subsequent decades, approximately 175 documented settlements were established with the explicit objective of anchoring mobile populations into fixed localities.

These settlements were typically organized around a central mosque, residential clusters, and agricultural plots. In addition to their religious and social functions, they served as administrative nodes linking local populations to emerging state authority.

The structural significance of the Hujar initiative lies not primarily in its immediate demographic scale but in its territorial impact. By transforming diffuse movement into fixed habitation, the initiative introduced nodality into previously non-nodal space. Each settlement functioned as a micro-anchor within the broader territorial field. Populations became geographically legible, enabling administrative oversight, taxation, dispute resolution, and infrastructural provision.

Demographic data at the time of political unification in 1932 indicate that nomadic populations constituted a majority of the total population, while urban residents represented roughly one-tenth. This composition reflected the persistence of mobility-based territorial organization. However, the establishment of Hujar settlements progressively altered this balance. While the numerical scale of early settlements was modest relative to later urban expansion, their distributed spatial placement across the territory created a foundational grid upon which subsequent growth could occur.

The demographic restructuring that followed territorial stabilization is summarized in Table 2, demonstrating quantitatively how nodal anchoring preceded large-scale metropolitan concentration.

Table 2. Demographic Transformation and Urbanization (1932–2023)

Year	Nomadic (%)	Urban (%)	Structural Phase
1932	57.7	10	Mobility Dominant
1974	-	48	Stabilization Expansion
1996	~1	79	Hierarchical Consolidation
2023	-	86+	Urban Saturation

The introduction of fixed settlements facilitated several structural shifts. First, it enabled territorial stabilization. Populations anchored to specific localities reduced seasonal dispersion and increased continuity of habitation. Second, it enhanced administrative penetration. Fixed nodes allowed emerging governance structures to operate through identifiable spatial units rather than through purely relational networks. Third, it created the conditions for infrastructural diffusion. Roads, wells, schools, and later utilities could be extended to stable settlements more effectively than to mobile groups.

This stabilization phase corresponds structurally to the ontological condition of qaryah: bounded settlement characterized by collective cohesion. While Hujar settlements varied in scale and development, their defining feature was permanence. The transition from mobility to stabilization did not immediately produce large urban centers; rather, it established a broad territorial base of small and medium settlements. This base would later support hierarchical layering.

Over subsequent decades, especially during the mid- and late-twentieth century, the multiplication of villages and towns accelerated. Oil revenues enabled infrastructural expansion, educational provision, and economic diversification. Urban population percentages increased significantly, reaching nearly four-fifths of the total population by the late twentieth century. Contemporary figures now exceed 86 percent urbanization. However, this demographic shift unfolded within an already stabilized settlement grid. The presence of widespread small settlements mitigated the risk of extreme metropolitan primacy and allowed population growth to distribute across multiple tiers.

The structural evolution of the Saudi settlement system can be summarized in stages. The first stage was mobility-dominant territoriality, characterized by diffuse occupation and weak nodality. The second stage was stabilization through Hujar settlements, introducing fixed nodes and territorial legibility. The third stage was hierarchical formation, as towns and regional centers developed above a broad base of smaller settlements. The fourth stage, addressed in the next section, involved the integration of major nodes into a linear industrial corridor along the Eastern seaboard.

The Hujar phase thus represents more than a political or religious initiative; it constitutes a foundational restructuring of spatial logic. By converting movement into settlement and dispersion into nodality, it laid the groundwork for hierarchical and networked urbanization. Without stabilization, subsequent demographic acceleration and infrastructural concentration would have lacked territorial coherence.

In this sense, the Saudi case demonstrates that institutional stabilization can precede industrial intensification. Urbanization did not begin with petrochemical clusters or export terminals. It began with the anchoring of populations to place. The following section examines how this stabilized base evolved into a structured urban pyramid and ultimately supported corridor-based integration.

6. From Stabilized Nodes to Urban Pyramid Formation

Following the initial phase of territorial stabilization introduced by the Hujar settlements, Saudi Arabia entered a prolonged period of hierarchical structuring. The presence of distributed fixed settlements across vast geographic space created the conditions necessary for vertical differentiation within the settlement system. Rather than remaining a flat mosaic of small villages, the stabilized grid gradually evolved into a multi-tiered urban hierarchy.

During the mid-twentieth century, particularly after the discovery and commercialization of oil, infrastructural investment intensified. Roads connected previously isolated settlements, administrative institutions expanded, and educational and health facilities proliferated. These developments did not occur in a territorial vacuum. They were superimposed upon an already anchored settlement network. Small villages served as local service nodes, intermediate towns emerged as regional centers, and major cities expanded as metropolitan cores. This layering process produced what can be conceptualized as an urban pyramid.

At the base of this pyramid were thousands of small settlements and villages distributed across the national territory. Their existence reduced the spatial distance between population and basic services, allowing incremental modernization without requiring immediate migration to a single dominant city. Above this base were intermediate towns that functioned as regional administrative and commercial centers. At higher levels stood major metropolitan areas such as Riyadh, Jeddah, Dammam, and later planned industrial cities such as Jubail and Yanbu. Each tier fulfilled distinct functional roles while remaining structurally connected.

This hierarchical formation contrasts with patterns observed in many rapidly urbanizing resource-rich states where capital accumulation leads to disproportionate concentration in a primate city. Extreme primacy often produces infrastructural strain, regional inequality, and fragmented development. In the Saudi case, while metropolitan growth has been significant, the prior diffusion of settlements mitigated severe primate distortion. The early stabilization phase dispersed population across the territory, providing multiple nodes capable of absorbing demographic growth.

The demographic transition reinforces this structural reading. Urban population percentages increased steadily from the modest levels recorded at unification to nearly 79 percent by the late twentieth century, and now exceed 86 percent. Yet the transformation was not solely a matter of rural exodus into a single urban core. Many stabilized settlements evolved into small towns; regional centers expanded gradually; new industrial cities

were planned strategically. The urban pyramid thickened from its base upward rather than collapsing into a singular apex.

Hierarchical differentiation also enabled specialization. As towns and cities acquired defined roles—administrative, industrial, commercial, or service-oriented—interdependencies between tiers increased. Transportation networks facilitated vertical connectivity, while governance structures coordinated development across scales. The settlement system became more than a collection of isolated nodes; it evolved into an organized hierarchy.

This hierarchical structuring represents a transitional stage between stabilization and network integration. Stabilization creates fixed nodes; hierarchy orders those nodes; network integration links selected high-capacity nodes into functional corridors. Without hierarchical differentiation, corridor formation would lack structural coherence. A purely flat distribution of settlements cannot generate concentrated flows; a purely hyper-centralized structure cannot distribute benefits equitably. Hierarchy mediates between dispersion and concentration.

Conceptually, this stage corresponds to the ontological condition of institutional centrality associated with madinah. While not all settlements attained full institutional complexity, major urban centers developed administrative depth, infrastructural density, and internal spatial differentiation. The emergence of industrial cities further intensified centrality by clustering production, housing, and port facilities within coordinated planning frameworks.

By the turn of the twenty-first century, Saudi Arabia possessed a mature urban hierarchy anchored in earlier stabilization. Population growth increasingly concentrated in urban areas, yet the multi-level structure persisted. The question then shifted from expansion to integration: how could major nodes be connected into globally competitive economic systems? The answer emerged along the Eastern seaboard in the form of a linear industrial corridor.

The following section examines the Eastern Industrial Corridor as the apex of hierarchical–network transformation, analyzing its morphological structure, infrastructural density, and functional integration within national and global systems.

The staged evolution from territorial stabilization to hierarchical differentiation is conceptually illustrated in Figure 1, highlighting the cumulative rather than disruptive nature of Saudi spatial transformation.



Figure 1. Conceptual Stages of Saudi Spatial Transformation

Source: Author (2026).

7. The Eastern Industrial Corridor: Networked Functional Integration

The emergence of the Eastern Industrial Corridor represents a qualitative transformation in Saudi Arabia's spatial logic. While the stabilization phase established nodal anchors and the hierarchical phase ordered those nodes vertically, the corridor phase introduces horizontal integration across selected high-capacity nodes. Along the Arabian Gulf coastline, industrial cities, energy complexes, ports, desalination facilities, and logistics platforms form a linear multi-nodal spine extending from the metropolitan-industrial zones of Dammam northward through Ras Tanura, Jubail I and II, Ras Al-Khair, and further energy and maritime nodes.

Morphologically, the corridor is characterized by five interrelated features. First, it exhibits linear continuity. Industrial concentrations align along the coast, benefiting from maritime access and reducing inland transportation constraints. Second, it demonstrates infrastructural density. Petrochemical complexes, refineries, mining processing plants, export terminals, and supporting utilities are spatially clustered in close proximity. Third, it integrates port-industrial coupling. Maritime gateways are directly linked to production zones, enabling seamless export flows. Fourth, it reflects energy-based specialization rooted in hydrocarbon and mineral value chains. Fifth, it maintains multi-nodal differentiation, with each major node fulfilling distinct industrial roles while remaining embedded within a unified corridor system.

From the perspective of network urbanism, the corridor functions as a platform of flows. Capital, raw materials, processed goods, and labor circulate between nodes and extend outward to global markets. Unlike isolated metropolitan agglomerations, corridor nodes are structurally interdependent. Production in one location feeds processing or export operations in another. Infrastructure networks—pipelines, highways, rail lines, and maritime channels—bind these nodes into a coherent system.

However, the corridor is not purely relational in the abstract sense described in some global-city theories. It remains territorially anchored and state-coordinated. The spatial continuity of the coastline provides physical coherence, while governance frameworks ensure coordinated planning. The corridor thus combines territorial consolidation with network integration. It is neither a dispersed network detached from geography nor a singular metropolitan core; it is a hierarchically embedded network spine.

The viability of this corridor rests upon earlier phases of stabilization and hierarchical formation. Without fixed settlements and administrative legibility, large-scale industrial investment would have faced structural

uncertainty. Without a multi-tiered urban hierarchy, labor supply, service provision, and infrastructural coordination would have been constrained. The corridor therefore represents the culmination of a century-long process of territorial structuring.

At the macro level, the corridor contributes to national economic diversification strategies and aligns with long-term development visions emphasizing industrial clustering and export competitiveness. At the spatial level, it reinforces the upper tiers of the urban pyramid while remaining connected to lower tiers through transportation and labor networks. Rather than replacing the hierarchical structure, it intensifies its apex.

With urbanization exceeding 86 percent, Saudi Arabia has entered a phase of urban maturity. Growth increasingly manifests as intensification within existing nodes and integration between nodes rather than as expansion into previously unsettled territory. The corridor exemplifies this mature condition: it consolidates industrial capacity within an already urbanized landscape and channels it through linear integration.

The transformation from mobility-based territoriality to corridor-based integration can thus be understood as a sequence of layered consolidation. Mobility yields to stabilization; stabilization yields to hierarchy; hierarchy yields to network integration. Each stage reconfigures the relationship between population, authority, and territory, producing progressively more structured spatial systems.

The following section synthesizes these stages into an integrated hierarchical–network model, articulating the structural logic connecting Hujar stabilization, urban pyramid formation, and corridor intensification within a unified analytical framework.

8. Integrated Hierarchical–Network Model: From Territorial Anchoring to Corridor Apex

The preceding sections have examined the Saudi spatial transformation through three distinct yet interrelated stages: stabilization through Hujar settlements, hierarchical urban pyramid formation, and corridor-based industrial integration. This section synthesizes these stages into a unified hierarchical–network model that clarifies the structural continuity underlying the Kingdom’s territorial evolution.

The first stage, mobility-based territoriality, represents a pre-nodal condition. In this regime, population distribution is diffuse, movement is adaptive, and authority is relational rather than spatially centralized. Territory is experienced as traversable space rather than as bounded

settlement. Administrative penetration remains limited, and infrastructural investment faces structural constraints due to the absence of fixed anchors.

The second stage, stabilization through the Hujar initiative, introduces nodality. Approximately 175 documented settlements functioned as micro-anchors distributed across the territory. These nodes converted movement into permanence and dispersion into fixed locality. Stabilization enhanced territorial legibility, enabling governance structures to operate through identifiable spatial units. This stage corresponds structurally to the ontological condition of bounded settlement.

The third stage, hierarchical formation, organizes stabilized nodes into vertical tiers. Small settlements form the base; intermediate towns operate as regional connectors; major cities serve as administrative and economic centers; specialized industrial cities intensify centrality at the upper levels. Hierarchy balances dispersion and concentration. It prevents extreme primacy while permitting specialization. The urban pyramid thickens upward without collapsing downward into a single dominant metropolis.

The fourth stage, corridor-based integration, introduces horizontal connectivity among selected high-capacity nodes. Industrial cities along the Eastern seaboard become interlinked through infrastructural networks, forming a linear multi-nodal spine. This stage reflects advanced functional integration in which production, logistics, and export flows circulate across nodes rather than remaining confined within a single urban core. The corridor represents the apex of hierarchical structuring, not its replacement.

These stages are cumulative rather than substitutive. Stabilization does not disappear when hierarchy emerges; it undergirds it. Hierarchy does not dissolve when corridors form; it organizes and supports them. The corridor intensifies the upper tier of the pyramid while remaining embedded within the broader settlement system. The model therefore emphasizes layered territorial accretion rather than abrupt structural rupture.

Three structural principles emerge from this synthesis. First, nodality precedes hierarchy. Without fixed settlement anchors, vertical differentiation cannot occur. Second, hierarchy precedes integration. Without organized tiers, corridor formation lacks structural coherence. Third, integration intensifies rather than negates hierarchy. Networked nodes remain dependent on stabilized lower tiers for labor supply, services, and territorial balance.

The hierarchical–network model also clarifies the distinctive features of the Saudi trajectory. In many rapidly modernizing states, industrialization precedes stabilization, producing spatial imbalances and

hyper-concentration. In the Saudi case, stabilization preceded industrial intensification. The Hujar phase created territorial anchors before large-scale petrochemical clustering emerged. This sequence mitigated severe primacy effects and facilitated distributed development.

Furthermore, the model underscores the importance of ontological consolidation. The transition from mobility to settlement was not merely demographic but structural. It altered how territory was inhabited, governed, and organized. The later transition from hierarchy to corridor integration similarly reconfigured spatial relationships, shifting emphasis from vertical differentiation to horizontal connectivity among specialized nodes.

With urbanization now surpassing 86 percent, the Saudi settlement system exhibits characteristics of structural maturity. The challenge shifts from expansion to optimization: enhancing connectivity, improving infrastructural efficiency, and maintaining hierarchical balance. The corridor phase thus represents not an endpoint but an advanced stage in ongoing territorial structuring.

The integrated model can be summarized sequentially:

Mobility-based territoriality → Stabilized nodal settlement → Hierarchical urban pyramid → Corridor-based network integration.

This sequential consolidation is analytically organized in Table 3, which outlines the structural characteristics and outcomes of each stage.

Table 3. Hierarchical–Network Model Stages

Stage	Spatial Characteristic	Structural Outcome
1. Mobility	Diffuse occupation	Low territorial legibility
2. Stabilization	Fixed nodal settlements	Administrative penetration
3. Hierarchy	Multi-tier urban pyramid	Balanced distribution
4. Corridor Integration	Linear multi-nodal network	Global functional connectivity

Source: Author's integrated model synthesis

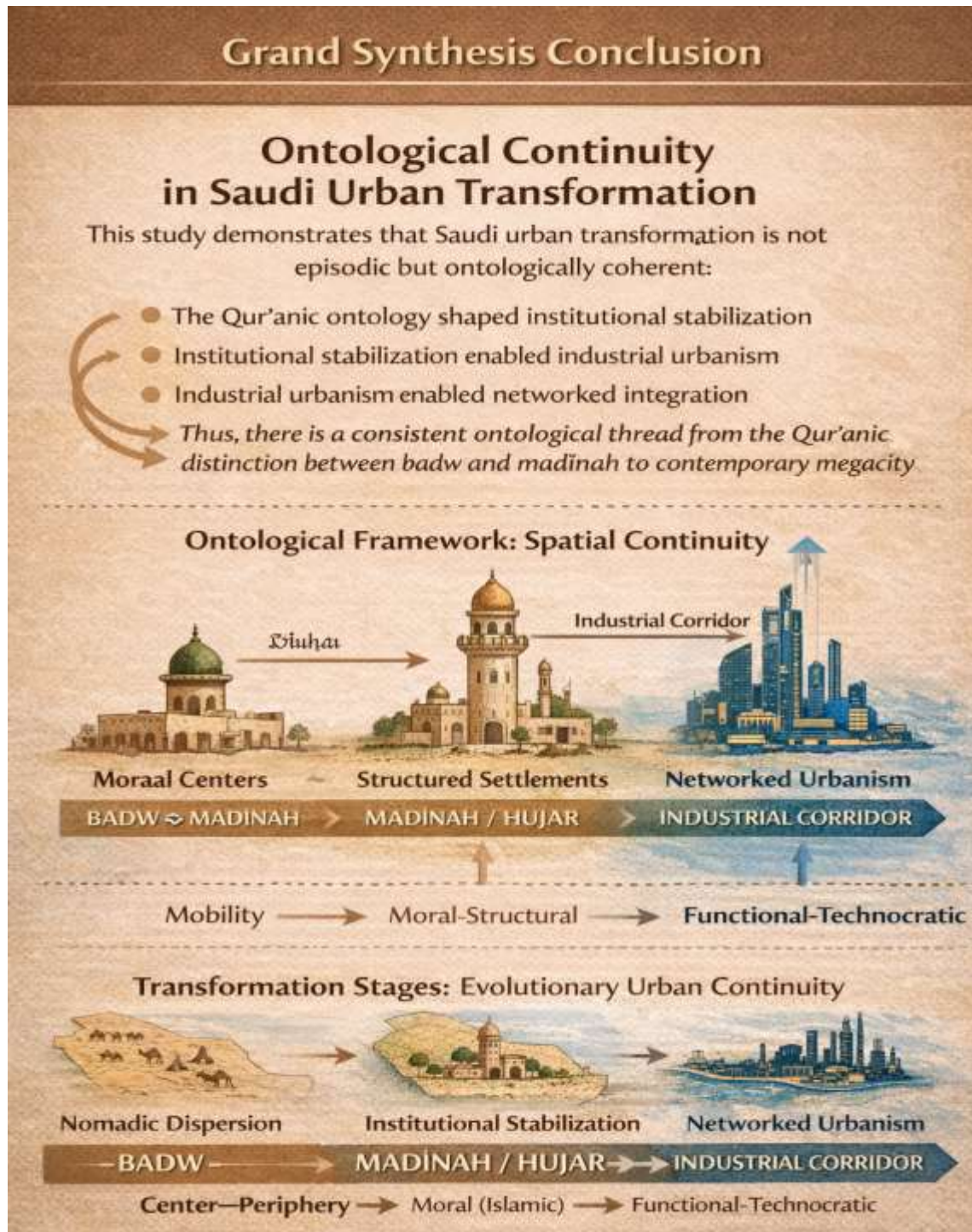


Figure 2. Hierarchical–Network Structural Model

Source: Author (2026).

Each arrow represents consolidation rather than replacement. The system thickens and integrates across stages, producing a territorially coherent and functionally networked spatial order.

The following section introduces a critical reflection, examining potential counter-arguments and addressing alternative interpretations of the Saudi transformation before presenting the final synthesis.

9. Counter-Argument and Critical Reflection

Any interpretation that frames Saudi Arabia's spatial transformation as a staged ontological consolidation invites critical scrutiny. Alternative explanations may argue that the Kingdom's urban evolution can be sufficiently explained through hydrocarbon revenues, centralized state planning, or global economic integration without invoking deeper structural or civilizational frameworks. This section addresses these perspectives and clarifies the analytical boundaries of the present argument.

A first counter-argument posits that oil wealth alone accounts for the rapid shift from mobility-dominant territoriality to urban saturation. From this viewpoint, the discovery of petroleum resources generated capital flows that financed infrastructure, attracted labor migration, and stimulated metropolitan expansion. Urbanization, therefore, appears as a derivative outcome of economic modernization rather than a layered spatial restructuring. While hydrocarbon revenues undeniably accelerated development, this explanation does not fully account for the relative hierarchical balance observed within the Saudi settlement system. Resource-driven growth in many contexts produces extreme primate-city concentration, where a single metropolitan area dominates national population and economic activity. The Saudi case, by contrast, exhibits a distributed settlement grid and multiple metropolitan centers, suggesting that earlier stabilization processes shaped the spatial receptivity of oil-driven expansion.

A second counter-argument emphasizes centralized state planning as the primary determinant of territorial order. According to this perspective, administrative decisions, master plans, and industrial city projects engineered the spatial hierarchy. The Hujar initiative could then be interpreted merely as an early political consolidation tool rather than as a foundational spatial restructuring. While state intervention played a critical role in shaping settlement patterns, planning operates within pre-existing territorial conditions. The presence of distributed fixed settlements facilitated subsequent administrative organization and infrastructural extension. In other words, stabilization enhanced the effectiveness of later

planning efforts. Without nodal anchoring, centralized planning would have faced greater structural constraints.

A third critique may question the use of Qur'anic spatial terminology as an analytical lens, arguing that modern urban transformation should be interpreted exclusively through contemporary socio-economic theory. The present study does not claim direct causal continuity between scriptural categories and planning policy. Instead, it employs semantic ontology as a conceptual scaffold to illuminate structural distinctions between mobility, stabilization, and centrality. The argument rests on structural analogy rather than theological determinism. The ontological categories provide analytical clarity regarding modes of territorial organization, not normative prescriptions for policy.

Another potential critique concerns generalizability. The Saudi trajectory is historically and geographically specific. Mobility-based territorial regimes were particularly prominent in the Arabian Peninsula, and the Hujar initiative reflects a unique socio-political context. The hierarchical-network model proposed here is not presented as a universal template applicable to all states. Rather, it offers a case-specific interpretation that may stimulate comparative inquiry in other contexts where mobility-to-settlement transitions preceded industrial intensification.

Finally, one may argue that contemporary corridor development represents a discontinuity rather than a culmination. Mega-projects, special economic zones, and industrial corridors might be viewed as externally driven strategies disconnected from earlier settlement dynamics. Yet the spatial logic of the Eastern Industrial Corridor—its reliance on established metropolitan areas, its integration within national infrastructure networks, and its embedding within a mature urban hierarchy—indicates continuity rather than rupture. The corridor intensifies and interconnects existing nodes; it does not replace them with an entirely new spatial regime.

These counter-arguments clarify the interpretive stance of the study. The paper does not reduce Saudi urbanization to civilizational determinism, nor does it deny the central role of oil revenues and state planning. Instead, it situates these factors within a longer arc of territorial consolidation. Economic modernization operates upon, and is conditioned by, spatial structures that precede it. Stabilization and hierarchy shape how capital is absorbed and distributed across territory.

By addressing these critiques, the argument gains analytical precision. The hierarchical-network model is not a monocausal explanation but a structural synthesis. It integrates economic, political, and ontological

dimensions into a layered account of spatial transformation. The following and final section consolidates this synthesis into a comprehensive conclusion.

10. Grand Synthesis Conclusion

Saudi Arabia's transformation from a predominantly mobility-based territorial regime in the early twentieth century to a structurally urbanized and industrially integrated system in the twenty-first century represents a profound reconfiguration of space, authority, and settlement. With urbanization now exceeding 86 percent, the Kingdom stands among highly urbanized nations. Yet the trajectory through which this condition emerged differs in important structural respects from many conventional modernization narratives.

This study has argued that Saudi urban transformation unfolded as a layered process of ontological consolidation. Rather than interpreting urbanization as a sudden by-product of oil revenues, the analysis identified sequential stages of territorial restructuring: mobility-based territoriality, stabilization through fixed settlements, hierarchical urban pyramid formation, and corridor-based network integration. Each stage established the structural preconditions for the next, producing cumulative rather than discontinuous transformation.

The semantic analysis of *badw*, *qaryah*, and *madinah* provided a conceptual axis of mobility, stabilization, and institutional centrality. Interpreted analytically, these categories illuminate fundamental distinctions in modes of inhabiting territory. Mobility-based regimes prioritize movement and environmental adaptation; stabilized settlements anchor populations to bounded localities; institutional centrality organizes internal differentiation and governance. While these terms originate in a scriptural context, their structural distinctions transcend theological interpretation and offer conceptual clarity regarding spatial organization.

The historical reconstruction of the Hujar settlement initiative demonstrated how territorial stabilization preceded large-scale industrial intensification. Approximately 175 documented settlements introduced nodality into diffuse space, transforming mobile populations into territorially legible communities. This stabilization phase did not immediately generate metropolitan dominance but instead laid the groundwork for distributed settlement multiplication. The subsequent growth of towns and cities formed a multi-tiered urban pyramid rather than an extreme primate-city structure.

The emergence of the Eastern Industrial Corridor along the Gulf coast represents the apex of this hierarchical structuring. Industrial nodes—petrochemical complexes, mining facilities, ports, desalination plants—are integrated into a linear multi-nodal spine characterized by infrastructural density and export orientation. Network integration did not replace hierarchy; it intensified and interconnected its upper tiers. The corridor rests upon the stabilized and hierarchically organized settlement system that preceded it.

The hierarchical–network model articulated in this study clarifies the structural logic connecting these phases. Stabilization introduces nodality; hierarchy organizes nodality; network integration links high-capacity nodes horizontally. Without stabilization, hierarchy cannot form; without hierarchy, corridor integration lacks coherence. The Saudi trajectory thus illustrates the importance of sequencing in territorial transformation.

This interpretation does not deny the decisive impact of oil wealth, state planning, or global economic integration. Rather, it situates these forces within a deeper structural continuum. Economic resources accelerated development, but they operated within a territorially consolidated framework shaped by earlier stabilization. Planning initiatives achieved coherence because fixed settlements and hierarchical differentiation already structured space. Corridor integration succeeded because nodal anchors and administrative capacity were in place.

The Saudi case therefore contributes to broader debates in urban epistemology. It demonstrates that urbanization may proceed as progressive consolidation rather than abrupt industrialization. It reintroduces the mobility–settlement distinction as a foundational analytical variable. It situates corridor-based development within long-term territorial structuring rather than treating it as a discrete planning innovation. And it highlights the importance of ontological clarity in understanding how populations inhabit and organize space.

At a policy level, recognizing the layered nature of Saudi spatial transformation carries implications for future development strategies. As the Kingdom enters a phase of urban maturity, the emphasis shifts from expansion to optimization—strengthening connectivity, enhancing infrastructural resilience, and maintaining hierarchical balance. Corridor intensification must remain embedded within broader settlement systems to avoid spatial fragmentation. Stabilization and hierarchy continue to underpin network integration.

Ultimately, the movement from badw to industrial corridors represents more than demographic change. It reflects a century-long consolidation of territorial order. Mobility yielded to settlement; settlement evolved into hierarchy; hierarchy matured into networked integration. Saudi Arabia today is not merely urbanized in statistical terms. It is territorially anchored, hierarchically structured, and functionally interconnected.

Understanding this layered transformation provides a more nuanced account of urban modernity—one that recognizes continuity within change and structure within acceleration.

In comparative perspective, the Saudi experience demonstrates that large-scale territorial consolidation across vast geographic space—coupled with the establishment of hundreds of distributed settlements—has few parallels in the Gulf region. The scale, sequencing, and spatial breadth of stabilization distinguish the Saudi case from smaller Gulf states whose urbanization occurred within more compressed territorial frameworks. This difference reinforces the analytical value of examining stabilization as a structural precondition for hierarchy and corridor integration. This study does not claim universal generalizability but offers an interpretive structural model grounded in the Saudi case.

References

1. Al-Jarallah, Ahmed Jarallah (2003) "King Abdulaziz Hajar, The Roots of the Contemporary Saudi Urban System", Urban Development Symposium in Desert Areas, Ministry of Public Works and Housing, Riyadh.
2. Al-Rasheed, M. (2010). A history of Saudi Arabia (2nd ed.). Cambridge University Press.
3. Al-Hathloul, S. (1996). Urban development in Saudi Arabia: Challenges and opportunities. Riyadh Development Authority.
4. Brenner, N. (2014). Implosions/explosions: Towards a study of planetary urbanization. Jovis.
5. Brenner, N., & Schmid, C. (2015). Towards a new epistemology of the urban? *City*, 19(2–3), 151–182.
6. Castells, M. (1996). The rise of the network society. Blackwell.
7. Elsheshtawy, Y. (2010). Dubai: Behind an urban spectacle. Routledge.
8. Faludi, A. (2013). Territorial cohesion and subsidiarity. *Town Planning Review*, 84(2), 159–181.
9. Florida, R. (2017). The new urban crisis. Basic Books.

10. General Authority for Statistics. (2023). Population characteristics survey.
11. Glaeser, E. (2011). *Triumph of the city*. Penguin Press.
12. Hall, P. (1998). *Cities in civilization*. Pantheon.
13. Hall, P., & Pain, K. (2006). *The polycentric metropolis*. Earthscan.
14. Harvey, D. (1973). *Social justice and the city*. Johns Hopkins University Press.
15. Harvey, D. (2008). The right to the city. *New Left Review*, 53, 23–40.
16. Healey, P. (2006). *Collaborative planning: Shaping places in fragmented societies*. Palgrave Macmillan.
17. Hertog, S. (2011). *Princes, brokers, and bureaucrats: Oil and the state in Saudi Arabia*. Cornell University Press.
18. Kanna, A. (2011). *Dubai: The city as corporation*. University of Minnesota Press.
19. Krane, J. (2019). *Energy kingdoms: Oil and political survival in the Persian Gulf*. Columbia University Press.
20. Lefebvre, H. (1991). *The production of space*. Blackwell.
21. Neuman, M., & Zonneveld, W. (2018). The resurgence of corridor planning. *European Planning Studies*, 26(4), 669–686.
22. Priemus, H., & Zonneveld, W. (2003). What are corridors and what are the issues? *Journal of Transport Geography*, 11(3), 167–177.
23. Salama, A. M. (2016). Urbanism in the Gulf. *Archnet-IJAR*, 10(2), 4–21.
24. Schmitt, P. (2014). Mega-regions reconsidered. *European Planning Studies*, 22(3), 467–482.
25. Scott, A. J. (2001). *Global city-regions*. Oxford University Press.
26. UN-Habitat. (2022). *World cities report 2022*. United Nations Human Settlements Programme.
27. Weber, M. (1958). *The city*. Free Press.
28. World Bank. (2023). *Saudi Arabia urban development overview*. World Bank