The Mitigation of Traffic in Tirana through the Formal Reconceptualization of the City

Case study of Kashar area, Tirana.

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Abstract - *Tirana, a city devouring itself, spinning outward in circles an urban condition of congestion, collision, and expansion. At its core, the historic centre exists as a complex convergence of multiple realities: a geometric centre, a congestion centre, and a city centre all together forming a gravitational force that attracts the flow of traffic and human energy, suffocating under the weight of its own allure. Major and secondary roads radiate towards these overlapping centres like arteries in a cardiac arrest, pulsing life toward the centre but choking on its dependency.*

This research uncovers a counter-geometry to address these challenging urban conditions through drawing out a series of already latent circles, inscribed in Tirana's peripheral veins, waiting to be closed. When drawn, these circles propose an alternative: a constellation of centres that are each disconnected but interdependent, forming a polycentric network. In this way, traffic flows are similar to the flow of water, redirected and absorbed, as the city expands in rings instead of lines.

The project shifts focus to look more closely at the scale of one such circle, the northwest edge of Tirana where the city fractures into congestion near "Casa Italia," to answer the question: how to design a new centre? This centre partially speculative, partially inevitable does not replace the historic core but competes with it, redistributing flows and recalibrating form. Anchored by infrastructure, it intercepts suburban axes and folds into a nexus of accessibility, equilibrium, and spatial justice. Geometry collapses into form. The circle's centre, once abstract, becomes real an urban node balancing the flow of cars, people, and potential.

What emerges is a master plan, not as a blueprint but as a system a flexible form that anticipates the city's next 50, 100, 150 years. A network of circles. A choreography of centres. Tirana no longer bends toward the singularity of its origin but radiates outward, forming an archipelago of possibilities its traffic mitigated, its form sustained, its expansion inevitable, but now logical.

Keywords - Traffic mitigation; Urban centre; Congested centres; Multimodal transportation; 'Archipuncture'.

Introduction

Reading Tirana's urban fabric shows a city struggling with centralization and congestion as a result of its rapid urban growth. The historic core, while rich in cultural and symbolic significance, has become a bottleneck for movement and development. Peripheral areas, however, are becoming prime targets for urban intervention. In these places, both opportunities and infrastructure converge, thus providing the power to change the course of Tirana's development.

Kashar, situated along the Tirana-Durrës corridor, holds a strategic position in the city's metropolitan network. Flanked by major infrastructural developments including the Tirana-Durrës highway, the Tirana International Airport link, and the Kashar-Kombinat highway this area is uniquely positioned to become a hub of accessibility and activity over the next decades. Its location bridges the urban core and surrounding suburban zones, making it a natural candidate for a new urban center that redistributes flows and mitigates existing traffic pressures on major highways leading to Tirana's historic centre.

Through envisioning Kashar as a new urban hub, this research considers the zone's existing assets and future potential. The research analysis included key factors such as Kashar's established residential and industrial areas, as well as its educational and healthcare institutions, which form the foundation of a self-sustaining urban node. Planned infrastructure projects, such as the construction of the Tirana-Rinas-Durrës railway and the connection of the existing highway to Kombinat, further enhance Kashar's capacity to serve as a pivotal point within Tirana's polycentric network.

This research explores Kashar's potential to evolve into a dynamic urban node, anchoring a polycentric vision for Tirana. Here, flexibility and fluidity are prioritized above traditional master plans, which impose strict designs. The research offers a framework for equitable, accessible, and sustainable urban growth by utilizing Kashar's strategic location and planned infrastructure developments. In this approach, rethinking the connections between Tirana's center and its outskirts is more important than simply building a new center without consideration of urban growth patterns.

In the context of urban growth, Kashar represents more than a geographical area it embodies the possibility of a decentralized Tirana. This study aims to articulate this transformation through an interdisciplinary lens, combining urban planning, geometry, and transport infrastructure. It seeks to propose Tirana's evolution into a city of interconnected centers, where peripheral zones such as Kashar become catalysts for sustainable and equitable development.

Literature review

From 1945 to 1990, Albania experienced one of the most rigid authoritarian regimes of the Cold War period. Following the collapse of this regime, the country embarked on a profound socio-economic transformation that restructured its political institutions, property relations, and spatial organization. Over the past three decades, Albania has achieved considerable growth compared to many countries in the Balkan region, particularly in terms of urban development and economic liberalization (Aliaj, 2015). Until the early 1990s, Albanian society maintained a predominantly rural structure, with only approximately 35% of the population residing in urban areas. Urban centers differ from rural settlements not merely in demographic scale but also in functional complexity (King, 2020). The functions of an urban center are intrinsically linked to diversified economic activities—agricultural, commercial, industrial—as well as to the presence of political, religious, and social institutions, and the provision of essential services such as healthcare, cultural facilities, and transportation infrastructure. In this sense, the urban center performs what may be described as a "pulling power" function, attracting population flows, capital, and services, while exerting influence over an extended territorial hinterland (King, 2020).

Since the 1990s, urban centers in Albania have experienced rapid expansion, with annual growth rates estimated between 5% and 10%, largely driven by the introduction of private property and market-based land development mechanisms (Aliaj, 2015). By 2015, nearly 60% of the national population resided in urban areas, while a significant proportion of Albanians—approximately one in four—lived abroad. This demographic restructuring has reshaped settlement patterns and intensified metropolitan concentration, particularly in the capital region. Today, through an evolving and increasingly complex urban planning process, Albania is positioning itself as an attractive destination for investors, which in turn contributes to rising flows of visitors and tourists and further pressures on urban infrastructure.

In recent decades, urban planning discourse in Albania has increasingly focused on the creation of new urban centers and the reinterpretation of vacant or underutilized territories through design-led interventions. The concept of design has contributed to assigning new spatial meaning to transitional and peripheral areas, transforming them into active components of the metropolitan structure (Stella, 2015). Although Tirana has consolidated its role as the dominant metropolitan pole within the national territory, it continues to exhibit significant potential for spatial reconfiguration and strategic expansion.

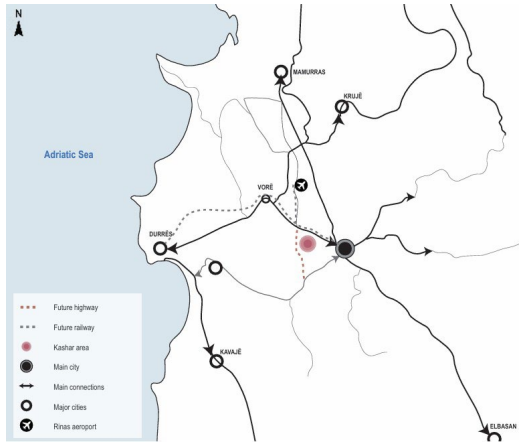

Fig 1 / This diagram presents the area of Kashar in relation to the airport and the cities of Tirana and Durres.
Source/ authors (2025)

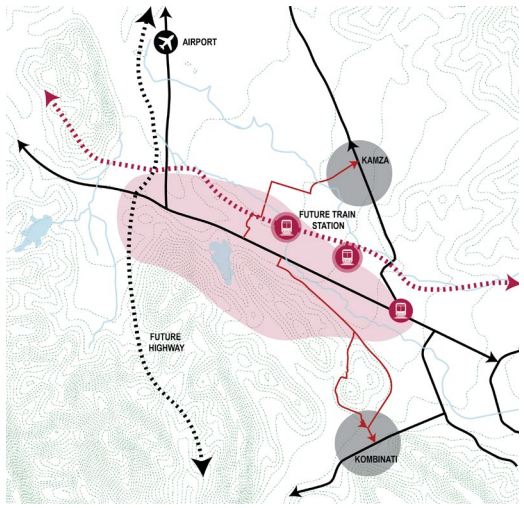

Fig 2 / The second diagram describes Kashar in relation to the development of the area's infrastructure, the new highway and the railway line.
Source/ authors (2025)

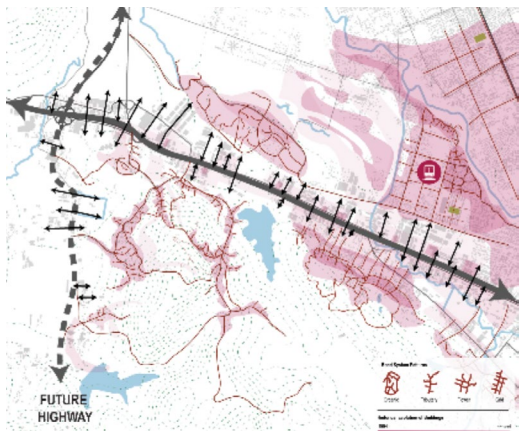

Fig 3 / This third diagram describes the different road morphologies found in Kashar, and the historic evolution of building development.
Source/ authors (2025)

Fig 4 / Actual context of routs in Tirana
Source/ authors (2025)

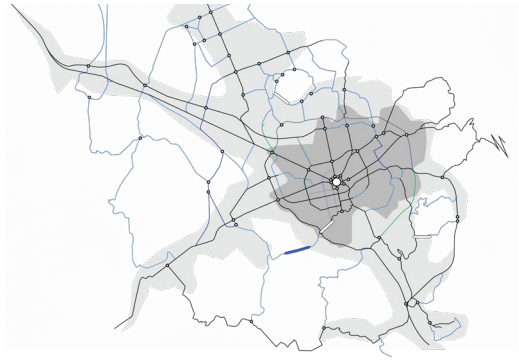

Fig 5 / The routes that can be followed to get from point A to B are presented.
Source/ authors (2025)

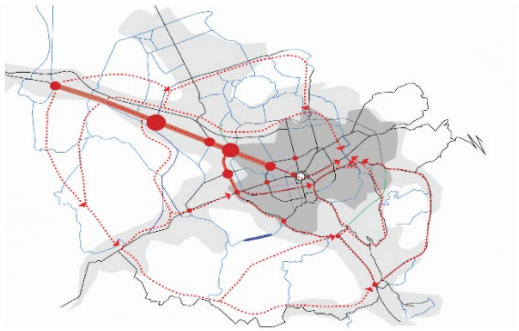

Fig 6 / The figure shows the existing roads in black lines, our proposals for connecting existing roads in blue lines, and the red dashed lines show the roads that could be considered to get from point A to B.
Source/ authors (2025)

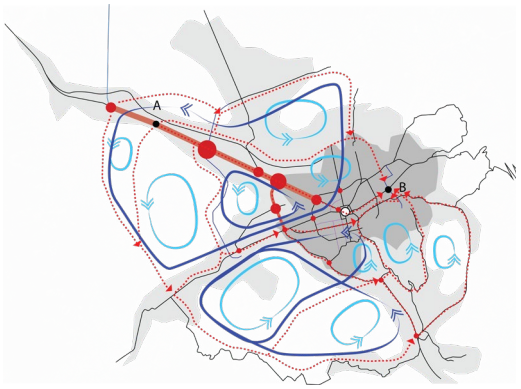

Fig 7 / Diagram of circular systems and sub-systems.
Source/ authors (2025)

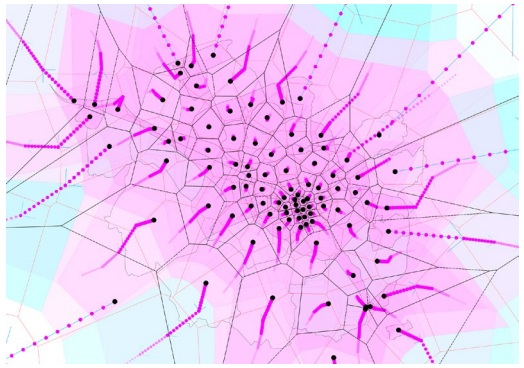

Fig 8 / Projected Stabilization of Urban Forms' structure by mapping decoherence of Centralities based on Voronoi Spatial Relationship analysis.. Source/ authors (2025)

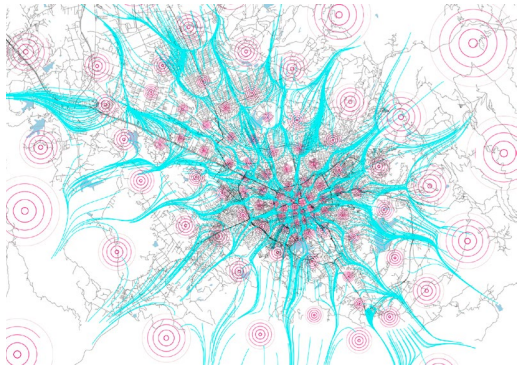

Fig 9 / Potentiality of Mobility Connection to Create periodic and consistent System-Subsystem System of Mobility.
Source/ authors (2025)

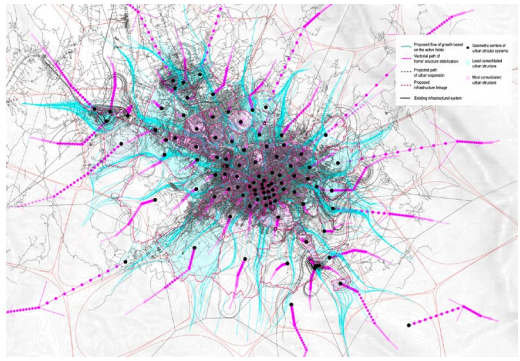

Fig 10 / Map describing proposed flow of growth and proposed urban expansion with most and least consolidated urban structures. Source/ authors (2025)

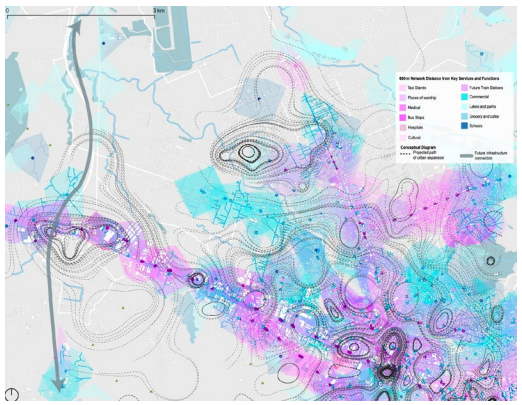

Fig 11 / Synthesis map of walking network analysis of services and projected urban expansion. Source/ authors (2025)

Tirana has developed along a distinct urban quadrant extending between the historic city center and the Rinas area adjacent to the international airport. The morphological characteristics of the territory surrounding Tirana have facilitated linear urban development along three major infrastructural corridors critical to the city's functioning: the Tirana–Durrës highway, the parallel railway network, and the northern quadrant extending beyond the airport. These infrastructures have acted as structural backbones guiding metropolitan expansion and spatial concentration. The road infrastructure mentioned above constitutes a focal point of the present analysis, particularly in light of two major forthcoming developments that are expected to intensify mobility flows. Peripheral areas of Tirana, including Kashar, are likely to become strategic zones for new development and may give rise to emerging urban centers. Such centers could significantly reinforce the "pulling power" dynamic, redistributing activities away from the congested historic core and promoting a more polycentric metropolitan configuration (King, 2020). The strengthening of secondary road networks through an integrated design approach combining urban planning and architectural interventions can facilitate this decentralization process. In this regard, the application of the concept of Archipuncture, which proposes targeted architectural interventions as catalysts for broader urban transformation, offers a relevant methodological framework. By decentralizing vehicular and pedestrian flows and redirecting them toward peripheral hubs, congestion pressures within the historic core can be mitigated. This spatial redistribution strategy responds to the marked increase in traffic congestion observed in recent years and aligns with broader metropolitan restructuring processes (Aliaj, 2015). Ultimately, decentralizing mobility patterns and reinforcing peripheral urban centers contributes to a more balanced metropolitan system.

1. Improve Connectivity: This objective focuses on identifying and addressing gaps in Kashar's mobility network. By redefining the role of secondary roads and enhancing connections between primary access routes, the project aims to create a more efficient and cohesive transportation framework.
2. Develop Urban Centers: The project interventions will consolidate Kashar's dispersed urban fabric into well-structured centers that act as decentralized hubs. These centers will intercept and redistribute traffic before it reaches Tirana's congested core, alleviating pressure on the city's entry points. In addition to reducing traffic, these hubs will offer residential, commercial, and recreational opportunities, promoting a more balanced and sustainable urban lifestyle.
3. Support Sustainable Growth: This objective focuses on aligning Kashar's development with strategic infrastructure projects, such as the Tirana-Rinas-Durrës railway and new highway connections. By adopting a flexible and adaptable planning approach, the project ensures equitable, accessible, and sustainable urban expansion. The framework prioritizes long-term growth that balances social, economic, and environmental needs.

Tools and Methodology

The methodology for the project involves several key steps to ensure effective analysis, planning

and implementation. First, data collection and analysis were conducted to understand the current infrastructure, traffic patterns, and urban trends in Kashar.

To illustrate the current traffic issues in this area, we provided a specific example that affects many of us within the university community: the challenge of traveling from the university to the city center or vice versa. As shown in Figure 5, commuters take various routes from point A to point B, often covering additional kilometers in an attempt to save a few minutes in traffic.

Given the heavy traffic in Tirana and the area under study, we identified the most congested routes. Through an analysis of the existing infrastructure, we recognized the need to establish new centralities to expand the circular systems recently developed. These circular systems have a geometric center, which was used as input for conducting a Voronoi spatial analysis. The centers of the new Voronoi cells were used as inputs for generating a sequential Voronoi diagram. This iterative process, repeated in a loop, illustrates the stabilization of urban form structures, which are visualized through vectors and trace points (represented in figure 8). This projection represents a formal flow or shift in geometric centrality. The new geometric centralities, derived from the projected expansion, are interpreted as abstract attractive poles with varying magnetic values (state and attractor) that activate an Abstract Field. This approach proposes an "infection" of segregated or less consolidated areas through the urban geometric structure, guided by the stability vector lengths of centralities from the Voronoi spatial analysis. This transformative process is termed Archipuncture, inspired by the concept of acupuncture, but realized as impactful architectural interventions. Archipuncture can take various forms, ranging from high-economic investment strategies to revitalization and architectural consolidation of the intervention area, densification, and more. The selected area represents a vacuum in the hidden fluidity of the city, as interpreted from synthesis diagrams. In this context, we aim to zoom in and analyse the diagrams on a smaller scale.

The analysis and interpretation from the Voronoi spatial analysis are overlaid with a walking distance network analysis of the service areas of various functions within Kashar, to understand the relationship between areas that are void of services and areas of projected urban expansion (see Figure 11). This interaction between existing and future context allows deeper understanding of where potential urban centers can be located, with respect to redirecting traffic flows from already congested nodes and axes.

Results

Based on the studies and analyses conducted for Kashar, we propose a series of interventions at different scales and functions to form points of Archipuncture within the study area. Firstly, we propose a multimodal station that will address traffic congestion at the primary entry and exit points of the capital. This proposal integrates the Rinas-Tirana-Durrës railway line and extends the Thumanë-Kashar highway with the Kashar-Vaqarr axis. At the existing Rinas overpass, an expanded circular system is envisioned, anchored by the multimodal station that reorganizes vehicular flows via a cross-overpass. This station will manage and distribute new intercity public transportation flows while serving as the main train station at the physical boundary of the Tirana-Kashar administrative unit.

Within this circular system, high-rise buildings with mixed-use functions, primarily for business, are proposed. These structures act as a physical "filter" for noise, protecting future residential developments planned along the secondary highway line.

Additionally, a preliminary development vision is proposed near the train station, positioned after the central multimodal station. This area is characterized by fluid architectural forms and circular infrastructural elements to facilitate seamless circulation with minimal traffic nodes that could impede vehicle flow. The multimodal station, strategically located near Kashar Lake, serves as a "gateway" to the New Kashar Park, marking the site of the proposed third archipuncture. The New Kashar Park will leverage the existing natural amenity that is not easily accessible and provide improved access for commuters and residents alike. All three of these interventions, in addition to the proposed infrastructure redevelopment, create a new consolidated urban system, which has the potential to revitalize all surrounding areas in the sustainable future of the city. These interventions address the urban structure, with the ultimate goal of improving circulation by mitigating automobile traffic - in relation to the projections of growth and urban densification of the new centralities of Tirana 2050.

Fig 12 / Master Plan of proposed interventions in Kashar, Tirana. Source/ authors (2025)

Conclusions and Recommendations

The proposed interventions significantly improve mobility and connectivity by addressing traffic congestion through the development of a multimodal station and an enhanced road network, streamlining both vehicular and public transportation flows at key entry and exit points of the capital. These measures promote balanced urban development by integrating high-rise, mixed-use buildings alongside residential areas, creating a sustainable urban fabric that accommodates business, recreational, and residential needs. The strategic alignment of the Rinas-Tirana-Durrës railway and the Thumanë-Kashar highway with urban development establishes a multimodal transportation framework, enhancing regional connectivity and accessibility. Additionally, the project demonstrates a strong commitment to environmental and social impact through the introduction of the New Kashar Park and noise-reducing architectural strategies, which improve urban living standards while promoting ecological and recreational spaces. Lastly, the innovative use of Archipunctures as targeted architectural interventions showcases a forward-thinking approach to urban revitalization, effectively addressing underutilized or fragmented urban spaces.

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